U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Sundry Print Report
07/05/2024

Well Name: ROSA UNIT	**Well Location:** T31N / R5W / SEC 7 / NESE / 36.913904 / -107.399208	**County or Parish/State:** RIO ARRIBA / NM
Well Number: 702H	**Type of Well:** CONVENTIONAL GAS WELL	**Allottee or Tribe Name:**
Lease Number: NMSF0078767	**Unit or CA Name:**	**Unit or CA Number:** NMNM078407E
US Well Number: 3003931439	**Operator:** LOGOS OPERATING LLC	

Notice of Intent

Sundry ID: 2799033

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 07/04/2024

Time Sundry Submitted: 03:35

Date proposed operation will begin: 07/04/2024

Procedure Description: LOGOS Operating request a change in plans for the following (based on KB elevation): Original bottom-hole location from 1086' FSL & 1109' FWL to new bottom-hole location 1086' FSL & 1009' FWL Original TD @ 18,024' (MD) 6,913' (TVD) to new TD @ 18,112' (MD) 6,913' (TVD). Geology tops have been updated per changes. Original KOP @ 6,497' MD 6,329' TVD to new KOP @ 6,490' MD 6,327' TVD Original Landing point @ 7,500' MD 6,947' TVD to new Landing point @ 8,035' MD 6,945' TVD Original 5.5" casing Production casing @ 18,024' MD to new 5.5" Production casing @ 18,112' MD 6913' TVD All cementing bbls and sacks have been update per casing depth changes. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_005_Rosa_Unit_702H_Change_in_Plan_3__20240704_20240704153500.pdf

CONFIDENTIAL

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 7 / NESE / 36.913904 / -107.399208

County or Parish/State: RIO ARRIBA / NM

Well Number: 702H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF0078767

Unit or CA Name:

Unit or CA Number: NMNM078407E

US Well Number: 3003931439

Operator: LOGOS OPERATING LLC

Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: ETTA TRUJILLO

Signed on: JUL 04, 2024 03:35 PM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: Farmington **State:** NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 07/05/2024

Signature: Kenneth Rennick

CONFIDENTIAL

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED OMB
No. 1004-0137 Expires:
December 31, 2024

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No.: NMSF078767

6. If Indian, Allottee or Tribe Name:

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

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.: ROSA UNIT 702H

2. Name of Operator: LOGOS OPERATING, LLC

9. API Well No.: 30-039-31439

3a. Address: 2010 AFTON PLACE, FARMINGTON, NM 87401

3b. Phone No. *(include area code)*: (505) 278-8720

10. Field and Pool or Exploratory Area: BASIN MANCOS

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*: UNIT J SEC 7 T31N 5W 2612' FSL 1322' FEL

11. Country or Parish, State: RIO ARRIBA, NEW MEXICO

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be perfonned or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

LOGOS Operating request a change in plans for the following (based on KB elevation):

Original bottom-hole location from 1086' FSL & 1109' FWL to **new bottom-hole location 1086' FSL & 1009' FWL**
Original TD @ 18,024' (MD) 6,913' (TVD) to **new TD @ 18,112' (MD) 6,913' (TVD)**.

Geology tops have been updated per changes.
Original KOP @ 6,497' MD 6,329' TVD to **new KOP @ 6,490' MD 6,327' TVD**
Original Landing point @ 7,500' MD 6,947' TVD to **new Landing point @ 8,035' MD 6,945' TVD**

Original 5.5" casing Production casing @ 18,024' MD to **new 5.5" Production casing @ 18,112' MD 6913' TVD**

All cementing bbls and sacks have been update per casing depth changes.
Attached: New C102, Operation and Directional Drill plans.

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*: Etta Trujillo

Title: Regulatory Specialist

Signature: Etta Trujillo

Date: 7/4/2024

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

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.

(Instructions on page 2)

Received by OCD: 7/5/2024 3:51:32 PM

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

State of New Mexico
Energy, Minerals & Natural Resources Department

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

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-039-31439	97232	BASIN MANCOS

4 Property Code	5 Property Name	6 Well Number
320608	ROSA UNIT	702H

7 OGRID No.	8 Operator Name	9 Elevation
289408	LOGOS OPERATING, LLC	6295'

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
J	7	31N	5W		2612	SOUTH	1322	EAST	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
M	11	31N	6W		1086	SOUTH	1009	WEST	RIO ARRIBA

12 Dedicated Acres		13 Joint or Infill	14 Consolidation Code	15 Order No.
823.25	S/2 – Sections 11, 12, T31N, R6W S/2 – Section 7, T31N, R5W			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 — 7/4/2024 — 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: JULY 4, 2024
Survey Date: NOVEMBER 15, 2021

Signature and Seal of Professional Surveyor

JASON C. EDWARDS NEW MEXICO 15269 REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

LAST TAKE POINT (C)
1086' FSL 1009' FWL
SECTION 11, T31N, R6W
LAT 36.909868 °N
LONG -107.437175 °W
DATUM: NAD1927

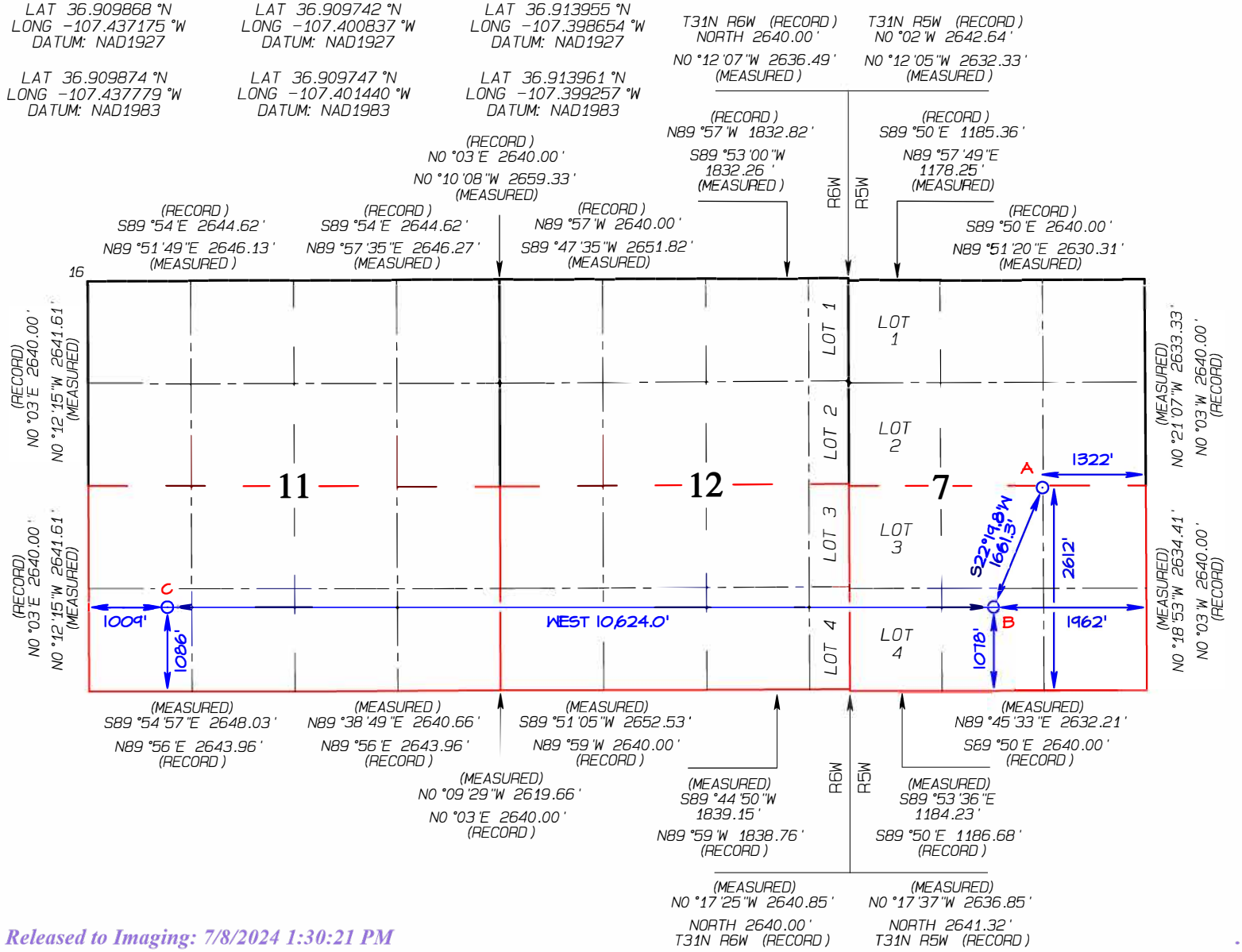
LAT 36.909874 °N
LONG -107.437779 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
1078' FSL 1962' FEL
SECTION 7, T31N, R5W
LAT 36.909742 °N
LONG -107.400837 °W
DATUM: NAD1927

LAT 36.909747 °N
LONG -107.401440 °W
DATUM: NAD1983

SURFACE LOCATION (A)
2612' FSL 1322' FEL
SECTION 7, T31N, R5W
LAT 36.913955 °N
LONG -107.398654 °W
DATUM: NAD1927

LAT 36.913961 °N
LONG -107.399257 °W
DATUM: NAD1983



Released to Imaging: 7/8/2024 1:30:21 PM

LOGOS Operating, LLC
Operations Plan

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

Date:	July 04, 2024	Pool:	Basin Mancos
Well Name:	**Rosa Unit 702H**	GL Elevation:	6,295'
Surface Location:	Sec 7, T31N, R5W 2612' FSL, 1322' FEL (36.913961º N, 107.399257º W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 11, T31N, R6W 1086' FSL, 1009' FWL (36.909874º N, 107.437779º W – NAD83)	Measured Depth:	18,112' (KB)
Lease Serial CA Serial	**# NMSF78767 # NMNM78407E**	County:	Rio Arriba

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2462'	2413'	*POINT LOOKOUT	5786'	5628'
KIRTLAND	2579'	2526'	*MANCOS	6335'	6172'
*FRUITLAND	2959'	2895'	KICKOFF POINT	6490'	6327'
*PICTURED CLIFFS	3411'	3333'	LANDING POINT	8035'	6945'
LEWIS	3541'	3459'	TD	18112'	6913'
CHACRA	4721'	4595'			
*CLIFF HOUSE	5516'	5362'			
MENEFEE	5567'	5412'			

* 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 26"/24" surface hole and 12-1/4" intermediate hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

Above ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times.

B. **BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **3000 psi (High) for 10 minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes.** Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.

C. **GeoHazards:** There are no Geohazards

D. **Maximum Anticipated Pressure:** 6,945' TVD x 0.43 = 2986 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	26"	375'	20"	94.0 LBS	J-55	BTC
INTERMEDIATE	12.25"	6,391'	9.625"	47.0 LBS	L-80	BTC
PRODUCTION	8.5"	18,112'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

NOTE: All casing depths are approximate, based on KB elevation and will be based on drilling conditions +/- 50'. Weights, grades and connections will be based on availability and may vary but will be equivalent or greater.

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 20" cement nose guide shoe. Place float shoe 1 joint above shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
2. INTERMEDIATE CASING: 9-5/8" cement float shoe. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.
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: Pre-set at 375'(GL)

Surface - 20" csg	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	350	0.9599	1.3	473	84	1.10	430	15.8
or Type III		350	0.9599	1.3	473	84	1.39	340	14.6
			24" hole						
Set Depth, ft RKB	350								

2. INTERMEDIATE : Pre-set at 6,391'

Intermediate - 9-5/8" csg	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,910	500	0.3132	1.3	221	39	1.10	201	15.8
Stage 1 Lead	4,759	1,151	0.3132	1.3	469	83	1.90	247	12.4
					690	**123**		**448**	
Stage 2 Tail	4,159	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,005	1,154	0.3132	1.3	470	84	1.90	247	12.4
					714	**127**		**402**	
Stage 3 Tail	2,355	650	0.3132	1.3	265	47	1.58	168	13.2
Stage 3 Lead	350	2,005	0.3132	1.3	816	145	1.58	517	12.4
Stage 3 Lead	-	350	1.4895	1	521	93	1.90	274	12.4
					1,602	**285**		**959**	
					3,006	**535**		**1,808**	
Set Depth, ft RKB	6410								

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.

Production - 5-1/2"	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased hole Tail	6,310	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Tail	6,410	11,702	0.2291	1.15	3,094	551	1.59	1,946	13.2
					3,119	555		1,962	
Set Depth, ft RKB	18112								

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 * 6,947' TVD = 1528 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

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

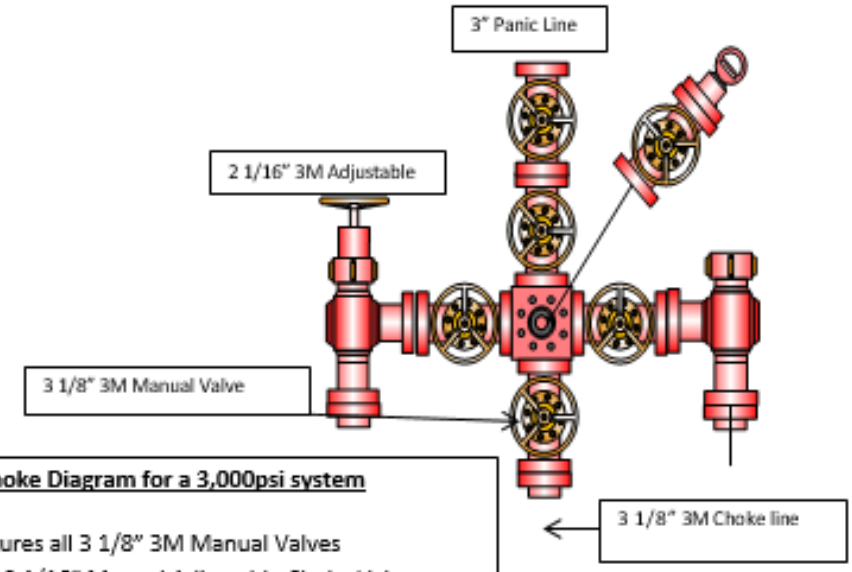
E. PRODUCTION TUBING

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

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

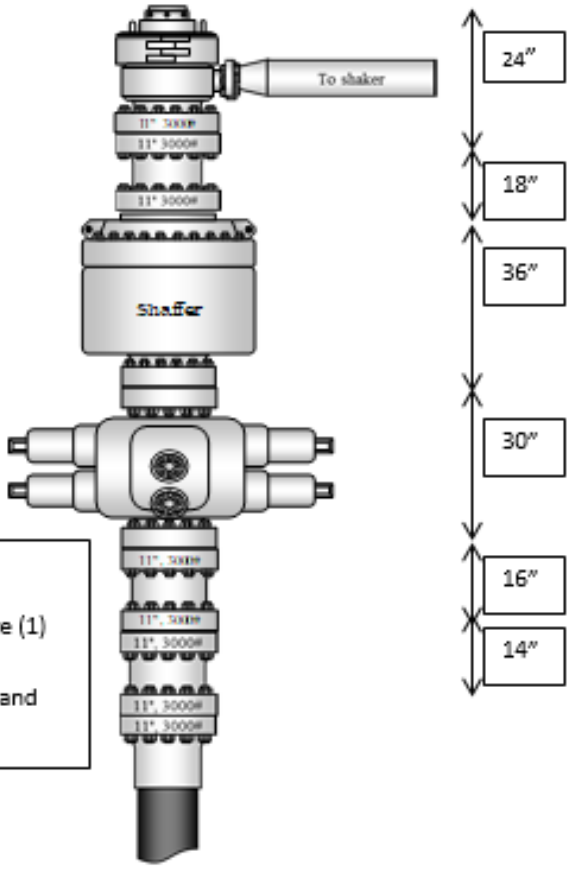
LOGOS OPERATING

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

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 24
Rosa Unit 702H

OH

Plan: Plan #3

Standard Planning Report

03 July, 2024

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**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 24				
Site Position:		**Northing:**	2,152,318.01 usft	**Latitude:**	36.914017
From:	Lat/Long	**Easting:**	2,849,973.79 usft	**Longitude:**	-107.399307
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "		

Well	Rosa Unit 702H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	2,152,297.69 usft	**Latitude:**	36.913961
	+E/-W	0.00 usft	**Easting:**	2,849,988.50 usft	**Longitude:**	-107.399257
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	6,295.00 usft
Grid Convergence:		0.26 °				

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HRGM	4/2/2024	8.46	63.29	49,366.30994752

Design	Plan #3			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	6,348.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	270.26

Plan Survey Tool Program **Date** 7/3/2024

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	54.25	308.67	Survey #1 (OH)	Standard Keeper 104 Standard Wireline Keeper ver 1	
2	454.00	6,348.00	Survey #2 (OH)	MWD+HRGM+MS MWD + HRGM + Multi-Station	
3	6,348.00	18,111.83	Plan #3 (OH)	MWD+HRGM+MS MWD + HRGM + Multi-Station	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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
6,348.00	3.99	176.58	6,185.46	-1,306.81	-16.51	0.00	0.00	0.00	0.00	
6,390.00	3.99	176.58	6,227.36	-1,309.73	-16.33	0.00	0.00	0.00	0.00	
6,490.00	3.99	176.58	6,327.12	-1,316.68	-15.92	0.00	0.00	0.00	0.00	
7,471.54	90.19	259.00	6,947.08	-1,478.96	-625.41	9.14	8.78	8.40	82.43	
8,034.58	90.19	270.26	6,945.23	-1,531.57	-1,185.08	2.00	0.00	2.00	90.01	
18,111.83	90.19	270.26	6,912.68	-1,485.69	-11,262.17	0.00	0.00	0.00	0.00	RU 702H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**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
54.25	0.24	61.55	54.25	0.05	0.10	-0.10	0.44	0.44	0.00
130.42	0.30	88.71	130.42	0.13	0.44	-0.44	0.18	0.08	35.66
219.69	0.32	62.64	219.69	0.25	0.89	-0.89	0.16	0.02	-29.20
308.67	0.36	71.55	308.67	0.46	1.38	-1.38	0.07	0.04	10.01
454.00	0.80	206.13	453.99	-0.31	1.37	-1.37	0.75	0.30	92.60
544.00	3.11	205.83	543.93	-3.07	0.03	-0.04	2.57	2.57	-0.33
667.00	4.87	218.89	666.63	-10.14	-4.71	4.66	1.60	1.43	10.62
756.00	5.55	204.01	755.27	-17.01	-8.83	8.75	1.69	0.76	-16.72
850.00	7.84	202.43	848.62	-27.09	-13.13	13.00	2.44	2.44	-1.68
942.00	10.07	196.01	939.50	-40.62	-17.74	17.55	2.65	2.42	-6.98
1,033.00	11.54	186.67	1,028.89	-57.31	-20.99	20.73	2.51	1.62	-10.26
1,123.00	12.02	180.43	1,117.00	-75.63	-22.11	21.76	1.51	0.53	-6.93
1,214.00	12.02	181.12	1,206.00	-94.58	-22.36	21.93	0.16	0.00	0.76
1,309.00	12.96	178.14	1,298.75	-115.11	-22.21	21.69	1.20	0.99	-3.14
1,403.00	12.78	175.10	1,390.39	-136.01	-20.98	20.36	0.75	-0.19	-3.23
1,498.00	13.65	178.41	1,482.88	-157.68	-19.77	19.06	1.21	0.92	3.48
1,592.00	15.61	178.83	1,573.82	-181.42	-19.21	18.38	2.09	2.09	0.45
1,687.00	15.64	175.83	1,665.32	-206.97	-18.01	17.07	0.85	0.03	-3.16
1,876.00	15.57	173.19	1,847.35	-257.57	-13.15	11.98	0.38	-0.04	-1.40
1,970.00	15.70	173.00	1,937.87	-282.72	-10.11	8.82	0.15	0.14	-0.20
2,064.00	15.44	172.46	2,028.42	-307.74	-6.92	5.52	0.32	-0.28	-0.57
2,159.00	15.56	171.21	2,119.97	-332.87	-3.31	1.80	0.37	0.13	-1.32
2,348.00	14.65	176.00	2,302.44	-381.77	2.23	-3.96	0.82	-0.48	2.53
2,443.00	14.40	176.64	2,394.41	-405.55	3.76	-5.60	0.31	-0.26	0.67
2,537.00	14.41	176.87	2,485.45	-428.89	5.09	-7.03	0.06	0.01	0.24
2,632.00	14.35	176.58	2,577.48	-452.45	6.43	-8.49	0.10	-0.06	-0.31
2,727.00	14.39	176.53	2,669.50	-475.98	7.85	-10.01	0.04	0.04	-0.05
2,821.00	14.38	176.77	2,760.56	-499.30	9.22	-11.48	0.06	-0.01	0.26
2,916.00	13.91	176.85	2,852.68	-522.47	10.51	-12.88	0.50	-0.49	0.08
3,011.00	13.20	176.74	2,945.03	-544.71	11.75	-14.22	0.75	-0.75	-0.12
3,105.00	13.11	182.47	3,036.57	-566.07	11.90	-14.47	1.39	-0.10	6.10
3,200.00	14.58	185.79	3,128.81	-588.73	10.23	-12.90	1.76	1.55	3.49
3,294.00	14.66	186.16	3,219.76	-612.33	7.76	-10.54	0.13	0.09	0.39
3,389.00	13.95	185.14	3,311.82	-635.69	5.45	-8.33	0.79	-0.75	-1.07
3,483.00	14.01	184.78	3,403.03	-658.31	3.48	-6.47	0.11	0.06	-0.38
3,578.00	13.47	184.23	3,495.31	-680.81	1.71	-4.80	0.58	-0.57	-0.58
3,672.00	13.88	183.11	3,586.65	-702.98	0.29	-3.48	0.52	0.44	-1.19
3,767.00	13.47	182.60	3,678.95	-725.41	-0.83	-2.46	0.45	-0.43	-0.54
3,862.00	11.89	182.84	3,771.63	-746.24	-1.82	-1.57	1.66	-1.66	0.25
3,956.00	11.40	182.51	3,863.70	-765.20	-2.70	-0.77	0.53	-0.52	-0.35
4,052.00	12.93	183.70	3,957.54	-785.39	-3.81	0.25	1.61	1.59	1.24
4,146.00	14.39	183.75	4,048.88	-807.55	-5.26	1.59	1.55	1.55	0.05
4,241.00	16.40	181.10	4,140.47	-832.74	-6.29	2.51	2.24	2.12	-2.79
4,336.00	17.86	177.72	4,231.25	-860.70	-5.96	2.06	1.86	1.54	-3.56
4,430.00	18.37	179.44	4,320.59	-889.92	-5.24	1.21	0.79	0.54	1.83
4,524.00	19.48	183.15	4,409.51	-920.38	-5.96	1.78	1.74	1.18	3.95
4,619.00	19.82	183.89	4,498.98	-952.27	-7.92	3.60	0.44	0.36	0.78
4,713.00	18.28	183.85	4,587.83	-982.88	-10.00	5.54	1.64	-1.64	-0.04
4,807.00	18.75	182.51	4,676.97	-1,012.68	-11.65	7.05	0.67	0.50	-1.43
4,870.00	18.59	182.12	4,736.65	-1,032.83	-12.46	7.78	0.32	-0.25	-0.62
4,933.00	17.31	182.16	4,796.58	-1,052.23	-13.19	8.41	2.03	-2.03	0.06
5,027.00	18.10	181.41	4,886.13	-1,080.80	-14.07	9.17	0.87	0.84	-0.80
5,121.00	15.51	181.06	4,976.11	-1,107.97	-14.67	9.64	2.76	-2.76	-0.37

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**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)
5,216.00	13.35	181.05	5,068.11	-1,131.64	-15.10	9.97	2.27	-2.27	-0.01
5,341.00	11.76	181.47	5,190.11	-1,158.81	-15.69	10.43	1.27	-1.27	0.34
5,436.00	11.26	181.38	5,283.20	-1,177.76	-16.16	10.82	0.53	-0.53	-0.09
5,499.00	10.88	181.46	5,345.03	-1,189.85	-16.46	11.06	0.60	-0.60	0.13
5,561.00	10.39	180.45	5,405.97	-1,201.29	-16.66	11.21	0.85	-0.79	-1.63
5,624.00	9.99	181.52	5,467.97	-1,212.43	-16.85	11.34	0.70	-0.63	1.70
5,687.00	9.65	180.60	5,530.05	-1,223.17	-17.05	11.50	0.59	-0.54	-1.46
5,750.00	9.19	180.35	5,592.20	-1,233.49	-17.13	11.54	0.73	-0.73	-0.40
5,813.00	8.88	179.33	5,654.42	-1,243.38	-17.11	11.46	0.55	-0.49	-1.62
5,876.00	8.65	179.12	5,716.68	-1,252.98	-16.98	11.29	0.37	-0.37	-0.33
5,939.00	8.34	179.33	5,778.99	-1,262.28	-16.85	11.12	0.49	-0.49	0.33
6,065.00	7.03	179.45	5,903.86	-1,279.13	-16.67	10.87	1.04	-1.04	0.10
6,128.00	6.53	180.91	5,966.41	-1,286.57	-16.69	10.85	0.84	-0.79	2.32
6,191.00	5.95	180.27	6,029.04	-1,293.42	-16.76	10.89	0.93	-0.92	-1.02
6,254.00	5.02	179.39	6,091.75	-1,299.44	-16.75	10.85	1.48	-1.48	-1.40
6,348.00	3.99	176.58	6,185.46	-1,306.81	-16.51	10.58	1.12	-1.10	-2.99
Start 42.00 hold at 6348.00 MD									
6,390.00	3.99	176.58	6,227.36	-1,309.73	-16.33	10.39	0.00	0.00	0.00
Start 100.00 hold at 6390.00 MD									
6,400.00	3.99	176.58	6,237.33	-1,310.43	-16.29	10.35	0.00	0.00	0.00
6,490.00	3.99	176.58	6,327.12	-1,316.68	-15.92	9.94	0.00	0.00	0.00
Start DLS 9.13 TFO 82.43									
6,500.00	4.21	189.02	6,337.09	-1,317.39	-15.96	9.98	9.14	2.19	124.35
6,550.00	7.19	225.75	6,386.85	-1,321.38	-18.49	12.49	9.14	5.96	73.46
6,600.00	11.28	238.71	6,436.20	-1,326.11	-24.91	18.89	9.14	8.19	25.93
6,650.00	15.64	244.69	6,484.82	-1,331.54	-35.19	29.15	9.14	8.71	11.96
6,700.00	20.09	248.09	6,532.40	-1,337.62	-49.25	43.18	9.14	8.90	6.80
6,750.00	24.58	250.29	6,578.63	-1,344.34	-67.02	60.92	9.14	8.98	4.41
6,800.00	29.09	251.85	6,623.24	-1,351.64	-88.37	82.24	9.14	9.03	3.11
6,850.00	33.62	253.02	6,665.93	-1,359.47	-113.17	107.00	9.14	9.05	2.34
6,900.00	38.15	253.94	6,706.42	-1,367.79	-141.27	135.06	9.14	9.07	1.84
6,950.00	42.70	254.69	6,744.48	-1,376.54	-172.48	166.23	9.14	9.08	1.50
6,982.81	45.68	255.12	6,768.00	-1,382.50	-194.55	188.28	9.14	9.09	1.30
Black Top									
7,000.00	47.24	255.32	6,779.84	-1,385.68	-206.60	200.31	9.14	9.09	1.20
7,050.00	51.79	255.87	6,812.30	-1,395.13	-243.43	237.09	9.14	9.10	1.09
7,100.00	56.34	256.35	6,841.63	-1,404.84	-282.72	276.34	9.14	9.10	0.96
7,150.00	60.89	256.78	6,867.66	-1,414.75	-324.23	317.80	9.14	9.11	0.87
7,200.00	65.45	257.18	6,890.22	-1,424.80	-367.69	361.22	9.14	9.11	0.79
7,250.00	70.00	257.55	6,909.17	-1,434.92	-412.82	406.31	9.14	9.11	0.74
7,300.00	74.56	257.89	6,924.38	-1,445.05	-459.35	452.79	9.14	9.11	0.69
7,350.00	79.11	258.23	6,935.77	-1,455.12	-506.97	500.36	9.14	9.11	0.66
7,400.00	83.67	258.55	6,943.25	-1,465.06	-555.38	548.73	9.14	9.11	0.64
7,450.00	88.23	258.86	6,946.78	-1,474.83	-604.28	597.58	9.14	9.11	0.63
7,471.54	90.19	259.00	6,947.08	-1,478.96	-625.41	618.69	9.14	9.11	0.63
Start DLS 2.00 TFO 90.01									
7,500.00	90.19	259.57	6,946.98	-1,484.26	-653.38	646.63	2.00	0.00	2.00
7,600.00	90.19	261.57	6,946.65	-1,500.64	-752.02	745.20	2.00	0.00	2.00
7,700.00	90.19	263.57	6,946.32	-1,513.57	-851.17	844.30	2.00	0.00	2.00
7,800.00	90.19	265.57	6,945.99	-1,523.04	-950.72	943.80	2.00	0.00	2.00
7,900.00	90.19	267.57	6,945.67	-1,529.02	-1,050.53	1,043.58	2.00	0.00	2.00
8,000.00	90.19	269.57	6,945.34	-1,531.52	-1,150.50	1,143.54	2.00	0.00	2.00
8,034.58	90.19	270.26	6,945.23	-1,531.57	-1,185.08	1,178.12	2.00	0.00	2.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**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)
Start 10077.25 hold at 8034.58 MD									
8,100.00	90.19	270.26	6,945.02	-1,531.27	-1,250.50	1,243.53	0.00	0.00	0.00
8,200.00	90.19	270.26	6,944.69	-1,530.81	-1,350.49	1,343.53	0.00	0.00	0.00
8,300.00	90.19	270.26	6,944.37	-1,530.36	-1,450.49	1,443.53	0.00	0.00	0.00
8,400.00	90.19	270.26	6,944.05	-1,529.90	-1,550.49	1,543.53	0.00	0.00	0.00
8,500.00	90.19	270.26	6,943.73	-1,529.45	-1,650.49	1,643.53	0.00	0.00	0.00
8,600.00	90.19	270.26	6,943.40	-1,528.99	-1,750.49	1,743.53	0.00	0.00	0.00
8,700.00	90.19	270.26	6,943.08	-1,528.54	-1,850.49	1,843.53	0.00	0.00	0.00
8,800.00	90.19	270.26	6,942.76	-1,528.08	-1,950.49	1,943.53	0.00	0.00	0.00
8,900.00	90.19	270.26	6,942.43	-1,527.63	-2,050.48	2,043.53	0.00	0.00	0.00
9,000.00	90.19	270.26	6,942.11	-1,527.17	-2,150.48	2,143.53	0.00	0.00	0.00
9,100.00	90.19	270.26	6,941.79	-1,526.72	-2,250.48	2,243.53	0.00	0.00	0.00
9,200.00	90.19	270.26	6,941.46	-1,526.26	-2,350.48	2,343.53	0.00	0.00	0.00
9,300.00	90.19	270.26	6,941.14	-1,525.81	-2,450.48	2,443.53	0.00	0.00	0.00
9,400.00	90.19	270.26	6,940.82	-1,525.35	-2,550.48	2,543.53	0.00	0.00	0.00
9,500.00	90.19	270.26	6,940.50	-1,524.90	-2,650.47	2,643.53	0.00	0.00	0.00
9,600.00	90.19	270.26	6,940.17	-1,524.44	-2,750.47	2,743.53	0.00	0.00	0.00
9,700.00	90.19	270.26	6,939.85	-1,523.99	-2,850.47	2,843.53	0.00	0.00	0.00
9,800.00	90.19	270.26	6,939.53	-1,523.53	-2,950.47	2,943.53	0.00	0.00	0.00
9,900.00	90.19	270.26	6,939.20	-1,523.07	-3,050.47	3,043.53	0.00	0.00	0.00
10,000.00	90.19	270.26	6,938.88	-1,522.62	-3,150.47	3,143.52	0.00	0.00	0.00
10,100.00	90.19	270.26	6,938.56	-1,522.16	-3,250.46	3,243.52	0.00	0.00	0.00
10,200.00	90.19	270.26	6,938.23	-1,521.71	-3,350.46	3,343.52	0.00	0.00	0.00
10,300.00	90.19	270.26	6,937.91	-1,521.25	-3,450.46	3,443.52	0.00	0.00	0.00
10,400.00	90.19	270.26	6,937.59	-1,520.80	-3,550.46	3,543.52	0.00	0.00	0.00
10,500.00	90.19	270.26	6,937.27	-1,520.34	-3,650.46	3,643.52	0.00	0.00	0.00
10,600.00	90.19	270.26	6,936.94	-1,519.89	-3,750.46	3,743.52	0.00	0.00	0.00
10,700.00	90.19	270.26	6,936.62	-1,519.43	-3,850.46	3,843.52	0.00	0.00	0.00
10,800.00	90.19	270.26	6,936.30	-1,518.98	-3,950.45	3,943.52	0.00	0.00	0.00
10,900.00	90.19	270.26	6,935.97	-1,518.52	-4,050.45	4,043.52	0.00	0.00	0.00
11,000.00	90.19	270.26	6,935.65	-1,518.07	-4,150.45	4,143.52	0.00	0.00	0.00
11,100.00	90.19	270.26	6,935.33	-1,517.61	-4,250.45	4,243.52	0.00	0.00	0.00
11,200.00	90.19	270.26	6,935.00	-1,517.16	-4,350.45	4,343.52	0.00	0.00	0.00
11,300.00	90.19	270.26	6,934.68	-1,516.70	-4,450.45	4,443.52	0.00	0.00	0.00
11,400.00	90.19	270.26	6,934.36	-1,516.24	-4,550.44	4,543.52	0.00	0.00	0.00
11,500.00	90.19	270.26	6,934.03	-1,515.79	-4,650.44	4,643.52	0.00	0.00	0.00
11,600.00	90.19	270.26	6,933.71	-1,515.33	-4,750.44	4,743.52	0.00	0.00	0.00
11,700.00	90.19	270.26	6,933.39	-1,514.88	-4,850.44	4,843.52	0.00	0.00	0.00
11,800.00	90.19	270.26	6,933.07	-1,514.42	-4,950.44	4,943.52	0.00	0.00	0.00
11,900.00	90.19	270.26	6,932.74	-1,513.97	-5,050.44	5,043.51	0.00	0.00	0.00
12,000.00	90.19	270.26	6,932.42	-1,513.51	-5,150.44	5,143.51	0.00	0.00	0.00
12,100.00	90.19	270.26	6,932.10	-1,513.06	-5,250.43	5,243.51	0.00	0.00	0.00
12,200.00	90.19	270.26	6,931.77	-1,512.60	-5,350.43	5,343.51	0.00	0.00	0.00
12,300.00	90.19	270.26	6,931.45	-1,512.15	-5,450.43	5,443.51	0.00	0.00	0.00
12,400.00	90.19	270.26	6,931.13	-1,511.69	-5,550.43	5,543.51	0.00	0.00	0.00
12,500.00	90.19	270.26	6,930.80	-1,511.24	-5,650.43	5,643.51	0.00	0.00	0.00
12,600.00	90.19	270.26	6,930.48	-1,510.78	-5,750.43	5,743.51	0.00	0.00	0.00
12,700.00	90.19	270.26	6,930.16	-1,510.33	-5,850.42	5,843.51	0.00	0.00	0.00
12,800.00	90.19	270.26	6,929.84	-1,509.87	-5,950.42	5,943.51	0.00	0.00	0.00
12,900.00	90.19	270.26	6,929.51	-1,509.42	-6,050.42	6,043.51	0.00	0.00	0.00
13,000.00	90.19	270.26	6,929.19	-1,508.96	-6,150.42	6,143.51	0.00	0.00	0.00
13,100.00	90.19	270.26	6,928.87	-1,508.50	-6,250.42	6,243.51	0.00	0.00	0.00
13,200.00	90.19	270.26	6,928.54	-1,508.05	-6,350.42	6,343.51	0.00	0.00	0.00
13,300.00	90.19	270.26	6,928.22	-1,507.59	-6,450.42	6,443.51	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**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)
13,400.00	90.19	270.26	6,927.90	-1,507.14	-6,550.41	6,543.51	0.00	0.00	0.00
13,500.00	90.19	270.26	6,927.57	-1,506.68	-6,650.41	6,643.51	0.00	0.00	0.00
13,600.00	90.19	270.26	6,927.25	-1,506.23	-6,750.41	6,743.51	0.00	0.00	0.00
13,700.00	90.19	270.26	6,926.93	-1,505.77	-6,850.41	6,843.51	0.00	0.00	0.00
13,800.00	90.19	270.26	6,926.61	-1,505.32	-6,950.41	6,943.50	0.00	0.00	0.00
13,900.00	90.19	270.26	6,926.28	-1,504.86	-7,050.41	7,043.50	0.00	0.00	0.00
14,000.00	90.19	270.26	6,925.96	-1,504.41	-7,150.40	7,143.50	0.00	0.00	0.00
14,100.00	90.19	270.26	6,925.64	-1,503.95	-7,250.40	7,243.50	0.00	0.00	0.00
14,200.00	90.19	270.26	6,925.31	-1,503.50	-7,350.40	7,343.50	0.00	0.00	0.00
14,300.00	90.19	270.26	6,924.99	-1,503.04	-7,450.40	7,443.50	0.00	0.00	0.00
14,400.00	90.19	270.26	6,924.67	-1,502.59	-7,550.40	7,543.50	0.00	0.00	0.00
14,500.00	90.19	270.26	6,924.34	-1,502.13	-7,650.40	7,643.50	0.00	0.00	0.00
14,600.00	90.19	270.26	6,924.02	-1,501.68	-7,750.39	7,743.50	0.00	0.00	0.00
14,700.00	90.19	270.26	6,923.70	-1,501.22	-7,850.39	7,843.50	0.00	0.00	0.00
14,800.00	90.19	270.26	6,923.38	-1,500.76	-7,950.39	7,943.50	0.00	0.00	0.00
14,900.00	90.19	270.26	6,923.05	-1,500.31	-8,050.39	8,043.50	0.00	0.00	0.00
15,000.00	90.19	270.26	6,922.73	-1,499.85	-8,150.39	8,143.50	0.00	0.00	0.00
15,100.00	90.19	270.26	6,922.41	-1,499.40	-8,250.39	8,243.50	0.00	0.00	0.00
15,200.00	90.19	270.26	6,922.08	-1,498.94	-8,350.39	8,343.50	0.00	0.00	0.00
15,300.00	90.19	270.26	6,921.76	-1,498.49	-8,450.38	8,443.50	0.00	0.00	0.00
15,400.00	90.19	270.26	6,921.44	-1,498.03	-8,550.38	8,543.50	0.00	0.00	0.00
15,500.00	90.19	270.26	6,921.11	-1,497.58	-8,650.38	8,643.50	0.00	0.00	0.00
15,600.00	90.19	270.26	6,920.79	-1,497.12	-8,750.38	8,743.50	0.00	0.00	0.00
15,700.00	90.19	270.26	6,920.47	-1,496.67	-8,850.38	8,843.49	0.00	0.00	0.00
15,800.00	90.19	270.26	6,920.14	-1,496.21	-8,950.38	8,943.49	0.00	0.00	0.00
15,900.00	90.19	270.26	6,919.82	-1,495.76	-9,050.37	9,043.49	0.00	0.00	0.00
16,000.00	90.19	270.26	6,919.50	-1,495.30	-9,150.37	9,143.49	0.00	0.00	0.00
16,100.00	90.19	270.26	6,919.18	-1,494.85	-9,250.37	9,243.49	0.00	0.00	0.00
16,200.00	90.19	270.26	6,918.85	-1,494.39	-9,350.37	9,343.49	0.00	0.00	0.00
16,300.00	90.19	270.26	6,918.53	-1,493.93	-9,450.37	9,443.49	0.00	0.00	0.00
16,400.00	90.19	270.26	6,918.21	-1,493.48	-9,550.37	9,543.49	0.00	0.00	0.00
16,500.00	90.19	270.26	6,917.88	-1,493.02	-9,650.37	9,643.49	0.00	0.00	0.00
16,600.00	90.19	270.26	6,917.56	-1,492.57	-9,750.36	9,743.49	0.00	0.00	0.00
16,700.00	90.19	270.26	6,917.24	-1,492.11	-9,850.36	9,843.49	0.00	0.00	0.00
16,800.00	90.19	270.26	6,916.91	-1,491.66	-9,950.36	9,943.49	0.00	0.00	0.00
16,900.00	90.19	270.26	6,916.59	-1,491.20	-10,050.36	10,043.49	0.00	0.00	0.00
17,000.00	90.19	270.26	6,916.27	-1,490.75	-10,150.36	10,143.49	0.00	0.00	0.00
17,100.00	90.19	270.26	6,915.95	-1,490.29	-10,250.36	10,243.49	0.00	0.00	0.00
17,200.00	90.19	270.26	6,915.62	-1,489.84	-10,350.35	10,343.49	0.00	0.00	0.00
17,300.00	90.19	270.26	6,915.30	-1,489.38	-10,450.35	10,443.49	0.00	0.00	0.00
17,400.00	90.19	270.26	6,914.98	-1,488.93	-10,550.35	10,543.49	0.00	0.00	0.00
17,500.00	90.19	270.26	6,914.65	-1,488.47	-10,650.35	10,643.49	0.00	0.00	0.00
17,600.00	90.19	270.26	6,914.33	-1,488.02	-10,750.35	10,743.49	0.00	0.00	0.00
17,700.00	90.19	270.26	6,914.01	-1,487.56	-10,850.35	10,843.48	0.00	0.00	0.00
17,800.00	90.19	270.26	6,913.68	-1,487.11	-10,950.35	10,943.48	0.00	0.00	0.00
17,900.00	90.19	270.26	6,913.36	-1,486.65	-11,050.34	11,043.48	0.00	0.00	0.00
18,000.00	90.19	270.26	6,913.04	-1,486.19	-11,150.34	11,143.48	0.00	0.00	0.00
18,100.00	90.19	270.26	6,912.72	-1,485.74	-11,250.34	11,243.48	0.00	0.00	0.00
18,111.83	90.19	270.26	6,912.68	-1,485.69	-11,262.17	11,255.32	0.00	0.00	0.00
TD at 18111.83									

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Company:	Logos Operating LLC	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site:	Rosa Unit 24	**North Reference:**	True
Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
RU 702H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,152,297.69	2,849,988.50	36.913961	-107.399257
RU 702H PBHL - plan hits target center - Point	0.00	0.00	6,912.68	-1,485.69	-11,262.17	2,150,760.77	2,838,733.21	36.909874	-107.437779
RU 702H POE - plan misses target center by 51.71usft at 7494.39usft MD (6947.00 TVD, -1483.23 N, -647.86 E) - Point	0.00	0.00	6,947.00	-1,534.04	-638.25	2,150,760.76	2,849,357.24	36.909747	-107.401440

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,462.20	2,413.00	Ojo Alamo		0.00	
2,578.86	2,526.00	Kirtland		0.00	
2,959.57	2,895.00	Fruitland		0.00	
3,058.21	2,991.00	Top of Coals		0.00	
3,236.37	3,164.00	Base of Coals		0.00	
3,410.83	3,333.00	Pictured Cliffs		0.00	
3,540.64	3,459.00	Lewis		0.00	
4,720.55	4,595.00	Chacra		0.00	
5,228.22	5,080.00	Upper Cliff House		0.00	
5,516.28	5,362.00	Cliff House		0.00	
5,567.14	5,412.00	Menefee		0.00	
5,786.26	5,628.00	Point Lookout		0.00	
6,334.51	6,172.00	Mancos		0.00	
6,982.81	6,768.00	Black Top		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,348.00	6,185.46	-1,306.81	-16.51	Start 42.00 hold at 6348.00 MD
6,390.00	6,227.36	-1,309.73	-16.33	Start 100.00 hold at 6390.00 MD
6,490.00	6,327.12	-1,316.68	-15.92	Start DLS 9.13 TFO 82.43
7,471.54	6,947.08	-1,478.96	-625.41	Start DLS 2.00 TFO 90.01
8,034.58	6,945.23	-1,531.57	-1,185.08	Start 10077.25 hold at 8034.58 MD
18,111.83	6,912.68	-1,485.69	-11,262.17	TD at 18111.83

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 24
Rosa Unit 702H

OH
Plan #3

Anticollision Report

03 July, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
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:	Max. Cent. Dist. of 99,999.00usft or Max. SF of 100	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 7/3/2024

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
54.25	308.67	Survey #1 (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
454.00	6,348.00	Survey #2 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction
6,348.00	18,111.83	Plan #3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction

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 24						
(O) Rosa Unit #001 - OH - OH-TD	15,838.42	6,958.43	354.21	61.64	1.211	Level 3, CC, ES, SF
(O) Rosa Unit #001E - OH - OH-SVY	14,736.18	6,934.44	361.25	209.86	2.386	CC, ES, SF
(O) Rosa Unit #009A - OH - OH-SVY	16,955.41	6,891.10	2,877.08	2,700.30	16.275	CC
(O) Rosa Unit #009A - OH - OH-SVY	17,000.00	6,891.74	2,877.42	2,700.20	16.236	ES
(O) Rosa Unit #009A - OH - OH-SVY	17,200.00	6,894.61	2,887.45	2,708.69	16.153	SF
(O) Rosa Unit #009C - OH - OH-TD	18,111.83	6,967.02	941.85	606.84	2.811	CC, ES, SF
(O) Rosa Unit #009D - OH - OH-SVY	17,715.43	7,269.82	2,126.76	1,924.39	10.509	CC, ES
(O) Rosa Unit #009D - OH - OH-SVY	17,800.00	7,269.41	2,128.44	1,925.66	10.497	SF
(O) Rosa Unit #030 - OH - OH-SVY	10,362.89	7,100.39	267.76	183.20	3.166	CC, ES
(O) Rosa Unit #030 - OH - OH-SVY	10,400.00	7,100.71	270.32	183.68	3.120	SF
(O) Rosa Unit #030B - OH - OH-TD	11,468.48	7,099.20	1,055.53	766.35	3.650	CC
(O) Rosa Unit #030B - OH - OH-TD	11,500.00	7,099.10	1,056.00	765.92	3.640	ES
(O) Rosa Unit #030B - OH - OH-TD	11,600.00	7,098.77	1,063.69	771.19	3.637	SF
(O) Rosa Unit #030C - OH - OH-TD	9,849.50	6,317.00	1,277.60	1,085.00	6.634	CC
(O) Rosa Unit #030C - OH - OH-TD	9,900.00	6,317.00	1,278.60	1,084.84	6.599	ES
(O) Rosa Unit #030C - OH - OH-TD	10,100.00	6,317.00	1,301.93	1,102.66	6.534	SF
(O) Rosa Unit #036 - OH - OH-SVY	14,596.91	7,013.95	2,389.41	2,239.99	15.991	CC
(O) Rosa Unit #036 - OH - OH-SVY	14,600.00	7,013.85	2,389.41	2,239.96	15.988	ES
(O) Rosa Unit #036 - OH - OH-SVY	14,800.00	7,007.79	2,398.02	2,247.16	15.896	SF
(O) Rosa Unit #036C - OH - OH-SVY	16,300.00	7,140.54	1,705.67	1,527.42	9.569	CC
(O) Rosa Unit #036C - OH - OH-SVY	16,304.45	7,140.66	1,705.67	1,527.40	9.568	ES, SF
(O) Rosa Unit #040 - OH - OH-TD	382.33	878.66	18,127.87	18,101.12	677.682	CC
(O) Rosa Unit #040 - OH - OH-TD	6,500.00	6,843.44	18,259.51	18,026.88	78.490	ES
(O) Rosa Unit #040 - OH - OH-TD	7,250.00	7,430.97	18,667.82	18,416.83	74.377	SF
(O) Rosa Unit #041C - OH - OH-TD	363.68	386.67	4,939.14	4,927.14	411.786	CC
(O) Rosa Unit #041C - OH - OH-TD	544.00	567.04	4,941.86	4,924.13	278.766	ES
(O) Rosa Unit #041C - OH - OH-TD	7,000.00	6,822.92	5,769.43	5,538.94	25.031	SF
(O) Rosa Unit #045 - OH - OH-TD	6,099.13	6,117.00	7,440.49	7,230.58	35.446	CC
(O) Rosa Unit #045 - OH - OH-TD	6,128.00	6,117.00	7,440.57	7,230.56	35.429	ES
(O) Rosa Unit #045 - OH - OH-TD	6,348.00	6,117.00	7,444.79	7,234.15	35.343	SF
(O) Rosa Unit #046A - OH - OH-SVY	2,909.93	2,448.00	4,738.64	4,713.93	191.791	CC
(O) Rosa Unit #046A - OH - OH-SVY	2,916.00	2,448.00	4,738.64	4,713.91	191.585	ES
(O) Rosa Unit #046A - OH - OH-SVY	6,600.00	6,291.37	4,900.37	4,849.47	96.272	SF
(O) Rosa Unit #070 - OH - OH	372.54	565.64	13,311.38	13,294.01	766.580	CC
(O) Rosa Unit #070 - OH - OH	2,821.00	3,000.00	13,391.07	13,290.25	132.823	ES

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
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 24						
(O) Rosa Unit #070 - OH - OH	6,500.00	6,518.00	13,596.63	13,373.98	61.068	SF
(O) Rosa Unit #080 - OH - OH-SVY	4,000.44	3,837.04	3,081.66	3,051.86	103.424	CC
(O) Rosa Unit #080 - OH - OH-SVY	4,353.58	4,112.50	3,084.09	3,051.59	94.896	ES
(O) Rosa Unit #080 - OH - OH-SVY	6,650.00	6,348.81	3,185.91	3,136.17	64.050	SF
(O) Rosa Unit #080A - OH - OH-TD	364.83	322.82	3,042.32	3,032.24	301.731	CC
(O) Rosa Unit #080A - OH - OH-TD	544.00	502.04	3,044.95	3,029.17	192.962	ES
(O) Rosa Unit #080A - OH - OH-TD	6,191.00	6,036.69	3,695.68	3,489.67	17.939	SF
(O) Rosa Unit #080B - OH - OH-TD	360.70	333.69	2,413.10	2,402.70	232.008	CC
(O) Rosa Unit #080B - OH - OH-TD	544.00	517.04	2,416.06	2,399.83	148.883	ES
(O) Rosa Unit #080B - OH - OH-TD	6,650.00	6,504.58	3,264.96	3,045.05	14.847	SF
(O) Rosa Unit #095 - OH - OH-TD	386.04	881.29	10,839.64	10,812.80	403.893	CC
(O) Rosa Unit #095 - OH - OH-TD	3,011.00	3,458.01	10,920.07	10,804.62	94.589	ES
(O) Rosa Unit #095 - OH - OH-TD	6,390.00	6,300.00	11,125.80	10,909.94	51.541	SF
(O) Rosa Unit #108 - OH - OH-INC	64.38	14.38	894.21	893.91	2,988.098	CC
(O) Rosa Unit #108 - OH - OH-INC	544.00	493.95	897.03	887.05	89.857	ES
(O) Rosa Unit #108 - OH - OH-INC	7,100.00	6,792.08	2,222.29	2,067.23	14.332	SF
(O) Rosa Unit #109 - OH - OH-TD	6,493.29	6,629.16	7,612.08	7,385.78	33.637	CC
(O) Rosa Unit #109 - OH - OH-TD	6,500.00	6,635.85	7,612.11	7,385.61	33.607	ES
(O) Rosa Unit #109 - OH - OH-TD	7,000.00	7,078.90	7,802.10	7,561.67	32.450	SF
(O) Rosa Unit #149 - OH - OH-INC	10,185.85	5,949.00	2,847.28	2,619.85	12.520	CC
(O) Rosa Unit #149 - OH - OH-INC	10,200.00	5,949.00	2,847.31	2,619.76	12.513	ES
(O) Rosa Unit #149 - OH - OH-INC	10,500.00	5,949.00	2,864.55	2,634.37	12.445	SF
(O) Rosa Unit #149A - OH - OH-INC	11,650.95	6,000.00	2,462.40	2,276.18	13.223	CC, ES
(O) Rosa Unit #149A - OH - OH-INC	11,900.00	6,000.00	2,474.96	2,286.85	13.157	SF
(O) Rosa Unit #149B - OH - OH-SVY	13,568.44	7,031.56	2,765.07	2,651.18	24.278	CC
(O) Rosa Unit #149B - OH - OH-SVY	13,600.00	7,031.64	2,765.25	2,651.04	24.212	ES
(O) Rosa Unit #149B - OH - OH-SVY	13,900.00	7,032.45	2,784.88	2,668.31	23.890	SF
(O) Rosa Unit #149C - OH - OH-SVY	10,883.83	7,118.75	3,014.59	2,926.64	34.274	CC
(O) Rosa Unit #149C - OH - OH-SVY	10,900.00	7,118.93	3,014.63	2,926.56	34.227	ES
(O) Rosa Unit #149C - OH - OH-SVY	11,400.00	7,124.41	3,058.46	2,967.42	33.595	SF
(O) Rosa Unit #154 - OH - OH-TD	8,247.59	6,341.00	798.89	720.31	10.167	CC
(O) Rosa Unit #154 - OH - OH-TD	8,300.00	6,341.00	800.60	720.06	9.940	ES
(O) Rosa Unit #154 - OH - OH-TD	8,900.00	6,341.00	1,031.44	873.65	6.537	SF
(O) Rosa Unit #154A - OH - OH-SVY	6,291.51	6,125.00	581.25	551.52	19.550	CC, ES
(O) Rosa Unit #154A - OH - OH-SVY	6,348.00	6,125.00	584.16	554.04	19.395	SF
(O) Rosa Unit #154B - OH - OH-SVY	3,004.25	3,217.12	430.88	412.78	23.807	CC
(O) Rosa Unit #154B - OH - OH-SVY	3,011.00	3,222.25	430.90	412.76	23.753	ES
(O) Rosa Unit #154B - OH - OH-SVY	3,105.00	3,301.11	435.58	416.92	23.341	SF
(O) Rosa Unit #171 - OH - OH-INC	72.61	12.06	815.61	815.37	3,370.717	CC
(O) Rosa Unit #171 - OH - OH-INC	454.00	397.07	817.00	810.34	122.555	ES
(O) Rosa Unit #171 - OH - OH-INC	2,159.00	2,060.32	1,135.03	1,093.69	27.451	SF
(O) Rosa Unit #171A - OH - OH-SVY	59.58	0.00	830.61	830.59	10,000.000	CC, ES
(O) Rosa Unit #171A - OH - OH-SVY	3,767.00	3,337.00	2,261.11	2,230.53	73.946	SF
(O) Rosa Unit #181 - OH - OH-SVY	18,111.83	6,896.00	3,111.77	2,928.39	16.969	CC, ES, SF
(O) Rosa Unit #228A - OH - OH-SVY	442.32	383.00	670.47	669.63	798.204	CC
(O) Rosa Unit #228A - OH - OH-SVY	454.00	392.61	670.49	669.62	770.322	ES
(O) Rosa Unit #228A - OH - OH-SVY	11,400.00	3,253.00	5,835.89	5,777.91	100.655	SF
Rosa Unit 700H - OH - OH	480.01	480.63	48.23	47.26	49.665	CC, ES
Rosa Unit 700H - OH - OH	18,111.83	18,177.00	2,626.24	2,256.62	7.105	SF
Rosa Unit 701H - OH - OH	0.00	0.00	25.09			
Rosa Unit 701H - OH - OH	544.00	544.40	26.22	24.93	20.348	ES
Rosa Unit 701H - OH - OH	756.00	755.32	33.15	30.37	11.944	SF
Rosa Unit 701H - OH - Plan #3	0.00	0.00	25.09			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
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 24						
Rosa Unit 701H - OH - Plan #3	18,000.00	17,747.67	1,298.11	940.52	3.630	SF
Rosa Unit 702H - OH - OH	6,352.57	6,348.00	4.57	4.57	101.000	CC, ES
Rosa Unit 702H - OH - OH	7,150.00	6,348.00	756.13	746.65	79.699	SF
Rosa Unit 704H - OH - OH	654.00	653.48	20.39	18.33	9.882	CC
Rosa Unit 704H - OH - OH	667.00	666.39	20.45	18.29	9.473	ES
Rosa Unit 704H - OH - OH	756.00	754.51	23.05	20.22	8.141	SF
Rosa Unit 704H - OH - Plan #6	654.00	653.48	20.39	18.33	9.882	CC
Rosa Unit 704H - OH - Plan #6	667.00	666.39	20.45	18.29	9.473	ES
Rosa Unit 704H - OH - Plan #6	756.00	754.51	23.05	20.22	8.141	SF
Rosa Unit 705H - OH - OH	0.00	0.00	75.22			
Rosa Unit 705H - OH - OH	1,687.00	1,668.43	134.21	123.82	12.913	SF
Rosa Unit 705H - OH - Plan #4	0.00	0.00	75.22			
Rosa Unit 705H - OH - Plan #4	1,687.00	1,668.43	134.21	123.82	12.913	SF
Rosa Unit 706H - OH - OH	554.06	552.64	47.82	46.45	34.852	CC, ES
Rosa Unit 706H - OH - OH	3,011.00	2,995.45	140.62	117.45	6.069	SF

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	40.00	40.00	0.00	3.38	-101.63	-1,850.57	-8,990.40	9,178.88				
54.25	54.25	94.25	94.25	0.02	3.82	-163.18	-1,850.57	-8,990.40	9,178.99	9,175.16	3.84	2,393.269	
130.42	130.42	170.42	170.42	0.11	4.83	169.66	-1,850.57	-8,990.40	9,179.34	9,174.40	4.94	1,858.335	
219.69	219.69	259.69	259.69	0.23	6.31	-164.27	-1,850.57	-8,990.40	9,179.81	9,173.27	6.54	1,403.213	
308.67	308.67	348.67	348.67	0.35	7.95	-173.18	-1,850.57	-8,990.40	9,180.33	9,172.03	8.29	1,106.782	
454.00	453.99	493.99	493.99	0.51	10.77	52.25	-1,850.57	-8,990.40	9,180.16	9,168.88	11.28	813.587	
544.00	543.93	583.96	583.93	0.74	12.61	52.60	-1,850.57	-8,990.40	9,178.29	9,164.95	13.34	687.907	
667.00	666.63	706.66	706.63	1.13	15.14	39.64	-1,850.57	-8,990.40	9,172.24	9,155.96	16.28	563.513	
756.00	755.27	792.57	792.53	1.44	16.93	54.58	-1,849.51	-8,990.40	9,166.61	9,148.23	18.38	498.829	
850.00	848.62	880.36	880.32	1.79	18.77	56.34	-1,849.77	-8,990.40	9,160.44	9,139.89	20.55	445.672	
942.00	939.50	965.91	965.86	2.14	20.57	62.94	-1,850.29	-8,990.40	9,153.35	9,130.64	22.70	403.194	
1,033.00	1,028.89	1,068.99	1,068.89	2.52	22.73	72.36	-1,850.57	-8,990.40	9,146.92	9,121.68	25.23	362.488	
1,123.00	1,117.00	1,157.10	1,157.00	2.90	24.59	78.62	-1,850.57	-8,990.40	9,142.25	9,114.79	27.46	332.889	
1,214.00	1,206.00	1,246.10	1,246.00	3.29	26.47	78.06	-1,850.57	-8,990.40	9,138.34	9,108.61	29.73	307.391	
1,309.00	1,298.75	1,333.78	1,333.67	3.71	28.32	81.13	-1,849.60	-8,990.40	9,134.38	9,102.39	31.99	285.494	
1,403.00	1,390.39	1,420.32	1,420.20	4.13	30.15	84.21	-1,849.98	-8,990.40	9,131.72	9,097.48	34.24	266.685	
1,498.00	1,482.88	1,523.05	1,522.88	4.56	32.33	81.16	-1,850.57	-8,990.40	9,128.97	9,092.12	36.84	247.771	
1,592.00	1,573.82	1,614.00	1,613.82	5.00	34.25	80.97	-1,850.57	-8,990.40	9,125.15	9,085.94	39.21	232.718	
1,687.00	1,665.32	1,705.49	1,705.32	5.46	36.19	84.02	-1,850.57	-8,990.40	9,121.69	9,080.08	41.61	219.228	
1,876.00	1,847.35	1,880.30	1,880.10	6.38	39.90	86.86	-1,849.77	-8,990.40	9,117.36	9,071.12	46.24	197.180	
1,970.00	1,937.87	1,966.24	1,966.04	6.84	41.72	87.19	-1,850.29	-8,990.40	9,116.09	9,067.57	48.52	187.869	
2,064.00	2,028.42	2,068.68	2,068.42	7.30	43.90	87.87	-1,850.57	-8,990.40	9,115.01	9,063.85	51.16	178.167	
2,159.00	2,119.97	2,160.22	2,159.97	7.77	45.84	89.23	-1,850.57	-8,990.40	9,114.34	9,060.77	53.57	170.134	
2,348.00	2,302.44	2,338.18	2,337.92	8.69	49.62	84.89	-1,849.61	-8,990.40	9,111.64	9,053.36	58.28	156.346	
2,443.00	2,394.41	2,425.81	2,425.54	9.15	51.48	84.40	-1,850.02	-8,990.40	9,109.42	9,048.82	60.60	150.321	
2,537.00	2,485.45	2,525.78	2,525.45	9.61	53.60	84.33	-1,850.57	-8,990.40	9,107.14	9,043.96	63.18	144.152	
2,632.00	2,577.48	2,617.81	2,617.48	10.07	55.56	84.75	-1,850.57	-8,990.40	9,104.82	9,039.23	65.59	138.811	
2,727.00	2,669.50	2,709.83	2,709.50	10.53	57.51	84.95	-1,850.57	-8,990.40	9,102.64	9,034.63	68.01	133.851	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,821.00	2,760.56	2,798.60	2,798.25	10.98	59.40	84.86	-1,849.52	-8,990.40	9,100.34	9,029.99	70.35	129.363	
2,916.00	2,852.68	2,886.68	2,886.34	11.44	61.27	84.90	-1,849.80	-8,990.40	9,098.25	9,025.58	72.68	125.189	
3,011.00	2,945.03	2,975.13	2,974.78	11.89	63.15	85.12	-1,850.36	-8,990.40	9,096.35	9,021.35	75.01	121.275	
3,105.00	3,036.57	3,076.97	3,076.57	12.33	65.31	79.68	-1,850.57	-8,990.40	9,093.48	9,015.87	77.61	117.169	
3,200.00	3,128.81	3,169.21	3,168.81	12.78	67.28	76.66	-1,850.57	-8,990.40	9,088.65	9,008.63	80.02	113.577	
3,294.00	3,219.76	3,259.75	3,259.33	13.24	69.20	76.45	-1,849.48	-8,990.40	9,082.81	9,000.41	82.40	110.227	
3,389.00	3,311.82	3,348.07	3,347.65	13.69	71.08	77.53	-1,849.65	-8,990.40	9,077.39	8,992.65	84.74	107.127	
3,483.00	3,403.03	3,435.73	3,435.30	14.14	72.94	78.02	-1,850.08	-8,990.40	9,072.50	8,985.46	87.05	104.226	
3,578.00	3,495.31	3,535.79	3,535.31	14.60	75.07	78.67	-1,850.57	-8,990.40	9,067.88	8,978.25	89.62	101.176	
3,672.00	3,586.65	3,627.13	3,626.65	15.04	77.01	79.91	-1,850.57	-8,990.40	9,063.63	8,971.62	92.01	98.505	
3,767.00	3,678.95	3,719.44	3,718.95	15.49	78.97	80.53	-1,850.57	-8,990.40	9,059.71	8,965.28	94.43	95.945	
3,862.00	3,771.63	3,809.81	3,809.32	15.93	80.90	80.37	-1,849.54	-8,990.40	9,056.04	8,959.26	96.79	93.568	
3,956.00	3,863.70	3,898.57	3,898.07	16.35	82.78	80.78	-1,849.86	-8,990.40	9,052.91	8,953.82	99.09	91.357	
4,052.00	3,957.54	3,989.17	3,988.66	16.79	84.71	79.79	-1,850.48	-8,990.40	9,049.49	8,948.03	101.46	89.196	
4,146.00	4,048.88	4,089.44	4,088.88	17.24	86.84	79.95	-1,850.57	-8,990.40	9,045.48	8,941.45	104.03	86.947	
4,241.00	4,140.47	4,181.03	4,180.47	17.71	88.79	82.74	-1,850.57	-8,990.40	9,041.59	8,935.13	106.46	84.932	
4,336.00	4,231.25	4,271.08	4,270.51	18.21	90.71	86.19	-1,849.49	-8,990.40	9,038.68	8,929.82	108.87	83.024	
4,430.00	4,320.59	4,357.56	4,356.98	18.71	92.55	84.74	-1,849.68	-8,990.40	9,036.27	8,925.06	111.21	81.252	
4,524.00	4,409.51	4,443.81	4,443.23	19.22	94.38	81.44	-1,850.13	-8,990.40	9,032.42	8,918.86	113.56	79.538	
4,619.00	4,498.98	4,539.62	4,538.98	19.75	96.42	80.96	-1,850.57	-8,990.40	9,027.28	8,911.16	116.13	77.736	
4,713.00	4,587.83	4,628.47	4,627.83	20.27	98.31	81.10	-1,850.57	-8,990.40	9,022.23	8,903.69	118.53	76.115	
4,807.00	4,676.97	4,717.60	4,716.97	20.78	100.20	82.57	-1,850.57	-8,990.40	9,017.77	8,896.83	120.94	74.564	
4,870.00	4,736.65	4,776.53	4,775.88	21.12	101.46	83.06	-1,849.49	-8,990.40	9,015.01	8,892.47	122.54	73.570	
4,933.00	4,796.58	4,834.86	4,834.21	21.46	102.70	83.08	-1,849.60	-8,990.40	9,012.56	8,888.44	124.12	72.614	
5,027.00	4,886.13	4,922.16	4,921.51	21.96	104.56	83.99	-1,849.99	-8,990.40	9,009.23	8,882.75	126.47	71.234	
5,121.00	4,976.11	5,016.82	5,016.11	22.45	106.57	84.42	-1,850.57	-8,990.40	9,006.40	8,877.42	128.98	69.829	
5,216.00	5,068.11	5,108.82	5,108.11	22.91	108.53	84.52	-1,850.57	-8,990.40	9,004.05	8,872.65	131.40	68.525	
5,341.00	5,190.11	5,230.82	5,230.11	23.49	111.12	84.24	-1,850.57	-8,990.40	9,001.33	8,866.76	134.57	66.889	
5,436.00	5,283.20	5,322.22	5,321.50	23.91	113.07	84.44	-1,849.57	-8,990.40	8,999.35	8,862.41	136.94	65.718	
5,499.00	5,345.03	5,382.69	5,381.97	24.19	114.35	84.43	-1,849.78	-8,990.40	8,998.17	8,859.67	138.50	64.968	
5,561.00	5,405.97	5,442.34	5,441.61	24.45	115.62	85.48	-1,850.12	-8,990.40	8,997.17	8,857.13	140.04	64.247	
5,624.00	5,467.97	5,508.76	5,507.97	24.72	117.03	84.50	-1,850.57	-8,990.40	8,996.22	8,854.49	141.72	63.478	
5,687.00	5,530.05	5,570.84	5,570.05	24.99	118.36	85.47	-1,850.57	-8,990.40	8,995.26	8,851.95	143.31	62.769	
5,750.00	5,592.20	5,632.99	5,632.20	25.25	119.68	85.77	-1,850.57	-8,990.40	8,994.46	8,849.57	144.89	62.077	
5,813.00	5,654.42	5,695.20	5,694.42	25.51	121.00	86.84	-1,850.57	-8,990.40	8,993.81	8,847.34	146.47	61.402	
5,876.00	5,716.68	5,757.32	5,756.52	25.76	122.32	87.11	-1,849.48	-8,990.40	8,993.23	8,845.18	148.05	60.744	
5,939.00	5,778.99	5,818.38	5,817.58	26.01	123.62	86.96	-1,849.56	-8,990.40	8,992.75	8,843.14	149.60	60.110	
6,065.00	5,903.86	5,940.86	5,940.05	26.51	126.23	86.93	-1,850.11	-8,990.40	8,991.88	8,839.18	152.70	58.885	
6,128.00	5,966.41	6,007.28	6,006.41	26.74	127.64	85.52	-1,850.57	-8,990.40	8,991.42	8,837.06	154.35	58.252	
6,191.00	6,029.04	6,069.90	6,069.04	26.97	128.97	86.20	-1,850.57	-8,990.40	8,990.92	8,835.00	155.92	57.664	
6,254.00	6,091.75	6,132.62	6,131.75	27.20	130.31	87.11	-1,850.57	-8,990.40	8,990.56	8,833.08	157.48	57.090	
6,348.00	6,185.46	6,226.32	6,225.46	27.52	132.30	89.95	-1,850.57	-8,990.40	8,990.35	8,830.55	159.80	56.261	
6,385.75	6,223.12	6,263.72	6,262.85	27.60	133.10	89.98	-1,849.48	-8,990.40	8,990.28	8,829.62	160.67	55.956	
6,390.00	6,227.36	6,267.88	6,267.01	27.61	133.19	89.98	-1,849.48	-8,990.40	8,990.28	8,829.52	160.76	55.923	
6,400.00	6,237.33	6,277.68	6,276.80	27.61	133.39	89.98	-1,849.49	-8,990.40	8,990.28	8,829.31	160.98	55.848	
6,490.00	6,327.12	6,365.83	6,364.95	27.66	135.27	90.02	-1,849.71	-8,990.40	8,990.30	8,827.40	162.90	55.189	
6,500.00	6,337.09	6,375.63	6,374.75	27.66	135.48	77.62	-1,849.75	-8,990.40	8,990.22	8,827.11	163.12	55.116	
6,550.00	6,386.85	6,424.51	6,423.63	27.70	136.52	41.10	-1,850.01	-8,990.40	8,987.48	8,823.29	164.19	54.739	
6,600.00	6,436.20	6,473.01	6,472.13	27.74	137.55	28.41	-1,850.35	-8,990.40	8,980.81	8,815.55	165.26	54.344	
6,650.00	6,484.82	6,525.76	6,524.82	27.79	138.67	22.76	-1,850.57	-8,990.40	8,970.24	8,803.82	166.42	53.900	
6,700.00	6,532.40	6,573.34	6,572.40	27.85	139.69	19.74	-1,850.57	-8,990.40	8,955.85	8,788.36	167.49	53.472	
6,750.00	6,578.63	6,619.57	6,618.63	27.92	140.67	18.00	-1,850.57	-8,990.40	8,937.73	8,769.20	168.53	53.034	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001 - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
6,800.00	6,623.24	6,664.18	6,663.24	28.00	141.62	16.98	-1,850.57	-8,990.40	8,916.00	8,746.46	169.54	52.590	
6,850.00	6,665.93	6,706.86	6,705.93	28.09	142.53	16.45	-1,850.57	-8,990.40	8,890.80	8,720.29	170.51	52.142	
6,900.00	6,706.42	6,747.36	6,746.42	28.19	143.39	16.29	-1,850.57	-8,990.40	8,862.29	8,690.85	171.45	51.691	
6,950.00	6,744.48	6,784.84	6,783.89	28.30	144.19	16.44	-1,849.50	-8,990.40	8,830.60	8,658.28	172.32	51.246	
7,000.00	6,779.84	6,819.66	6,818.70	28.43	144.93	16.90	-1,849.56	-8,990.40	8,796.04	8,622.90	173.14	50.803	
7,050.00	6,812.30	6,851.63	6,850.68	28.57	145.61	17.68	-1,849.66	-8,990.40	8,758.78	8,584.87	173.90	50.366	
7,100.00	6,841.63	6,880.55	6,879.60	28.73	146.22	18.86	-1,849.78	-8,990.40	8,719.04	8,544.44	174.60	49.937	
7,150.00	6,867.66	6,906.24	6,905.29	28.90	146.77	20.56	-1,849.90	-8,990.40	8,677.09	8,501.86	175.23	49.517	
7,200.00	6,890.22	6,928.53	6,927.57	29.08	147.24	22.98	-1,850.03	-8,990.40	8,633.20	8,457.40	175.79	49.110	
7,250.00	6,909.17	6,947.27	6,946.31	29.28	147.64	26.50	-1,850.16	-8,990.40	8,587.63	8,411.35	176.28	48.717	
7,300.00	6,924.38	6,962.35	6,961.39	29.49	147.96	31.81	-1,850.26	-8,990.40	8,540.67	8,363.99	176.68	48.340	
7,350.00	6,935.77	6,973.65	6,972.69	29.72	148.20	40.27	-1,850.35	-8,990.40	8,492.64	8,315.64	177.00	47.982	
7,400.00	6,943.25	6,981.11	6,980.15	29.97	148.36	54.57	-1,850.41	-8,990.40	8,443.82	8,266.59	177.23	47.643	
7,450.00	6,946.78	6,984.68	6,983.71	30.22	148.44	78.27	-1,850.44	-8,990.40	8,394.53	8,217.15	177.38	47.325	
7,471.54	6,947.08	6,985.00	6,984.04	30.34	148.44	91.14	-1,850.44	-8,990.40	8,373.23	8,195.82	177.42	47.195	
7,500.00	6,946.98	6,984.95	6,983.99	30.49	148.44	91.22	-1,850.44	-8,990.40	8,345.06	8,167.61	177.45	47.027	
7,600.00	6,946.65	6,984.76	6,983.80	31.07	148.44	91.61	-1,850.44	-8,990.40	8,245.81	8,068.25	177.56	46.439	
7,700.00	6,946.32	6,984.54	6,983.58	31.69	148.43	92.39	-1,850.44	-8,990.40	8,146.20	7,968.55	177.64	45.857	
7,800.00	6,945.99	6,984.29	6,983.33	32.35	148.43	94.60	-1,850.44	-8,990.40	8,046.35	7,868.65	177.69	45.282	
7,900.00	6,945.67	6,984.02	6,983.05	33.05	148.42	146.17	-1,850.43	-8,990.40	7,946.37	7,768.65	177.72	44.714	
8,000.00	6,945.34	6,983.71	6,982.75	33.79	148.42	-95.01	-1,850.43	-8,990.40	7,846.39	7,668.68	177.71	44.154	
8,034.58	6,945.23	6,983.60	6,982.64	34.05	148.41	-93.65	-1,850.43	-8,990.40	7,811.84	7,634.14	177.69	43.962	
8,100.00	6,945.02	6,983.39	6,982.43	34.57	148.41	-93.62	-1,850.43	-8,990.40	7,746.48	7,568.82	177.67	43.601	
8,200.00	6,944.69	6,983.07	6,982.11	35.41	148.40	-93.57	-1,850.43	-8,990.40	7,646.59	7,468.96	177.63	43.048	
8,300.00	6,944.37	6,982.75	6,981.78	36.30	148.40	-93.51	-1,850.42	-8,990.40	7,546.70	7,369.11	177.59	42.495	
8,400.00	6,944.05	6,982.42	6,981.46	37.25	148.39	-93.46	-1,850.42	-8,990.40	7,446.81	7,269.26	177.55	41.942	
8,500.00	6,943.73	6,982.10	6,981.14	38.25	148.38	-93.41	-1,850.42	-8,990.40	7,346.93	7,169.42	177.51	41.389	
8,600.00	6,943.40	6,981.78	6,980.82	39.29	148.38	-93.36	-1,850.42	-8,990.40	7,247.05	7,069.57	177.47	40.835	
8,700.00	6,943.08	6,981.46	6,980.49	40.37	148.37	-93.31	-1,850.41	-8,990.40	7,147.17	6,969.74	177.43	40.281	
8,800.00	6,942.76	6,981.13	6,980.17	41.49	148.36	-93.25	-1,850.41	-8,990.40	7,047.29	6,869.90	177.39	39.727	
8,900.00	6,942.43	6,980.81	6,979.85	42.64	148.36	-93.20	-1,850.41	-8,990.40	6,947.42	6,770.07	177.35	39.173	
9,000.00	6,942.11	6,980.49	6,979.52	43.82	148.35	-93.15	-1,850.40	-8,990.40	6,847.55	6,670.24	177.31	38.619	
9,100.00	6,941.79	6,980.16	6,979.20	45.03	148.34	-93.10	-1,850.40	-8,990.40	6,747.69	6,570.42	177.27	38.065	
9,200.00	6,941.46	6,979.84	6,978.88	46.27	148.33	-93.05	-1,850.40	-8,990.40	6,647.83	6,470.60	177.23	37.510	
9,300.00	6,941.14	6,979.52	6,978.56	47.53	148.33	-92.99	-1,850.40	-8,990.40	6,547.97	6,370.79	177.19	36.955	
9,400.00	6,940.82	6,979.20	6,978.23	48.81	148.32	-92.94	-1,850.39	-8,990.40	6,448.12	6,270.98	177.14	36.401	
9,500.00	6,940.50	6,978.87	6,977.91	50.11	148.31	-92.89	-1,850.39	-8,990.40	6,348.28	6,171.18	177.10	35.846	
9,600.00	6,940.17	6,978.55	6,977.59	51.43	148.31	-92.84	-1,850.39	-8,990.40	6,248.44	6,071.38	177.06	35.291	
9,700.00	6,939.85	6,978.23	6,977.26	52.76	148.30	-92.79	-1,850.39	-8,990.40	6,148.60	5,971.59	177.01	34.735	
9,800.00	6,939.53	6,977.90	6,976.94	54.11	148.29	-92.73	-1,850.38	-8,990.40	6,048.77	5,871.80	176.97	34.180	
9,900.00	6,939.20	6,977.58	6,976.62	55.48	148.29	-92.68	-1,850.38	-8,990.40	5,948.95	5,772.02	176.92	33.624	
10,000.00	6,938.88	6,977.26	6,976.30	56.86	148.28	-92.63	-1,850.38	-8,990.40	5,849.13	5,672.25	176.88	33.069	
10,100.00	6,938.56	6,976.94	6,975.97	58.25	148.27	-92.58	-1,850.38	-8,990.40	5,749.31	5,572.48	176.83	32.513	
10,200.00	6,938.23	6,976.61	6,975.65	59.65	148.27	-92.53	-1,850.37	-8,990.40	5,649.51	5,472.72	176.78	31.957	
10,300.00	6,937.91	6,976.29	6,975.33	61.06	148.26	-92.47	-1,850.37	-8,990.40	5,549.71	5,372.97	176.74	31.401	
10,400.00	6,937.59	6,975.97	6,975.01	62.48	148.25	-92.42	-1,850.37	-8,990.40	5,449.92	5,273.23	176.69	30.845	
10,500.00	6,937.27	6,975.64	6,974.68	63.91	148.25	-92.37	-1,850.37	-8,990.40	5,350.13	5,173.50	176.64	30.289	
10,600.00	6,936.94	6,975.32	6,974.36	65.34	148.24	-92.32	-1,850.36	-8,990.40	5,250.36	5,073.77	176.59	29.733	
10,700.00	6,936.62	6,975.00	6,974.04	66.79	148.23	-92.27	-1,850.36	-8,990.40	5,150.59	4,974.06	176.53	29.176	
10,800.00	6,936.30	6,974.68	6,973.71	68.24	148.22	-92.21	-1,850.36	-8,990.40	5,050.83	4,874.35	176.48	28.620	
10,900.00	6,935.97	6,974.35	6,973.39	69.70	148.22	-92.16	-1,850.36	-8,990.40	4,951.08	4,774.66	176.43	28.063	
11,000.00	6,935.65	6,974.03	6,973.07	71.17	148.21	-92.11	-1,850.35	-8,990.40	4,851.34	4,674.97	176.37	27.506	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001 - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,100.00	6,935.33	6,973.71	6,972.75	72.64	148.20	-92.06	-1,850.35	-8,990.40	4,751.62	4,575.30	176.32	26.949	
11,200.00	6,935.00	6,973.39	6,972.42	74.11	148.20	-92.00	-1,850.35	-8,990.40	4,651.90	4,475.64	176.26	26.392	
11,300.00	6,934.68	6,973.06	6,972.10	75.60	148.19	-91.95	-1,850.35	-8,990.40	4,552.20	4,376.00	176.20	25.835	
11,400.00	6,934.36	6,972.74	6,971.78	77.08	148.18	-91.90	-1,850.34	-8,990.40	4,452.51	4,276.37	176.14	25.278	
11,500.00	6,934.03	6,972.42	6,971.46	78.57	148.18	-91.85	-1,850.34	-8,990.40	4,352.83	4,176.75	176.08	24.721	
11,600.00	6,933.71	6,972.10	6,971.13	80.07	148.17	-91.80	-1,850.34	-8,990.40	4,253.17	4,077.15	176.02	24.163	
11,700.00	6,933.39	6,971.77	6,970.81	81.57	148.16	-91.74	-1,850.34	-8,990.40	4,153.53	3,977.57	175.96	23.605	
11,800.00	6,933.07	6,971.45	6,970.49	83.07	148.16	-91.69	-1,850.33	-8,990.40	4,053.90	3,878.01	175.90	23.047	
11,900.00	6,932.74	6,971.13	6,970.17	84.58	148.15	-91.64	-1,850.33	-8,990.40	3,954.30	3,778.47	175.83	22.489	
12,000.00	6,932.42	6,970.81	6,969.84	86.09	148.14	-91.59	-1,850.33	-8,990.40	3,854.71	3,678.94	175.77	21.931	
12,100.00	6,932.10	6,970.48	6,969.52	87.60	148.14	-91.54	-1,850.33	-8,990.40	3,755.15	3,579.44	175.70	21.372	
12,200.00	6,931.77	6,970.16	6,969.20	89.12	148.13	-91.48	-1,850.32	-8,990.40	3,655.60	3,479.97	175.64	20.813	
12,300.00	6,931.45	6,969.84	6,968.88	90.64	148.12	-91.43	-1,850.32	-8,990.40	3,556.09	3,380.51	175.57	20.254	
12,400.00	6,931.13	6,969.51	6,968.55	92.16	148.11	-91.38	-1,850.32	-8,990.40	3,456.60	3,281.09	175.51	19.695	
12,500.00	6,930.80	6,969.19	6,968.23	93.69	148.11	-91.33	-1,850.32	-8,990.40	3,357.14	3,181.70	175.45	19.135	
12,600.00	6,930.48	6,968.87	6,967.91	95.22	148.10	-91.28	-1,850.31	-8,990.40	3,257.72	3,082.33	175.39	18.575	
12,700.00	6,930.16	6,968.55	6,967.59	96.75	148.09	-91.22	-1,850.31	-8,990.40	3,158.33	2,983.00	175.33	18.014	
12,800.00	6,929.84	6,968.22	6,967.26	98.28	148.09	-91.17	-1,850.31	-8,990.40	3,058.98	2,883.71	175.28	17.452	
12,900.00	6,929.51	6,967.90	6,966.94	99.82	148.08	-91.12	-1,850.31	-8,990.40	2,959.68	2,784.45	175.23	16.891	
13,000.00	6,929.19	6,967.58	6,966.62	101.35	148.07	-91.07	-1,850.30	-8,990.40	2,860.42	2,685.24	175.19	16.328	
13,100.00	6,928.87	6,967.26	6,966.30	102.89	148.07	-91.01	-1,850.30	-8,990.40	2,761.22	2,586.07	175.15	15.765	
13,200.00	6,928.54	6,966.93	6,965.97	104.43	148.06	-90.96	-1,850.30	-8,990.40	2,662.08	2,486.94	175.13	15.200	
13,300.00	6,928.22	6,966.61	6,965.65	105.97	148.05	-90.91	-1,850.30	-8,990.40	2,563.00	2,387.87	175.13	14.635	
13,400.00	6,927.90	6,966.29	6,965.33	107.52	148.05	-90.86	-1,850.29	-8,990.40	2,464.00	2,288.86	175.14	14.068	
13,500.00	6,927.57	6,965.97	6,965.01	109.06	148.04	-90.81	-1,850.29	-8,990.40	2,365.08	2,189.90	175.18	13.501	
13,600.00	6,927.25	6,965.65	6,964.68	110.61	148.03	-90.75	-1,850.29	-8,990.40	2,266.26	2,091.01	175.25	12.931	
13,700.00	6,926.93	6,965.32	6,964.36	112.16	148.03	-90.70	-1,850.29	-8,990.40	2,167.55	1,992.18	175.37	12.360	
13,800.00	6,926.61	6,965.00	6,964.04	113.71	148.02	-90.65	-1,850.28	-8,990.40	2,068.96	1,893.43	175.53	11.787	
13,900.00	6,926.28	6,964.68	6,963.72	115.26	148.01	-90.60	-1,850.28	-8,990.40	1,970.51	1,794.76	175.75	11.212	
14,000.00	6,925.96	6,964.36	6,963.39	116.82	148.01	-90.55	-1,850.28	-8,990.40	1,872.22	1,696.17	176.06	10.634	
14,100.00	6,925.64	6,964.03	6,963.07	118.37	148.00	-90.49	-1,850.28	-8,990.40	1,774.13	1,597.66	176.47	10.054	
14,200.00	6,925.31	6,963.71	6,962.75	119.93	147.99	-90.44	-1,850.27	-8,990.40	1,676.26	1,499.26	177.01	9.470	
14,300.00	6,924.99	6,963.39	6,962.43	121.48	147.98	-90.39	-1,850.27	-8,990.40	1,578.66	1,400.95	177.71	8.883	
14,400.00	6,924.67	6,963.07	6,962.10	123.04	147.98	-90.34	-1,850.27	-8,990.40	1,481.38	1,302.76	178.63	8.293	
14,500.00	6,924.34	6,962.74	6,961.78	124.60	147.97	-90.28	-1,850.27	-8,990.40	1,384.49	1,204.68	179.81	7.700	
14,600.00	6,924.02	6,962.42	6,961.46	126.16	147.96	-90.23	-1,850.27	-8,990.40	1,288.08	1,106.74	181.34	7.103	
14,700.00	6,923.70	6,962.10	6,961.14	127.72	147.96	-90.18	-1,850.26	-8,990.40	1,192.25	1,008.95	183.30	6.504	
14,800.00	6,923.38	6,961.78	6,960.82	129.28	147.95	-90.13	-1,850.26	-8,990.40	1,097.17	911.35	185.81	5.905	
14,900.00	6,923.05	6,961.45	6,960.49	130.85	147.94	-90.08	-1,850.26	-8,990.40	1,003.04	814.00	189.04	5.306	
15,000.00	6,922.73	6,961.13	6,960.17	132.41	147.94	-90.02	-1,850.26	-8,990.40	910.17	716.98	193.19	4.711	
15,100.00	6,922.41	6,960.81	6,959.85	133.97	147.93	-89.97	-1,850.25	-8,990.40	818.98	620.45	198.53	4.125	
15,200.00	6,922.08	6,960.49	6,959.53	135.54	147.92	-89.92	-1,850.25	-8,990.40	730.10	524.68	205.42	3.554	
15,300.00	6,921.76	6,960.17	6,959.20	137.11	147.92	-89.87	-1,850.25	-8,990.40	644.48	430.17	214.31	3.007	
15,400.00	6,921.44	6,959.84	6,958.88	138.67	147.91	-89.82	-1,850.25	-8,990.40	563.63	337.89	225.74	2.497	
15,500.00	6,921.11	6,959.52	6,958.56	140.24	147.90	-89.76	-1,850.24	-8,990.40	489.89	249.74	240.15	2.040	
15,600.00	6,920.79	6,959.20	6,958.24	141.81	147.90	-89.71	-1,850.24	-8,990.40	426.98	169.60	257.37	1.659	
15,700.00	6,920.47	6,958.88	6,957.92	143.38	147.89	-89.66	-1,850.24	-8,990.40	380.30	104.86	275.44	1.381	Level 3
15,800.00	6,920.14	6,958.55	6,957.59	144.95	147.88	-89.61	-1,850.24	-8,990.40	356.29	66.79	289.50	1.231	Level 3
15,838.42	6,920.02	6,958.43	6,957.47	145.55	147.88	-89.59	-1,850.24	-8,990.40	354.21	61.64	292.57	1.211	Level 3, CC, ES, SF
15,900.00	6,919.82	6,958.23	6,957.27	146.52	147.87	-89.56	-1,850.23	-8,990.40	359.52	65.41	294.12	1.222	Level 3
16,000.00	6,919.50	6,957.91	6,956.95	148.09	147.87	-89.50	-1,850.23	-8,990.40	389.32	100.56	288.76	1.348	Level 3
16,100.00	6,919.18	6,957.59	6,956.63	149.66	147.86	-89.45	-1,850.23	-8,990.40	440.33	162.41	277.91	1.584	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,200.00	6,918.85	6,957.27	6,956.30	151.24	147.85	-89.40	-1,850.23	-8,990.40	506.17	240.17	266.00	1.903	
16,300.00	6,918.53	6,956.94	6,955.98	152.81	147.85	-89.35	-1,850.23	-8,990.40	581.82	326.65	255.18	2.280	
16,400.00	6,918.21	6,956.62	6,955.66	154.38	147.84	-89.29	-1,850.22	-8,990.40	663.95	417.92	246.03	2.699	
16,500.00	6,917.88	6,956.30	6,955.34	155.96	147.83	-89.24	-1,850.22	-8,990.40	750.43	511.95	238.48	3.147	
16,600.00	6,917.56	6,955.98	6,955.02	157.53	147.83	-89.19	-1,850.22	-8,990.40	839.92	607.63	232.29	3.616	
16,700.00	6,917.24	6,955.65	6,954.69	159.11	147.82	-89.14	-1,850.22	-8,990.40	931.54	704.36	227.18	4.100	
16,800.00	6,916.91	6,955.33	6,954.37	160.68	147.81	-89.09	-1,850.21	-8,990.40	1,024.74	801.80	222.94	4.597	
16,900.00	6,916.59	6,955.01	6,954.05	162.26	147.81	-89.03	-1,850.21	-8,990.40	1,119.11	899.73	219.38	5.101	
17,000.00	6,916.27	6,954.69	6,953.73	163.84	147.80	-88.98	-1,850.21	-8,990.40	1,214.38	998.01	216.37	5.613	
17,100.00	6,915.95	6,954.37	6,953.41	165.41	147.79	-88.93	-1,850.21	-8,990.40	1,310.35	1,096.56	213.80	6.129	
17,200.00	6,915.62	6,954.04	6,953.08	166.99	147.79	-88.88	-1,850.20	-8,990.40	1,406.89	1,195.31	211.58	6.649	
17,300.00	6,915.30	6,953.72	6,952.76	168.57	147.78	-88.83	-1,850.20	-8,990.40	1,503.88	1,294.21	209.67	7.173	
17,400.00	6,914.98	6,953.40	6,952.44	170.15	147.77	-88.77	-1,850.20	-8,990.40	1,601.24	1,393.25	207.99	7.699	
17,500.00	6,914.65	6,953.08	6,952.12	171.73	147.77	-88.72	-1,850.20	-8,990.40	1,698.91	1,492.38	206.52	8.226	
17,600.00	6,914.33	6,952.76	6,951.80	173.31	147.76	-88.67	-1,850.20	-8,990.40	1,796.83	1,591.61	205.22	8.756	
17,700.00	6,914.01	6,952.43	6,951.47	174.89	147.75	-88.62	-1,850.19	-8,990.40	1,894.97	1,690.90	204.07	9.286	
17,800.00	6,913.68	6,952.11	6,951.15	176.47	147.74	-88.57	-1,850.19	-8,990.40	1,993.29	1,790.25	203.04	9.817	
17,900.00	6,913.36	6,951.79	6,950.83	178.05	147.74	-88.51	-1,850.19	-8,990.40	2,091.78	1,889.66	202.12	10.349	
18,000.00	6,913.04	6,951.47	6,950.51	179.63	147.73	-88.46	-1,850.19	-8,990.40	2,190.40	1,989.11	201.29	10.882	
18,100.00	6,912.72	6,951.15	6,950.19	181.21	147.72	-88.41	-1,850.18	-8,990.40	2,289.14	2,088.60	200.54	11.415	
18,111.83	6,912.68	6,951.11	6,950.15	181.40	147.72	-88.40	-1,850.18	-8,990.40	2,300.83	2,100.37	200.46	11.478	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001E - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	17.14	17.14	0.00	0.03	-102.61	-1,747.17	-7,812.45	8,005.44				
54.25	54.25	61.04	61.04	0.02	0.13	-164.16	-1,747.18	-7,812.49	8,005.59	8,005.45	0.14	N/A	
130.42	130.42	137.68	137.68	0.11	0.39	168.68	-1,747.34	-7,812.60	8,006.09	8,005.58	0.51	N/A	
219.69	219.69	227.28	227.28	0.23	0.71	-165.25	-1,747.63	-7,812.67	8,006.68	8,005.75	0.94	8,551.062	
308.67	308.67	304.60	304.60	0.35	0.98	-174.16	-1,747.97	-7,812.76	8,007.40	8,006.07	1.32	6,057.346	
454.00	453.99	434.33	434.32	0.51	1.43	51.26	-1,748.55	-7,813.22	8,007.85	8,005.91	1.94	4,121.655	
544.00	543.93	540.49	540.49	0.74	1.81	51.61	-1,748.79	-7,813.69	8,006.39	8,003.85	2.54	3,153.732	
667.00	666.63	711.11	711.10	1.13	2.40	38.66	-1,749.20	-7,813.41	8,000.05	7,996.52	3.53	2,265.458	
756.00	755.27	794.27	794.27	1.44	2.69	53.61	-1,749.37	-7,813.14	7,994.29	7,990.16	4.13	1,935.712	
850.00	848.62	892.20	892.19	1.79	3.03	55.39	-1,749.25	-7,812.90	7,987.67	7,982.86	4.81	1,659.991	
942.00	939.50	1,008.79	1,008.78	2.14	3.44	62.05	-1,748.89	-7,812.46	7,979.87	7,974.30	5.57	1,432.419	
1,033.00	1,028.89	1,111.51	1,111.50	2.52	3.80	71.52	-1,748.58	-7,811.81	7,972.52	7,966.23	6.29	1,267.213	
1,123.00	1,117.00	1,189.80	1,189.78	2.90	4.07	77.79	-1,748.41	-7,811.28	7,966.94	7,960.01	6.94	1,148.619	
1,214.00	1,206.00	1,277.05	1,277.04	3.29	4.37	77.25	-1,748.20	-7,810.73	7,962.14	7,954.51	7.63	1,043.948	
1,309.00	1,298.75	1,373.40	1,373.38	3.71	4.71	80.36	-1,747.70	-7,810.11	7,957.37	7,948.99	8.38	949.958	
1,403.00	1,390.39	1,455.88	1,455.86	4.13	5.00	83.45	-1,747.14	-7,809.73	7,953.77	7,944.69	9.08	875.879	
1,498.00	1,482.88	1,541.47	1,541.44	4.56	5.30	80.40	-1,746.40	-7,809.37	7,950.05	7,940.25	9.81	810.553	
1,592.00	1,573.82	1,641.62	1,641.59	5.00	5.65	80.27	-1,745.72	-7,809.01	7,945.46	7,934.86	10.60	749.681	
1,687.00	1,665.32	1,769.28	1,769.25	5.46	6.09	83.42	-1,744.68	-7,808.11	7,940.86	7,929.36	11.50	690.411	
1,876.00	1,847.35	1,921.32	1,921.26	6.38	6.62	86.27	-1,742.46	-7,807.04	7,934.26	7,921.30	12.96	612.322	
1,970.00	1,937.87	1,983.29	1,983.22	6.84	6.84	86.59	-1,741.17	-7,806.96	7,932.13	7,918.49	13.64	581.684	
2,064.00	2,028.42	2,055.48	2,055.40	7.30	7.09	87.25	-1,739.68	-7,807.12	7,930.55	7,916.20	14.35	552.579	
2,159.00	2,119.97	2,163.51	2,163.41	7.77	7.47	88.68	-1,737.75	-7,807.29	7,929.46	7,914.27	15.20	521.775	
2,348.00	2,302.44	2,325.00	2,324.86	8.69	8.03	84.37	-1,734.46	-7,807.38	7,925.90	7,909.21	16.69	474.873	
2,443.00	2,394.41	2,400.31	2,400.16	9.15	8.30	83.89	-1,733.09	-7,807.68	7,923.46	7,906.05	17.41	455.009	
2,537.00	2,485.45	2,522.32	2,522.16	9.61	8.72	83.89	-1,731.44	-7,807.99	7,920.93	7,902.63	18.29	432.999	
2,632.00	2,577.48	2,607.01	2,606.83	10.07	9.02	84.33	-1,730.03	-7,808.02	7,918.21	7,899.16	19.05	415.694	
2,727.00	2,669.50	2,668.49	2,668.31	10.53	9.24	84.50	-1,728.90	-7,808.24	7,915.90	7,896.18	19.72	401.357	
2,821.00	2,760.56	2,725.00	2,724.81	10.98	9.43	84.38	-1,728.05	-7,808.68	7,914.06	7,893.69	20.38	388.412	
2,916.00	2,852.68	2,770.03	2,769.83	11.44	9.59	84.37	-1,727.58	-7,809.26	7,912.75	7,891.76	20.99	376.984	
3,011.00	2,945.03	2,864.38	2,864.17	11.89	9.92	84.64	-1,726.51	-7,810.58	7,911.75	7,889.98	21.77	363.450	
3,105.00	3,036.57	2,925.00	2,924.77	12.33	10.13	79.16	-1,725.75	-7,811.56	7,910.05	7,887.63	22.42	352.828	
3,200.00	3,128.81	3,042.82	3,042.57	12.78	10.54	76.19	-1,725.21	-7,813.63	7,906.69	7,883.41	23.28	339.620	
3,294.00	3,219.76	3,113.45	3,113.19	13.24	10.79	75.96	-1,725.01	-7,814.64	7,902.15	7,878.17	23.98	329.506	
3,389.00	3,311.82	3,237.56	3,237.29	13.69	11.22	77.14	-1,725.01	-7,816.70	7,898.20	7,873.32	24.87	317.566	
3,483.00	3,403.03	3,300.00	3,299.72	14.14	11.44	77.60	-1,724.94	-7,817.56	7,894.40	7,868.86	25.54	309.139	
3,578.00	3,495.31	3,415.79	3,415.49	14.60	11.84	78.32	-1,725.04	-7,819.27	7,891.01	7,864.62	26.39	299.000	
3,672.00	3,586.65	3,514.45	3,514.14	15.04	12.19	79.59	-1,725.11	-7,820.71	7,888.05	7,860.87	27.18	290.201	
3,767.00	3,678.95	3,566.12	3,565.81	15.49	12.37	80.16	-1,725.04	-7,821.46	7,885.38	7,857.56	27.81	283.520	
3,862.00	3,771.63	3,661.69	3,661.37	15.93	12.70	80.04	-1,725.00	-7,822.89	7,883.15	7,854.57	28.58	275.783	
3,956.00	3,863.70	3,774.81	3,774.47	16.35	13.10	80.52	-1,724.95	-7,824.59	7,881.31	7,851.91	29.40	268.067	
4,052.00	3,957.54	3,850.00	3,849.66	16.79	13.36	79.51	-1,725.17	-7,825.73	7,879.20	7,849.11	30.10	261.774	
4,146.00	4,048.88	3,933.89	3,933.53	17.24	13.65	79.63	-1,725.90	-7,827.13	7,876.77	7,845.93	30.84	255.421	
4,241.00	4,140.47	4,020.21	4,019.83	17.71	13.95	82.40	-1,727.18	-7,828.55	7,874.49	7,842.87	31.61	249.086	
4,336.00	4,231.25	4,090.60	4,090.20	18.21	14.20	85.79	-1,728.70	-7,829.64	7,873.33	7,840.97	32.36	243.335	
4,430.00	4,320.59	4,177.81	4,177.35	18.71	14.50	84.33	-1,731.28	-7,831.21	7,872.75	7,839.59	33.17	237.379	
4,524.00	4,409.51	4,250.00	4,249.49	19.22	14.75	81.00	-1,733.68	-7,832.51	7,870.75	7,836.82	33.93	231.961	
4,619.00	4,498.98	4,325.00	4,324.42	19.75	15.02	80.47	-1,736.47	-7,834.02	7,867.69	7,832.97	34.72	226.595	
4,713.00	4,587.83	4,386.63	4,386.00	20.27	15.23	80.60	-1,738.83	-7,835.40	7,864.96	7,829.51	35.45	221.853	
4,807.00	4,676.97	4,468.11	4,467.38	20.78	15.52	82.04	-1,742.15	-7,837.39	7,863.02	7,826.78	36.25	216.936	
4,870.00	4,736.65	4,547.75	4,546.93	21.12	15.79	82.57	-1,745.50	-7,839.34	7,862.05	7,825.18	36.87	213.242	
4,933.00	4,796.58	4,594.51	4,593.64	21.46	15.96	82.61	-1,747.47	-7,840.49	7,861.28	7,823.91	37.37	210.365	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001E - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,027.00	4,886.13	4,683.03	4,682.04	21.96	16.27	83.50	-1,751.31	-7,842.70	7,860.48	7,822.30	38.18	205.875	
5,096.82	4,952.85	4,739.23	4,738.17	22.32	16.46	83.84	-1,753.74	-7,844.15	7,860.25	7,821.51	38.74	202.894	
5,121.00	4,976.11	4,750.00	4,748.92	22.45	16.50	83.95	-1,754.23	-7,844.44	7,860.29	7,821.39	38.90	202.046	
5,216.00	5,068.11	4,864.94	4,863.72	22.91	16.90	84.14	-1,759.19	-7,847.38	7,860.58	7,820.81	39.77	197.647	
5,341.00	5,190.11	4,986.85	4,985.47	23.49	17.33	83.90	-1,764.45	-7,850.50	7,861.39	7,820.61	40.77	192.806	
5,436.00	5,283.20	5,059.19	5,057.71	23.91	17.58	84.08	-1,767.69	-7,852.39	7,862.23	7,820.78	41.45	189.688	
5,499.00	5,345.03	5,135.46	5,133.88	24.19	17.85	84.08	-1,771.04	-7,854.53	7,862.99	7,820.99	41.99	187.245	
5,561.00	5,405.97	5,218.60	5,216.91	24.45	18.14	85.17	-1,774.84	-7,856.54	7,863.61	7,821.06	42.55	184.792	
5,624.00	5,467.97	5,303.18	5,301.38	24.72	18.44	84.20	-1,778.86	-7,858.35	7,864.15	7,821.03	43.12	182.379	
5,687.00	5,530.05	5,407.86	5,405.92	24.99	18.80	85.20	-1,783.89	-7,860.24	7,864.53	7,820.78	43.75	179.749	
5,750.00	5,592.20	5,479.31	5,477.28	25.25	19.05	85.51	-1,787.39	-7,861.33	7,864.88	7,820.62	44.26	177.679	
5,813.00	5,654.42	5,561.84	5,559.69	25.51	19.34	86.58	-1,791.59	-7,862.32	7,865.18	7,820.37	44.81	175.516	
5,876.00	5,716.68	5,657.67	5,655.37	25.76	19.67	86.86	-1,796.76	-7,863.18	7,865.45	7,820.04	45.40	173.238	
5,939.00	5,778.99	5,759.54	5,757.10	26.01	20.03	86.72	-1,802.29	-7,863.65	7,865.47	7,819.46	46.01	170.947	
6,011.79	5,851.08	5,813.75	5,811.22	26.30	20.22	86.69	-1,805.23	-7,863.76	7,865.32	7,818.84	46.49	169.200	
6,065.00	5,903.86	5,855.74	5,853.15	26.51	20.37	86.66	-1,807.52	-7,864.02	7,865.44	7,818.60	46.84	167.921	
6,128.00	5,966.41	5,900.00	5,897.35	26.74	20.52	85.23	-1,809.84	-7,864.33	7,865.57	7,818.34	47.23	166.528	
6,191.00	6,029.04	5,942.19	5,939.48	26.97	20.67	85.89	-1,812.08	-7,864.67	7,865.80	7,818.18	47.61	165.204	
6,254.00	6,091.75	5,989.38	5,986.60	27.20	20.83	86.79	-1,814.61	-7,865.17	7,866.31	7,818.31	48.00	163.870	
6,348.00	6,185.46	6,073.41	6,070.50	27.52	21.13	89.62	-1,819.12	-7,866.26	7,867.61	7,818.99	48.62	161.816	
6,390.00	6,227.36	6,100.00	6,097.05	27.61	21.22	89.62	-1,820.55	-7,866.66	7,868.36	7,819.56	48.80	161.252	
6,400.00	6,237.33	6,100.00	6,097.05	27.61	21.22	89.62	-1,820.55	-7,866.66	7,868.55	7,819.75	48.80	161.241	
6,490.00	6,327.12	6,175.00	6,171.93	27.66	21.48	89.63	-1,824.52	-7,867.95	7,870.38	7,821.27	49.11	160.259	
6,500.00	6,337.09	6,185.47	6,182.39	27.66	21.52	77.23	-1,825.06	-7,868.13	7,870.50	7,821.35	49.15	160.124	
6,550.00	6,386.85	6,214.76	6,211.63	27.70	21.62	40.68	-1,826.67	-7,868.75	7,868.93	7,819.64	49.29	159.660	
6,600.00	6,436.20	6,250.00	6,246.81	27.74	21.75	27.94	-1,828.58	-7,869.52	7,863.47	7,814.03	49.45	159.033	
6,650.00	6,484.82	6,288.65	6,285.39	27.79	21.88	22.25	-1,830.68	-7,870.41	7,854.17	7,804.55	49.62	158.276	
6,700.00	6,532.40	6,325.00	6,321.67	27.85	22.01	19.19	-1,832.72	-7,871.33	7,841.12	7,791.32	49.80	157.458	
6,750.00	6,578.63	6,350.00	6,346.62	27.92	22.10	17.38	-1,834.21	-7,872.02	7,824.42	7,774.48	49.94	156.683	
6,800.00	6,623.24	6,350.00	6,346.62	28.00	22.10	16.27	-1,834.21	-7,872.02	7,804.23	7,754.24	49.99	156.112	
6,850.00	6,665.93	6,375.00	6,371.54	28.09	22.18	15.63	-1,835.94	-7,872.90	7,780.70	7,730.56	50.14	155.178	
6,900.00	6,706.42	6,450.00	6,446.38	28.19	22.45	15.40	-1,840.02	-7,875.56	7,753.75	7,703.27	50.48	153.608	
6,950.00	6,744.48	6,510.15	6,506.43	28.30	22.66	15.47	-1,842.98	-7,877.48	7,723.42	7,672.65	50.76	152.143	
7,000.00	6,779.84	6,541.33	6,537.55	28.43	22.76	15.78	-1,844.49	-7,878.42	7,690.00	7,639.05	50.95	150.933	
7,050.00	6,812.30	6,591.88	6,588.02	28.57	22.94	16.42	-1,846.89	-7,879.90	7,653.72	7,602.52	51.21	149.461	
7,100.00	6,841.63	6,635.14	6,631.22	28.73	23.09	17.41	-1,848.91	-7,881.12	7,614.85	7,563.41	51.44	148.024	
7,150.00	6,867.66	6,663.72	6,659.75	28.90	23.19	18.82	-1,850.28	-7,881.92	7,573.66	7,522.04	51.63	146.702	
7,200.00	6,890.22	6,689.55	6,685.55	29.08	23.28	20.84	-1,851.49	-7,882.61	7,530.38	7,478.58	51.80	145.375	
7,250.00	6,909.17	6,734.48	6,730.41	29.28	23.44	23.91	-1,853.56	-7,883.77	7,485.31	7,433.27	52.04	143.835	
7,300.00	6,924.38	6,743.32	6,739.25	29.49	23.47	28.26	-1,853.97	-7,883.99	7,438.72	7,386.57	52.15	142.638	
7,350.00	6,935.77	6,768.50	6,764.39	29.72	23.56	35.40	-1,855.14	-7,884.59	7,390.94	7,338.62	52.32	141.272	
7,400.00	6,943.25	6,783.07	6,778.94	29.97	23.61	47.47	-1,855.81	-7,884.92	7,342.26	7,289.82	52.44	140.008	
7,450.00	6,946.78	6,785.07	6,780.94	30.22	23.62	68.38	-1,855.90	-7,884.97	7,293.02	7,240.51	52.52	138.868	
7,471.54	6,947.08	6,785.46	6,781.33	30.34	23.62	80.94	-1,855.91	-7,884.97	7,271.72	7,219.17	52.55	138.384	
7,500.00	6,946.98	6,785.78	6,781.64	30.49	23.62	80.29	-1,855.93	-7,884.98	7,243.52	7,190.94	52.58	137.751	
7,600.00	6,946.65	6,786.86	6,782.73	31.07	23.62	76.99	-1,855.98	-7,885.01	7,144.20	7,091.51	52.70	135.575	
7,700.00	6,946.32	6,787.91	6,783.77	31.69	23.63	70.40	-1,856.03	-7,885.03	7,044.56	6,991.78	52.78	133.470	
7,800.00	6,945.99	6,788.91	6,784.77	32.35	23.63	52.12	-1,856.07	-7,885.06	6,944.69	6,891.86	52.84	131.441	
7,900.00	6,945.67	6,789.87	6,785.73	33.05	23.63	-13.19	-1,856.12	-7,885.08	6,844.73	6,791.87	52.86	129.490	
8,000.00	6,945.34	6,790.78	6,786.64	33.79	23.64	-60.21	-1,856.16	-7,885.10	6,744.79	6,691.94	52.85	127.620	
8,034.58	6,945.23	6,791.08	6,786.94	34.05	23.64	-66.20	-1,856.17	-7,885.11	6,710.26	6,657.42	52.84	126.992	
8,100.00	6,945.02	6,791.65	6,787.51	34.57	23.64	-66.28	-1,856.20	-7,885.12	6,644.95	6,592.13	52.82	125.814	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001E - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,200.00	6,944.69	6,792.54	6,788.40	35.41	23.64	-66.40	-1,856.24	-7,885.14	6,545.12	6,492.34	52.78	124.011	
8,300.00	6,944.37	6,808.91	6,804.75	36.30	23.70	-68.69	-1,856.98	-7,885.53	6,445.30	6,392.51	52.80	122.081	
8,400.00	6,944.05	6,810.82	6,806.66	37.25	23.71	-68.96	-1,857.06	-7,885.58	6,345.48	6,292.72	52.76	120.269	
8,500.00	6,943.73	6,812.73	6,808.57	38.25	23.71	-69.23	-1,857.15	-7,885.62	6,245.66	6,192.94	52.73	118.456	
8,600.00	6,943.40	6,814.65	6,810.48	39.29	23.72	-69.51	-1,857.23	-7,885.66	6,145.85	6,093.16	52.69	116.642	
8,700.00	6,943.08	6,816.56	6,812.39	40.37	23.73	-69.78	-1,857.32	-7,885.71	6,046.05	5,993.39	52.65	114.827	
8,800.00	6,942.76	6,818.47	6,814.30	41.49	23.73	-70.06	-1,857.40	-7,885.75	5,946.25	5,893.63	52.62	113.012	
8,900.00	6,942.43	6,832.54	6,828.36	42.64	23.78	-72.11	-1,858.00	-7,886.05	5,846.44	5,793.82	52.62	111.107	
9,000.00	6,942.11	6,833.29	6,829.10	43.82	23.79	-72.22	-1,858.03	-7,886.06	5,746.65	5,694.08	52.58	109.299	
9,100.00	6,941.79	6,834.05	6,829.86	45.03	23.79	-72.33	-1,858.06	-7,886.08	5,646.87	5,594.34	52.53	107.491	
9,200.00	6,941.46	6,834.82	6,830.63	46.27	23.79	-72.44	-1,858.09	-7,886.09	5,547.10	5,494.61	52.49	105.681	
9,300.00	6,941.14	6,835.61	6,831.42	47.53	23.79	-72.56	-1,858.12	-7,886.11	5,447.33	5,394.88	52.44	103.870	
9,400.00	6,940.82	6,836.42	6,832.23	48.81	23.80	-72.68	-1,858.16	-7,886.13	5,347.57	5,295.17	52.40	102.058	
9,500.00	6,940.50	6,837.24	6,833.05	50.11	23.80	-72.80	-1,858.19	-7,886.15	5,247.82	5,195.47	52.35	100.245	
9,600.00	6,940.17	6,838.08	6,833.89	51.43	23.80	-72.93	-1,858.23	-7,886.16	5,148.08	5,095.77	52.30	98.431	
9,700.00	6,939.85	6,838.94	6,834.74	52.76	23.81	-73.05	-1,858.26	-7,886.18	5,048.34	4,996.09	52.25	96.616	
9,800.00	6,939.53	6,839.81	6,835.61	54.11	23.81	-73.18	-1,858.30	-7,886.20	4,948.62	4,896.42	52.20	94.800	
9,900.00	6,939.20	6,840.70	6,836.51	55.48	23.81	-73.32	-1,858.34	-7,886.22	4,848.91	4,796.77	52.15	92.983	
10,000.00	6,938.88	6,841.62	6,837.42	56.86	23.82	-73.45	-1,858.38	-7,886.24	4,749.22	4,697.12	52.10	91.164	
10,100.00	6,938.56	6,842.55	6,838.35	58.25	23.82	-73.59	-1,858.41	-7,886.26	4,649.53	4,597.49	52.04	89.345	
10,200.00	6,938.23	6,843.50	6,839.30	59.65	23.82	-73.73	-1,858.46	-7,886.29	4,549.86	4,497.88	51.98	87.524	
10,300.00	6,937.91	6,850.00	6,845.79	61.06	23.84	-74.71	-1,858.73	-7,886.44	4,450.21	4,398.27	51.94	85.673	
10,400.00	6,937.59	6,850.00	6,845.79	62.48	23.84	-74.71	-1,858.73	-7,886.44	4,350.57	4,298.68	51.88	83.856	
10,500.00	6,937.27	6,850.00	6,845.79	63.91	23.84	-74.71	-1,858.73	-7,886.44	4,250.94	4,199.12	51.82	82.037	
10,600.00	6,936.94	6,850.00	6,845.79	65.34	23.84	-74.71	-1,858.73	-7,886.44	4,151.33	4,099.58	51.75	80.216	
10,700.00	6,936.62	6,850.00	6,845.79	66.79	23.84	-74.71	-1,858.73	-7,886.44	4,051.74	4,000.05	51.68	78.394	
10,800.00	6,936.30	6,850.00	6,845.79	68.24	23.84	-74.71	-1,858.73	-7,886.44	3,952.17	3,900.55	51.62	76.569	
10,900.00	6,935.97	6,865.99	6,861.76	69.70	23.90	-77.14	-1,859.41	-7,886.80	3,852.62	3,801.02	51.59	74.671	
11,000.00	6,935.65	6,864.65	6,860.42	71.17	23.90	-76.93	-1,859.34	-7,886.76	3,753.07	3,701.55	51.52	72.849	
11,100.00	6,935.33	6,866.47	6,862.24	72.64	23.90	-77.21	-1,859.42	-7,886.80	3,653.56	3,602.11	51.45	71.012	
11,200.00	6,935.00	6,868.30	6,864.07	74.11	23.91	-77.49	-1,859.49	-7,886.84	3,554.08	3,502.70	51.38	69.172	
11,300.00	6,934.68	6,870.12	6,865.89	75.60	23.92	-77.77	-1,859.57	-7,886.88	3,454.63	3,403.32	51.31	67.329	
11,400.00	6,934.36	6,879.86	6,875.62	77.08	23.95	-79.28	-1,859.96	-7,887.07	3,355.21	3,303.95	51.26	65.452	
11,500.00	6,934.03	6,881.00	6,876.76	78.57	23.95	-79.45	-1,860.01	-7,887.10	3,255.82	3,204.64	51.19	63.606	
11,600.00	6,933.71	6,882.17	6,877.93	80.07	23.96	-79.64	-1,860.06	-7,887.12	3,156.47	3,105.36	51.11	61.754	
11,700.00	6,933.39	6,883.36	6,879.11	81.57	23.96	-79.82	-1,860.10	-7,887.14	3,057.17	3,006.13	51.04	59.897	
11,800.00	6,933.07	6,884.57	6,880.32	83.07	23.97	-80.01	-1,860.15	-7,887.17	2,957.90	2,906.94	50.97	58.034	
11,900.00	6,932.74	6,885.80	6,881.55	84.58	23.97	-80.20	-1,860.20	-7,887.19	2,858.69	2,807.79	50.90	56.164	
12,000.00	6,932.42	6,887.06	6,882.81	86.09	23.97	-80.40	-1,860.25	-7,887.22	2,759.54	2,708.70	50.83	54.285	
12,100.00	6,932.10	6,888.34	6,884.09	87.60	23.98	-80.60	-1,860.30	-7,887.24	2,660.45	2,609.67	50.77	52.397	
12,200.00	6,931.77	6,889.64	6,885.39	89.12	23.98	-80.80	-1,860.35	-7,887.27	2,561.42	2,510.70	50.72	50.498	
12,300.00	6,931.45	6,890.98	6,886.72	90.64	23.99	-81.01	-1,860.40	-7,887.30	2,462.48	2,411.80	50.68	48.585	
12,400.00	6,931.13	6,892.34	6,888.08	92.16	23.99	-81.22	-1,860.46	-7,887.33	2,363.62	2,312.96	50.66	46.657	
12,500.00	6,930.80	6,893.72	6,889.47	93.69	24.00	-81.44	-1,860.51	-7,887.36	2,264.86	2,214.21	50.65	44.712	
12,600.00	6,930.48	6,895.14	6,890.88	95.22	24.00	-81.66	-1,860.57	-7,887.39	2,166.22	2,115.54	50.68	42.747	
12,700.00	6,930.16	6,896.58	6,892.32	96.75	24.01	-81.89	-1,860.62	-7,887.42	2,067.70	2,016.97	50.73	40.758	
12,800.00	6,929.84	6,900.00	6,895.74	98.28	24.02	-82.42	-1,860.76	-7,887.49	1,969.34	1,918.50	50.84	38.738	
12,900.00	6,929.51	6,900.00	6,895.74	99.82	24.02	-82.42	-1,860.76	-7,887.49	1,871.14	1,820.15	50.99	36.694	
13,000.00	6,929.19	6,902.01	6,897.75	101.35	24.03	-82.74	-1,860.84	-7,887.54	1,773.14	1,721.91	51.23	34.611	
13,100.00	6,928.87	6,904.71	6,900.44	102.89	24.04	-83.16	-1,860.94	-7,887.60	1,675.38	1,623.81	51.57	32.487	
13,200.00	6,928.54	6,907.27	6,903.00	104.43	24.05	-83.57	-1,861.04	-7,887.65	1,577.90	1,525.86	52.04	30.321	
13,300.00	6,928.22	6,909.70	6,905.43	105.97	24.05	-83.95	-1,861.13	-7,887.70	1,480.75	1,428.07	52.68	28.109	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001E - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	6,912.02	6,907.75	107.52	24.06	-84.32	-1,861.22	-7,887.75	1,384.00	1,330.46	53.54	25.851	
13,500.00	6,927.57	6,914.23	6,909.95	109.06	24.07	-84.67	-1,861.30	-7,887.79	1,287.74	1,233.06	54.68	23.549	
13,600.00	6,927.25	6,916.33	6,912.06	110.61	24.08	-85.00	-1,861.38	-7,887.83	1,192.10	1,135.89	56.20	21.210	
13,700.00	6,926.93	6,918.35	6,914.07	112.16	24.08	-85.32	-1,861.46	-7,887.87	1,097.23	1,039.02	58.21	18.849	
13,800.00	6,926.61	6,920.27	6,915.99	113.71	24.09	-85.62	-1,861.53	-7,887.90	1,003.36	942.51	60.85	16.489	
13,900.00	6,926.28	6,922.11	6,917.83	115.26	24.10	-85.91	-1,861.60	-7,887.94	910.79	846.47	64.32	14.161	
14,000.00	6,925.96	6,923.88	6,919.59	116.82	24.10	-86.19	-1,861.66	-7,887.97	819.96	751.11	68.85	11.909	
14,100.00	6,925.64	6,925.57	6,921.28	118.37	24.11	-86.46	-1,861.73	-7,888.00	731.52	656.74	74.79	9.781	
14,200.00	6,925.31	6,926.67	6,922.38	119.93	24.11	-86.64	-1,861.77	-7,888.02	646.47	563.94	82.52	7.834	
14,300.00	6,924.99	6,927.97	6,923.69	121.48	24.12	-86.84	-1,861.81	-7,888.04	566.31	473.77	92.53	6.120	
14,400.00	6,924.67	6,929.34	6,925.05	123.04	24.12	-87.06	-1,861.86	-7,888.07	493.45	388.25	105.20	4.691	
14,500.00	6,924.34	6,930.78	6,926.49	124.60	24.13	-87.29	-1,861.92	-7,888.10	431.59	311.25	120.33	3.587	
14,600.00	6,924.02	6,932.28	6,927.99	126.16	24.13	-87.53	-1,861.97	-7,888.13	386.06	249.86	136.20	2.834	
14,700.00	6,923.70	6,933.85	6,929.56	127.72	24.14	-87.78	-1,862.03	-7,888.16	363.06	214.38	148.68	2.442	
14,736.18	6,923.58	6,934.44	6,930.15	128.29	24.14	-87.87	-1,862.05	-7,888.17	361.25	209.86	151.39	2.386	CC, ES, SF
14,800.00	6,923.38	6,935.51	6,931.22	129.28	24.14	-88.04	-1,862.09	-7,888.19	366.85	213.63	153.22	2.394	
14,900.00	6,923.05	6,937.25	6,932.96	130.85	24.15	-88.32	-1,862.16	-7,888.23	396.65	247.34	149.31	2.657	
15,000.00	6,922.73	6,939.09	6,934.79	132.41	24.16	-88.61	-1,862.23	-7,888.26	447.31	306.71	140.60	3.182	
15,100.00	6,922.41	6,941.03	6,936.73	133.97	24.16	-88.91	-1,862.30	-7,888.31	512.67	381.91	130.76	3.921	
15,200.00	6,922.08	6,943.08	6,938.78	135.54	24.17	-89.24	-1,862.38	-7,888.35	587.85	466.16	121.69	4.831	
15,300.00	6,921.76	6,945.24	6,940.94	137.11	24.18	-89.58	-1,862.46	-7,888.40	669.55	555.61	113.94	5.876	
15,400.00	6,921.44	6,947.54	6,943.24	138.67	24.19	-89.95	-1,862.54	-7,888.45	755.66	648.15	107.51	7.029	
15,500.00	6,921.11	6,949.98	6,945.67	140.24	24.19	-90.33	-1,862.63	-7,888.51	844.83	742.62	102.20	8.266	
15,600.00	6,920.79	6,952.57	6,948.26	141.81	24.20	-90.74	-1,862.73	-7,888.57	936.18	838.36	97.82	9.571	
15,700.00	6,920.47	6,953.48	6,949.17	143.38	24.21	-90.88	-1,862.77	-7,888.59	1,029.14	934.99	94.15	10.931	
15,800.00	6,920.14	6,955.14	6,950.83	144.95	24.21	-91.15	-1,862.83	-7,888.63	1,123.31	1,032.23	91.08	12.333	
15,900.00	6,919.82	6,956.76	6,952.44	146.52	24.22	-91.40	-1,862.89	-7,888.67	1,218.40	1,129.93	88.48	13.771	
16,000.00	6,919.50	6,958.32	6,954.01	148.09	24.22	-91.65	-1,862.95	-7,888.70	1,314.22	1,227.97	86.25	15.237	
16,100.00	6,919.18	6,959.84	6,955.52	149.66	24.23	-91.89	-1,863.01	-7,888.74	1,410.62	1,326.28	84.34	16.726	
16,200.00	6,918.85	6,961.32	6,957.00	151.24	24.23	-92.12	-1,863.06	-7,888.77	1,507.49	1,424.81	82.68	18.233	
16,300.00	6,918.53	6,962.75	6,958.43	152.81	24.24	-92.35	-1,863.11	-7,888.80	1,604.74	1,523.51	81.23	19.756	
16,400.00	6,918.21	6,964.14	6,959.82	154.38	24.24	-92.57	-1,863.17	-7,888.83	1,702.30	1,622.35	79.96	21.291	
16,500.00	6,917.88	6,965.49	6,961.17	155.96	24.25	-92.78	-1,863.22	-7,888.86	1,800.13	1,721.30	78.83	22.835	
16,600.00	6,917.56	6,966.81	6,962.48	157.53	24.25	-92.99	-1,863.27	-7,888.89	1,898.19	1,820.36	77.83	24.387	
16,700.00	6,917.24	6,968.09	6,963.76	159.11	24.26	-93.19	-1,863.32	-7,888.91	1,996.44	1,919.49	76.95	25.946	
16,800.00	6,916.91	6,969.33	6,965.01	160.68	24.26	-93.38	-1,863.36	-7,888.94	2,094.85	2,018.70	76.15	27.509	
16,900.00	6,916.59	6,970.54	6,966.22	162.26	24.27	-93.57	-1,863.41	-7,888.97	2,193.41	2,117.97	75.44	29.076	
17,000.00	6,916.27	6,975.00	6,970.67	163.84	24.28	-94.27	-1,863.58	-7,889.05	2,292.09	2,217.28	74.81	30.638	
17,100.00	6,915.95	6,975.00	6,970.67	165.41	24.28	-94.27	-1,863.58	-7,889.05	2,390.88	2,316.66	74.22	32.212	
17,200.00	6,915.62	6,975.00	6,970.67	166.99	24.28	-94.27	-1,863.58	-7,889.05	2,489.76	2,416.07	73.69	33.788	
17,300.00	6,915.30	6,975.31	6,970.98	168.57	24.28	-94.32	-1,863.59	-7,889.06	2,588.73	2,515.53	73.20	35.363	
17,400.00	6,914.98	6,979.47	6,975.14	170.15	24.30	-94.97	-1,863.74	-7,889.14	2,687.78	2,614.99	72.78	36.928	
17,500.00	6,914.65	6,984.10	6,979.76	171.73	24.31	-95.69	-1,863.91	-7,889.24	2,786.89	2,714.48	72.41	38.489	
17,600.00	6,914.33	6,989.28	6,984.94	173.31	24.33	-96.50	-1,864.10	-7,889.35	2,886.05	2,813.99	72.07	40.047	
17,700.00	6,914.01	6,995.12	6,990.77	174.89	24.35	-97.40	-1,864.30	-7,889.48	2,985.27	2,913.51	71.76	41.601	
17,800.00	6,913.68	7,001.76	6,997.41	176.47	24.38	-98.42	-1,864.52	-7,889.64	3,084.54	3,013.05	71.49	43.149	
17,900.00	6,913.36	6,993.67	6,989.33	178.05	24.35	-97.18	-1,864.24	-7,889.46	3,183.85	3,112.69	71.15	44.746	
18,000.00	6,913.04	6,995.53	6,991.18	179.63	24.35	-97.47	-1,864.30	-7,889.50	3,283.20	3,212.30	70.90	46.307	
18,100.00	6,912.72	6,997.38	6,993.03	181.21	24.36	-97.75	-1,864.37	-7,889.54	3,382.60	3,311.93	70.67	47.865	
18,111.83	6,912.68	6,997.60	6,993.25	181.40	24.36	-97.78	-1,864.38	-7,889.55	3,394.36	3,323.72	70.64	48.049	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 100-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-81.82	1,438.05	-10,007.81	10,110.90				
54.25	54.25	0.00	0.00	0.02	0.00	-143.37	1,438.05	-10,007.81	10,110.72				
130.42	130.42	31.75	31.75	0.11	0.04	-170.53	1,438.06	-10,007.84	10,111.07	10,110.92	0.14	N/A	
219.69	219.69	100.00	100.00	0.23	0.11	-144.46	1,438.12	-10,008.12	10,111.85	10,111.53	0.33	N/A	
308.67	308.67	154.11	154.11	0.35	0.23	-153.37	1,438.19	-10,008.49	10,112.89	10,112.33	0.55	N/A	
454.00	453.99	330.18	330.17	0.51	0.60	72.05	1,438.30	-10,009.68	10,113.99	10,112.91	1.08	9,350.823	
544.00	543.93	455.62	455.61	0.74	0.85	72.39	1,438.41	-10,010.07	10,113.35	10,111.79	1.57	6,454.955	
667.00	666.63	571.30	571.29	1.13	1.09	59.43	1,438.82	-10,010.04	10,109.73	10,107.51	2.21	4,568.067	
756.00	755.27	635.69	635.69	1.44	1.23	74.32	1,439.05	-10,010.20	10,106.89	10,104.23	2.66	3,795.075	
850.00	848.62	700.00	699.99	1.79	1.36	75.99	1,439.30	-10,010.51	10,104.60	10,101.46	3.15	3,211.192	
942.00	939.50	778.61	778.60	2.14	1.53	82.45	1,439.64	-10,011.05	10,102.69	10,099.01	3.68	2,748.599	
986.86	983.62	817.97	817.95	2.33	1.62	87.33	1,439.82	-10,011.36	10,102.35	10,098.41	3.94	2,561.198	
1,033.00	1,028.89	862.31	862.30	2.52	1.71	91.72	1,440.03	-10,011.72	10,102.70	10,098.47	4.23	2,388.590	
1,123.00	1,117.00	943.65	943.63	2.90	1.89	97.91	1,440.45	-10,012.40	10,105.12	10,100.33	4.79	2,110.597	
1,214.00	1,206.00	1,027.27	1,027.24	3.29	2.07	97.33	1,440.96	-10,013.16	10,108.61	10,103.25	5.36	1,886.266	
1,309.00	1,298.75	1,130.61	1,130.58	3.71	2.28	100.34	1,441.61	-10,014.05	10,112.78	10,106.79	5.99	1,688.283	
1,403.00	1,390.39	1,236.89	1,236.85	4.13	2.50	103.45	1,442.33	-10,014.82	10,117.99	10,111.36	6.63	1,527.038	
1,498.00	1,482.88	1,339.99	1,339.95	4.56	2.71	100.31	1,443.01	-10,015.42	10,123.22	10,115.95	7.27	1,392.852	
1,592.00	1,573.82	1,429.25	1,429.20	5.00	2.90	99.93	1,443.64	-10,015.89	10,128.13	10,120.23	7.90	1,282.658	
1,687.00	1,665.32	1,500.00	1,499.95	5.46	3.05	102.93	1,444.15	-10,016.32	10,134.10	10,125.60	8.50	1,191.685	
1,876.00	1,847.35	1,653.54	1,653.49	6.38	3.37	105.73	1,445.20	-10,017.68	10,149.06	10,139.32	9.74	1,041.710	
1,970.00	1,937.87	1,757.33	1,757.26	6.84	3.59	106.05	1,445.64	-10,018.81	10,157.35	10,146.94	10.41	975.365	
2,064.00	2,028.42	1,874.91	1,874.84	7.30	3.83	106.77	1,445.59	-10,019.83	10,165.55	10,154.44	11.11	914.846	
2,159.00	2,119.97	1,970.36	1,970.29	7.77	4.03	108.11	1,445.45	-10,020.54	10,174.11	10,162.34	11.77	864.453	
2,348.00	2,302.44	2,143.11	2,143.03	8.69	4.39	103.77	1,445.22	-10,021.80	10,189.49	10,176.45	13.04	781.255	
2,443.00	2,394.41	2,213.01	2,212.93	9.15	4.54	103.26	1,445.31	-10,022.44	10,196.13	10,182.49	13.64	747.391	
2,537.00	2,485.45	2,291.42	2,291.34	9.61	4.71	103.14	1,445.49	-10,023.26	10,202.68	10,188.42	14.26	715.666	
2,632.00	2,577.48	2,356.64	2,356.55	10.07	4.85	103.52	1,445.71	-10,024.06	10,209.51	10,194.67	14.85	687.649	
2,727.00	2,669.50	2,427.87	2,427.78	10.53	5.00	103.66	1,446.10	-10,025.09	10,216.71	10,201.26	15.45	661.267	
2,821.00	2,760.56	2,519.35	2,519.25	10.98	5.19	103.55	1,446.56	-10,026.51	10,223.94	10,207.85	16.09	635.375	
2,916.00	2,852.68	2,622.92	2,622.80	11.44	5.41	103.65	1,446.96	-10,028.03	10,231.03	10,214.27	16.76	610.531	
3,011.00	2,945.03	2,702.81	2,702.68	11.89	5.58	103.91	1,447.32	-10,029.22	10,237.98	10,220.61	17.37	589.491	
3,105.00	3,036.57	2,815.55	2,815.41	12.33	5.81	98.46	1,447.84	-10,030.83	10,243.67	10,225.63	18.04	567.861	
3,200.00	3,128.81	2,914.61	2,914.46	12.78	6.02	95.30	1,448.32	-10,032.12	10,247.78	10,229.09	18.70	548.152	
3,294.00	3,219.76	3,055.74	3,055.58	13.24	6.32	95.14	1,449.20	-10,033.60	10,251.16	10,231.71	19.45	527.103	
3,389.00	3,311.82	3,288.24	3,288.07	13.69	6.80	96.48	1,450.14	-10,033.25	10,253.25	10,232.85	20.40	502.691	
3,483.00	3,403.03	3,369.99	3,369.82	14.14	6.97	96.94	1,450.55	-10,032.76	10,255.51	10,234.49	21.02	488.001	
3,578.00	3,495.31	3,451.20	3,451.03	14.60	7.14	97.60	1,450.95	-10,032.36	10,258.07	10,236.43	21.63	474.165	
3,672.00	3,586.65	3,537.80	3,537.63	15.04	7.32	98.79	1,451.37	-10,032.01	10,261.05	10,238.79	22.26	461.006	
3,767.00	3,678.95	3,630.28	3,630.11	15.49	7.52	99.42	1,451.78	-10,031.64	10,264.41	10,241.51	22.90	448.251	
3,862.00	3,771.63	3,714.40	3,714.22	15.93	7.69	99.35	1,452.16	-10,031.35	10,267.66	10,244.16	23.51	436.743	
3,956.00	3,863.70	3,801.11	3,800.93	16.35	7.87	99.78	1,452.58	-10,031.11	10,270.71	10,246.60	24.11	425.998	
4,052.00	3,957.54	3,907.63	3,907.45	16.79	8.10	98.70	1,452.91	-10,030.80	10,273.82	10,249.05	24.77	414.833	
4,146.00	4,048.88	4,009.48	4,009.30	17.24	8.31	98.73	1,452.86	-10,030.47	10,276.96	10,251.53	25.42	404.269	
4,241.00	4,140.47	4,097.23	4,097.04	17.71	8.49	101.33	1,452.49	-10,030.23	10,281.20	10,255.12	26.07	394.329	
4,336.00	4,231.25	4,189.95	4,189.77	18.21	8.68	104.63	1,451.81	-10,030.06	10,287.45	10,260.69	26.76	384.505	
4,430.00	4,320.59	4,264.86	4,264.67	18.71	8.84	103.07	1,450.96	-10,030.03	10,294.49	10,267.09	27.41	375.633	
4,524.00	4,409.51	4,334.33	4,334.13	19.22	8.99	99.59	1,449.75	-10,030.23	10,300.65	10,272.59	28.06	367.141	
4,619.00	4,498.98	4,400.00	4,399.78	19.75	9.13	98.98	1,448.24	-10,030.64	10,306.20	10,277.48	28.71	358.918	
4,713.00	4,587.83	4,485.02	4,484.76	20.27	9.31	99.25	1,445.86	-10,031.40	10,311.54	10,282.14	29.40	350.689	
4,807.00	4,676.97	4,567.54	4,567.23	20.78	9.48	100.62	1,443.25	-10,032.27	10,317.24	10,287.16	30.08	342.976	
4,870.00	4,736.65	4,618.36	4,618.03	21.12	9.59	101.08	1,441.60	-10,032.85	10,321.47	10,290.94	30.53	338.111	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,663.20	4,662.84	21.46	9.68	101.20	1,440.16	-10,033.42	10,325.71	10,294.76	30.95	333.596	
5,027.00	4,886.13	4,728.11	4,727.71	21.96	9.82	101.96	1,438.14	-10,034.37	10,332.37	10,300.79	31.58	327.179	
5,121.00	4,976.11	4,800.00	4,799.56	22.45	9.98	102.58	1,435.95	-10,035.61	10,339.27	10,307.06	32.21	320.982	
5,216.00	5,068.11	4,862.05	4,861.57	22.91	10.11	102.80	1,434.09	-10,036.83	10,345.75	10,312.95	32.80	315.458	
5,341.00	5,190.11	4,967.27	4,966.72	23.49	10.34	102.59	1,430.92	-10,039.10	10,353.58	10,319.99	33.59	308.260	
5,436.00	5,283.20	5,050.14	5,049.53	23.91	10.51	102.78	1,428.33	-10,041.01	10,359.22	10,325.04	34.18	303.059	
5,499.00	5,345.03	5,100.00	5,099.35	24.19	10.62	102.77	1,426.78	-10,042.21	10,362.93	10,328.37	34.56	299.841	
5,561.00	5,405.97	5,149.51	5,148.81	24.45	10.73	103.83	1,425.27	-10,043.44	10,366.65	10,331.72	34.93	296.778	
5,624.00	5,467.97	5,200.00	5,199.27	24.72	10.84	102.84	1,423.81	-10,044.77	10,370.41	10,335.11	35.30	293.761	
5,687.00	5,530.05	5,250.19	5,249.42	24.99	10.95	103.80	1,422.44	-10,046.13	10,374.14	10,338.47	35.67	290.852	
5,750.00	5,592.20	5,306.46	5,305.66	25.25	11.07	104.12	1,420.99	-10,047.67	10,377.93	10,341.88	36.04	287.925	
5,813.00	5,654.42	5,376.68	5,375.83	25.51	11.21	105.19	1,419.22	-10,049.57	10,381.71	10,345.27	36.45	284.858	
5,876.00	5,716.68	5,451.69	5,450.78	25.76	11.37	105.46	1,417.33	-10,051.53	10,385.47	10,348.62	36.85	281.803	
5,939.00	5,778.99	5,525.09	5,524.14	26.01	11.52	105.32	1,415.52	-10,053.34	10,389.08	10,351.82	37.26	278.857	
6,065.00	5,903.86	5,642.33	5,641.31	26.51	11.77	105.33	1,412.80	-10,056.11	10,395.72	10,357.73	37.99	273.679	
6,128.00	5,966.41	5,700.00	5,698.95	26.74	11.89	103.93	1,411.49	-10,057.57	10,398.79	10,360.45	38.34	271.211	
6,191.00	6,029.04	5,738.90	5,737.82	26.97	11.97	104.61	1,410.62	-10,058.61	10,401.73	10,363.08	38.65	269.101	
6,254.00	6,091.75	5,787.33	5,786.22	27.20	12.08	105.54	1,409.55	-10,059.96	10,404.64	10,365.66	38.98	266.918	
6,348.00	6,185.46	5,870.13	5,868.98	27.52	12.26	108.41	1,407.75	-10,062.38	10,408.90	10,369.42	39.48	263.646	
6,390.00	6,227.36	5,911.55	5,910.36	27.61	12.35	108.42	1,406.84	-10,063.61	10,410.79	10,371.15	39.65	262.580	
6,400.00	6,237.33	5,924.38	5,923.18	27.61	12.38	108.42	1,406.55	-10,063.99	10,411.24	10,371.56	39.68	262.375	
6,490.00	6,327.12	6,026.02	6,024.75	27.66	12.60	108.44	1,404.05	-10,066.96	10,415.18	10,375.24	39.95	260.736	
6,500.00	6,337.09	6,034.39	6,033.11	27.66	12.62	96.03	1,403.84	-10,067.20	10,415.55	10,375.58	39.97	260.595	
6,550.00	6,386.85	6,076.23	6,074.92	27.70	12.71	59.48	1,402.81	-10,068.44	10,415.25	10,375.16	40.09	259.788	
6,600.00	6,436.20	6,115.95	6,114.61	27.74	12.79	46.85	1,401.86	-10,069.63	10,411.42	10,371.19	40.22	258.835	
6,650.00	6,484.82	6,152.72	6,151.36	27.79	12.87	41.36	1,400.99	-10,070.78	10,404.09	10,363.73	40.36	257.752	
6,700.00	6,532.40	6,200.00	6,198.60	27.85	12.98	38.62	1,399.87	-10,072.33	10,393.33	10,352.79	40.54	256.349	
6,750.00	6,578.63	6,223.12	6,221.70	27.92	13.03	37.23	1,399.32	-10,073.11	10,379.18	10,338.50	40.68	255.138	
6,800.00	6,623.24	6,255.90	6,254.44	28.00	13.10	36.68	1,398.54	-10,074.26	10,361.76	10,320.90	40.85	253.629	
6,850.00	6,665.93	6,300.00	6,298.51	28.09	13.20	36.76	1,397.48	-10,075.87	10,341.18	10,300.11	41.07	251.807	
6,900.00	6,706.42	6,333.68	6,332.15	28.19	13.27	37.32	1,396.67	-10,077.12	10,317.52	10,276.25	41.27	250.013	
6,950.00	6,744.48	6,388.22	6,386.64	28.30	13.39	38.40	1,395.34	-10,079.07	10,290.88	10,249.35	41.53	247.798	
7,000.00	6,779.84	6,427.84	6,426.23	28.43	13.47	39.90	1,394.39	-10,080.44	10,261.46	10,219.69	41.77	245.683	
7,050.00	6,812.30	6,461.27	6,459.63	28.57	13.54	41.88	1,393.63	-10,081.59	10,229.47	10,187.47	42.00	243.547	
7,100.00	6,841.63	6,491.68	6,490.01	28.73	13.61	44.39	1,392.96	-10,082.63	10,195.14	10,152.90	42.24	241.357	
7,150.00	6,867.66	6,525.71	6,524.02	28.90	13.68	47.55	1,392.25	-10,083.77	10,158.67	10,116.17	42.50	239.038	
7,200.00	6,890.22	6,558.05	6,556.34	29.08	13.75	51.43	1,391.61	-10,084.82	10,120.30	10,077.54	42.76	236.675	
7,250.00	6,909.17	6,585.49	6,583.76	29.28	13.81	56.12	1,391.10	-10,085.68	10,080.27	10,037.25	43.02	234.322	
7,300.00	6,924.38	6,612.33	6,610.58	29.49	13.86	61.75	1,390.62	-10,086.50	10,038.86	9,995.58	43.28	231.940	
7,350.00	6,935.77	6,639.19	6,637.42	29.72	13.92	68.39	1,390.14	-10,087.28	9,996.32	9,952.77	43.55	229.537	
7,400.00	6,943.25	6,657.77	6,655.99	29.97	13.96	75.93	1,389.81	-10,087.80	9,952.94	9,909.14	43.80	227.222	
7,450.00	6,946.78	6,668.09	6,666.31	30.22	13.98	84.18	1,389.62	-10,088.07	9,909.01	9,864.97	44.04	225.005	
7,471.54	6,947.08	6,670.00	6,668.22	30.34	13.98	87.87	1,389.59	-10,088.12	9,889.99	9,845.85	44.14	224.081	
7,500.00	6,946.98	6,671.52	6,669.74	30.49	13.99	87.85	1,389.56	-10,088.17	9,864.77	9,820.51	44.26	222.879	
7,600.00	6,946.65	6,676.72	6,674.93	31.07	14.00	87.77	1,389.47	-10,088.30	9,775.30	9,730.60	44.69	218.714	
7,700.00	6,946.32	6,681.71	6,679.92	31.69	14.01	87.67	1,389.38	-10,088.43	9,684.50	9,639.39	45.12	214.651	
7,800.00	6,945.99	6,686.50	6,684.71	32.35	14.02	87.55	1,389.29	-10,088.56	9,592.46	9,546.94	45.53	210.704	
7,900.00	6,945.67	6,691.08	6,689.29	33.05	14.03	87.41	1,389.21	-10,088.67	9,499.26	9,453.34	45.92	206.882	
8,000.00	6,945.34	6,695.46	6,693.67	33.79	14.04	87.23	1,389.13	-10,088.79	9,404.96	9,358.68	46.29	203.190	
8,034.58	6,945.23	6,696.93	6,695.13	34.05	14.04	87.15	1,389.11	-10,088.82	9,372.12	9,325.71	46.41	201.943	
8,100.00	6,945.02	6,699.66	6,697.86	34.57	14.05	87.21	1,389.06	-10,088.89	9,309.90	9,263.25	46.64	199.608	
8,200.00	6,944.69	6,703.83	6,702.03	35.41	14.05	87.29	1,388.99	-10,088.99	9,214.86	9,167.86	47.00	196.043	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,707.91	6,706.11	36.30	14.06	87.37	1,388.91	-10,089.10	9,119.94	9,072.56	47.38	192.483	
8,400.00	6,944.05	6,711.91	6,710.11	37.25	14.07	87.45	1,388.84	-10,089.19	9,025.12	8,977.35	47.77	188.930	
8,500.00	6,943.73	6,715.83	6,714.03	38.25	14.08	87.53	1,388.77	-10,089.29	8,930.42	8,882.24	48.17	185.385	
8,600.00	6,943.40	6,719.67	6,717.87	39.29	14.09	87.60	1,388.70	-10,089.38	8,835.83	8,787.24	48.59	181.850	
8,700.00	6,943.08	6,723.44	6,721.63	40.37	14.09	87.68	1,388.64	-10,089.47	8,741.36	8,692.34	49.02	178.326	
8,800.00	6,942.76	6,727.13	6,725.32	41.49	14.10	87.75	1,388.57	-10,089.56	8,647.01	8,597.55	49.46	174.815	
8,900.00	6,942.43	6,730.74	6,728.93	42.64	14.11	87.82	1,388.50	-10,089.64	8,552.79	8,502.87	49.92	171.318	
9,000.00	6,942.11	6,734.29	6,732.48	43.82	14.12	87.89	1,388.44	-10,089.72	8,458.71	8,408.31	50.40	167.837	
9,100.00	6,941.79	6,737.77	6,735.96	45.03	14.12	87.96	1,388.38	-10,089.80	8,364.76	8,313.87	50.89	164.373	
9,200.00	6,941.46	6,741.19	6,739.37	46.27	14.13	88.03	1,388.32	-10,089.88	8,270.95	8,219.55	51.40	160.927	
9,300.00	6,941.14	6,744.54	6,742.72	47.53	14.14	88.10	1,388.26	-10,089.96	8,177.28	8,125.36	51.92	157.501	
9,400.00	6,940.82	6,747.82	6,746.00	48.81	14.15	88.16	1,388.20	-10,090.03	8,083.77	8,031.31	52.46	154.096	
9,500.00	6,940.50	6,751.05	6,749.23	50.11	14.15	88.23	1,388.14	-10,090.10	7,990.41	7,937.40	53.02	150.714	
9,600.00	6,940.17	6,754.22	6,752.40	51.43	14.16	88.29	1,388.09	-10,090.17	7,897.22	7,843.63	53.59	147.355	
9,700.00	6,939.85	6,757.33	6,755.51	52.76	14.17	88.35	1,388.03	-10,090.24	7,804.19	7,750.01	54.19	144.022	
9,800.00	6,939.53	6,760.38	6,758.56	54.11	14.17	88.41	1,387.97	-10,090.31	7,711.34	7,656.54	54.80	140.716	
9,900.00	6,939.20	6,763.38	6,761.56	55.48	14.18	88.47	1,387.92	-10,090.37	7,618.67	7,563.23	55.43	137.438	
10,000.00	6,938.88	6,766.33	6,764.50	56.86	14.18	88.53	1,387.87	-10,090.44	7,526.18	7,470.10	56.09	134.189	
10,100.00	6,938.56	6,769.23	6,767.40	58.25	14.19	88.59	1,387.82	-10,090.50	7,433.89	7,377.13	56.76	130.970	
10,200.00	6,938.23	6,772.07	6,770.24	59.65	14.20	88.64	1,387.77	-10,090.56	7,341.80	7,284.35	57.46	127.782	
10,300.00	6,937.91	6,774.87	6,773.04	61.06	14.20	88.70	1,387.72	-10,090.62	7,249.92	7,191.75	58.17	124.628	
10,400.00	6,937.59	6,777.62	6,775.79	62.48	14.21	88.75	1,387.67	-10,090.68	7,158.25	7,099.34	58.91	121.507	
10,500.00	6,937.27	6,780.32	6,778.49	63.91	14.21	88.81	1,387.62	-10,090.73	7,066.82	7,007.14	59.68	118.421	
10,600.00	6,936.94	6,782.98	6,781.15	65.34	14.22	88.86	1,387.57	-10,090.79	6,975.61	6,915.15	60.46	115.371	
10,700.00	6,936.62	6,785.59	6,783.76	66.79	14.22	88.91	1,387.52	-10,090.84	6,884.65	6,823.37	61.27	112.358	
10,800.00	6,936.30	6,788.16	6,786.33	68.24	14.23	88.96	1,387.48	-10,090.89	6,793.94	6,731.83	62.11	109.383	
10,900.00	6,935.97	6,790.69	6,788.86	69.70	14.23	89.01	1,387.43	-10,090.94	6,703.50	6,640.52	62.98	106.447	
11,000.00	6,935.65	6,793.18	6,791.34	71.17	14.24	89.06	1,387.39	-10,090.99	6,613.33	6,549.46	63.87	103.550	
11,100.00	6,935.33	6,795.63	6,793.79	72.64	14.25	89.11	1,387.34	-10,091.04	6,523.44	6,458.66	64.78	100.695	
11,200.00	6,935.00	6,798.03	6,796.20	74.11	14.25	89.16	1,387.30	-10,091.09	6,433.86	6,368.13	65.73	97.881	
11,300.00	6,934.68	6,800.41	6,798.57	75.60	14.26	89.21	1,387.26	-10,091.13	6,344.58	6,277.87	66.71	95.109	
11,400.00	6,934.36	6,802.74	6,800.90	77.08	14.26	89.25	1,387.22	-10,091.18	6,255.63	6,187.91	67.72	92.380	
11,500.00	6,934.03	6,805.04	6,803.19	78.57	14.26	89.30	1,387.18	-10,091.22	6,167.02	6,098.26	68.76	89.695	
11,600.00	6,933.71	6,807.30	6,805.45	80.07	14.27	89.34	1,387.13	-10,091.27	6,078.76	6,008.93	69.83	87.054	
11,700.00	6,933.39	6,809.52	6,807.68	81.57	14.27	89.39	1,387.09	-10,091.31	5,990.86	5,919.93	70.93	84.458	
11,800.00	6,933.07	6,811.72	6,809.87	83.07	14.28	89.43	1,387.06	-10,091.35	5,903.36	5,831.28	72.07	81.908	
11,900.00	6,932.74	6,813.88	6,812.03	84.58	14.28	89.47	1,387.02	-10,091.39	5,816.25	5,743.00	73.25	79.404	
12,000.00	6,932.42	6,816.00	6,814.16	86.09	14.29	89.52	1,386.98	-10,091.43	5,729.57	5,655.10	74.46	76.947	
12,100.00	6,932.10	6,818.10	6,816.25	87.60	14.29	89.56	1,386.94	-10,091.47	5,643.32	5,567.61	75.71	74.537	
12,200.00	6,931.77	6,816.09	6,814.25	89.12	14.29	89.52	1,386.98	-10,091.44	5,557.54	5,480.55	76.99	72.182	
12,300.00	6,931.45	6,817.81	6,815.97	90.64	14.29	89.55	1,386.95	-10,091.47	5,472.24	5,393.92	78.32	69.867	
12,400.00	6,931.13	6,819.53	6,817.68	92.16	14.29	89.59	1,386.92	-10,091.51	5,387.44	5,307.75	79.69	67.602	
12,500.00	6,930.80	6,821.23	6,819.39	93.69	14.30	89.62	1,386.89	-10,091.54	5,303.18	5,222.07	81.11	65.384	
12,600.00	6,930.48	6,822.93	6,821.08	95.22	14.30	89.65	1,386.86	-10,091.57	5,219.47	5,136.90	82.57	63.216	
12,700.00	6,930.16	6,824.63	6,822.78	96.75	14.31	89.69	1,386.83	-10,091.60	5,136.34	5,052.27	84.07	61.097	
12,800.00	6,929.84	6,826.31	6,824.46	98.28	14.31	89.72	1,386.80	-10,091.64	5,053.82	4,968.20	85.62	59.028	
12,900.00	6,929.51	6,827.99	6,826.14	99.82	14.31	89.76	1,386.77	-10,091.67	4,971.94	4,884.72	87.21	57.008	
13,000.00	6,929.19	6,829.67	6,827.82	101.35	14.32	89.79	1,386.74	-10,091.70	4,890.73	4,801.87	88.86	55.039	
13,100.00	6,928.87	6,831.33	6,829.48	102.89	14.32	89.82	1,386.71	-10,091.73	4,810.24	4,719.68	90.56	53.119	
13,200.00	6,928.54	6,833.00	6,831.14	104.43	14.32	89.86	1,386.68	-10,091.76	4,730.48	4,638.18	92.30	51.250	
13,300.00	6,928.22	6,834.65	6,832.80	105.97	14.33	89.89	1,386.65	-10,091.79	4,651.51	4,557.41	94.10	49.431	
13,400.00	6,927.90	6,836.30	6,834.45	107.52	14.33	89.92	1,386.62	-10,091.82	4,573.36	4,477.41	95.95	47.663	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,837.94	6,836.09	109.06	14.33	89.95	1,386.59	-10,091.86	4,496.08	4,398.22	97.86	45.945	
13,600.00	6,927.25	6,839.58	6,837.72	110.61	14.34	89.99	1,386.56	-10,091.89	4,419.71	4,319.89	99.82	44.277	
13,700.00	6,926.93	6,841.21	6,839.35	112.16	14.34	90.02	1,386.53	-10,091.92	4,344.29	4,242.46	101.83	42.660	
13,800.00	6,926.61	6,842.83	6,840.98	113.71	14.34	90.05	1,386.50	-10,091.95	4,269.89	4,165.98	103.91	41.094	
13,900.00	6,926.28	6,844.45	6,842.59	115.26	14.35	90.08	1,386.47	-10,091.98	4,196.55	4,090.51	106.03	39.577	
14,000.00	6,925.96	6,846.06	6,844.21	116.82	14.35	90.12	1,386.44	-10,092.01	4,124.33	4,016.11	108.22	38.111	
14,100.00	6,925.64	6,847.67	6,845.81	118.37	14.35	90.15	1,386.42	-10,092.04	4,053.28	3,942.83	110.46	36.696	
14,200.00	6,925.31	6,849.26	6,847.41	119.93	14.36	90.18	1,386.39	-10,092.07	3,983.49	3,870.74	112.75	35.330	
14,300.00	6,924.99	6,850.86	6,849.00	121.48	14.36	90.21	1,386.36	-10,092.10	3,915.00	3,799.90	115.10	34.014	
14,400.00	6,924.67	6,852.45	6,850.59	123.04	14.36	90.24	1,386.33	-10,092.13	3,847.89	3,730.39	117.50	32.748	
14,500.00	6,924.34	6,854.03	6,852.17	124.60	14.37	90.27	1,386.30	-10,092.16	3,782.23	3,662.28	119.95	31.531	
14,600.00	6,924.02	6,855.60	6,853.75	126.16	14.37	90.31	1,386.27	-10,092.19	3,718.10	3,595.65	122.45	30.364	
14,700.00	6,923.70	6,857.17	6,855.31	127.72	14.37	90.34	1,386.25	-10,092.22	3,655.59	3,530.59	125.00	29.246	
14,800.00	6,923.38	6,858.74	6,856.88	129.28	14.38	90.37	1,386.22	-10,092.24	3,594.77	3,467.18	127.58	28.176	
14,900.00	6,923.05	6,860.30	6,858.44	130.85	14.38	90.40	1,386.19	-10,092.27	3,535.73	3,405.52	130.20	27.155	
15,000.00	6,922.73	6,861.85	6,859.99	132.41	14.38	90.43	1,386.16	-10,092.30	3,478.56	3,345.70	132.86	26.183	
15,100.00	6,922.41	6,863.40	6,861.53	133.97	14.39	90.46	1,386.14	-10,092.33	3,423.36	3,287.82	135.54	25.258	
15,200.00	6,922.08	6,864.94	6,863.08	135.54	14.39	90.49	1,386.11	-10,092.36	3,370.22	3,231.98	138.23	24.381	
15,300.00	6,921.76	6,866.47	6,864.61	137.11	14.39	90.52	1,386.08	-10,092.39	3,319.24	3,178.30	140.94	23.550	
15,400.00	6,921.44	6,868.00	6,866.14	138.67	14.40	90.55	1,386.06	-10,092.41	3,270.53	3,126.88	143.65	22.767	
15,500.00	6,921.11	6,869.53	6,867.66	140.24	14.40	90.58	1,386.03	-10,092.44	3,224.18	3,077.83	146.35	22.031	
15,600.00	6,920.79	6,871.04	6,869.18	141.81	14.40	90.61	1,386.00	-10,092.47	3,180.30	3,031.27	149.03	21.340	
15,700.00	6,920.47	6,872.56	6,870.69	143.38	14.41	90.64	1,385.97	-10,092.50	3,138.99	2,987.31	151.68	20.695	
15,800.00	6,920.14	6,874.07	6,872.20	144.95	14.41	90.67	1,385.95	-10,092.53	3,100.36	2,946.08	154.29	20.095	
15,900.00	6,919.82	6,875.57	6,873.70	146.52	14.41	90.70	1,385.92	-10,092.55	3,064.51	2,907.68	156.83	19.540	
16,000.00	6,919.50	6,877.06	6,875.20	148.09	14.41	90.73	1,385.90	-10,092.58	3,031.53	2,872.22	159.31	19.029	
16,100.00	6,919.18	6,878.56	6,876.69	149.66	14.42	90.76	1,385.87	-10,092.61	3,001.52	2,839.82	161.70	18.562	
16,200.00	6,918.85	6,880.04	6,878.18	151.24	14.42	90.79	1,385.84	-10,092.63	2,974.57	2,810.58	164.00	18.138	
16,300.00	6,918.53	6,881.52	6,879.66	152.81	14.42	90.82	1,385.82	-10,092.66	2,950.77	2,784.59	166.18	17.757	
16,400.00	6,918.21	6,883.00	6,881.13	154.38	14.43	90.85	1,385.79	-10,092.69	2,930.19	2,761.95	168.23	17.418	
16,500.00	6,917.88	6,884.47	6,882.60	155.96	14.43	90.88	1,385.76	-10,092.71	2,912.89	2,742.75	170.14	17.120	
16,600.00	6,917.56	6,885.93	6,884.06	157.53	14.43	90.91	1,385.74	-10,092.74	2,898.94	2,727.04	171.90	16.864	
16,700.00	6,917.24	6,887.39	6,885.52	159.11	14.44	90.94	1,385.71	-10,092.77	2,888.39	2,714.89	173.50	16.648	
16,800.00	6,916.91	6,888.85	6,886.98	160.68	14.44	90.97	1,385.69	-10,092.79	2,881.27	2,706.35	174.92	16.471	
16,900.00	6,916.59	6,890.29	6,888.43	162.26	14.44	91.00	1,385.66	-10,092.82	2,877.61	2,701.44	176.17	16.335	
16,955.41	6,916.41	6,891.10	6,889.23	163.13	14.44	91.01	1,385.65	-10,092.83	2,877.08	2,700.30	176.78	16.275 CC	
17,000.00	6,916.27	6,891.74	6,889.87	163.84	14.45	91.02	1,385.64	-10,092.84	2,877.42	2,700.20	177.22	16.236 ES	
17,100.00	6,915.95	6,893.18	6,891.31	165.41	14.45	91.05	1,385.61	-10,092.87	2,880.71	2,702.62	178.09	16.176	
17,200.00	6,915.62	6,894.61	6,892.74	166.99	14.45	91.08	1,385.59	-10,092.90	2,887.45	2,708.69	178.76	16.153 SF	
17,300.00	6,915.30	6,896.04	6,894.17	168.57	14.45	91.11	1,385.56	-10,092.92	2,897.64	2,718.40	179.24	16.166	
17,400.00	6,914.98	6,897.46	6,895.59	170.15	14.46	91.14	1,385.54	-10,092.95	2,911.22	2,731.69	179.53	16.216	
17,500.00	6,914.65	6,898.88	6,897.01	171.73	14.46	91.17	1,385.51	-10,092.97	2,928.15	2,748.52	179.63	16.301	
17,600.00	6,914.33	6,900.00	6,898.13	173.31	14.46	91.19	1,385.49	-10,092.99	2,948.39	2,768.83	179.56	16.420	
17,700.00	6,914.01	6,900.00	6,898.13	174.89	14.46	91.19	1,385.49	-10,092.99	2,971.85	2,792.54	179.31	16.574	
17,800.00	6,913.68	6,903.06	6,901.19	176.47	14.47	91.25	1,385.44	-10,093.05	2,998.46	2,819.56	178.90	16.760	
17,900.00	6,913.36	6,904.43	6,902.55	178.05	14.47	91.28	1,385.41	-10,093.07	3,028.14	2,849.80	178.34	16.980	
18,000.00	6,913.04	6,905.78	6,903.91	179.63	14.47	91.30	1,385.39	-10,093.09	3,060.80	2,883.17	177.64	17.231	
18,100.00	6,912.72	6,907.12	6,905.25	181.21	14.48	91.33	1,385.37	-10,093.12	3,096.35	2,919.55	176.80	17.513	
18,111.83	6,912.68	6,907.28	6,905.41	181.40	14.48	91.33	1,385.36	-10,093.12	3,100.74	2,924.05	176.69	17.549	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
0.00	0.00	61.00	61.00	0.00	1.83	-100.42	-2,186.42	-11,892.00	12,091.32				
54.25	54.25	115.25	115.25	0.02	3.45	-161.97	-2,186.42	-11,892.00	12,091.43	12,087.96	3.47	3,485.607	
130.42	130.42	191.42	191.42	0.11	5.74	170.87	-2,186.42	-11,892.00	12,091.78	12,085.93	5.85	2,067.219	
219.69	219.69	280.69	280.69	0.23	8.41	-163.06	-2,186.42	-11,892.00	12,092.25	12,083.61	8.64	1,399.693	
308.67	308.67	369.67	369.67	0.35	11.08	-171.97	-2,186.42	-11,892.00	12,092.76	12,081.34	11.42	1,058.897	
454.00	453.99	515.09	514.99	0.51	15.43	53.46	-2,186.42	-11,892.00	12,092.61	12,076.67	15.94	758.419	
544.00	543.93	605.04	604.93	0.74	18.13	53.81	-2,186.42	-11,892.00	12,090.79	12,071.93	18.86	640.944	
667.00	666.63	727.73	727.63	1.13	21.81	40.84	-2,186.42	-11,892.00	12,084.86	12,061.93	22.94	526.833	
756.00	755.27	807.64	807.49	1.44	24.20	55.78	-2,184.36	-11,892.00	12,079.20	12,053.56	25.64	471.056	
850.00	848.62	888.84	888.67	1.79	26.63	57.51	-2,184.92	-11,892.00	12,073.29	12,044.87	28.42	424.851	
942.00	939.50	1,000.90	1,000.50	2.14	29.99	64.10	-2,186.42	-11,892.00	12,066.59	12,034.46	32.13	375.566	
1,033.00	1,028.89	1,090.29	1,089.89	2.52	32.67	73.48	-2,186.42	-11,892.00	12,060.43	12,025.26	35.17	342.905	
1,123.00	1,117.00	1,178.40	1,178.00	2.90	35.31	79.71	-2,186.42	-11,892.00	12,056.11	12,017.93	38.18	315.731	
1,214.00	1,206.00	1,265.17	1,264.73	3.29	37.91	79.13	-2,184.25	-11,892.00	12,052.18	12,011.01	41.17	292.726	
1,309.00	1,298.75	1,346.26	1,345.80	3.71	40.34	82.16	-2,184.57	-11,892.00	12,048.85	12,004.83	44.02	273.738	
1,403.00	1,390.39	1,426.60	1,426.12	4.13	42.75	85.20	-2,185.34	-11,892.00	12,046.64	11,999.80	46.84	257.185	
1,498.00	1,482.88	1,544.59	1,543.88	4.56	46.28	82.12	-2,186.42	-11,892.00	12,044.32	11,993.51	50.80	237.073	
1,592.00	1,573.82	1,635.54	1,634.82	5.00	49.01	81.89	-2,186.42	-11,892.00	12,040.90	11,986.93	53.97	223.101	
1,687.00	1,665.32	1,727.03	1,726.32	5.46	51.75	84.90	-2,186.42	-11,892.00	12,037.85	11,980.68	57.17	210.561	
1,876.00	1,847.35	1,890.23	1,889.45	6.38	56.64	87.66	-2,184.93	-11,892.00	12,034.20	11,971.22	62.99	191.064	
1,970.00	1,937.87	1,970.41	1,969.61	6.84	59.04	87.94	-2,185.94	-11,892.00	12,033.39	11,967.54	65.85	182.741	
2,064.00	2,028.42	2,090.44	2,089.42	7.30	62.64	88.61	-2,186.42	-11,892.00	12,032.65	11,962.74	69.91	172.120	
2,159.00	2,119.97	2,181.98	2,180.97	7.77	65.38	89.93	-2,186.42	-11,892.00	12,032.32	11,959.20	73.12	164.557	
2,348.00	2,302.44	2,351.67	2,350.60	8.69	70.47	85.52	-2,184.61	-11,892.00	12,030.09	11,950.96	79.13	152.024	
2,443.00	2,394.41	2,433.67	2,432.58	9.15	72.92	84.98	-2,185.42	-11,892.00	12,028.20	11,946.15	82.05	146.597	
2,537.00	2,485.45	2,547.77	2,546.45	9.61	76.34	84.89	-2,186.42	-11,892.00	12,026.20	11,940.28	85.92	139.966	
2,632.00	2,577.48	2,639.80	2,638.48	10.07	79.10	85.28	-2,186.42	-11,892.00	12,024.12	11,934.98	89.14	134.892	
2,727.00	2,669.50	2,731.82	2,730.50	10.53	81.86	85.44	-2,186.42	-11,892.00	12,022.15	11,929.79	92.36	130.173	
2,821.00	2,760.56	2,815.20	2,813.83	10.98	84.36	85.31	-2,184.39	-11,892.00	12,019.92	11,924.61	95.31	126.116	
2,916.00	2,852.68	2,897.88	2,896.49	11.44	86.83	85.32	-2,185.01	-11,892.00	12,018.07	11,919.83	98.24	122.330	
3,011.00	2,945.03	3,007.65	3,006.03	11.89	90.12	85.53	-2,186.42	-11,892.00	12,016.43	11,914.45	101.98	117.829	
3,105.00	3,036.57	3,099.19	3,097.57	12.33	92.87	80.04	-2,186.42	-11,892.00	12,013.68	11,908.51	105.16	114.238	
3,200.00	3,128.81	3,191.43	3,189.81	12.78	95.63	76.98	-2,186.42	-11,892.00	12,008.99	11,900.61	108.38	110.806	
3,294.00	3,219.76	3,279.17	3,277.50	13.24	98.26	76.74	-2,184.27	-11,892.00	12,003.14	11,891.67	111.46	107.688	
3,389.00	3,311.82	3,362.32	3,360.63	13.69	100.75	77.79	-2,184.69	-11,892.00	11,997.86	11,883.45	114.41	104.867	
3,483.00	3,403.03	3,444.96	3,443.25	14.14	103.23	78.23	-2,185.57	-11,892.00	11,993.14	11,875.81	117.33	102.214	
3,578.00	3,495.31	3,558.24	3,556.31	14.60	106.62	78.86	-2,186.42	-11,892.00	11,988.63	11,867.45	121.18	98.934	
3,672.00	3,586.65	3,649.58	3,647.65	15.04	109.36	80.07	-2,186.42	-11,892.00	11,984.45	11,860.09	124.36	96.369	
3,767.00	3,678.95	3,741.88	3,739.95	15.49	112.12	80.65	-2,186.42	-11,892.00	11,980.59	11,853.01	127.58	93.909	
3,862.00	3,771.63	3,826.85	3,824.87	15.93	114.67	80.46	-2,184.45	-11,892.00	11,976.85	11,846.29	130.56	91.734	
3,956.00	3,863.70	3,910.75	3,908.75	16.35	117.18	80.85	-2,185.15	-11,892.00	11,973.80	11,840.30	133.49	89.695	
4,052.00	3,957.54	4,020.77	4,018.54	16.79	120.48	79.84	-2,186.42	-11,892.00	11,970.46	11,833.23	137.23	87.231	
4,146.00	4,048.88	4,112.11	4,109.88	17.24	123.22	79.95	-2,186.42	-11,892.00	11,966.45	11,826.04	140.41	85.225	
4,241.00	4,140.47	4,203.70	4,201.47	17.71	125.96	82.71	-2,186.42	-11,892.00	11,962.55	11,818.93	143.63	83.289	
4,336.00	4,231.25	4,290.72	4,288.44	18.21	128.57	86.12	-2,184.30	-11,892.00	11,959.50	11,812.77	146.73	81.507	
4,430.00	4,320.59	4,372.76	4,370.47	18.71	131.03	84.61	-2,184.77	-11,892.00	11,957.08	11,807.38	149.69	79.877	
4,524.00	4,409.51	4,454.76	4,452.44	19.22	133.48	81.26	-2,185.71	-11,892.00	11,953.21	11,800.55	152.66	78.297	
4,619.00	4,498.98	4,562.52	4,559.98	19.75	136.71	80.75	-2,186.42	-11,892.00	11,947.99	11,791.57	156.42	76.384	
4,713.00	4,587.83	4,651.37	4,648.83	20.27	139.38	80.84	-2,186.42	-11,892.00	11,942.80	11,783.20	159.60	74.831	
4,807.00	4,676.97	4,740.50	4,737.97	20.78	142.05	82.27	-2,186.42	-11,892.00	11,938.19	11,775.41	162.78	73.340	
4,870.00	4,736.65	4,796.45	4,793.87	21.12	143.72	82.73	-2,184.32	-11,892.00	11,935.21	11,770.42	164.80	72.423	
4,933.00	4,796.58	4,852.07	4,849.48	21.46	145.39	82.72	-2,184.61	-11,892.00	11,932.67	11,765.86	166.80	71.538	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,027.00	4,886.13	4,935.45	4,932.83	21.96	147.89	83.59	-2,185.45	-11,892.00	11,929.19	11,759.39	169.80	70.254	
5,121.00	4,976.11	5,039.95	5,037.11	22.45	151.02	83.98	-2,186.42	-11,892.00	11,926.19	11,752.77	173.42	68.770	
5,216.00	5,068.11	5,131.95	5,129.11	22.91	153.78	84.04	-2,186.42	-11,892.00	11,923.64	11,747.00	176.64	67.502	
5,341.00	5,190.11	5,253.68	5,250.80	23.49	157.42	83.73	-2,184.25	-11,892.00	11,920.49	11,739.63	180.87	65.908	
5,436.00	5,283.20	5,340.69	5,337.79	23.91	160.03	83.89	-2,184.53	-11,892.00	11,918.43	11,734.54	183.90	64.811	
5,499.00	5,345.03	5,398.60	5,395.69	24.19	161.77	83.85	-2,185.02	-11,892.00	11,917.16	11,731.26	185.91	64.102	
5,561.00	5,405.97	5,455.77	5,452.84	24.45	163.48	84.88	-2,185.72	-11,892.00	11,916.08	11,728.19	187.89	63.421	
5,624.00	5,467.97	5,532.12	5,528.97	24.72	165.77	83.88	-2,186.42	-11,892.00	11,915.03	11,724.58	190.45	62.564	
5,687.00	5,530.05	5,594.20	5,591.05	24.99	167.63	84.84	-2,186.42	-11,892.00	11,913.96	11,721.39	192.57	61.868	
5,750.00	5,592.20	5,656.35	5,653.20	25.25	169.49	85.13	-2,186.42	-11,892.00	11,913.04	11,718.35	194.69	61.188	
5,813.00	5,654.42	5,718.56	5,715.42	25.51	171.35	86.18	-2,186.42	-11,892.00	11,912.28	11,715.46	196.82	60.525	
5,876.00	5,716.68	5,778.94	5,775.75	25.76	173.16	86.44	-2,184.27	-11,892.00	11,911.48	11,712.60	198.88	59.892	
5,939.00	5,778.99	5,837.52	5,834.32	26.01	174.92	86.27	-2,184.51	-11,892.00	11,910.91	11,710.01	200.89	59.290	
6,065.00	5,903.86	5,955.13	5,951.89	26.51	178.44	86.21	-2,185.72	-11,892.00	11,909.89	11,704.98	204.91	58.123	
6,128.00	5,966.41	6,030.87	6,027.41	26.74	180.71	84.79	-2,186.42	-11,892.00	11,909.35	11,701.94	207.41	57.418	
6,191.00	6,029.04	6,093.49	6,090.04	26.97	182.59	85.45	-2,186.42	-11,892.00	11,908.77	11,699.24	209.52	56.837	
6,254.00	6,091.75	6,156.20	6,152.75	27.20	184.47	86.35	-2,186.42	-11,892.00	11,908.33	11,696.70	211.63	56.270	
6,348.00	6,185.46	6,249.91	6,246.42	27.52	187.28	89.20	-2,184.24	-11,892.00	11,907.86	11,693.10	214.76	55.447	
6,390.00	6,227.36	6,289.40	6,285.91	27.61	188.46	89.21	-2,184.30	-11,892.00	11,907.82	11,691.80	216.03	55.122	
6,400.00	6,237.33	6,298.81	6,295.31	27.61	188.74	89.21	-2,184.33	-11,892.00	11,907.82	11,691.50	216.31	55.049	
6,490.00	6,327.12	6,383.52	6,380.00	27.66	191.28	89.24	-2,184.87	-11,892.00	11,907.77	11,688.87	218.90	54.398	
6,500.00	6,337.09	6,392.94	6,389.42	27.66	191.56	76.84	-2,184.96	-11,892.00	11,907.69	11,688.50	219.19	54.326	
6,550.00	6,386.85	6,439.94	6,436.41	27.70	192.97	40.31	-2,185.51	-11,892.00	11,904.92	11,684.29	220.63	53.959	
6,600.00	6,436.20	6,500.96	6,497.20	27.74	194.80	27.60	-2,186.42	-11,892.00	11,898.23	11,675.74	222.49	53.477	
6,650.00	6,484.82	6,549.57	6,545.82	27.79	196.25	21.93	-2,186.42	-11,892.00	11,887.59	11,663.60	223.99	53.071	
6,700.00	6,532.40	6,597.15	6,593.40	27.85	197.68	18.89	-2,186.42	-11,892.00	11,873.12	11,647.66	225.47	52.660	
6,750.00	6,578.63	6,643.39	6,639.63	27.92	199.07	17.10	-2,186.42	-11,892.00	11,854.93	11,628.02	226.91	52.245	
6,800.00	6,623.24	6,688.00	6,684.24	28.00	200.40	16.04	-2,186.42	-11,892.00	11,833.11	11,604.81	228.30	51.831	
6,850.00	6,665.93	6,730.68	6,726.93	28.09	201.68	15.46	-2,186.42	-11,892.00	11,807.82	11,578.17	229.65	51.417	
6,900.00	6,706.42	6,770.03	6,766.24	28.19	202.86	15.23	-2,184.26	-11,892.00	11,779.06	11,548.17	230.89	51.015	
6,950.00	6,744.48	6,806.07	6,802.27	28.30	203.94	15.30	-2,184.36	-11,892.00	11,747.33	11,515.28	232.05	50.625	
7,000.00	6,779.84	6,839.62	6,835.81	28.43	204.95	15.64	-2,184.53	-11,892.00	11,712.67	11,479.55	233.13	50.242	
7,050.00	6,812.30	6,870.45	6,866.63	28.57	205.87	16.29	-2,184.75	-11,892.00	11,675.31	11,441.18	234.13	49.867	
7,100.00	6,841.63	6,898.36	6,894.54	28.73	206.71	17.30	-2,185.01	-11,892.00	11,635.47	11,400.43	235.04	49.504	
7,150.00	6,867.66	6,923.18	6,919.35	28.90	207.45	18.79	-2,185.29	-11,892.00	11,593.41	11,357.55	235.87	49.153	
7,200.00	6,890.22	6,944.73	6,940.90	29.08	208.10	20.93	-2,185.57	-11,892.00	11,549.40	11,312.81	236.59	48.816	
7,250.00	6,909.17	6,962.88	6,959.04	29.28	208.64	24.08	-2,185.83	-11,892.00	11,503.72	11,266.51	237.21	48.496	
7,300.00	6,924.38	6,977.51	6,973.66	29.49	209.08	28.92	-2,186.05	-11,892.00	11,456.65	11,218.92	237.72	48.193	
7,350.00	6,935.77	7,000.83	6,996.77	29.72	209.78	37.00	-2,186.42	-11,892.00	11,408.49	11,170.00	238.49	47.836	
7,400.00	6,943.25	7,008.31	7,004.25	29.97	210.00	51.21	-2,186.42	-11,892.00	11,359.55	11,120.76	238.78	47.572	
7,450.00	6,946.78	7,011.84	7,007.78	30.22	210.11	76.82	-2,186.42	-11,892.00	11,310.13	11,071.18	238.95	47.332	
7,471.54	6,947.08	7,012.14	7,008.08	30.34	210.12	91.46	-2,186.42	-11,892.00	11,288.78	11,049.79	238.99	47.236	
7,500.00	6,946.98	7,012.04	7,007.98	30.49	210.11	91.58	-2,186.42	-11,892.00	11,260.54	11,021.52	239.02	47.112	
7,600.00	6,946.65	7,011.71	7,007.65	31.07	210.10	92.21	-2,186.42	-11,892.00	11,161.07	10,921.97	239.10	46.679	
7,700.00	6,946.32	7,011.38	7,007.32	31.69	210.09	93.67	-2,186.42	-11,892.00	11,061.31	10,822.15	239.16	46.251	
7,800.00	6,945.99	7,011.05	7,006.99	32.35	210.08	101.07	-2,186.42	-11,892.00	10,961.37	10,722.19	239.19	45.828	
7,900.00	6,945.67	7,010.73	7,006.67	33.05	210.07	-100.19	-2,186.42	-11,892.00	10,861.38	10,622.19	239.19	45.410	
8,000.00	6,945.34	7,010.40	7,006.34	33.79	210.06	-93.47	-2,186.42	-11,892.00	10,761.45	10,522.29	239.15	44.998	
8,034.58	6,945.23	7,010.29	7,006.23	34.05	210.06	-92.81	-2,186.42	-11,892.00	10,726.93	10,487.79	239.14	44.857	
8,100.00	6,945.02	7,010.08	7,006.02	34.57	210.05	-92.80	-2,186.42	-11,892.00	10,661.65	10,422.55	239.10	44.591	
8,200.00	6,944.69	7,009.76	7,005.69	35.41	210.04	-92.77	-2,186.42	-11,892.00	10,561.87	10,322.83	239.04	44.184	
8,300.00	6,944.37	7,009.43	7,005.37	36.30	210.03	-92.74	-2,186.42	-11,892.00	10,462.10	10,223.11	238.98	43.777	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009C - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
8,400.00	6,944.05	7,009.11	7,005.05	37.25	210.02	-92.72	-2,186.42	-11,892.00	10,362.33	10,123.40	238.93	43.370	
8,500.00	6,943.73	7,008.79	7,004.73	38.25	210.01	-92.69	-2,186.42	-11,892.00	10,262.56	10,023.69	238.87	42.963	
8,600.00	6,943.40	7,008.46	7,004.40	39.29	210.01	-92.66	-2,186.42	-11,892.00	10,162.80	9,923.98	238.81	42.555	
8,700.00	6,943.08	7,008.14	7,004.08	40.37	210.00	-92.64	-2,186.42	-11,892.00	10,063.04	9,824.28	238.76	42.148	
8,800.00	6,942.76	7,007.82	7,003.76	41.49	209.99	-92.61	-2,186.42	-11,892.00	9,963.29	9,724.59	238.70	41.740	
8,900.00	6,942.43	7,007.49	7,003.43	42.64	209.98	-92.59	-2,186.42	-11,892.00	9,863.54	9,624.90	238.64	41.332	
9,000.00	6,942.11	7,007.17	7,003.11	43.82	209.97	-92.56	-2,186.42	-11,892.00	9,763.80	9,525.21	238.59	40.923	
9,100.00	6,941.79	7,006.85	7,002.79	45.03	209.96	-92.53	-2,186.42	-11,892.00	9,664.06	9,425.53	238.53	40.515	
9,200.00	6,941.46	7,006.53	7,002.46	46.27	209.95	-92.51	-2,186.42	-11,892.00	9,564.33	9,325.86	238.48	40.106	
9,300.00	6,941.14	7,006.20	7,002.14	47.53	209.94	-92.48	-2,186.42	-11,892.00	9,464.61	9,226.19	238.42	39.697	
9,400.00	6,940.82	7,005.88	7,001.82	48.81	209.93	-92.45	-2,186.42	-11,892.00	9,364.89	9,126.52	238.36	39.288	
9,500.00	6,940.50	7,005.56	7,001.50	50.11	209.92	-92.43	-2,186.42	-11,892.00	9,265.17	9,026.86	238.31	38.879	
9,600.00	6,940.17	7,005.23	7,001.17	51.43	209.91	-92.40	-2,186.42	-11,892.00	9,165.46	8,927.21	238.25	38.470	
9,700.00	6,939.85	7,004.91	7,000.85	52.76	209.90	-92.38	-2,186.42	-11,892.00	9,065.76	8,827.57	238.20	38.060	
9,800.00	6,939.53	7,004.59	7,000.53	54.11	209.89	-92.35	-2,186.42	-11,892.00	8,966.07	8,727.93	238.14	37.650	
9,900.00	6,939.20	7,004.26	7,000.20	55.48	209.88	-92.32	-2,186.42	-11,892.00	8,866.38	8,628.29	238.09	37.240	
10,000.00	6,938.88	7,003.94	6,999.88	56.86	209.87	-92.30	-2,186.42	-11,892.00	8,766.70	8,528.67	238.03	36.830	
10,100.00	6,938.56	7,003.62	6,999.56	58.25	209.86	-92.27	-2,186.42	-11,892.00	8,667.03	8,429.05	237.98	36.420	
10,200.00	6,938.23	7,003.30	6,999.23	59.65	209.85	-92.24	-2,186.42	-11,892.00	8,567.36	8,329.44	237.92	36.009	
10,300.00	6,937.91	7,002.97	6,998.91	61.06	209.84	-92.22	-2,186.42	-11,892.00	8,467.70	8,229.84	237.87	35.599	
10,400.00	6,937.59	7,002.65	6,998.59	62.48	209.83	-92.19	-2,186.42	-11,892.00	8,368.05	8,130.24	237.81	35.188	
10,500.00	6,937.27	7,002.33	6,998.27	63.91	209.82	-92.17	-2,186.42	-11,892.00	8,268.41	8,030.65	237.76	34.777	
10,600.00	6,936.94	7,002.00	6,997.94	65.34	209.81	-92.14	-2,186.42	-11,892.00	8,168.78	7,931.08	237.70	34.365	
10,700.00	6,936.62	7,001.68	6,997.62	66.79	209.80	-92.11	-2,186.42	-11,892.00	8,069.16	7,831.51	237.65	33.954	
10,800.00	6,936.30	7,001.36	6,997.30	68.24	209.79	-92.09	-2,186.42	-11,892.00	7,969.54	7,731.95	237.60	33.542	
10,900.00	6,935.97	7,001.03	6,996.97	69.70	209.78	-92.06	-2,186.42	-11,892.00	7,869.94	7,632.39	237.55	33.130	
11,000.00	6,935.65	7,000.71	6,996.65	71.17	209.77	-92.03	-2,186.42	-11,892.00	7,770.35	7,532.85	237.49	32.718	
11,100.00	6,935.33	7,000.39	6,996.33	72.64	209.76	-92.01	-2,186.42	-11,892.00	7,670.76	7,433.32	237.44	32.306	
11,200.00	6,935.00	7,000.07	6,996.00	74.11	209.75	-91.98	-2,186.42	-11,892.00	7,571.19	7,333.80	237.39	31.893	
11,300.00	6,934.68	6,988.47	6,984.61	75.60	209.41	-91.06	-2,186.23	-11,892.00	7,471.62	7,234.62	237.00	31.525	
11,400.00	6,934.36	6,988.15	6,984.30	77.08	209.40	-91.03	-2,186.23	-11,892.00	7,372.07	7,135.11	236.96	31.112	
11,500.00	6,934.03	6,987.84	6,983.98	78.57	209.39	-91.00	-2,186.22	-11,892.00	7,272.53	7,035.63	236.91	30.698	
11,600.00	6,933.71	6,987.52	6,983.67	80.07	209.38	-90.98	-2,186.22	-11,892.00	7,173.01	6,936.15	236.86	30.284	
11,700.00	6,933.39	6,987.21	6,983.35	81.57	209.37	-90.95	-2,186.21	-11,892.00	7,073.50	6,836.68	236.81	29.869	
11,800.00	6,933.07	6,986.89	6,983.04	83.07	209.36	-90.93	-2,186.21	-11,892.00	6,974.00	6,737.23	236.77	29.455	
11,900.00	6,932.74	6,986.58	6,982.72	84.58	209.35	-90.90	-2,186.20	-11,892.00	6,874.52	6,637.79	236.72	29.040	
12,000.00	6,932.42	6,986.26	6,982.41	86.09	209.34	-90.88	-2,186.20	-11,892.00	6,775.05	6,538.37	236.68	28.625	
12,100.00	6,932.10	6,985.94	6,982.09	87.60	209.33	-90.85	-2,186.19	-11,892.00	6,675.60	6,438.96	236.64	28.210	
12,200.00	6,931.77	6,985.63	6,981.78	89.12	209.32	-90.82	-2,186.18	-11,892.00	6,576.16	6,339.56	236.60	27.794	
12,300.00	6,931.45	6,985.31	6,981.46	90.64	209.31	-90.80	-2,186.18	-11,892.00	6,476.75	6,240.18	236.57	27.378	
12,400.00	6,931.13	6,985.00	6,981.15	92.16	209.30	-90.77	-2,186.17	-11,892.00	6,377.35	6,140.82	236.53	26.962	
12,500.00	6,930.80	6,984.68	6,980.83	93.69	209.29	-90.75	-2,186.17	-11,892.00	6,277.97	6,041.47	236.50	26.545	
12,600.00	6,930.48	6,984.37	6,980.52	95.22	209.28	-90.72	-2,186.16	-11,892.00	6,178.61	5,942.14	236.47	26.128	
12,700.00	6,930.16	6,984.05	6,980.20	96.75	209.27	-90.70	-2,186.16	-11,892.00	6,079.27	5,842.82	236.44	25.711	
12,800.00	6,929.84	6,983.74	6,979.89	98.28	209.26	-90.67	-2,186.15	-11,892.00	5,979.95	5,743.53	236.42	25.294	
12,900.00	6,929.51	6,983.42	6,979.57	99.82	209.25	-90.64	-2,186.15	-11,892.00	5,880.66	5,644.25	236.40	24.875	
13,000.00	6,929.19	6,983.11	6,979.26	101.35	209.25	-90.62	-2,186.14	-11,892.00	5,781.39	5,545.00	236.39	24.457	
13,100.00	6,928.87	6,982.79	6,978.94	102.89	209.24	-90.59	-2,186.14	-11,892.00	5,682.14	5,445.76	236.38	24.038	
13,200.00	6,928.54	6,982.48	6,978.63	104.43	209.23	-90.57	-2,186.13	-11,892.00	5,582.93	5,346.55	236.38	23.619	
13,300.00	6,928.22	6,982.16	6,978.31	105.97	209.22	-90.54	-2,186.13	-11,892.00	5,483.74	5,247.36	236.38	23.199	
13,400.00	6,927.90	6,981.85	6,978.00	107.52	209.21	-90.52	-2,186.12	-11,892.00	5,384.58	5,148.19	236.39	22.779	
13,500.00	6,927.57	6,981.53	6,977.68	109.06	209.20	-90.49	-2,186.12	-11,892.00	5,285.45	5,049.05	236.40	22.358	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	6,927.25	6,981.22	6,977.37	110.61	209.19	-90.47	-2,186.11	-11,892.00	5,186.36	4,949.93	236.43	21.937	
13,700.00	6,926.93	6,980.90	6,977.05	112.16	209.18	-90.44	-2,186.11	-11,892.00	5,087.30	4,850.84	236.46	21.515	
13,800.00	6,926.61	6,980.59	6,976.74	113.71	209.17	-90.41	-2,186.10	-11,892.00	4,988.28	4,751.78	236.50	21.092	
13,900.00	6,926.28	6,980.27	6,976.42	115.26	209.16	-90.39	-2,186.10	-11,892.00	4,889.30	4,652.74	236.56	20.669	
14,000.00	6,925.96	6,979.96	6,976.11	116.82	209.15	-90.36	-2,186.09	-11,892.00	4,790.36	4,553.74	236.62	20.245	
14,100.00	6,925.64	6,979.64	6,975.79	118.37	209.14	-90.34	-2,186.09	-11,892.00	4,691.46	4,454.76	236.70	19.820	
14,200.00	6,925.31	6,979.33	6,975.48	119.93	209.13	-90.31	-2,186.08	-11,892.00	4,592.62	4,355.82	236.80	19.395	
14,300.00	6,924.99	6,979.01	6,975.16	121.48	209.12	-90.29	-2,186.08	-11,892.00	4,493.82	4,256.91	236.91	18.968	
14,400.00	6,924.67	6,978.70	6,974.85	123.04	209.11	-90.26	-2,186.07	-11,892.00	4,395.08	4,158.04	237.04	18.541	
14,500.00	6,924.34	6,978.38	6,974.53	124.60	209.10	-90.23	-2,186.07	-11,892.00	4,296.40	4,059.21	237.20	18.113	
14,600.00	6,924.02	6,978.07	6,974.22	126.16	209.09	-90.21	-2,186.06	-11,892.00	4,197.78	3,960.41	237.37	17.684	
14,700.00	6,923.70	6,977.75	6,973.90	127.72	209.08	-90.18	-2,186.06	-11,892.00	4,099.23	3,861.66	237.57	17.255	
14,800.00	6,923.38	6,977.44	6,973.59	129.28	209.08	-90.16	-2,186.05	-11,892.00	4,000.75	3,762.94	237.81	16.824	
14,900.00	6,923.05	6,977.12	6,973.27	130.85	209.07	-90.13	-2,186.05	-11,892.00	3,902.35	3,664.28	238.07	16.392	
15,000.00	6,922.73	6,976.81	6,972.96	132.41	209.06	-90.11	-2,186.04	-11,892.00	3,804.03	3,565.66	238.37	15.959	
15,100.00	6,922.41	6,976.49	6,972.64	133.97	209.05	-90.08	-2,186.04	-11,892.00	3,705.80	3,467.09	238.71	15.524	
15,200.00	6,922.08	6,976.18	6,972.33	135.54	209.04	-90.06	-2,186.03	-11,892.00	3,607.66	3,368.57	239.09	15.089	
15,300.00	6,921.76	6,975.86	6,972.01	137.11	209.03	-90.03	-2,186.03	-11,892.00	3,509.64	3,270.11	239.52	14.653	
15,400.00	6,921.44	6,975.55	6,971.70	138.67	209.02	-90.00	-2,186.02	-11,892.00	3,411.72	3,171.72	240.01	14.215	
15,500.00	6,921.11	6,975.23	6,971.38	140.24	209.01	-89.98	-2,186.02	-11,892.00	3,313.93	3,073.38	240.55	13.776	
15,600.00	6,920.79	6,974.92	6,971.07	141.81	209.00	-89.95	-2,186.01	-11,892.00	3,216.28	2,975.11	241.17	13.336	
15,700.00	6,920.47	6,974.60	6,970.76	143.38	208.99	-89.93	-2,186.01	-11,892.00	3,118.78	2,876.92	241.85	12.895	
15,800.00	6,920.14	6,974.29	6,970.44	144.95	208.98	-89.90	-2,186.00	-11,892.00	3,021.44	2,778.81	242.63	12.453	
15,900.00	6,919.82	6,973.97	6,970.13	146.52	208.97	-89.88	-2,186.00	-11,892.00	2,924.27	2,680.79	243.49	12.010	
16,000.00	6,919.50	6,973.66	6,969.81	148.09	208.96	-89.85	-2,185.99	-11,892.00	2,827.31	2,582.86	244.45	11.566	
16,100.00	6,919.18	6,973.34	6,969.50	149.66	208.95	-89.82	-2,185.99	-11,892.00	2,730.57	2,485.03	245.53	11.121	
16,200.00	6,918.85	6,973.03	6,969.18	151.24	208.94	-89.80	-2,185.98	-11,892.00	2,634.06	2,387.32	246.74	10.675	
16,300.00	6,918.53	6,972.72	6,968.87	152.81	208.93	-89.77	-2,185.98	-11,892.00	2,537.83	2,289.74	248.09	10.230	
16,400.00	6,918.21	6,972.40	6,968.55	154.38	208.92	-89.75	-2,185.97	-11,892.00	2,441.91	2,192.31	249.60	9.783	
16,500.00	6,917.88	6,972.09	6,968.24	155.96	208.92	-89.72	-2,185.97	-11,892.00	2,346.32	2,095.04	251.28	9.337	
16,600.00	6,917.56	6,971.77	6,967.92	157.53	208.91	-89.70	-2,185.96	-11,892.00	2,251.11	1,997.95	253.16	8.892	
16,700.00	6,917.24	6,971.46	6,967.61	159.11	208.90	-89.67	-2,185.96	-11,892.00	2,156.34	1,901.08	255.26	8.447	
16,800.00	6,916.91	6,971.14	6,967.30	160.68	208.89	-89.64	-2,185.95	-11,892.00	2,062.07	1,804.45	257.62	8.004	
16,900.00	6,916.59	6,970.83	6,966.98	162.26	208.88	-89.62	-2,185.95	-11,892.00	1,968.36	1,708.10	260.25	7.563	
17,000.00	6,916.27	6,970.51	6,966.67	163.84	208.87	-89.59	-2,185.94	-11,892.00	1,875.29	1,612.08	263.21	7.125	
17,100.00	6,915.95	6,970.20	6,966.35	165.41	208.86	-89.57	-2,185.94	-11,892.00	1,782.98	1,516.46	266.52	6.690	
17,200.00	6,915.62	6,969.88	6,966.04	166.99	208.85	-89.54	-2,185.93	-11,892.00	1,691.55	1,421.30	270.25	6.259	
17,300.00	6,915.30	6,969.57	6,965.72	168.57	208.84	-89.52	-2,185.93	-11,892.00	1,601.14	1,326.70	274.44	5.834	
17,400.00	6,914.98	6,969.26	6,965.41	170.15	208.83	-89.49	-2,185.92	-11,892.00	1,511.93	1,232.77	279.16	5.416	
17,500.00	6,914.65	6,968.94	6,965.09	171.73	208.82	-89.47	-2,185.92	-11,892.00	1,424.16	1,139.68	284.48	5.006	
17,600.00	6,914.33	6,968.63	6,964.78	173.31	208.81	-89.44	-2,185.92	-11,892.00	1,338.11	1,047.62	290.49	4.606	
17,700.00	6,914.01	6,968.31	6,964.47	174.89	208.80	-89.41	-2,185.91	-11,892.00	1,254.13	956.86	297.27	4.219	
17,800.00	6,913.68	6,968.00	6,964.15	176.47	208.79	-89.39	-2,185.91	-11,892.00	1,172.67	867.75	304.91	3.846	
17,900.00	6,913.36	6,967.68	6,963.84	178.05	208.78	-89.36	-2,185.90	-11,892.00	1,094.28	780.78	313.50	3.490	
18,000.00	6,913.04	6,967.37	6,963.52	179.63	208.77	-89.34	-2,185.90	-11,892.00	1,019.68	696.58	323.10	3.156	
18,100.00	6,912.72	6,967.06	6,963.21	181.21	208.76	-89.31	-2,185.89	-11,892.00	949.76	616.07	333.69	2.846	
18,111.83	6,912.68	6,967.02	6,963.17	181.40	208.76	-89.31	-2,185.89	-11,892.00	941.85	606.84	335.01	2.811	CC, ES, SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009D - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 25-B001Mb_MWD+HRGM — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	-81.92	1,428.61	-10,059.84	10,161.29				
54.25	54.25	0.00	0.00	0.02	0.00	-143.47	1,428.61	-10,059.84	10,162.07				
130.42	130.42	0.00	0.00	0.11	0.00	-170.63	1,428.61	-10,059.84	10,163.85	10,163.74	0.11	N/A	
219.69	219.69	0.00	0.00	0.23	0.00	-144.55	1,428.61	-10,059.84	10,166.72	10,166.50	0.22	N/A	
308.67	308.67	0.00	0.00	0.35	0.00	-153.46	1,428.61	-10,059.84	10,170.37	10,170.05	0.32	N/A	
454.00	453.99	0.00	0.00	0.51	0.00	71.91	1,428.61	-10,059.84	10,177.37	10,176.87	0.50	N/A	
544.00	543.93	0.00	0.00	0.74	0.00	72.11	1,428.61	-10,059.84	10,181.74	10,181.02	0.73	N/A	
667.00	666.63	0.00	0.00	1.13	0.00	59.03	1,428.61	-10,059.84	10,186.59	10,185.46	1.12	9,073.234	
756.00	755.27	0.00	0.00	1.44	0.00	73.80	1,428.61	-10,059.84	10,190.56	10,189.13	1.44	7,093.221	
850.00	848.62	0.00	0.00	1.79	0.00	75.23	1,428.61	-10,059.84	10,196.04	10,194.26	1.79	5,708.049	
942.00	939.50	0.00	0.00	2.14	0.00	81.41	1,428.61	-10,059.84	10,202.31	10,200.17	2.15	4,754.552	
1,033.00	1,028.89	550.00	533.60	2.52	2.16	90.93	1,413.62	-10,104.12	10,207.35	10,202.65	4.70	2,173.939	
1,123.00	1,117.00	562.22	545.74	2.90	2.20	97.01	1,412.67	-10,105.04	10,214.40	10,209.28	5.12	1,994.142	
1,214.00	1,206.00	575.00	558.44	3.29	2.24	96.34	1,411.62	-10,106.08	10,223.10	10,217.54	5.56	1,839.275	
1,309.00	1,298.75	608.31	591.48	3.71	2.35	99.18	1,408.62	-10,109.05	10,233.33	10,227.24	6.09	1,681.350	
1,403.00	1,390.39	650.00	632.73	4.13	2.49	102.21	1,404.14	-10,113.16	10,245.15	10,238.51	6.65	1,541.319	
1,498.00	1,482.88	700.00	682.04	4.56	2.67	98.88	1,397.80	-10,118.44	10,257.57	10,250.32	7.25	1,414.607	
1,592.00	1,573.82	713.02	694.85	5.00	2.72	98.22	1,395.99	-10,119.92	10,270.10	10,262.36	7.74	1,327.427	
1,687.00	1,665.32	725.00	706.61	5.46	2.77	101.13	1,394.26	-10,121.37	10,284.30	10,276.07	8.24	1,248.793	
1,876.00	1,847.35	750.00	731.10	6.38	2.87	103.72	1,390.48	-10,124.69	10,317.14	10,307.91	9.23	1,117.328	
1,970.00	1,937.87	775.00	755.52	6.84	2.97	103.90	1,386.55	-10,128.31	10,335.09	10,325.31	9.78	1,057.014	
2,064.00	2,028.42	800.00	779.91	7.30	3.08	104.49	1,382.57	-10,132.11	10,353.77	10,343.45	10.32	1,003.155	
2,159.00	2,119.97	825.00	804.25	7.77	3.19	105.70	1,378.53	-10,136.14	10,373.67	10,362.80	10.87	954.402	
2,348.00	2,302.44	850.00	828.51	8.69	3.30	101.21	1,374.39	-10,140.52	10,413.60	10,401.74	11.85	878.517	
2,443.00	2,394.41	862.51	840.62	9.15	3.36	100.64	1,372.27	-10,142.84	10,433.40	10,421.06	12.34	845.408	
2,537.00	2,485.45	875.00	852.70	9.61	3.41	100.42	1,370.13	-10,145.21	10,453.44	10,440.62	12.82	815.196	
2,632.00	2,577.48	900.00	876.81	10.07	3.53	100.72	1,365.75	-10,150.16	10,474.34	10,460.98	13.36	783.794	
2,727.00	2,669.50	900.00	876.81	10.53	3.53	100.76	1,365.75	-10,150.16	10,496.04	10,482.25	13.79	760.982	
2,821.00	2,760.56	925.00	900.76	10.98	3.66	100.53	1,361.02	-10,155.52	10,518.14	10,503.82	14.33	734.065	
2,916.00	2,852.68	950.00	924.57	11.44	3.79	100.57	1,355.92	-10,161.20	10,541.03	10,526.16	14.87	708.973	
3,011.00	2,945.03	989.22	961.75	11.89	4.00	100.84	1,347.34	-10,170.29	10,564.20	10,548.73	15.47	682.810	
3,105.00	3,036.57	1,025.00	995.44	12.33	4.19	95.23	1,338.93	-10,178.87	10,586.50	10,570.44	16.05	659.413	
3,200.00	3,128.81	1,050.00	1,018.87	12.78	4.34	91.65	1,332.82	-10,185.09	10,607.99	10,591.40	16.60	639.048	
3,294.00	3,219.76	1,075.00	1,042.22	13.24	4.48	91.27	1,326.57	-10,191.48	10,629.21	10,612.06	17.15	619.694	
3,389.00	3,311.82	1,100.00	1,065.53	13.69	4.63	92.42	1,320.27	-10,197.96	10,651.28	10,633.57	17.71	601.545	
3,483.00	3,403.03	1,150.00	1,112.04	14.14	4.93	92.74	1,307.54	-10,211.17	10,673.80	10,655.41	18.39	580.393	
3,578.00	3,495.31	1,193.48	1,152.51	14.60	5.19	93.40	1,296.72	-10,222.83	10,697.14	10,678.10	19.04	561.784	
3,672.00	3,586.65	1,225.00	1,181.86	15.04	5.38	94.38	1,289.11	-10,231.43	10,721.03	10,701.41	19.62	546.446	
3,767.00	3,678.95	1,250.00	1,205.15	15.49	5.54	94.98	1,283.29	-10,238.41	10,746.06	10,725.89	20.16	532.950	
3,862.00	3,771.63	1,319.10	1,269.63	15.93	5.96	95.16	1,267.79	-10,257.85	10,771.41	10,750.47	20.94	514.370	
3,956.00	3,863.70	1,666.27	1,594.22	16.35	8.12	95.48	1,188.37	-10,351.85	10,795.61	10,772.30	23.31	463.074	
4,052.00	3,957.54	1,759.85	1,681.74	16.79	8.71	93.90	1,165.92	-10,376.23	10,818.90	10,794.65	24.25	446.063	
4,146.00	4,048.88	1,893.46	1,806.69	17.24	9.55	93.45	1,133.33	-10,410.57	10,841.25	10,815.80	25.45	425.997	
4,241.00	4,140.47	1,925.00	1,836.17	17.71	9.75	95.51	1,125.66	-10,418.73	10,864.83	10,838.77	26.06	416.861	
4,336.00	4,231.25	1,950.00	1,859.53	18.21	9.91	98.37	1,119.69	-10,425.35	10,890.59	10,863.93	26.66	408.552	
4,430.00	4,320.59	1,994.27	1,900.86	18.71	10.19	96.57	1,109.25	-10,437.27	10,917.10	10,889.73	27.37	398.877	
4,524.00	4,409.51	2,095.50	1,995.33	19.22	10.84	92.75	1,085.37	-10,464.71	10,942.56	10,914.12	28.44	384.780	
4,619.00	4,498.98	2,161.18	2,056.63	19.75	11.26	91.98	1,069.89	-10,482.50	10,967.21	10,937.90	29.31	374.192	
4,713.00	4,587.83	4,838.81	4,658.52	20.27	23.16	94.87	741.00	-10,849.57	10,975.84	10,934.38	41.46	264.747	
4,807.00	4,676.97	4,941.71	4,761.41	20.78	23.44	96.29	739.54	-10,849.84	10,978.94	10,936.66	42.27	259.715	
4,870.00	4,736.65	5,475.00	5,284.23	21.12	24.99	97.35	700.47	-10,846.12	10,980.48	10,936.28	44.20	248.428	
4,933.00	4,796.58	5,475.00	5,284.23	21.46	24.99	97.31	700.47	-10,846.12	10,980.58	10,936.02	44.56	246.420	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009D - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 25-B001Mb_MWD+HRGM **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,027.00	4,886.13	5,900.00	5,692.98	21.96	26.14	98.54	670.38	-10,830.55	10,979.97	10,933.75	46.22	237.553	
5,121.00	4,976.11	5,900.00	5,692.98	22.45	26.14	98.83	670.38	-10,830.55	10,978.34	10,931.59	46.75	234.825	
5,216.00	5,068.11	5,900.00	5,692.98	22.91	26.14	98.81	670.38	-10,830.55	10,977.01	10,929.75	47.25	232.310	
5,341.00	5,190.11	5,900.00	5,692.98	23.49	26.14	98.38	670.38	-10,830.55	10,975.78	10,927.91	47.87	229.278	
5,426.93	5,274.31	5,900.00	5,692.98	23.87	26.14	98.46	670.38	-10,830.55	10,975.48	10,927.20	48.28	227.327	
5,436.00	5,283.20	5,900.00	5,692.98	23.91	26.14	98.47	670.38	-10,830.55	10,975.49	10,927.16	48.32	227.125	
5,499.00	5,345.03	5,900.00	5,692.98	24.19	26.14	98.39	670.38	-10,830.55	10,975.67	10,927.06	48.62	225.755	
5,561.00	5,405.97	5,900.00	5,692.98	24.45	26.14	99.39	670.38	-10,830.55	10,976.23	10,927.33	48.90	224.455	
5,624.00	5,467.97	5,900.00	5,692.98	24.72	26.14	98.34	670.38	-10,830.55	10,977.08	10,927.90	49.18	223.180	
5,687.00	5,530.05	5,925.00	5,717.98	24.99	26.21	99.28	670.09	-10,830.40	10,978.18	10,928.65	49.53	221.642	
5,750.00	5,592.20	5,966.80	5,759.78	25.25	26.32	99.56	669.72	-10,830.17	10,979.45	10,929.53	49.92	219.949	
5,813.00	5,654.42	5,987.41	5,780.38	25.51	26.37	100.60	669.63	-10,830.09	10,980.93	10,930.69	50.24	218.562	
5,876.00	5,716.68	6,035.82	5,828.79	25.76	26.50	100.85	669.60	-10,830.07	10,982.69	10,932.05	50.64	216.889	
5,939.00	5,778.99	6,081.68	5,874.66	26.01	26.63	100.68	669.32	-10,830.11	10,984.43	10,933.40	51.03	215.248	
6,065.00	5,903.86	6,167.54	5,960.51	26.51	26.88	100.65	668.70	-10,830.47	10,987.92	10,936.12	51.79	212.155	
6,128.00	5,966.41	6,217.83	6,010.79	26.74	27.03	99.24	668.25	-10,830.80	10,989.52	10,937.33	52.19	210.581	
6,191.00	6,029.04	6,225.00	6,017.97	26.97	27.05	99.90	668.18	-10,830.85	10,991.14	10,938.69	52.45	209.562	
6,254.00	6,091.75	6,225.00	6,017.97	27.20	27.05	100.80	668.18	-10,830.85	10,993.05	10,940.37	52.68	208.677	
6,348.00	6,185.46	6,225.00	6,017.97	27.52	27.05	103.64	668.18	-10,830.85	10,996.51	10,943.50	53.01	207.448	
6,390.00	6,227.36	6,225.00	6,017.97	27.61	27.05	103.64	668.18	-10,830.85	10,998.31	10,945.22	53.09	207.166	
6,400.00	6,237.33	6,225.00	6,017.97	27.61	27.05	103.64	668.18	-10,830.85	10,998.76	10,945.67	53.09	207.154	
6,490.00	6,327.12	6,225.00	6,017.97	27.66	27.05	103.64	668.18	-10,830.85	11,003.24	10,950.10	53.14	207.054	
6,500.00	6,337.09	6,225.00	6,017.97	27.66	27.05	91.22	668.18	-10,830.85	11,003.71	10,950.57	53.15	207.042	
6,550.00	6,386.85	6,225.00	6,017.97	27.70	27.05	54.64	668.18	-10,830.85	11,003.97	10,950.78	53.18	206.914	
6,600.00	6,436.20	6,225.00	6,017.97	27.74	27.05	41.94	668.18	-10,830.85	11,000.73	10,947.51	53.23	206.677	
6,650.00	6,484.82	6,225.00	6,017.97	27.79	27.05	36.35	668.18	-10,830.85	10,994.03	10,940.75	53.28	206.329	
6,700.00	6,532.40	6,225.00	6,017.97	27.85	27.05	33.46	668.18	-10,830.85	10,983.90	10,930.54	53.35	205.875	
6,750.00	6,578.63	6,225.00	6,017.97	27.92	27.05	31.90	668.18	-10,830.85	10,970.39	10,916.95	53.43	205.314	
6,800.00	6,623.24	6,992.37	6,741.83	28.00	29.39	32.02	639.61	-10,856.68	10,950.88	10,894.99	55.89	195.929	
6,850.00	6,665.93	7,050.00	6,799.45	28.09	29.55	32.09	639.55	-10,856.55	10,927.82	10,871.66	56.17	194.562	
6,900.00	6,706.42	7,075.00	6,824.45	28.19	29.62	32.61	639.52	-10,856.50	10,901.64	10,845.28	56.36	193.420	
6,950.00	6,744.48	7,127.50	6,876.95	28.30	29.76	33.64	639.46	-10,856.40	10,872.50	10,815.86	56.65	191.939	
7,000.00	6,779.84	7,150.00	6,899.45	28.43	29.83	35.08	639.44	-10,856.36	10,840.60	10,783.75	56.86	190.671	
7,050.00	6,812.30	7,200.00	6,949.45	28.57	29.97	37.12	639.36	-10,856.28	10,806.16	10,749.00	57.15	189.074	
7,100.00	6,841.63	7,225.00	6,974.45	28.73	30.04	39.68	639.32	-10,856.21	10,769.32	10,711.93	57.39	187.665	
7,150.00	6,867.66	7,254.62	7,004.07	28.90	30.12	42.99	639.27	-10,856.14	10,730.39	10,672.75	57.64	186.166	
7,200.00	6,890.22	7,266.61	7,016.06	29.08	30.15	47.07	639.25	-10,856.11	10,689.62	10,631.77	57.85	184.785	
7,250.00	6,909.17	7,294.05	7,043.50	29.28	30.23	52.32	639.20	-10,856.05	10,647.26	10,589.15	58.11	183.236	
7,300.00	6,924.38	7,309.90	7,059.36	29.49	30.27	58.76	639.17	-10,856.01	10,603.57	10,545.23	58.33	181.771	
7,350.00	6,935.77	7,318.33	7,067.78	29.72	30.30	66.58	639.15	-10,855.99	10,558.84	10,500.29	58.54	180.359	
7,400.00	6,943.25	7,325.00	7,074.45	29.97	30.31	75.82	639.14	-10,855.97	10,513.36	10,454.61	58.75	178.957	
7,450.00	6,946.78	7,350.00	7,099.45	30.22	30.38	86.50	639.09	-10,855.88	10,467.41	10,408.41	59.00	177.407	
7,471.54	6,947.08	7,350.00	7,099.45	30.34	30.38	91.17	639.09	-10,855.88	10,447.55	10,388.46	59.08	176.833	
7,500.00	6,946.98	7,350.00	7,099.45	30.49	30.38	91.20	639.09	-10,855.88	10,421.24	10,362.06	59.19	176.079	
7,600.00	6,946.65	7,350.00	7,099.45	31.07	30.38	91.32	639.09	-10,855.88	10,328.07	10,268.53	59.54	173.466	
7,700.00	6,946.32	7,338.16	7,087.61	31.69	30.35	91.25	639.11	-10,855.92	10,233.80	10,173.95	59.84	171.008	
7,800.00	6,945.99	7,337.86	7,087.31	32.35	30.35	91.40	639.12	-10,855.93	10,138.53	10,078.37	60.16	168.527	
7,900.00	6,945.67	7,325.00	7,074.45	33.05	30.31	91.30	639.14	-10,855.97	10,042.32	9,981.90	60.42	166.217	
8,000.00	6,945.34	7,325.00	7,074.45	33.79	30.31	91.49	639.14	-10,855.97	9,945.28	9,884.60	60.68	163.888	
8,034.58	6,945.23	7,325.00	7,074.45	34.05	30.31	91.58	639.14	-10,855.97	9,911.55	9,850.78	60.77	163.100	
8,100.00	6,945.02	7,325.00	7,074.45	34.57	30.31	91.58	639.14	-10,855.97	9,847.67	9,786.74	60.93	161.624	
8,200.00	6,944.69	7,325.00	7,074.45	35.41	30.31	91.58	639.14	-10,855.97	9,750.05	9,688.87	61.18	159.365	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009D - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 25-B001Mb_MWD+HRGM — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,325.00	7,074.45	36.30	30.31	91.58	639.14	-10,855.97	9,652.49	9,591.05	61.44	157.105	
8,400.00	6,944.05	7,325.00	7,074.45	37.25	30.31	91.58	639.14	-10,855.97	9,554.97	9,493.26	61.71	154.844	
8,500.00	6,943.73	7,325.00	7,074.45	38.25	30.31	91.58	639.14	-10,855.97	9,457.51	9,395.53	61.98	152.581	
8,600.00	6,943.40	7,321.83	7,071.28	39.29	30.31	91.49	639.15	-10,855.98	9,360.10	9,297.84	62.26	150.339	
8,700.00	6,943.08	7,321.39	7,070.85	40.37	30.30	91.48	639.15	-10,855.98	9,262.74	9,200.19	62.55	148.078	
8,800.00	6,942.76	7,320.95	7,070.41	41.49	30.30	91.47	639.15	-10,855.98	9,165.44	9,102.59	62.86	145.817	
8,900.00	6,942.43	7,320.51	7,069.97	42.64	30.30	91.45	639.15	-10,855.98	9,068.21	9,005.04	63.17	143.556	
9,000.00	6,942.11	7,320.07	7,069.52	43.82	30.30	91.44	639.15	-10,855.98	8,971.03	8,907.54	63.49	141.296	
9,100.00	6,941.79	7,319.63	7,069.08	45.03	30.30	91.43	639.15	-10,855.98	8,873.91	8,810.09	63.82	139.037	
9,200.00	6,941.46	7,319.18	7,068.64	46.27	30.30	91.42	639.15	-10,855.98	8,776.86	8,712.69	64.17	136.780	
9,300.00	6,941.14	7,318.74	7,068.19	47.53	30.30	91.41	639.15	-10,855.99	8,679.87	8,615.35	64.52	134.526	
9,400.00	6,940.82	7,318.29	7,067.74	48.81	30.30	91.39	639.15	-10,855.99	8,582.96	8,518.07	64.89	132.274	
9,500.00	6,940.50	7,317.84	7,067.29	50.11	30.29	91.38	639.15	-10,855.99	8,486.12	8,420.85	65.27	130.025	
9,600.00	6,940.17	7,317.38	7,066.84	51.43	30.29	91.37	639.15	-10,855.99	8,389.35	8,323.69	65.65	127.780	
9,700.00	6,939.85	7,316.93	7,066.38	52.76	30.29	91.36	639.15	-10,855.99	8,292.65	8,226.60	66.06	125.539	
9,800.00	6,939.53	7,316.47	7,065.93	54.11	30.29	91.35	639.15	-10,855.99	8,196.04	8,129.57	66.47	123.302	
9,900.00	6,939.20	7,316.02	7,065.47	55.48	30.29	91.33	639.16	-10,855.99	8,099.51	8,032.61	66.90	121.071	
10,000.00	6,938.88	7,315.56	7,065.01	56.86	30.29	91.32	639.16	-10,855.99	8,003.06	7,935.72	67.34	118.845	
10,100.00	6,938.56	7,315.09	7,064.55	58.25	30.29	91.31	639.16	-10,855.99	7,906.70	7,838.91	67.80	116.625	
10,200.00	6,938.23	7,314.63	7,064.08	59.65	30.29	91.30	639.16	-10,856.00	7,810.44	7,742.17	68.27	114.412	
10,300.00	6,937.91	7,314.17	7,063.62	61.06	30.28	91.28	639.16	-10,856.00	7,714.27	7,645.51	68.75	112.206	
10,400.00	6,937.59	7,313.70	7,063.15	62.48	30.28	91.27	639.16	-10,856.00	7,618.19	7,548.94	69.25	110.007	
10,500.00	6,937.27	7,313.23	7,062.68	63.91	30.28	91.26	639.16	-10,856.00	7,522.22	7,452.45	69.77	107.817	
10,600.00	6,936.94	7,312.76	7,062.21	65.34	30.28	91.25	639.16	-10,856.00	7,426.36	7,356.06	70.30	105.635	
10,700.00	6,936.62	7,312.29	7,061.74	66.79	30.28	91.23	639.16	-10,856.00	7,330.60	7,259.75	70.85	103.463	
10,800.00	6,936.30	7,311.81	7,061.26	68.24	30.28	91.22	639.16	-10,856.00	7,234.96	7,163.54	71.42	101.301	
10,900.00	6,935.97	7,311.34	7,060.79	69.70	30.28	91.21	639.16	-10,856.00	7,139.44	7,067.44	72.01	99.149	
11,000.00	6,935.65	7,310.86	7,060.31	71.17	30.27	91.19	639.17	-10,856.01	7,044.05	6,971.44	72.61	97.008	
11,100.00	6,935.33	7,310.38	7,059.83	72.64	30.27	91.18	639.17	-10,856.01	6,948.78	6,875.54	73.24	94.878	
11,200.00	6,935.00	7,309.89	7,059.35	74.11	30.27	91.17	639.17	-10,856.01	6,853.65	6,779.77	73.89	92.761	
11,300.00	6,934.68	7,309.41	7,058.86	75.60	30.27	91.16	639.17	-10,856.01	6,758.66	6,684.11	74.55	90.656	
11,400.00	6,934.36	7,308.92	7,058.38	77.08	30.27	91.14	639.17	-10,856.01	6,663.82	6,588.58	75.24	88.565	
11,500.00	6,934.03	7,308.44	7,057.89	78.57	30.27	91.13	639.17	-10,856.01	6,569.13	6,493.17	75.95	86.487	
11,600.00	6,933.71	7,307.95	7,057.40	80.07	30.27	91.12	639.17	-10,856.01	6,474.59	6,397.90	76.69	84.424	
11,700.00	6,933.39	7,307.45	7,056.91	81.57	30.27	91.10	639.17	-10,856.02	6,380.23	6,302.78	77.45	82.376	
11,800.00	6,933.07	7,306.96	7,056.41	83.07	30.26	91.09	639.17	-10,856.02	6,286.04	6,207.80	78.24	80.344	
11,900.00	6,932.74	7,306.46	7,055.92	84.58	30.26	91.08	639.17	-10,856.02	6,192.03	6,112.98	79.05	78.328	
12,000.00	6,932.42	7,305.96	7,055.42	86.09	30.26	91.06	639.18	-10,856.02	6,098.21	6,018.32	79.89	76.329	
12,100.00	6,932.10	7,305.46	7,054.92	87.60	30.26	91.05	639.18	-10,856.02	6,004.59	5,923.83	80.76	74.347	
12,200.00	6,931.77	7,304.96	7,054.41	89.12	30.26	91.04	639.18	-10,856.02	5,911.19	5,829.52	81.66	72.384	
12,300.00	6,931.45	7,304.46	7,053.91	90.64	30.26	91.02	639.18	-10,856.02	5,817.99	5,735.40	82.60	70.439	
12,400.00	6,931.13	7,303.95	7,053.40	92.16	30.26	91.01	639.18	-10,856.03	5,725.03	5,641.47	83.56	68.514	
12,500.00	6,930.80	7,303.44	7,052.89	93.69	30.25	91.00	639.18	-10,856.03	5,632.31	5,547.76	84.56	66.609	
12,600.00	6,930.48	7,302.93	7,052.38	95.22	30.25	90.98	639.18	-10,856.03	5,539.85	5,454.26	85.59	64.724	
12,700.00	6,930.16	7,304.67	7,054.12	96.75	30.26	91.03	639.18	-10,856.02	5,447.65	5,360.98	86.67	62.857	
12,800.00	6,929.84	7,303.63	7,053.08	98.28	30.25	91.00	639.18	-10,856.03	5,355.73	5,267.95	87.77	61.017	
12,900.00	6,929.51	7,302.61	7,052.07	99.82	30.25	90.97	639.18	-10,856.03	5,264.10	5,175.18	88.92	59.199	
13,000.00	6,929.19	7,301.62	7,051.07	101.35	30.25	90.95	639.19	-10,856.03	5,172.79	5,082.67	90.11	57.404	
13,100.00	6,928.87	7,300.63	7,050.09	102.89	30.25	90.92	639.19	-10,856.04	5,081.80	4,990.45	91.34	55.634	
13,200.00	6,928.54	7,299.67	7,049.12	104.43	30.24	90.89	639.19	-10,856.04	4,991.15	4,898.53	92.62	53.887	
13,300.00	6,928.22	7,298.72	7,048.18	105.97	30.24	90.87	639.19	-10,856.04	4,900.87	4,806.93	93.95	52.166	
13,400.00	6,927.90	7,297.79	7,047.25	107.52	30.24	90.84	639.19	-10,856.04	4,810.98	4,715.65	95.32	50.471	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009D - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 25-B001Mb_MWD+HRGM

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	7,296.88	7,046.33	109.06	30.24	90.82	639.20	-10,856.05	4,721.49	4,624.74	96.75	48.802	
13,600.00	6,927.25	7,295.98	7,045.44	110.61	30.23	90.79	639.20	-10,856.05	4,632.43	4,534.20	98.23	47.160	
13,700.00	6,926.93	7,295.10	7,044.55	112.16	30.23	90.77	639.20	-10,856.05	4,543.82	4,444.06	99.76	45.546	
13,800.00	6,926.61	7,294.23	7,043.69	113.71	30.23	90.75	639.20	-10,856.05	4,455.70	4,354.34	101.36	43.960	
13,900.00	6,926.28	7,293.38	7,042.83	115.26	30.23	90.72	639.20	-10,856.06	4,368.09	4,265.08	103.01	42.403	
14,000.00	6,925.96	7,292.54	7,042.00	116.82	30.22	90.70	639.21	-10,856.06	4,281.02	4,176.29	104.73	40.876	
14,100.00	6,925.64	7,291.72	7,041.17	118.37	30.22	90.68	639.21	-10,856.06	4,194.53	4,088.01	106.52	39.379	
14,200.00	6,925.31	7,290.91	7,040.36	119.93	30.22	90.66	639.21	-10,856.06	4,108.65	4,000.28	108.37	37.914	
14,300.00	6,924.99	7,290.11	7,039.56	121.48	30.22	90.64	639.21	-10,856.06	4,023.43	3,913.13	110.29	36.480	
14,400.00	6,924.67	7,289.32	7,038.78	123.04	30.21	90.61	639.21	-10,856.07	3,938.89	3,826.60	112.29	35.078	
14,500.00	6,924.34	7,288.55	7,038.00	124.60	30.21	90.59	639.21	-10,856.07	3,855.10	3,740.74	114.36	33.709	
14,600.00	6,924.02	7,287.79	7,037.24	126.16	30.21	90.57	639.22	-10,856.07	3,772.10	3,655.58	116.52	32.374	
14,700.00	6,923.70	7,287.04	7,036.50	127.72	30.21	90.55	639.22	-10,856.07	3,689.94	3,571.19	118.75	31.073	
14,800.00	6,923.38	7,286.31	7,035.76	129.28	30.21	90.53	639.22	-10,856.07	3,608.69	3,487.62	121.07	29.806	
14,900.00	6,923.05	7,285.58	7,035.03	130.85	30.20	90.51	639.22	-10,856.07	3,528.39	3,404.92	123.48	28.575	
15,000.00	6,922.73	7,284.87	7,034.32	132.41	30.20	90.49	639.22	-10,856.08	3,449.13	3,323.16	125.97	27.381	
15,100.00	6,922.41	7,284.17	7,033.62	133.97	30.20	90.48	639.22	-10,856.08	3,370.97	3,242.41	128.55	26.222	
15,200.00	6,922.08	7,283.47	7,032.93	135.54	30.20	90.46	639.22	-10,856.08	3,293.98	3,162.76	131.23	25.101	
15,300.00	6,921.76	7,282.79	7,032.24	137.11	30.20	90.44	639.22	-10,856.08	3,218.27	3,084.28	133.99	24.018	
15,400.00	6,921.44	7,282.12	7,031.57	138.67	30.19	90.42	639.23	-10,856.08	3,143.91	3,007.06	136.85	22.974	
15,500.00	6,921.11	7,281.46	7,030.91	140.24	30.19	90.40	639.23	-10,856.08	3,071.01	2,931.21	139.80	21.968	
15,600.00	6,920.79	7,280.81	7,030.26	141.81	30.19	90.39	639.23	-10,856.08	2,999.67	2,856.84	142.83	21.001	
15,700.00	6,920.47	7,280.16	7,029.62	143.38	30.19	90.37	639.23	-10,856.09	2,930.01	2,784.06	145.95	20.075	
15,800.00	6,920.14	7,279.53	7,028.98	144.95	30.19	90.35	639.23	-10,856.09	2,862.15	2,712.99	149.16	19.189	
15,900.00	6,919.82	7,278.91	7,028.36	146.52	30.19	90.33	639.23	-10,856.09	2,796.21	2,643.78	152.43	18.344	
16,000.00	6,919.50	7,278.29	7,027.74	148.09	30.18	90.32	639.23	-10,856.09	2,732.35	2,576.57	155.77	17.540	
16,100.00	6,919.18	7,277.69	7,027.14	149.66	30.18	90.30	639.23	-10,856.09	2,670.70	2,511.53	159.17	16.779	
16,200.00	6,918.85	7,277.09	7,026.54	151.24	30.18	90.29	639.23	-10,856.09	2,611.43	2,448.82	162.61	16.059	
16,300.00	6,918.53	7,276.50	7,025.95	152.81	30.18	90.27	639.23	-10,856.09	2,554.70	2,388.63	166.08	15.383	
16,400.00	6,918.21	7,275.92	7,025.37	154.38	30.18	90.25	639.23	-10,856.09	2,500.68	2,331.14	169.55	14.749	
16,500.00	6,917.88	7,275.34	7,024.80	155.96	30.18	90.24	639.24	-10,856.09	2,449.56	2,276.55	173.01	14.159	
16,600.00	6,917.56	7,275.00	7,024.45	157.53	30.17	90.23	639.24	-10,856.09	2,401.51	2,225.09	176.42	13.612	
16,700.00	6,917.24	7,275.00	7,024.45	159.11	30.17	90.23	639.24	-10,856.09	2,356.73	2,176.96	179.77	13.109	
16,800.00	6,916.91	7,275.00	7,024.45	160.68	30.17	90.23	639.24	-10,856.09	2,315.40	2,132.38	183.03	12.651	
16,900.00	6,916.59	7,273.53	7,022.98	162.26	30.17	90.19	639.24	-10,856.10	2,277.72	2,091.58	186.14	12.237	
17,000.00	6,916.27	7,273.09	7,022.54	163.84	30.17	90.18	639.24	-10,856.10	2,243.87	2,054.77	189.09	11.867	
17,100.00	6,915.95	7,272.64	7,022.09	165.41	30.17	90.17	639.24	-10,856.10	2,214.01	2,022.17	191.84	11.541	
17,200.00	6,915.62	7,272.19	7,021.64	166.99	30.17	90.15	639.24	-10,856.10	2,188.32	1,993.97	194.35	11.260	
17,300.00	6,915.30	7,271.74	7,021.19	168.57	30.17	90.14	639.24	-10,856.10	2,166.95	1,970.36	196.59	11.023	
17,400.00	6,914.98	7,271.28	7,020.73	170.15	30.16	90.13	639.24	-10,856.10	2,150.02	1,951.50	198.52	10.830	
17,500.00	6,914.65	7,270.82	7,020.27	171.73	30.16	90.12	639.24	-10,856.10	2,137.64	1,937.52	200.13	10.681	
17,600.00	6,914.33	7,270.36	7,019.81	173.31	30.16	90.10	639.24	-10,856.10	2,129.89	1,928.51	201.38	10.577	
17,700.00	6,914.01	7,269.89	7,019.34	174.89	30.16	90.09	639.24	-10,856.10	2,126.81	1,924.55	202.26	10.515	
17,715.43	6,913.96	7,269.82	7,019.27	175.13	30.16	90.09	639.24	-10,856.10	2,126.76	1,924.39	202.37	10.509	CC, ES
17,800.00	6,913.68	7,269.41	7,018.87	176.47	30.16	90.08	639.24	-10,856.10	2,128.44	1,925.66	202.78	10.497	SF
17,900.00	6,913.36	7,268.94	7,018.39	178.05	30.16	90.07	639.25	-10,856.10	2,134.75	1,931.84	202.91	10.521	
18,000.00	6,913.04	7,268.46	7,017.91	179.63	30.16	90.05	639.25	-10,856.11	2,145.71	1,943.03	202.68	10.587	
18,100.00	6,912.72	7,267.97	7,017.42	181.21	30.15	90.04	639.25	-10,856.11	2,161.25	1,959.15	202.10	10.694	
18,111.83	6,912.68	7,267.91	7,017.37	181.40	30.15	90.04	639.25	-10,856.11	2,163.39	1,961.38	202.01	10.709	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	161.27	161.27	0.00	0.48	-116.33	-1,688.94	-3,412.71	3,807.77				
54.25	54.25	219.10	219.10	0.02	0.68	-177.88	-1,688.97	-3,412.64	3,807.83	3,807.14	0.69	5,483.476	
130.42	130.42	283.49	283.49	0.11	0.90	154.96	-1,688.91	-3,412.80	3,808.31	3,807.29	1.02	3,747.141	
219.69	219.69	383.09	383.09	0.23	1.25	-178.97	-1,689.00	-3,413.00	3,808.97	3,807.49	1.48	2,576.701	
308.67	308.67	450.00	450.00	0.35	1.49	172.12	-1,689.04	-3,413.25	3,809.81	3,807.98	1.83	2,083.094	
454.00	453.99	601.94	601.94	0.51	2.02	37.55	-1,689.67	-3,413.60	3,810.02	3,807.49	2.53	1,507.459	
544.00	543.93	683.52	683.52	0.74	2.30	37.90	-1,690.11	-3,413.78	3,807.99	3,804.96	3.04	1,253.599	
667.00	666.63	809.61	809.61	1.13	2.75	24.94	-1,690.83	-3,413.99	3,801.11	3,797.24	3.88	980.748	
756.00	755.27	912.63	912.62	1.44	3.11	39.94	-1,691.01	-3,414.30	3,794.67	3,790.13	4.54	834.979	
850.00	848.62	1,009.87	1,009.86	1.79	3.44	41.77	-1,690.74	-3,414.76	3,786.67	3,781.45	5.22	725.120	
942.00	939.50	1,104.84	1,104.82	2.14	3.78	48.54	-1,689.97	-3,415.03	3,776.50	3,770.60	5.90	640.083	
1,033.00	1,028.89	1,205.46	1,205.44	2.52	4.13	58.22	-1,688.84	-3,415.39	3,766.16	3,759.56	6.60	570.285	
1,123.00	1,117.00	1,278.66	1,278.62	2.90	4.38	64.65	-1,687.79	-3,415.81	3,757.17	3,749.95	7.22	520.411	
1,214.00	1,206.00	1,375.00	1,374.96	3.29	4.72	64.26	-1,686.66	-3,416.29	3,748.80	3,740.87	7.93	472.656	
1,309.00	1,298.75	1,455.07	1,455.02	3.71	5.00	67.53	-1,685.52	-3,416.89	3,740.34	3,731.72	8.61	434.205	
1,403.00	1,390.39	1,556.07	1,556.01	4.13	5.35	70.85	-1,684.17	-3,417.50	3,732.71	3,723.34	9.37	398.223	
1,498.00	1,482.88	1,657.86	1,657.78	4.56	5.71	68.03	-1,682.82	-3,418.14	3,724.92	3,714.77	10.15	367.057	
1,592.00	1,573.82	1,745.42	1,745.34	5.00	6.01	68.14	-1,681.68	-3,418.44	3,715.59	3,704.70	10.89	341.335	
1,687.00	1,665.32	1,844.50	1,844.41	5.46	6.36	71.46	-1,680.46	-3,418.47	3,706.00	3,694.33	11.68	317.333	
1,876.00	1,847.35	2,025.00	2,024.90	6.38	6.99	74.77	-1,678.44	-3,418.54	3,689.94	3,676.72	13.22	279.181	
1,970.00	1,937.87	2,109.53	2,109.43	6.84	7.29	75.31	-1,677.87	-3,418.56	3,682.94	3,668.98	13.97	263.658	
2,064.00	2,028.42	2,200.00	2,199.90	7.30	7.60	76.19	-1,677.26	-3,418.61	3,676.31	3,661.57	14.74	249.360	
2,159.00	2,119.97	2,281.28	2,281.17	7.77	7.89	77.75	-1,676.77	-3,418.65	3,670.24	3,654.75	15.49	236.898	
2,348.00	2,302.44	2,442.03	2,441.92	8.69	8.45	73.69	-1,676.30	-3,419.19	3,658.22	3,641.24	16.98	215.441	
2,443.00	2,394.41	2,542.83	2,542.72	9.15	8.80	73.44	-1,676.34	-3,419.87	3,651.91	3,634.12	17.79	205.284	
2,537.00	2,485.45	2,635.11	2,635.00	9.61	9.12	73.57	-1,676.09	-3,420.46	3,645.56	3,626.99	18.56	196.379	
2,632.00	2,577.48	2,727.43	2,727.31	10.07	9.45	74.21	-1,675.48	-3,420.99	3,639.14	3,619.79	19.34	188.131	
2,727.00	2,669.50	2,837.06	2,836.94	10.53	9.83	74.68	-1,674.95	-3,421.38	3,632.78	3,612.60	20.18	179.996	
2,821.00	2,760.56	2,925.00	2,924.88	10.98	10.14	74.79	-1,674.49	-3,421.51	3,626.43	3,605.48	20.94	173.149	
2,916.00	2,852.68	3,013.86	3,013.74	11.44	10.45	75.02	-1,674.25	-3,421.59	3,620.21	3,598.50	21.71	166.745	
3,011.00	2,945.03	3,091.93	3,091.81	11.89	10.72	75.36	-1,674.29	-3,421.76	3,614.60	3,592.16	22.44	161.111	
3,105.00	3,036.57	3,175.00	3,174.88	12.33	11.01	70.04	-1,674.64	-3,422.20	3,608.70	3,585.53	23.17	155.778	
3,200.00	3,128.81	3,260.66	3,260.53	12.78	11.31	67.20	-1,675.46	-3,422.86	3,601.14	3,577.23	23.91	150.582	
3,294.00	3,219.76	3,356.89	3,356.74	13.24	11.65	67.18	-1,677.16	-3,423.29	3,592.60	3,567.90	24.70	145.436	
3,389.00	3,311.82	3,456.38	3,456.21	13.69	11.99	68.45	-1,679.07	-3,423.22	3,583.97	3,558.47	25.50	140.537	
3,483.00	3,403.03	3,556.02	3,555.84	14.14	12.34	69.14	-1,680.68	-3,423.35	3,576.11	3,549.81	26.29	136.000	
3,578.00	3,495.31	3,650.00	3,649.82	14.60	12.67	69.96	-1,681.81	-3,423.23	3,568.23	3,541.16	27.07	131.806	
3,672.00	3,586.65	3,741.18	3,740.99	15.04	12.98	71.40	-1,682.75	-3,423.38	3,561.11	3,533.28	27.84	127.935	
3,767.00	3,678.95	3,846.69	3,846.50	15.49	13.35	72.23	-1,683.84	-3,423.16	3,554.00	3,525.35	28.65	124.039	
3,862.00	3,771.63	3,926.46	3,926.27	15.93	13.63	72.16	-1,684.48	-3,423.10	3,547.61	3,518.24	29.37	120.783	
3,956.00	3,863.70	4,008.18	4,007.98	16.35	13.91	72.69	-1,685.46	-3,423.23	3,542.22	3,512.14	30.08	117.760	
4,052.00	3,957.54	4,105.22	4,105.00	16.79	14.25	71.90	-1,687.22	-3,423.32	3,536.47	3,505.61	30.86	114.614	
4,146.00	4,048.88	4,191.01	4,190.78	17.24	14.55	72.24	-1,688.70	-3,423.40	3,529.97	3,498.36	31.60	111.698	
4,241.00	4,140.47	4,259.93	4,259.68	17.71	14.79	75.20	-1,690.03	-3,423.75	3,523.65	3,491.33	32.32	109.020	
4,336.00	4,231.25	4,336.41	4,336.13	18.21	15.06	78.85	-1,692.04	-3,424.46	3,518.64	3,485.55	33.09	106.338	
4,430.00	4,320.59	4,417.88	4,417.55	18.71	15.34	77.60	-1,694.75	-3,425.33	3,514.17	3,480.28	33.88	103.716	
4,524.00	4,409.51	4,496.01	4,495.62	19.22	15.62	74.50	-1,697.51	-3,426.39	3,508.49	3,473.82	34.67	101.187	
4,619.00	4,498.98	4,571.26	4,570.82	19.75	15.88	74.19	-1,700.19	-3,427.74	3,501.88	3,466.41	35.47	98.736	
4,713.00	4,587.83	4,642.28	4,641.76	20.27	16.13	74.46	-1,702.94	-3,429.37	3,496.14	3,459.90	36.23	96.491	
4,807.00	4,676.97	4,729.42	4,728.81	20.78	16.43	76.16	-1,706.42	-3,431.43	3,491.28	3,454.23	37.05	94.230	
4,870.00	4,736.65	4,775.00	4,774.34	21.12	16.59	76.73	-1,708.10	-3,432.70	3,488.58	3,451.03	37.55	92.893	
4,933.00	4,796.58	4,825.00	4,824.28	21.46	16.77	76.87	-1,709.98	-3,434.27	3,486.45	3,448.38	38.07	91.583	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,027.00	4,886.13	4,918.25	4,917.41	21.96	17.09	78.02	-1,713.59	-3,437.26	3,483.74	3,444.84	38.90	89.553	
5,121.00	4,976.11	5,009.57	5,008.63	22.45	17.41	78.68	-1,716.88	-3,440.34	3,481.90	3,442.18	39.72	87.670	
5,216.00	5,068.11	5,099.69	5,098.62	22.91	17.73	78.99	-1,720.07	-3,443.50	3,481.13	3,440.63	40.50	85.957	
5,265.20	5,116.04	5,135.28	5,134.18	23.14	17.85	78.96	-1,721.24	-3,444.74	3,480.98	3,440.13	40.85	85.215	
5,341.00	5,190.11	5,211.40	5,210.19	23.49	18.12	78.92	-1,724.03	-3,447.51	3,481.07	3,439.60	41.47	83.945	
5,436.00	5,283.20	5,300.00	5,298.67	23.91	18.43	79.25	-1,727.38	-3,450.78	3,481.53	3,439.33	42.20	82.492	
5,499.00	5,345.03	5,359.40	5,358.00	24.19	18.64	79.33	-1,729.47	-3,453.03	3,482.00	3,439.31	42.69	81.564	
5,561.00	5,405.97	5,425.00	5,423.50	24.45	18.87	80.50	-1,731.77	-3,455.57	3,482.71	3,439.52	43.19	80.633	
5,624.00	5,467.97	5,486.92	5,485.34	24.72	19.08	79.60	-1,733.99	-3,457.85	3,483.43	3,439.75	43.68	79.750	
5,687.00	5,530.05	5,550.57	5,548.91	24.99	19.31	80.65	-1,736.17	-3,460.22	3,484.24	3,440.07	44.17	78.883	
5,750.00	5,592.20	5,614.55	5,612.81	25.25	19.53	81.05	-1,738.30	-3,462.58	3,485.22	3,440.57	44.66	78.043	
5,813.00	5,654.42	5,675.00	5,673.19	25.51	19.74	82.19	-1,740.31	-3,464.79	3,486.38	3,441.25	45.13	77.253	
5,876.00	5,716.68	5,737.06	5,735.17	25.76	19.96	82.53	-1,742.42	-3,467.08	3,487.73	3,442.12	45.60	76.478	
5,939.00	5,778.99	5,800.11	5,798.14	26.01	20.18	82.45	-1,744.61	-3,469.43	3,489.16	3,443.08	46.08	75.719	
6,065.00	5,903.86	5,932.68	5,930.53	26.51	20.64	82.58	-1,749.37	-3,474.27	3,492.17	3,445.13	47.04	74.236	
6,128.00	5,966.41	5,993.48	5,991.25	26.74	20.86	81.23	-1,751.58	-3,476.45	3,493.68	3,446.19	47.49	73.562	
6,191.00	6,029.04	6,050.00	6,047.70	26.97	21.06	81.95	-1,753.75	-3,478.43	3,495.21	3,447.28	47.92	72.933	
6,254.00	6,091.75	6,115.99	6,113.59	27.20	21.29	82.92	-1,756.23	-3,480.84	3,497.01	3,448.63	48.38	72.279	
6,348.00	6,185.46	6,193.47	6,190.96	27.52	21.56	85.81	-1,759.25	-3,483.85	3,500.37	3,451.39	48.97	71.474	
6,390.00	6,227.36	6,239.12	6,236.54	27.61	21.72	85.84	-1,760.95	-3,485.65	3,502.00	3,452.78	49.22	71.151	
6,400.00	6,237.33	6,250.00	6,247.40	27.61	21.76	85.85	-1,761.38	-3,486.09	3,502.41	3,453.15	49.26	71.097	
6,490.00	6,327.12	6,325.00	6,322.29	27.66	22.02	85.89	-1,764.21	-3,489.20	3,506.11	3,456.54	49.57	70.730	
6,500.00	6,337.09	6,340.20	6,337.46	27.66	22.07	73.50	-1,764.75	-3,489.85	3,506.44	3,456.81	49.63	70.650	
6,550.00	6,386.85	6,384.95	6,382.14	27.70	22.23	36.96	-1,766.42	-3,491.69	3,505.71	3,455.90	49.82	70.372	
6,600.00	6,436.20	6,432.59	6,429.71	27.74	22.40	24.22	-1,768.08	-3,493.89	3,501.22	3,451.20	50.02	69.999	
6,650.00	6,484.82	6,478.13	6,475.17	27.79	22.56	18.49	-1,769.75	-3,495.98	3,492.80	3,442.58	50.21	69.557	
6,700.00	6,532.40	6,525.00	6,521.96	27.85	22.72	15.37	-1,771.41	-3,498.07	3,480.41	3,429.99	50.42	69.026	
6,750.00	6,578.63	6,587.12	6,583.98	27.92	22.94	13.51	-1,773.64	-3,500.81	3,464.21	3,413.52	50.69	68.339	
6,800.00	6,623.24	6,643.18	6,639.95	28.00	23.13	12.33	-1,775.71	-3,503.16	3,444.21	3,393.27	50.94	67.610	
6,850.00	6,665.93	6,687.28	6,683.99	28.09	23.29	11.58	-1,777.33	-3,504.82	3,420.45	3,369.30	51.15	66.869	
6,900.00	6,706.42	6,748.41	6,745.05	28.19	23.50	11.18	-1,779.41	-3,507.05	3,393.21	3,341.78	51.43	65.979	
6,950.00	6,744.48	6,793.74	6,790.32	28.30	23.66	11.01	-1,780.84	-3,508.55	3,362.59	3,310.94	51.65	65.104	
7,000.00	6,779.84	6,852.35	6,848.89	28.43	23.87	11.11	-1,782.61	-3,510.10	3,328.64	3,276.72	51.92	64.108	
7,050.00	6,812.30	6,908.13	6,904.64	28.57	24.06	11.46	-1,784.11	-3,511.35	3,291.79	3,239.60	52.19	63.079	
7,100.00	6,841.63	6,936.08	6,932.57	28.73	24.16	11.98	-1,784.90	-3,511.88	3,252.30	3,199.95	52.35	62.127	
7,150.00	6,867.66	6,969.03	6,965.50	28.90	24.28	12.87	-1,785.76	-3,512.53	3,210.52	3,157.99	52.53	61.117	
7,200.00	6,890.22	7,002.33	6,998.79	29.08	24.39	14.26	-1,786.52	-3,513.09	3,166.63	3,113.92	52.71	60.073	
7,250.00	6,909.17	7,021.28	7,017.73	29.28	24.46	16.26	-1,786.95	-3,513.38	3,120.99	3,068.15	52.84	59.061	
7,300.00	6,924.38	7,035.11	7,031.55	29.49	24.51	19.38	-1,787.25	-3,513.60	3,073.91	3,020.96	52.95	58.050	
7,350.00	6,935.77	7,045.24	7,041.68	29.72	24.54	24.70	-1,787.48	-3,513.77	3,025.70	2,972.65	53.05	57.038	
7,400.00	6,943.25	7,055.91	7,052.35	29.97	24.58	35.35	-1,787.72	-3,513.96	2,976.64	2,923.50	53.14	56.017	
7,450.00	6,946.78	7,065.56	7,061.99	30.22	24.61	61.22	-1,787.93	-3,514.11	2,927.05	2,873.83	53.22	54.997	
7,471.54	6,947.08	7,067.02	7,063.46	30.34	24.62	81.05	-1,787.96	-3,514.13	2,905.60	2,852.35	53.25	54.568	
7,500.00	6,946.98	7,067.91	7,064.34	30.49	24.62	80.13	-1,787.98	-3,514.14	2,877.24	2,823.96	53.28	54.007	
7,600.00	6,946.65	7,070.78	7,067.21	31.07	24.63	73.71	-1,788.04	-3,514.18	2,777.43	2,724.08	53.35	52.058	
7,700.00	6,946.32	7,073.32	7,069.75	31.69	24.64	37.88	-1,788.09	-3,514.22	2,677.48	2,624.08	53.40	50.142	
7,800.00	6,945.99	7,075.58	7,072.00	32.35	24.65	-65.26	-1,788.14	-3,514.25	2,577.49	2,524.09	53.41	48.262	
7,900.00	6,945.67	7,077.57	7,074.00	33.05	24.66	-79.51	-1,788.18	-3,514.27	2,477.60	2,424.23	53.37	46.420	
8,000.00	6,945.34	7,079.33	7,075.76	33.79	24.66	-83.57	-1,788.21	-3,514.29	2,377.95	2,324.65	53.30	44.618	
8,034.58	6,945.23	7,079.89	7,076.31	34.05	24.66	-84.36	-1,788.22	-3,514.30	2,343.57	2,290.31	53.26	44.005	
8,100.00	6,945.02	7,078.97	7,075.39	34.57	24.66	-84.16	-1,788.21	-3,514.29	2,278.59	2,225.42	53.17	42.854	
8,200.00	6,944.69	7,080.06	7,076.49	35.41	24.67	-84.40	-1,788.23	-3,514.31	2,179.32	2,126.28	53.04	41.088	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,081.14	7,077.57	36.30	24.67	-84.63	-1,788.25	-3,514.32	2,080.12	2,027.22	52.90	39.322	
8,400.00	6,944.05	7,082.21	7,078.64	37.25	24.67	-84.85	-1,788.27	-3,514.33	1,981.00	1,928.25	52.75	37.556	
8,500.00	6,943.73	7,083.26	7,079.68	38.25	24.68	-85.08	-1,788.29	-3,514.35	1,881.97	1,829.39	52.58	35.791	
8,600.00	6,943.40	7,084.29	7,080.72	39.29	24.68	-85.30	-1,788.31	-3,514.36	1,783.05	1,730.64	52.40	34.026	
8,700.00	6,943.08	7,085.31	7,081.74	40.37	24.68	-85.52	-1,788.34	-3,514.37	1,684.25	1,632.04	52.21	32.261	
8,800.00	6,942.76	7,086.32	7,082.74	41.49	24.69	-85.73	-1,788.36	-3,514.38	1,585.61	1,533.61	52.00	30.495	
8,900.00	6,942.43	7,087.31	7,083.74	42.64	24.69	-85.94	-1,788.38	-3,514.40	1,487.14	1,435.38	51.76	28.729	
9,000.00	6,942.11	7,088.29	7,084.71	43.82	24.69	-86.15	-1,788.40	-3,514.41	1,388.90	1,337.38	51.52	26.961	
9,100.00	6,941.79	7,089.25	7,085.68	45.03	24.70	-86.36	-1,788.42	-3,514.42	1,290.92	1,239.67	51.25	25.190	
9,200.00	6,941.46	7,090.20	7,086.63	46.27	24.70	-86.56	-1,788.44	-3,514.43	1,193.28	1,142.32	50.96	23.415	
9,300.00	6,941.14	7,091.14	7,087.57	47.53	24.70	-86.76	-1,788.46	-3,514.44	1,096.06	1,045.40	50.67	21.632	
9,400.00	6,940.82	7,092.07	7,088.49	48.81	24.71	-86.96	-1,788.48	-3,514.46	999.40	949.02	50.38	19.838	
9,500.00	6,940.50	7,092.98	7,089.40	50.11	24.71	-87.15	-1,788.50	-3,514.47	903.45	853.33	50.12	18.026	
9,600.00	6,940.17	7,093.88	7,090.31	51.43	24.71	-87.35	-1,788.52	-3,514.48	808.49	758.54	49.95	16.185	
9,700.00	6,939.85	7,094.77	7,091.19	52.76	24.72	-87.54	-1,788.54	-3,514.49	714.91	664.92	49.99	14.302	
9,800.00	6,939.53	7,095.65	7,092.07	54.11	24.72	-87.72	-1,788.56	-3,514.50	623.32	572.87	50.44	12.357	
9,900.00	6,939.20	7,096.51	7,092.94	55.48	24.72	-87.91	-1,788.57	-3,514.51	534.74	483.01	51.73	10.337	
10,000.00	6,938.88	7,097.37	7,093.79	56.86	24.73	-88.09	-1,788.59	-3,514.52	450.97	396.43	54.55	8.267	
10,100.00	6,938.56	7,098.21	7,094.63	58.25	24.73	-88.27	-1,788.61	-3,514.53	375.24	315.35	59.89	6.265	
10,200.00	6,938.23	7,099.04	7,095.47	59.65	24.73	-88.45	-1,788.63	-3,514.54	313.41	244.90	68.52	4.574	
10,300.00	6,937.91	7,100.00	7,096.42	61.06	24.74	-88.65	-1,788.65	-3,514.55	275.05	195.95	79.10	3.477	
10,362.89	6,937.71	7,100.39	7,096.81	61.95	24.74	-88.74	-1,788.66	-3,514.55	267.76	183.20	84.56	3.166	CC, ES
10,400.00	6,937.59	7,100.71	7,097.13	62.48	24.74	-88.81	-1,788.67	-3,514.56	270.32	183.68	86.64	3.120	SF
10,500.00	6,937.27	7,101.57	7,097.99	63.91	24.74	-88.99	-1,788.68	-3,514.57	300.82	213.20	87.62	3.433	
10,600.00	6,936.94	7,102.46	7,098.88	65.34	24.74	-89.18	-1,788.70	-3,514.58	357.65	273.13	84.51	4.232	
10,700.00	6,936.62	7,103.37	7,099.79	66.79	24.75	-89.38	-1,788.72	-3,514.59	430.50	349.92	80.58	5.343	
10,800.00	6,936.30	7,104.30	7,100.72	68.24	24.75	-89.57	-1,788.74	-3,514.60	512.58	435.49	77.10	6.649	
10,900.00	6,935.97	7,105.25	7,101.67	69.70	24.75	-89.78	-1,788.76	-3,514.61	600.13	525.83	74.30	8.077	
11,000.00	6,935.65	7,106.23	7,102.65	71.17	24.76	-89.99	-1,788.79	-3,514.62	691.06	618.97	72.09	9.586	
11,100.00	6,935.33	7,107.23	7,103.65	72.64	24.76	-90.20	-1,788.81	-3,514.64	784.21	713.86	70.35	11.148	
11,200.00	6,935.00	7,108.26	7,104.68	74.11	24.76	-90.42	-1,788.83	-3,514.65	878.86	809.90	68.95	12.746	
11,300.00	6,934.68	7,109.32	7,105.74	75.60	24.77	-90.65	-1,788.85	-3,514.66	974.57	906.75	67.82	14.369	
11,400.00	6,934.36	7,110.40	7,106.82	77.08	24.77	-90.88	-1,788.88	-3,514.68	1,071.07	1,004.18	66.90	16.011	
11,500.00	6,934.03	7,111.52	7,107.94	78.57	24.78	-91.12	-1,788.90	-3,514.69	1,168.16	1,102.03	66.13	17.666	
11,600.00	6,933.71	7,112.66	7,109.08	80.07	24.78	-91.36	-1,788.92	-3,514.71	1,265.70	1,200.22	65.48	19.330	
11,700.00	6,933.39	7,113.84	7,110.26	81.57	24.78	-91.61	-1,788.95	-3,514.72	1,363.60	1,298.67	64.93	21.001	
11,800.00	6,933.07	7,115.05	7,111.47	83.07	24.79	-91.87	-1,788.97	-3,514.74	1,461.78	1,397.31	64.46	22.676	
11,900.00	6,932.74	7,116.30	7,112.72	84.58	24.79	-92.14	-1,789.00	-3,514.75	1,560.19	1,496.13	64.06	24.355	
12,000.00	6,932.42	7,117.58	7,114.00	86.09	24.80	-92.41	-1,789.03	-3,514.77	1,658.79	1,595.08	63.71	26.036	
12,100.00	6,932.10	7,118.90	7,115.32	87.60	24.80	-92.69	-1,789.06	-3,514.79	1,757.55	1,694.14	63.41	27.718	
12,200.00	6,931.77	7,120.26	7,116.68	89.12	24.81	-92.98	-1,789.08	-3,514.81	1,856.43	1,793.29	63.14	29.401	
12,300.00	6,931.45	7,121.66	7,118.08	90.64	24.81	-93.28	-1,789.11	-3,514.83	1,955.44	1,892.53	62.91	31.083	
12,400.00	6,931.13	7,123.11	7,119.52	92.16	24.82	-93.59	-1,789.14	-3,514.85	2,054.53	1,991.83	62.70	32.765	
12,500.00	6,930.80	7,124.60	7,121.01	93.69	24.82	-93.90	-1,789.17	-3,514.87	2,153.71	2,091.19	62.52	34.446	
12,600.00	6,930.48	7,126.14	7,122.55	95.22	24.83	-94.23	-1,789.20	-3,514.89	2,252.97	2,190.60	62.36	36.126	
12,700.00	6,930.16	7,127.73	7,124.14	96.75	24.83	-94.57	-1,789.24	-3,514.92	2,352.28	2,290.06	62.22	37.803	
12,800.00	6,929.84	7,129.37	7,125.78	98.28	24.84	-94.91	-1,789.27	-3,514.94	2,451.65	2,389.55	62.10	39.479	
12,900.00	6,929.51	7,130.34	7,126.76	99.82	24.84	-95.12	-1,789.29	-3,514.96	2,551.07	2,489.08	61.99	41.155	
13,000.00	6,929.19	7,131.84	7,128.25	101.35	24.85	-95.44	-1,789.32	-3,514.98	2,650.53	2,588.64	61.89	42.827	
13,100.00	6,928.87	7,133.36	7,129.77	102.89	24.85	-95.76	-1,789.35	-3,515.00	2,750.03	2,688.23	61.80	44.496	
13,200.00	6,928.54	7,134.92	7,131.33	104.43	24.86	-96.09	-1,789.38	-3,515.02	2,849.57	2,787.84	61.73	46.163	
13,300.00	6,928.22	7,136.50	7,132.91	105.97	24.86	-96.42	-1,789.41	-3,515.05	2,949.13	2,887.47	61.66	47.828	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 50-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	7,138.11	7,134.52	107.52	24.87	-96.76	-1,789.44	-3,515.07	3,048.72	2,987.12	61.60	49.489	
13,500.00	6,927.57	7,139.76	7,136.17	109.06	24.87	-97.10	-1,789.47	-3,515.10	3,148.34	3,086.79	61.55	51.147	
13,600.00	6,927.25	7,141.44	7,137.85	110.61	24.88	-97.46	-1,789.50	-3,515.13	3,247.98	3,186.47	61.51	52.802	
13,700.00	6,926.93	7,143.15	7,139.56	112.16	24.89	-97.81	-1,789.54	-3,515.15	3,347.64	3,286.17	61.48	54.454	
13,800.00	6,926.61	7,144.90	7,141.31	113.71	24.89	-98.18	-1,789.57	-3,515.18	3,447.33	3,385.88	61.45	56.103	
13,900.00	6,926.28	7,146.68	7,143.09	115.26	24.90	-98.55	-1,789.60	-3,515.21	3,547.02	3,485.60	61.42	57.748	
14,000.00	6,925.96	7,148.51	7,144.91	116.82	24.91	-98.93	-1,789.63	-3,515.24	3,646.74	3,585.33	61.40	59.390	
14,100.00	6,925.64	7,150.37	7,146.77	118.37	24.91	-99.31	-1,789.67	-3,515.27	3,746.47	3,685.08	61.39	61.028	
14,200.00	6,925.31	7,152.27	7,148.67	119.93	24.92	-99.71	-1,789.70	-3,515.30	3,846.21	3,784.83	61.38	62.663	
14,300.00	6,924.99	7,154.21	7,150.61	121.48	24.93	-100.11	-1,789.73	-3,515.33	3,945.96	3,884.59	61.37	64.293	
14,400.00	6,924.67	7,150.00	7,146.41	123.04	24.91	-99.24	-1,789.66	-3,515.26	4,045.73	3,984.38	61.35	65.947	
14,500.00	6,924.34	7,150.00	7,146.41	124.60	24.91	-99.24	-1,789.66	-3,515.26	4,145.51	4,084.17	61.34	67.580	
14,600.00	6,924.02	7,150.00	7,146.41	126.16	24.91	-99.24	-1,789.66	-3,515.26	4,245.30	4,183.96	61.34	69.209	
14,700.00	6,923.70	7,150.00	7,146.41	127.72	24.91	-99.24	-1,789.66	-3,515.26	4,345.10	4,283.76	61.34	70.835	
14,800.00	6,923.38	7,150.00	7,146.41	129.28	24.91	-99.24	-1,789.66	-3,515.26	4,444.91	4,383.56	61.34	72.458	
14,900.00	6,923.05	7,150.00	7,146.41	130.85	24.91	-99.24	-1,789.66	-3,515.26	4,544.72	4,483.37	61.35	74.077	
15,000.00	6,922.73	7,150.00	7,146.41	132.41	24.91	-99.24	-1,789.66	-3,515.26	4,644.55	4,583.19	61.36	75.692	
15,100.00	6,922.41	7,150.00	7,146.41	133.97	24.91	-99.24	-1,789.66	-3,515.26	4,744.38	4,683.01	61.37	77.304	
15,200.00	6,922.08	7,150.00	7,146.41	135.54	24.91	-99.24	-1,789.66	-3,515.26	4,844.22	4,782.83	61.39	78.912	
15,300.00	6,921.76	7,157.24	7,153.64	137.11	24.94	-100.73	-1,789.79	-3,515.37	4,944.05	4,882.62	61.43	80.478	
15,400.00	6,921.44	7,157.74	7,154.15	138.67	24.94	-100.83	-1,789.79	-3,515.38	5,043.90	4,982.45	61.45	82.075	
15,500.00	6,921.11	7,158.24	7,154.64	140.24	24.94	-100.93	-1,789.80	-3,515.39	5,143.76	5,082.28	61.48	83.669	
15,600.00	6,920.79	7,158.73	7,155.13	141.81	24.94	-101.03	-1,789.81	-3,515.40	5,243.62	5,182.11	61.50	85.258	
15,700.00	6,920.47	7,159.20	7,155.60	143.38	24.94	-101.13	-1,789.82	-3,515.40	5,343.48	5,281.95	61.53	86.844	
15,800.00	6,920.14	7,159.66	7,156.07	144.95	24.94	-101.23	-1,789.83	-3,515.41	5,443.35	5,381.80	61.56	88.426	
15,900.00	6,919.82	7,160.12	7,156.52	146.52	24.95	-101.32	-1,789.84	-3,515.42	5,543.23	5,481.64	61.59	90.004	
16,000.00	6,919.50	7,160.56	7,156.97	148.09	24.95	-101.41	-1,789.84	-3,515.42	5,643.11	5,581.49	61.62	91.578	
16,100.00	6,919.18	7,161.00	7,157.40	149.66	24.95	-101.50	-1,789.85	-3,515.43	5,742.99	5,681.34	61.65	93.148	
16,200.00	6,918.85	7,161.43	7,157.83	151.24	24.95	-101.59	-1,789.86	-3,515.43	5,842.88	5,781.19	61.69	94.713	
16,300.00	6,918.53	7,161.85	7,158.25	152.81	24.95	-101.67	-1,789.86	-3,515.44	5,942.77	5,881.05	61.73	96.275	
16,400.00	6,918.21	7,162.26	7,158.66	154.38	24.95	-101.75	-1,789.87	-3,515.44	6,042.67	5,980.90	61.77	97.833	
16,500.00	6,917.88	7,162.66	7,159.06	155.96	24.95	-101.84	-1,789.88	-3,515.45	6,142.57	6,080.76	61.80	99.387	
16,600.00	6,917.56	7,163.05	7,159.46	157.53	24.96	-101.92	-1,789.88	-3,515.46	6,242.47	6,180.62	61.85	100.936	
16,700.00	6,917.24	7,163.44	7,159.84	159.11	24.96	-101.99	-1,789.89	-3,515.46	6,342.37	6,280.48	61.89	102.481	
16,800.00	6,916.91	7,163.82	7,160.22	160.68	24.96	-102.07	-1,789.90	-3,515.47	6,442.28	6,380.35	61.93	104.022	
16,900.00	6,916.59	7,164.19	7,160.59	162.26	24.96	-102.15	-1,789.90	-3,515.47	6,542.19	6,480.21	61.98	105.559	
17,000.00	6,916.27	7,164.56	7,160.96	163.84	24.96	-102.22	-1,789.91	-3,515.47	6,642.10	6,580.08	62.02	107.092	
17,100.00	6,915.95	7,164.91	7,161.32	165.41	24.96	-102.29	-1,789.92	-3,515.48	6,742.02	6,679.95	62.07	108.620	
17,200.00	6,915.62	7,165.27	7,161.67	166.99	24.96	-102.37	-1,789.92	-3,515.48	6,841.94	6,779.82	62.12	110.144	
17,300.00	6,915.30	7,165.61	7,162.01	168.57	24.97	-102.43	-1,789.93	-3,515.49	6,941.86	6,879.69	62.17	111.664	
17,400.00	6,914.98	7,165.95	7,162.35	170.15	24.97	-102.50	-1,789.93	-3,515.49	7,041.78	6,979.56	62.22	113.179	
17,500.00	6,914.65	7,166.28	7,162.69	171.73	24.97	-102.57	-1,789.94	-3,515.50	7,141.70	7,079.43	62.27	114.690	
17,600.00	6,914.33	7,166.61	7,163.01	173.31	24.97	-102.64	-1,789.94	-3,515.50	7,241.63	7,179.31	62.32	116.197	
17,700.00	6,914.01	7,166.93	7,163.33	174.89	24.97	-102.70	-1,789.95	-3,515.50	7,341.56	7,279.18	62.38	117.699	
17,800.00	6,913.68	7,175.00	7,171.40	176.47	25.00	-104.32	-1,790.08	-3,515.59	7,441.50	7,379.04	62.46	119.138	
17,900.00	6,913.36	7,175.00	7,171.40	178.05	25.00	-104.32	-1,790.08	-3,515.59	7,541.43	7,478.91	62.52	120.633	
18,000.00	6,913.04	7,175.00	7,171.40	179.63	25.00	-104.32	-1,790.08	-3,515.59	7,641.36	7,578.79	62.57	122.124	
18,100.00	6,912.72	7,175.00	7,171.40	181.21	25.00	-104.32	-1,790.08	-3,515.59	7,741.30	7,678.67	62.63	123.610	
18,111.83	6,912.68	7,175.00	7,171.40	181.40	25.00	-104.32	-1,790.08	-3,515.59	7,753.12	7,690.49	62.63	123.786	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030B - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	161.00	161.00	0.00	4.82	-119.08	-2,571.45	-4,623.72	5,290.67				
54.25	54.25	215.25	215.25	0.02	6.45	179.37	-2,571.45	-4,623.72	5,290.78	5,284.32	6.47	818.255	
130.42	130.42	291.42	291.42	0.11	8.73	152.21	-2,571.45	-4,623.72	5,291.12	5,282.27	8.84	598.247	
219.69	219.69	380.69	380.69	0.23	11.41	178.28	-2,571.45	-4,623.72	5,291.57	5,279.94	11.63	454.923	
308.67	308.67	469.67	469.67	0.35	14.07	169.37	-2,571.45	-4,623.72	5,292.10	5,277.68	14.41	367.145	
454.00	453.99	615.09	614.99	0.51	18.43	34.80	-2,571.45	-4,623.72	5,291.71	5,272.77	18.94	279.417	
544.00	543.93	705.04	704.93	0.74	21.13	35.16	-2,571.45	-4,623.72	5,289.20	5,267.34	21.86	241.955	
667.00	666.63	815.96	815.81	1.13	24.45	22.19	-2,569.42	-4,623.72	5,280.66	5,255.08	25.58	206.430	
756.00	755.27	891.27	891.10	1.44	26.71	37.15	-2,569.97	-4,623.72	5,274.04	5,245.89	28.14	187.395	
850.00	848.62	1,010.03	1,009.62	1.79	30.27	38.94	-2,571.45	-4,623.72	5,266.06	5,234.02	32.04	164.355	
942.00	939.50	1,100.90	1,100.50	2.14	32.99	45.65	-2,571.45	-4,623.72	5,255.49	5,220.38	35.11	149.688	
1,033.00	1,028.89	1,190.29	1,189.89	2.52	35.67	55.24	-2,571.45	-4,623.72	5,244.62	5,206.48	38.14	137.513	
1,123.00	1,117.00	1,274.18	1,273.73	2.90	38.18	61.64	-2,569.29	-4,623.72	5,233.86	5,192.85	41.01	127.624	
1,214.00	1,206.00	1,350.14	1,349.68	3.29	40.46	61.11	-2,569.62	-4,623.72	5,224.81	5,181.15	43.66	119.675	
1,309.00	1,298.75	1,429.51	1,429.02	3.71	42.83	64.29	-2,570.40	-4,623.72	5,215.68	5,169.24	46.44	112.320	
1,403.00	1,390.39	1,552.10	1,551.39	4.13	46.51	67.53	-2,571.45	-4,623.72	5,207.36	5,156.85	50.51	103.090	
1,498.00	1,482.88	1,644.59	1,643.88	4.56	49.28	64.57	-2,571.45	-4,623.72	5,198.33	5,144.63	53.70	96.804	
1,592.00	1,573.82	1,735.54	1,734.82	5.00	52.00	64.58	-2,571.45	-4,623.72	5,187.86	5,131.00	56.85	91.252	
1,687.00	1,665.32	1,816.13	1,815.37	5.46	54.42	67.75	-2,569.42	-4,623.72	5,176.28	5,116.57	59.71	86.690	
1,876.00	1,847.35	2,009.37	2,008.35	6.38	60.21	70.83	-2,571.45	-4,623.72	5,158.63	5,092.23	66.40	77.693	
1,970.00	1,937.87	2,099.89	2,098.87	6.84	62.92	71.29	-2,571.45	-4,623.72	5,150.12	5,080.56	69.56	74.038	
2,064.00	2,028.42	2,190.44	2,189.42	7.30	65.64	72.05	-2,571.45	-4,623.72	5,141.91	5,069.19	72.73	70.701	
2,159.00	2,119.97	2,277.65	2,276.60	7.77	68.25	73.54	-2,569.30	-4,623.72	5,133.21	5,057.41	75.80	67.719	
2,348.00	2,302.44	2,436.15	2,435.05	8.69	73.00	69.24	-2,570.48	-4,623.72	5,117.69	5,036.22	81.46	62.821	
2,443.00	2,394.41	2,556.73	2,555.41	9.15	76.61	68.90	-2,571.45	-4,623.72	5,109.28	5,023.75	85.53	59.738	
2,537.00	2,485.45	2,647.77	2,646.45	9.61	79.34	68.91	-2,571.45	-4,623.72	5,100.63	5,011.93	88.70	57.503	
2,632.00	2,577.48	2,739.80	2,738.48	10.07	82.10	69.43	-2,571.45	-4,623.72	5,092.01	5,000.10	91.91	55.401	
2,727.00	2,669.50	2,821.40	2,820.03	10.53	84.54	69.72	-2,569.45	-4,623.72	5,082.73	4,987.92	94.81	53.609	
2,821.00	2,760.56	2,901.12	2,899.73	10.98	86.93	69.69	-2,570.07	-4,623.72	5,074.71	4,977.06	97.65	51.969	
2,916.00	2,852.68	3,015.30	3,013.68	11.44	90.35	69.86	-2,571.45	-4,623.72	5,066.99	4,965.47	101.52	49.912	
3,011.00	2,945.03	3,107.65	3,106.03	11.89	93.12	70.14	-2,571.45	-4,623.72	5,059.18	4,954.45	104.73	48.307	
3,105.00	3,036.57	3,199.19	3,197.57	12.33	95.86	64.73	-2,571.45	-4,623.72	5,050.80	4,942.89	107.91	46.807	
3,200.00	3,128.81	3,286.39	3,284.72	12.78	98.48	61.84	-2,569.32	-4,623.72	5,039.47	4,928.51	110.96	45.416	
3,294.00	3,219.76	3,366.52	3,364.83	13.24	100.88	61.69	-2,569.75	-4,623.72	5,028.16	4,914.35	113.81	44.181	
3,389.00	3,311.82	3,447.86	3,446.15	13.69	103.31	62.81	-2,570.64	-4,623.72	5,017.37	4,900.67	116.69	42.996	
3,483.00	3,403.03	3,565.96	3,564.03	14.14	106.85	63.46	-2,571.45	-4,623.72	5,007.11	4,886.44	120.67	41.495	
3,578.00	3,495.31	3,658.24	3,656.31	14.60	109.62	64.17	-2,571.45	-4,623.72	4,996.91	4,873.04	123.88	40.338	
3,672.00	3,586.65	3,749.58	3,747.65	15.04	112.35	65.53	-2,571.45	-4,623.72	4,987.25	4,860.20	127.05	39.254	
3,767.00	3,678.95	3,831.43	3,829.45	15.49	114.81	66.22	-2,569.50	-4,623.72	4,977.14	4,847.19	129.95	38.300	
3,862.00	3,771.63	3,913.81	3,911.81	15.93	117.28	66.04	-2,570.21	-4,623.72	4,968.83	4,835.98	132.85	37.401	
3,956.00	3,863.70	4,026.93	4,024.70	16.35	120.67	66.56	-2,571.45	-4,623.72	4,961.49	4,824.83	136.66	36.306	
4,052.00	3,957.54	4,120.77	4,118.54	16.79	123.48	65.72	-2,571.45	-4,623.72	4,953.14	4,813.24	139.90	35.405	
4,146.00	4,048.88	4,212.11	4,209.88	17.24	126.21	66.03	-2,571.45	-4,623.72	4,943.85	4,800.77	143.08	34.553	
4,241.00	4,140.47	4,297.90	4,295.62	17.71	128.78	69.08	-2,569.35	-4,623.72	4,933.21	4,787.10	146.12	33.762	
4,336.00	4,231.25	4,379.15	4,376.85	18.21	131.22	72.73	-2,569.85	-4,623.72	4,923.94	4,774.89	149.05	33.036	
4,430.00	4,320.59	4,459.42	4,457.10	18.71	133.62	71.40	-2,570.80	-4,623.72	4,914.91	4,762.95	151.95	32.345	
4,524.00	4,409.51	4,573.05	4,570.51	19.22	137.03	68.36	-2,571.45	-4,623.72	4,904.05	4,748.19	155.87	31.463	
4,619.00	4,498.98	4,662.52	4,659.98	19.75	139.71	68.02	-2,571.45	-4,623.72	4,891.56	4,732.49	159.07	30.751	
4,713.00	4,587.83	4,751.22	4,748.64	20.27	142.37	68.22	-2,569.27	-4,623.72	4,878.84	4,716.61	162.24	30.072	
4,807.00	4,676.97	4,831.66	4,829.07	20.78	144.78	69.84	-2,569.50	-4,623.72	4,867.75	4,702.60	165.16	29.474	
4,870.00	4,736.65	4,885.71	4,883.10	21.12	146.40	70.38	-2,569.91	-4,623.72	4,860.72	4,693.60	167.12	29.086	
4,933.00	4,796.58	4,940.11	4,937.49	21.46	148.03	70.40	-2,570.53	-4,623.72	4,854.14	4,685.06	169.08	28.708	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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
5,027.00	4,886.13	5,049.97	5,047.13	21.96	151.32	71.56	-2,571.45	-4,623.72	4,844.68	4,671.80	172.87	28.024	
5,121.00	4,976.11	5,139.95	5,137.11	22.45	154.02	71.96	-2,571.45	-4,623.72	4,835.82	4,659.76	176.06	27.467	
5,216.00	5,068.11	5,231.95	5,229.11	22.91	156.77	72.07	-2,571.45	-4,623.72	4,828.30	4,649.02	179.28	26.931	
5,341.00	5,190.11	5,344.67	5,341.78	23.49	160.15	71.85	-2,569.58	-4,623.72	4,819.16	4,635.92	183.24	26.300	
5,436.00	5,283.20	5,429.70	5,426.78	23.91	162.70	72.09	-2,570.40	-4,623.72	4,813.46	4,627.24	186.22	25.849	
5,499.00	5,345.03	5,509.18	5,506.03	24.19	165.08	72.15	-2,571.45	-4,623.72	4,809.96	4,621.08	188.87	25.467	
5,561.00	5,405.97	5,570.11	5,566.97	24.45	166.91	73.25	-2,571.45	-4,623.72	4,806.50	4,615.53	190.97	25.169	
5,624.00	5,467.97	5,632.12	5,628.97	24.72	168.76	72.30	-2,571.45	-4,623.72	4,803.15	4,610.05	193.10	24.874	
5,687.00	5,530.05	5,694.20	5,691.05	24.99	170.62	73.31	-2,571.45	-4,623.72	4,799.93	4,604.71	195.22	24.587	
5,750.00	5,592.20	5,755.79	5,752.61	25.25	172.47	73.68	-2,569.27	-4,623.72	4,796.35	4,599.02	197.33	24.306	
5,813.00	5,654.42	5,812.77	5,809.58	25.51	174.18	74.78	-2,569.41	-4,623.72	4,793.67	4,594.37	199.30	24.052	
5,876.00	5,716.68	5,869.87	5,866.67	25.76	175.89	75.07	-2,569.77	-4,623.72	4,791.26	4,589.99	201.27	23.805	
5,939.00	5,778.99	5,927.09	5,923.87	26.01	177.60	74.94	-2,570.37	-4,623.72	4,789.01	4,585.77	203.24	23.563	
6,065.00	5,903.86	6,068.31	6,064.86	26.51	181.83	74.99	-2,571.45	-4,623.72	4,784.88	4,576.91	207.97	23.008	
6,128.00	5,966.41	6,130.87	6,127.41	26.74	183.71	73.61	-2,571.45	-4,623.72	4,782.85	4,572.77	210.08	22.766	
6,191.00	6,029.04	6,193.49	6,190.04	26.97	185.59	74.31	-2,571.45	-4,623.72	4,780.95	4,568.75	212.20	22.531	
6,254.00	6,091.75	6,255.69	6,252.20	27.20	187.45	75.25	-2,569.27	-4,623.72	4,778.78	4,564.49	214.29	22.301	
6,348.00	6,185.46	6,341.86	6,338.35	27.52	190.03	78.11	-2,569.57	-4,623.72	4,777.14	4,559.94	217.20	21.994	
6,390.00	6,227.36	6,380.41	6,376.90	27.61	191.19	78.14	-2,569.87	-4,623.72	4,776.62	4,558.18	218.44	21.867	
6,400.00	6,237.33	6,389.60	6,386.08	27.61	191.46	78.15	-2,569.95	-4,623.72	4,776.50	4,557.79	218.72	21.839	
6,490.00	6,327.12	6,472.29	6,468.75	27.66	193.94	78.20	-2,571.00	-4,623.72	4,775.52	4,554.27	221.24	21.585	
6,500.00	6,337.09	6,501.85	6,498.09	27.66	194.82	65.82	-2,571.45	-4,623.72	4,775.37	4,553.24	222.13	21.498	
6,550.00	6,386.85	6,551.61	6,547.85	27.70	196.32	29.26	-2,571.45	-4,623.72	4,771.88	4,548.23	223.65	21.336	
6,600.00	6,436.20	6,600.96	6,597.20	27.74	197.79	16.44	-2,571.45	-4,623.72	4,764.45	4,539.29	225.16	21.160	
6,650.00	6,484.82	6,649.57	6,645.82	27.79	199.25	10.57	-2,571.45	-4,623.72	4,753.11	4,526.46	226.65	20.972	
6,700.00	6,532.40	6,697.15	6,693.40	27.85	200.68	7.25	-2,571.45	-4,623.72	4,737.94	4,509.84	228.10	20.771	
6,750.00	6,578.63	6,743.39	6,739.63	27.92	202.06	5.09	-2,571.45	-4,623.72	4,719.04	4,489.53	229.52	20.561	
6,800.00	6,623.24	6,785.02	6,781.22	28.00	203.31	3.57	-2,569.31	-4,623.72	4,695.97	4,465.18	230.79	20.347	
6,850.00	6,665.93	6,824.42	6,820.62	28.09	204.49	2.36	-2,569.46	-4,623.72	4,670.03	4,438.03	232.00	20.129	
6,900.00	6,706.42	6,861.85	6,858.04	28.19	205.61	1.34	-2,569.71	-4,623.72	4,640.81	4,407.66	233.15	19.905	
6,950.00	6,744.48	6,897.07	6,893.25	28.30	206.67	0.41	-2,570.03	-4,623.72	4,608.49	4,374.25	234.23	19.675	
7,000.00	6,779.84	6,929.86	6,926.02	28.43	207.65	-0.49	-2,570.40	-4,623.72	4,573.27	4,338.02	235.24	19.441	
7,050.00	6,812.30	6,959.99	6,956.15	28.57	208.55	-1.43	-2,570.81	-4,623.72	4,535.36	4,299.20	236.17	19.204	
7,100.00	6,841.63	7,006.69	7,002.63	28.73	209.95	-2.51	-2,571.45	-4,623.72	4,495.03	4,257.45	237.58	18.920	
7,150.00	6,867.66	7,032.72	7,028.66	28.90	210.73	-3.78	-2,571.45	-4,623.72	4,452.37	4,214.00	238.38	18.678	
7,200.00	6,890.22	7,055.28	7,051.22	29.08	211.41	-5.41	-2,571.45	-4,623.72	4,407.80	4,168.73	239.07	18.438	
7,250.00	6,909.17	7,074.23	7,070.17	29.28	211.98	-7.71	-2,571.45	-4,623.72	4,361.58	4,121.94	239.64	18.201	
7,300.00	6,924.38	7,089.44	7,085.38	29.49	212.43	-11.24	-2,571.45	-4,623.72	4,314.03	4,073.93	240.09	17.968	
7,350.00	6,935.77	7,100.83	7,096.77	29.72	212.77	-17.45	-2,571.45	-4,623.72	4,265.43	4,025.00	240.43	17.741	
7,400.00	6,943.25	7,108.31	7,104.25	29.97	213.00	-30.81	-2,571.45	-4,623.72	4,216.10	3,975.46	240.64	17.520	
7,450.00	6,946.78	7,111.84	7,107.78	30.22	213.10	-66.78	-2,571.45	-4,623.72	4,166.36	3,925.63	240.72	17.308	
7,471.54	6,947.08	7,112.14	7,108.08	30.34	213.11	-92.54	-2,571.45	-4,623.72	4,144.88	3,904.16	240.72	17.219	
7,500.00	6,946.98	7,112.04	7,107.98	30.49	213.11	-92.22	-2,571.45	-4,623.72	4,116.51	3,875.81	240.70	17.102	
7,600.00	6,946.65	7,111.71	7,107.65	31.07	213.10	-91.54	-2,571.45	-4,623.72	4,017.06	3,776.44	240.61	16.695	
7,700.00	6,946.32	7,111.38	7,107.32	31.69	213.09	-91.16	-2,571.45	-4,623.72	3,918.07	3,677.58	240.49	16.292	
7,800.00	6,945.99	7,111.05	7,106.99	32.35	213.08	-90.92	-2,571.45	-4,623.72	3,819.70	3,579.37	240.33	15.894	
7,900.00	6,945.67	7,110.73	7,106.67	33.05	213.07	-90.76	-2,571.45	-4,623.72	3,722.14	3,482.00	240.14	15.500	
8,000.00	6,945.34	7,110.40	7,106.34	33.79	213.06	-90.64	-2,571.45	-4,623.72	3,625.57	3,385.65	239.92	15.112	
8,034.58	6,945.23	7,110.29	7,106.23	34.05	213.06	-90.60	-2,571.45	-4,623.72	3,592.44	3,352.61	239.84	14.979	
8,100.00	6,945.02	7,110.08	7,106.02	34.57	213.05	-90.59	-2,571.45	-4,623.72	3,529.96	3,290.29	239.67	14.728	
8,200.00	6,944.69	7,109.76	7,105.69	35.41	213.04	-90.57	-2,571.45	-4,623.72	3,434.67	3,195.24	239.43	14.345	
8,300.00	6,944.37	7,109.43	7,105.37	36.30	213.03	-90.56	-2,571.45	-4,623.72	3,339.65	3,100.46	239.19	13.962	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,400.00	6,944.05	7,109.11	7,105.05	37.25	213.02	-90.54	-2,571.45	-4,623.72	3,244.93	3,005.97	238.96	13.579	
8,500.00	6,943.73	7,108.79	7,104.73	38.25	213.01	-90.52	-2,571.45	-4,623.72	3,150.54	2,911.80	238.74	13.197	
8,600.00	6,943.40	7,108.46	7,104.40	39.29	213.00	-90.50	-2,571.45	-4,623.72	3,056.50	2,817.97	238.53	12.814	
8,700.00	6,943.08	7,108.14	7,104.08	40.37	212.99	-90.49	-2,571.45	-4,623.72	2,962.86	2,724.52	238.34	12.431	
8,800.00	6,942.76	7,107.82	7,103.76	41.49	212.98	-90.47	-2,571.45	-4,623.72	2,869.64	2,631.47	238.17	12.049	
8,900.00	6,942.43	7,107.49	7,103.43	42.64	212.97	-90.45	-2,571.45	-4,623.72	2,776.89	2,538.86	238.03	11.666	
9,000.00	6,942.11	7,107.17	7,103.11	43.82	212.96	-90.43	-2,571.45	-4,623.72	2,684.67	2,446.74	237.93	11.283	
9,100.00	6,941.79	7,106.85	7,102.79	45.03	212.95	-90.42	-2,571.45	-4,623.72	2,593.02	2,355.14	237.88	10.900	
9,200.00	6,941.46	7,106.53	7,102.46	46.27	212.94	-90.40	-2,571.45	-4,623.72	2,502.01	2,264.12	237.89	10.517	
9,300.00	6,941.14	7,106.20	7,102.14	47.53	212.93	-90.38	-2,571.45	-4,623.72	2,411.72	2,173.74	237.97	10.134	
9,400.00	6,940.82	7,105.88	7,101.82	48.81	212.92	-90.36	-2,571.45	-4,623.72	2,322.21	2,084.06	238.15	9.751	
9,500.00	6,940.50	7,105.56	7,101.50	50.11	212.91	-90.35	-2,571.45	-4,623.72	2,233.60	1,995.17	238.44	9.368	
9,600.00	6,940.17	7,105.23	7,101.17	51.43	212.90	-90.33	-2,571.45	-4,623.72	2,146.00	1,907.14	238.85	8.985	
9,700.00	6,939.85	7,104.91	7,100.85	52.76	212.90	-90.31	-2,571.45	-4,623.72	2,059.52	1,820.09	239.42	8.602	
9,800.00	6,939.53	7,104.59	7,100.53	54.11	212.89	-90.29	-2,571.45	-4,623.72	1,974.31	1,734.14	240.18	8.220	
9,900.00	6,939.20	7,104.26	7,100.20	55.48	212.88	-90.28	-2,571.45	-4,623.72	1,890.56	1,649.43	241.13	7.840	
10,000.00	6,938.88	7,103.94	7,099.88	56.86	212.87	-90.26	-2,571.45	-4,623.72	1,808.46	1,566.13	242.33	7.463	
10,100.00	6,938.56	7,103.62	7,099.56	58.25	212.86	-90.24	-2,571.45	-4,623.72	1,728.25	1,484.46	243.79	7.089	
10,200.00	6,938.23	7,103.30	7,099.23	59.65	212.85	-90.22	-2,571.45	-4,623.72	1,650.20	1,404.66	245.53	6.721	
10,300.00	6,937.91	7,102.97	7,098.91	61.06	212.84	-90.20	-2,571.45	-4,623.72	1,574.63	1,327.04	247.59	6.360	
10,400.00	6,937.59	7,102.65	7,098.59	62.48	212.83	-90.19	-2,571.45	-4,623.72	1,501.92	1,251.94	249.98	6.008	
10,500.00	6,937.27	7,102.33	7,098.27	63.91	212.82	-90.17	-2,571.45	-4,623.72	1,432.51	1,179.79	252.72	5.668	
10,600.00	6,936.94	7,102.00	7,097.94	65.34	212.81	-90.15	-2,571.45	-4,623.72	1,366.89	1,111.08	255.80	5.344	
10,700.00	6,936.62	7,101.68	7,097.62	66.79	212.80	-90.13	-2,571.45	-4,623.72	1,305.64	1,046.41	259.23	5.037	
10,800.00	6,936.30	7,101.36	7,097.30	68.24	212.79	-90.12	-2,571.45	-4,623.72	1,249.40	986.44	262.96	4.751	
10,900.00	6,935.97	7,101.03	7,096.97	69.70	212.78	-90.10	-2,571.45	-4,623.72	1,198.87	931.92	266.95	4.491	
11,000.00	6,935.65	7,100.71	7,096.65	71.17	212.77	-90.08	-2,571.45	-4,623.72	1,154.82	883.70	271.12	4.259	
11,100.00	6,935.33	7,100.39	7,096.33	72.64	212.76	-90.06	-2,571.45	-4,623.72	1,117.99	842.63	275.36	4.060	
11,200.00	6,935.00	7,100.07	7,096.00	74.11	212.75	-90.05	-2,571.45	-4,623.72	1,089.14	809.61	279.53	3.896	
11,300.00	6,934.68	7,099.74	7,095.68	75.60	212.74	-90.03	-2,571.45	-4,623.72	1,068.89	785.41	283.47	3.771	
11,400.00	6,934.36	7,099.42	7,095.36	77.08	212.73	-90.01	-2,571.45	-4,623.72	1,057.75	770.71	287.04	3.685	
11,468.48	6,934.14	7,099.20	7,095.14	78.10	212.72	-90.00	-2,571.45	-4,623.72	1,055.53	766.35	289.18	3.650 CC	
11,500.00	6,934.03	7,099.10	7,095.03	78.57	212.72	-89.99	-2,571.45	-4,623.72	1,056.00	765.92	290.08	3.640 ES	
11,600.00	6,933.71	7,098.77	7,094.71	80.07	212.71	-89.98	-2,571.45	-4,623.72	1,063.69	771.19	292.50	3.637 SF	
11,700.00	6,933.39	7,098.45	7,094.39	81.57	212.70	-89.96	-2,571.45	-4,623.72	1,080.62	786.35	294.27	3.672	
11,800.00	6,933.07	7,098.13	7,094.07	83.07	212.69	-89.94	-2,571.45	-4,623.72	1,106.37	810.98	295.38	3.746	
11,900.00	6,932.74	7,097.80	7,093.74	84.58	212.68	-89.92	-2,571.45	-4,623.72	1,140.33	844.43	295.90	3.854	
12,000.00	6,932.42	7,097.48	7,093.42	86.09	212.67	-89.91	-2,571.45	-4,623.72	1,181.80	885.89	295.92	3.994	
12,100.00	6,932.10	7,097.16	7,093.10	87.60	212.66	-89.89	-2,571.45	-4,623.72	1,230.02	934.51	295.51	4.162	
12,200.00	6,931.77	7,096.83	7,092.77	89.12	212.65	-89.87	-2,571.45	-4,623.72	1,284.24	989.44	294.80	4.356	
12,300.00	6,931.45	7,096.51	7,092.45	90.64	212.64	-89.85	-2,571.45	-4,623.72	1,343.71	1,049.86	293.85	4.573	
12,400.00	6,931.13	7,096.19	7,092.13	92.16	212.63	-89.84	-2,571.45	-4,623.72	1,407.79	1,115.03	292.76	4.809	
12,500.00	6,930.80	7,095.87	7,091.80	93.69	212.62	-89.82	-2,571.45	-4,623.72	1,475.86	1,184.30	291.57	5.062	
12,600.00	6,930.48	7,095.54	7,091.48	95.22	212.61	-89.80	-2,571.45	-4,623.72	1,547.41	1,257.08	290.33	5.330	
12,700.00	6,930.16	7,095.22	7,091.16	96.75	212.60	-89.78	-2,571.45	-4,623.72	1,621.97	1,332.88	289.08	5.611	
12,800.00	6,929.84	7,094.90	7,090.84	98.28	212.60	-89.77	-2,571.45	-4,623.72	1,699.14	1,411.29	287.85	5.903	
12,900.00	6,929.51	7,094.57	7,090.51	99.82	212.59	-89.75	-2,571.45	-4,623.72	1,778.59	1,491.95	286.64	6.205	
13,000.00	6,929.19	7,094.25	7,090.19	101.35	212.58	-89.73	-2,571.45	-4,623.72	1,860.02	1,574.55	285.47	6.516	
13,100.00	6,928.87	7,093.93	7,089.87	102.89	212.57	-89.71	-2,571.45	-4,623.72	1,943.19	1,658.84	284.35	6.834	
13,200.00	6,928.54	7,093.60	7,089.54	104.43	212.56	-89.70	-2,571.45	-4,623.72	2,027.88	1,744.60	283.28	7.159	
13,300.00	6,928.22	7,093.28	7,089.22	105.97	212.55	-89.68	-2,571.45	-4,623.72	2,113.90	1,831.64	282.26	7.489	
13,400.00	6,927.90	7,092.96	7,088.90	107.52	212.54	-89.66	-2,571.45	-4,623.72	2,201.11	1,919.81	281.30	7.825	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	7,092.64	7,088.57	109.06	212.53	-89.64	-2,571.45	-4,623.72	2,289.37	2,008.98	280.39	8.165	
13,600.00	6,927.25	7,092.31	7,088.25	110.61	212.52	-89.63	-2,571.45	-4,623.72	2,378.55	2,099.03	279.52	8.509	
13,700.00	6,926.93	7,091.99	7,087.93	112.16	212.51	-89.61	-2,571.45	-4,623.72	2,468.56	2,189.86	278.71	8.857	
13,800.00	6,926.61	7,091.67	7,087.61	113.71	212.50	-89.59	-2,571.45	-4,623.72	2,559.32	2,281.38	277.94	9.208	
13,900.00	6,926.28	7,091.34	7,087.28	115.26	212.49	-89.57	-2,571.45	-4,623.72	2,650.73	2,373.53	277.21	9.562	
14,000.00	6,925.96	7,091.02	7,086.96	116.82	212.48	-89.56	-2,571.45	-4,623.72	2,742.75	2,466.23	276.52	9.919	
14,100.00	6,925.64	7,090.70	7,086.64	118.37	212.47	-89.54	-2,571.45	-4,623.72	2,835.31	2,559.44	275.87	10.278	
14,200.00	6,925.31	7,090.37	7,086.31	119.93	212.46	-89.52	-2,571.45	-4,623.72	2,928.36	2,653.10	275.26	10.639	
14,300.00	6,924.99	7,090.05	7,085.99	121.48	212.45	-89.50	-2,571.45	-4,623.72	3,021.85	2,747.17	274.68	11.001	
14,400.00	6,924.67	7,089.73	7,085.67	123.04	212.44	-89.49	-2,571.45	-4,623.72	3,115.75	2,841.62	274.13	11.366	
14,500.00	6,924.34	7,089.41	7,085.34	124.60	212.43	-89.47	-2,571.45	-4,623.72	3,210.01	2,936.40	273.61	11.732	
14,600.00	6,924.02	7,089.08	7,085.02	126.16	212.42	-89.45	-2,571.45	-4,623.72	3,304.62	3,031.49	273.12	12.099	
14,700.00	6,923.70	7,088.76	7,084.70	127.72	212.41	-89.43	-2,571.45	-4,623.72	3,399.53	3,126.87	272.66	12.468	
14,800.00	6,923.38	7,088.44	7,084.38	129.28	212.40	-89.42	-2,571.45	-4,623.72	3,494.72	3,222.50	272.22	12.838	
14,900.00	6,923.05	7,088.11	7,084.05	130.85	212.39	-89.40	-2,571.45	-4,623.72	3,590.18	3,318.38	271.80	13.209	
15,000.00	6,922.73	7,087.79	7,083.73	132.41	212.38	-89.38	-2,571.45	-4,623.72	3,685.88	3,414.47	271.41	13.581	
15,100.00	6,922.41	7,087.47	7,083.41	133.97	212.37	-89.36	-2,571.45	-4,623.72	3,781.80	3,510.77	271.03	13.953	
15,200.00	6,922.08	7,087.14	7,083.08	135.54	212.36	-89.35	-2,571.45	-4,623.72	3,877.92	3,607.25	270.67	14.327	
15,300.00	6,921.76	7,086.82	7,082.76	137.11	212.35	-89.33	-2,571.45	-4,623.72	3,974.24	3,703.90	270.33	14.701	
15,400.00	6,921.44	7,086.50	7,082.44	138.67	212.34	-89.31	-2,571.45	-4,623.72	4,070.73	3,800.72	270.01	15.076	
15,500.00	6,921.11	7,086.18	7,082.11	140.24	212.33	-89.29	-2,571.45	-4,623.72	4,167.39	3,897.69	269.71	15.452	
15,600.00	6,920.79	7,085.85	7,081.79	141.81	212.32	-89.28	-2,571.45	-4,623.72	4,264.21	3,994.79	269.41	15.828	
15,700.00	6,920.47	7,085.53	7,081.47	143.38	212.31	-89.26	-2,571.45	-4,623.72	4,361.17	4,092.03	269.14	16.204	
15,800.00	6,920.14	7,085.21	7,081.14	144.95	212.30	-89.24	-2,571.45	-4,623.72	4,458.26	4,189.39	268.87	16.581	
15,900.00	6,919.82	7,084.88	7,080.82	146.52	212.30	-89.22	-2,571.45	-4,623.72	4,555.48	4,286.85	268.62	16.959	
16,000.00	6,919.50	7,084.56	7,080.50	148.09	212.29	-89.21	-2,571.45	-4,623.72	4,652.81	4,384.43	268.38	17.337	
16,100.00	6,919.18	7,084.24	7,080.18	149.66	212.28	-89.19	-2,571.45	-4,623.72	4,750.26	4,482.11	268.15	17.715	
16,200.00	6,918.85	7,083.91	7,079.85	151.24	212.27	-89.17	-2,571.45	-4,623.72	4,847.81	4,579.87	267.93	18.093	
16,300.00	6,918.53	7,083.59	7,079.53	152.81	212.26	-89.15	-2,571.45	-4,623.72	4,945.46	4,677.73	267.73	18.472	
16,400.00	6,918.21	7,083.27	7,079.21	154.38	212.25	-89.14	-2,571.45	-4,623.72	5,043.20	4,775.67	267.53	18.851	
16,500.00	6,917.88	7,082.94	7,078.88	155.96	212.24	-89.12	-2,571.45	-4,623.72	5,141.02	4,873.69	267.34	19.230	
16,600.00	6,917.56	7,082.62	7,078.56	157.53	212.23	-89.10	-2,571.45	-4,623.72	5,238.93	4,971.78	267.16	19.610	
16,700.00	6,917.24	7,082.30	7,078.24	159.11	212.22	-89.08	-2,571.45	-4,623.72	5,336.92	5,069.94	266.98	19.990	
16,800.00	6,916.91	7,081.98	7,077.91	160.68	212.21	-89.07	-2,571.45	-4,623.72	5,434.98	5,168.16	266.82	20.369	
16,900.00	6,916.59	7,081.65	7,077.59	162.26	212.20	-89.05	-2,571.45	-4,623.72	5,533.11	5,266.45	266.66	20.749	
17,000.00	6,916.27	7,081.33	7,077.27	163.84	212.19	-89.03	-2,571.45	-4,623.72	5,631.31	5,364.79	266.51	21.130	
17,100.00	6,915.95	7,081.01	7,076.95	165.41	212.18	-89.01	-2,571.45	-4,623.72	5,729.56	5,463.19	266.37	21.510	
17,200.00	6,915.62	7,080.68	7,076.62	166.99	212.17	-89.00	-2,571.45	-4,623.72	5,827.88	5,561.65	266.23	21.890	
17,300.00	6,915.30	7,080.36	7,076.30	168.57	212.16	-88.98	-2,571.45	-4,623.72	5,926.25	5,660.15	266.10	22.271	
17,400.00	6,914.98	7,080.04	7,075.98	170.15	212.15	-88.96	-2,571.45	-4,623.72	6,024.68	5,758.70	265.98	22.651	
17,500.00	6,914.65	7,079.71	7,075.65	171.73	212.14	-88.94	-2,571.45	-4,623.72	6,123.16	5,857.30	265.86	23.032	
17,600.00	6,914.33	7,079.39	7,075.33	173.31	212.13	-88.93	-2,571.45	-4,623.72	6,221.68	5,955.94	265.75	23.412	
17,700.00	6,914.01	7,079.07	7,075.01	174.89	212.12	-88.91	-2,571.45	-4,623.72	6,320.26	6,054.62	265.64	23.793	
17,800.00	6,913.68	7,078.75	7,074.68	176.47	212.11	-88.89	-2,571.45	-4,623.72	6,418.87	6,153.34	265.54	24.173	
17,900.00	6,913.36	7,078.42	7,074.36	178.05	212.10	-88.87	-2,571.45	-4,623.72	6,517.53	6,252.09	265.44	24.554	
18,000.00	6,913.04	7,078.10	7,074.04	179.63	212.09	-88.85	-2,571.45	-4,623.72	6,616.23	6,350.89	265.34	24.934	
18,100.00	6,912.72	7,077.78	7,073.72	181.21	212.08	-88.84	-2,571.45	-4,623.72	6,714.97	6,449.71	265.26	25.315	
18,111.83	6,912.68	7,077.74	7,073.68	181.40	212.08	-88.84	-2,571.45	-4,623.72	6,726.66	6,461.41	265.25	25.360	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030C - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	178.00	178.00	0.00	5.33	-129.97	-2,516.19	-3,001.86	3,916.94				
54.25	54.25	232.25	232.25	0.02	6.96	168.48	-2,516.19	-3,001.86	3,917.05	3,910.07	6.98	561.577	
130.42	130.42	308.42	308.42	0.11	9.24	141.32	-2,516.19	-3,001.86	3,917.36	3,908.01	9.35	419.006	
219.69	219.69	397.69	397.69	0.23	11.92	167.40	-2,516.19	-3,001.86	3,917.78	3,905.65	12.13	322.946	
308.67	308.67	486.67	486.67	0.35	14.58	158.49	-2,516.19	-3,001.86	3,918.29	3,903.38	14.91	262.785	
454.00	453.99	632.09	631.99	0.51	18.94	23.92	-2,516.19	-3,001.86	3,917.78	3,898.35	19.43	201.598	
544.00	543.93	722.04	721.93	0.74	21.64	24.27	-2,516.19	-3,001.86	3,914.98	3,892.62	22.36	175.084	
667.00	666.63	830.66	830.50	1.13	24.89	11.27	-2,514.24	-3,001.86	3,905.59	3,879.58	26.01	150.132	
756.00	755.27	906.22	906.05	1.44	27.15	26.23	-2,514.86	-3,001.86	3,898.49	3,869.91	28.58	136.384	
850.00	848.62	1,027.03	1,026.62	1.79	30.77	28.00	-2,516.19	-3,001.86	3,889.49	3,856.95	32.54	119.521	
942.00	939.50	1,117.90	1,117.50	2.14	33.50	34.73	-2,516.19	-3,001.86	3,877.29	3,841.69	35.61	108.889	
1,033.00	1,028.89	1,207.29	1,206.89	2.52	36.18	44.40	-2,516.19	-3,001.86	3,864.15	3,825.52	38.63	100.028	
1,123.00	1,117.00	1,288.79	1,288.34	2.90	38.62	50.88	-2,514.06	-3,001.86	3,850.32	3,808.90	41.42	92.959	
1,214.00	1,206.00	1,365.03	1,364.56	3.29	40.90	50.38	-2,514.47	-3,001.86	3,838.45	3,794.38	44.06	87.110	
1,309.00	1,298.75	1,444.68	1,444.19	3.71	43.29	53.63	-2,515.33	-3,001.86	3,826.28	3,779.44	46.84	81.692	
1,403.00	1,390.39	1,569.10	1,568.39	4.13	47.02	56.95	-2,516.19	-3,001.86	3,814.57	3,763.61	50.96	74.858	
1,498.00	1,482.88	1,661.59	1,660.88	4.56	49.79	54.03	-2,516.19	-3,001.86	3,802.03	3,747.90	54.13	70.236	
1,592.00	1,573.82	1,752.16	1,751.41	5.00	52.50	54.17	-2,514.01	-3,001.86	3,786.45	3,729.19	57.26	66.127	
1,687.00	1,665.32	1,831.00	1,830.24	5.46	54.87	57.40	-2,514.24	-3,001.86	3,771.87	3,711.82	60.05	62.811	
1,876.00	1,847.35	2,026.37	2,025.35	6.38	60.72	60.65	-2,516.19	-3,001.86	3,746.17	3,679.39	66.77	56.104	
1,970.00	1,937.87	2,116.89	2,115.87	6.84	63.43	61.19	-2,516.19	-3,001.86	3,733.50	3,663.58	69.92	53.395	
2,064.00	2,028.42	2,207.44	2,206.42	7.30	66.14	62.02	-2,516.19	-3,001.86	3,721.15	3,648.07	73.08	50.921	
2,159.00	2,119.97	2,292.51	2,291.45	7.77	68.69	63.59	-2,514.07	-3,001.86	3,707.96	3,631.89	76.08	48.740	
2,348.00	2,302.44	2,451.59	2,450.49	8.69	73.46	59.35	-2,515.43	-3,001.86	3,684.83	3,603.10	81.74	45.083	
2,443.00	2,394.41	2,573.73	2,572.41	9.15	77.12	59.09	-2,516.19	-3,001.86	3,672.68	3,586.85	85.83	42.788	
2,537.00	2,485.45	2,664.77	2,663.45	9.61	79.85	59.18	-2,516.19	-3,001.86	3,660.40	3,571.40	89.00	41.129	
2,632.00	2,577.48	2,755.92	2,754.56	10.07	82.58	59.79	-2,514.01	-3,001.86	3,646.90	3,554.73	92.17	39.566	
2,727.00	2,669.50	2,836.54	2,835.17	10.53	85.00	60.12	-2,514.27	-3,001.86	3,634.99	3,539.96	95.03	38.249	
2,821.00	2,760.56	2,916.55	2,915.16	10.98	87.39	60.14	-2,514.98	-3,001.86	3,623.55	3,525.68	97.87	37.023	
2,916.00	2,852.68	3,032.30	3,030.68	11.44	90.86	60.39	-2,516.19	-3,001.86	3,612.38	3,510.60	101.78	35.492	
3,011.00	2,945.03	3,124.65	3,123.03	11.89	93.63	60.73	-2,516.19	-3,001.86	3,601.20	3,496.21	104.99	34.302	
3,105.00	3,036.57	3,216.19	3,214.57	12.33	96.37	55.34	-2,516.19	-3,001.86	3,589.67	3,481.52	108.15	33.190	
3,200.00	3,128.81	3,301.51	3,299.84	12.78	98.93	52.51	-2,514.10	-3,001.86	3,574.88	3,463.74	111.15	32.163	
3,294.00	3,219.76	3,381.94	3,380.25	13.24	101.34	52.41	-2,514.62	-3,001.86	3,560.45	3,446.46	113.99	31.234	
3,389.00	3,311.82	3,463.58	3,461.87	13.69	103.78	53.58	-2,515.60	-3,001.86	3,546.65	3,429.78	116.88	30.345	
3,483.00	3,403.03	3,582.96	3,581.03	14.14	107.36	54.32	-2,516.19	-3,001.86	3,533.24	3,412.36	120.88	29.229	
3,578.00	3,495.31	3,675.24	3,673.31	14.60	110.13	55.10	-2,516.19	-3,001.86	3,519.95	3,395.87	124.08	28.368	
3,672.00	3,586.65	3,764.70	3,762.74	15.04	112.81	56.57	-2,514.02	-3,001.86	3,506.10	3,378.91	127.19	27.565	
3,767.00	3,678.95	3,846.83	3,844.85	15.49	115.27	57.29	-2,514.34	-3,001.86	3,493.79	3,363.70	130.10	26.855	
3,862.00	3,771.63	3,929.52	3,927.52	15.93	117.75	57.14	-2,515.14	-3,001.86	3,482.78	3,349.77	133.00	26.186	
3,956.00	3,863.70	4,043.93	4,041.70	16.35	121.17	57.73	-2,516.19	-3,001.86	3,472.88	3,336.05	136.84	25.379	
4,052.00	3,957.54	4,137.77	4,135.54	16.79	123.99	56.98	-2,516.19	-3,001.86	3,461.78	3,321.71	140.08	24.713	
4,146.00	4,048.88	4,229.11	4,226.88	17.24	126.72	57.39	-2,516.19	-3,001.86	3,449.51	3,306.26	143.25	24.080	
4,241.00	4,140.47	4,313.29	4,311.01	17.71	129.25	60.59	-2,514.15	-3,001.86	3,435.21	3,288.97	146.24	23.490	
4,336.00	4,231.25	4,394.85	4,392.55	18.21	131.69	64.42	-2,514.74	-3,001.86	3,422.21	3,273.04	149.17	22.941	
4,430.00	4,320.59	4,501.13	4,498.59	18.71	134.87	63.29	-2,516.19	-3,001.86	3,409.47	3,256.62	152.85	22.306	
4,524.00	4,409.51	4,590.05	4,587.51	19.22	137.54	60.28	-2,516.19	-3,001.86	3,394.41	3,238.39	156.02	21.756	
4,619.00	4,498.98	4,679.52	4,676.98	19.75	140.22	60.06	-2,516.19	-3,001.86	3,377.80	3,218.58	159.22	21.215	
4,713.00	4,587.83	4,766.59	4,764.01	20.27	142.83	60.33	-2,514.02	-3,001.86	3,360.90	3,198.57	162.33	20.704	
4,807.00	4,676.97	4,847.35	4,844.75	20.78	145.25	62.08	-2,514.34	-3,001.86	3,346.11	3,180.86	165.26	20.248	
4,870.00	4,736.65	4,901.60	4,899.00	21.12	146.87	62.70	-2,514.81	-3,001.86	3,336.62	3,169.39	167.23	19.953	
4,933.00	4,796.58	4,956.22	4,953.60	21.46	148.51	62.75	-2,515.50	-3,001.86	3,327.73	3,158.53	169.20	19.668	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
5,027.00	4,886.13	5,066.97	5,064.13	21.96	151.83	64.09	-2,516.19	-3,001.86	3,314.70	3,141.69	173.01	19.159	
5,121.00	4,976.11	5,156.95	5,154.11	22.45	154.53	64.53	-2,516.19	-3,001.86	3,302.49	3,126.29	176.20	18.743	
5,216.00	5,068.11	5,248.95	5,246.11	22.91	157.28	64.69	-2,516.19	-3,001.86	3,292.07	3,112.65	179.42	18.349	
5,341.00	5,190.11	5,360.55	5,357.65	23.49	160.63	64.55	-2,514.44	-3,001.86	3,279.49	3,096.14	183.35	17.887	
5,436.00	5,283.20	5,445.91	5,442.98	23.91	163.18	64.86	-2,515.35	-3,001.86	3,271.68	3,085.34	186.34	17.558	
5,499.00	5,345.03	5,526.18	5,523.03	24.19	165.59	64.99	-2,516.19	-3,001.86	3,266.77	3,077.75	189.01	17.283	
5,561.00	5,405.97	5,587.11	5,583.97	24.45	167.42	66.13	-2,516.19	-3,001.86	3,261.96	3,070.85	191.11	17.068	
5,624.00	5,467.97	5,644.48	5,641.31	24.72	169.13	65.22	-2,515.19	-3,001.86	3,256.92	3,063.81	193.11	16.866	
5,687.00	5,530.05	5,696.80	5,693.62	24.99	170.70	66.25	-2,515.57	-3,001.86	3,252.63	3,057.69	194.95	16.685	
5,750.00	5,592.20	5,773.49	5,770.20	25.25	173.00	66.66	-2,516.19	-3,001.86	3,248.68	3,051.18	197.51	16.449	
5,813.00	5,654.42	5,835.71	5,832.42	25.51	174.86	67.82	-2,516.19	-3,001.86	3,244.81	3,045.18	199.63	16.254	
5,876.00	5,716.68	5,893.92	5,890.60	25.76	176.61	68.18	-2,515.10	-3,001.86	3,240.76	3,039.11	201.64	16.072	
5,939.00	5,778.99	5,947.32	5,943.99	26.01	178.21	68.08	-2,515.46	-3,001.86	3,237.42	3,033.92	203.50	15.909	
6,065.00	5,903.86	6,085.31	6,081.86	26.51	182.34	68.19	-2,516.19	-3,001.86	3,231.36	3,023.23	208.13	15.525	
6,128.00	5,966.41	6,147.87	6,144.41	26.74	184.22	66.84	-2,516.19	-3,001.86	3,228.50	3,018.25	210.25	15.356	
6,191.00	6,029.04	6,210.49	6,207.04	26.97	186.09	67.56	-2,516.19	-3,001.86	3,225.83	3,013.47	212.36	15.190	
6,254.00	6,091.75	6,273.20	6,269.75	27.20	187.97	68.51	-2,516.19	-3,001.86	3,223.57	3,009.09	214.47	15.030	
6,348.00	6,185.46	6,317.00	6,313.36	27.52	189.29	71.35	-2,516.19	-3,001.86	3,221.40	3,005.29	216.11	14.906	
6,369.63	6,207.03	6,317.00	6,313.36	27.57	189.29	71.35	-2,516.19	-3,001.86	3,221.33	3,005.19	216.14	14.904	
6,390.00	6,227.36	6,317.00	6,313.36	27.61	189.29	71.35	-2,516.19	-3,001.86	3,221.39	3,005.24	216.16	14.903	
6,400.00	6,237.33	6,317.00	6,313.36	27.61	189.29	71.35	-2,516.19	-3,001.86	3,221.47	3,005.33	216.15	14.904	
6,490.00	6,327.12	6,317.00	6,313.36	27.66	189.29	71.35	-2,516.19	-3,001.86	3,223.58	3,007.61	215.97	14.926	
6,500.00	6,337.09	6,317.00	6,313.36	27.66	189.29	58.95	-2,516.19	-3,001.86	3,223.89	3,007.95	215.94	14.929	
6,550.00	6,386.85	6,317.00	6,313.36	27.70	189.29	22.37	-2,516.19	-3,001.86	3,223.56	3,007.80	215.76	14.940	
6,600.00	6,436.20	6,317.00	6,313.36	27.74	189.29	9.51	-2,516.19	-3,001.86	3,220.10	3,004.57	215.53	14.940	
6,650.00	6,484.82	6,317.00	6,313.36	27.79	189.29	3.57	-2,516.19	-3,001.86	3,213.52	2,998.27	215.24	14.930	
6,700.00	6,532.40	6,317.00	6,313.36	27.85	189.29	0.15	-2,516.19	-3,001.86	3,203.83	2,988.93	214.91	14.908	
6,750.00	6,578.63	6,317.00	6,313.36	27.92	189.29	-2.13	-2,516.19	-3,001.86	3,191.09	2,976.57	214.52	14.875	
6,800.00	6,623.24	6,317.00	6,313.36	28.00	189.29	-3.83	-2,516.19	-3,001.86	3,175.32	2,961.23	214.09	14.832	
6,850.00	6,665.93	6,317.00	6,313.36	28.09	189.29	-5.22	-2,516.19	-3,001.86	3,156.59	2,942.97	213.62	14.777	
6,900.00	6,706.42	6,317.00	6,313.36	28.19	189.29	-6.44	-2,516.19	-3,001.86	3,134.96	2,921.84	213.11	14.710	
6,950.00	6,744.48	6,317.00	6,313.36	28.30	189.29	-7.60	-2,516.19	-3,001.86	3,110.51	2,897.93	212.58	14.632	
7,000.00	6,779.84	6,317.00	6,313.36	28.43	189.29	-8.75	-2,516.19	-3,001.86	3,083.33	2,871.31	212.01	14.543	
7,050.00	6,812.30	6,317.00	6,313.36	28.57	189.29	-9.96	-2,516.19	-3,001.86	3,053.52	2,842.09	211.43	14.442	
7,100.00	6,841.63	6,317.00	6,313.36	28.73	189.29	-11.28	-2,516.19	-3,001.86	3,021.20	2,810.36	210.84	14.329	
7,150.00	6,867.66	6,317.00	6,313.36	28.90	189.29	-12.76	-2,516.19	-3,001.86	2,986.50	2,776.25	210.25	14.205	
7,200.00	6,890.22	6,317.00	6,313.36	29.08	189.29	-14.50	-2,516.19	-3,001.86	2,949.55	2,739.89	209.65	14.069	
7,250.00	6,909.17	6,317.00	6,313.36	29.28	189.29	-16.57	-2,516.19	-3,001.86	2,910.51	2,701.43	209.07	13.921	
7,300.00	6,924.38	6,317.00	6,313.36	29.49	189.29	-19.13	-2,516.19	-3,001.86	2,869.55	2,661.03	208.52	13.762	
7,350.00	6,935.77	6,317.00	6,313.36	29.72	189.29	-22.35	-2,516.19	-3,001.86	2,826.84	2,618.86	207.99	13.591	
7,400.00	6,943.25	6,317.00	6,313.36	29.97	189.29	-26.53	-2,516.19	-3,001.86	2,782.59	2,575.10	207.50	13.410	
7,450.00	6,946.78	6,317.00	6,313.36	30.22	189.29	-32.12	-2,516.19	-3,001.86	2,737.02	2,529.96	207.05	13.219	
7,471.54	6,947.08	6,317.00	6,313.36	30.34	189.29	-35.11	-2,516.19	-3,001.86	2,717.03	2,510.15	206.88	13.133	
7,500.00	6,946.98	6,317.00	6,313.36	30.49	189.29	-36.28	-2,516.19	-3,001.86	2,690.54	2,483.89	206.66	13.019	
7,600.00	6,946.65	6,317.00	6,313.36	31.07	189.29	-40.02	-2,516.19	-3,001.86	2,598.33	2,392.53	205.80	12.626	
7,700.00	6,946.32	6,317.00	6,313.36	31.69	189.29	-43.23	-2,516.19	-3,001.86	2,507.66	2,302.81	204.85	12.241	
7,800.00	6,945.99	6,317.00	6,313.36	32.35	189.29	-45.98	-2,516.19	-3,001.86	2,418.82	2,214.99	203.82	11.867	
7,900.00	6,945.67	6,317.00	6,313.36	33.05	189.29	-48.34	-2,516.19	-3,001.86	2,332.12	2,129.41	202.71	11.505	
8,000.00	6,945.34	6,317.00	6,313.36	33.79	189.29	-50.37	-2,516.19	-3,001.86	2,247.93	2,046.41	201.52	11.155	
8,034.58	6,945.23	6,317.00	6,313.36	34.05	189.29	-51.00	-2,516.19	-3,001.86	2,219.48	2,018.38	201.10	11.037	
8,100.00	6,945.02	6,317.00	6,313.36	34.57	189.29	-51.00	-2,516.19	-3,001.86	2,166.31	1,966.03	200.28	10.816	
8,200.00	6,944.69	6,317.00	6,313.36	35.41	189.29	-51.00	-2,516.19	-3,001.86	2,086.39	1,887.39	199.00	10.485	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,317.00	6,313.36	36.30	189.29	-51.00	-2,516.19	-3,001.86	2,008.26	1,810.59	197.68	10.159	
8,400.00	6,944.05	6,317.00	6,313.36	37.25	189.29	-51.00	-2,516.19	-3,001.86	1,932.15	1,735.82	196.33	9.841	
8,500.00	6,943.73	6,317.00	6,313.36	38.25	189.29	-51.00	-2,516.19	-3,001.86	1,858.31	1,663.33	194.98	9.531	
8,600.00	6,943.40	6,317.00	6,313.36	39.29	189.29	-51.00	-2,516.19	-3,001.86	1,787.02	1,593.37	193.65	9.228	
8,700.00	6,943.08	6,317.00	6,313.36	40.37	189.29	-51.00	-2,516.19	-3,001.86	1,718.59	1,526.23	192.35	8.935	
8,800.00	6,942.76	6,317.00	6,313.36	41.49	189.29	-51.00	-2,516.19	-3,001.86	1,653.37	1,462.25	191.13	8.651	
8,900.00	6,942.43	6,317.00	6,313.36	42.64	189.29	-51.00	-2,516.19	-3,001.86	1,591.78	1,401.77	190.01	8.378	
9,000.00	6,942.11	6,317.00	6,313.36	43.82	189.29	-51.00	-2,516.19	-3,001.86	1,534.23	1,345.21	189.02	8.117	
9,100.00	6,941.79	6,317.00	6,313.36	45.03	189.29	-51.00	-2,516.19	-3,001.86	1,481.20	1,292.99	188.22	7.870	
9,200.00	6,941.46	6,317.00	6,313.36	46.27	189.29	-51.00	-2,516.19	-3,001.86	1,433.20	1,245.57	187.63	7.638	
9,300.00	6,941.14	6,317.00	6,313.36	47.53	189.29	-51.00	-2,516.19	-3,001.86	1,390.75	1,203.43	187.32	7.425	
9,400.00	6,940.82	6,317.00	6,313.36	48.81	189.29	-51.00	-2,516.19	-3,001.86	1,354.36	1,167.03	187.33	7.230	
9,500.00	6,940.50	6,317.00	6,313.36	50.11	189.29	-51.00	-2,516.19	-3,001.86	1,324.53	1,136.82	187.71	7.056	
9,600.00	6,940.17	6,317.00	6,313.36	51.43	189.29	-51.00	-2,516.19	-3,001.86	1,301.73	1,113.20	188.53	6.905	
9,700.00	6,939.85	6,317.00	6,313.36	52.76	189.29	-51.00	-2,516.19	-3,001.86	1,286.31	1,096.51	189.80	6.777	
9,800.00	6,939.53	6,317.00	6,313.36	54.11	189.29	-51.00	-2,516.19	-3,001.86	1,278.56	1,087.00	191.56	6.675	
9,849.50	6,939.37	6,317.00	6,313.36	54.79	189.29	-51.00	-2,516.19	-3,001.86	1,277.60	1,085.00	192.60	6.634	CC
9,900.00	6,939.20	6,317.00	6,313.36	55.48	189.29	-51.00	-2,516.19	-3,001.86	1,278.60	1,084.84	193.76	6.599	ES
10,000.00	6,938.88	6,317.00	6,313.36	56.86	189.29	-51.00	-2,516.19	-3,001.86	1,286.44	1,090.07	196.36	6.551	
10,100.00	6,938.56	6,317.00	6,313.36	58.25	189.29	-51.00	-2,516.19	-3,001.86	1,301.93	1,102.66	199.27	6.534	SF
10,200.00	6,938.23	6,317.00	6,313.36	59.65	189.29	-51.00	-2,516.19	-3,001.86	1,324.81	1,122.45	202.36	6.547	
10,300.00	6,937.91	6,317.00	6,313.36	61.06	189.29	-51.00	-2,516.19	-3,001.86	1,354.71	1,149.17	205.54	6.591	
10,400.00	6,937.59	6,317.00	6,313.36	62.48	189.29	-51.00	-2,516.19	-3,001.86	1,391.17	1,182.48	208.69	6.666	
10,500.00	6,937.27	6,317.00	6,313.36	63.91	189.29	-51.00	-2,516.19	-3,001.86	1,433.68	1,221.97	211.71	6.772	
10,600.00	6,936.94	6,317.00	6,313.36	65.34	189.29	-51.00	-2,516.19	-3,001.86	1,481.74	1,267.18	214.56	6.906	
10,700.00	6,936.62	6,317.00	6,313.36	66.79	189.29	-51.00	-2,516.19	-3,001.86	1,534.82	1,317.63	217.19	7.067	
10,800.00	6,936.30	6,317.00	6,313.36	68.24	189.29	-51.00	-2,516.19	-3,001.86	1,592.41	1,372.83	219.58	7.252	
10,900.00	6,935.97	6,317.00	6,313.36	69.70	189.29	-51.00	-2,516.19	-3,001.86	1,654.05	1,432.33	221.72	7.460	
11,000.00	6,935.65	6,317.00	6,313.36	71.17	189.29	-51.00	-2,516.19	-3,001.86	1,719.30	1,495.68	223.62	7.689	
11,100.00	6,935.33	6,317.00	6,313.36	72.64	189.29	-51.00	-2,516.19	-3,001.86	1,787.76	1,562.47	225.29	7.935	
11,200.00	6,935.00	6,317.00	6,313.36	74.11	189.29	-51.00	-2,516.19	-3,001.86	1,859.08	1,632.32	226.76	8.198	
11,300.00	6,934.68	6,317.00	6,313.36	75.60	189.29	-51.00	-2,516.19	-3,001.86	1,932.95	1,704.91	228.05	8.476	
11,400.00	6,934.36	6,317.00	6,313.36	77.08	189.29	-51.00	-2,516.19	-3,001.86	2,009.08	1,779.92	229.16	8.767	
11,500.00	6,934.03	6,317.00	6,313.36	78.57	189.29	-51.00	-2,516.19	-3,001.86	2,087.23	1,857.09	230.13	9.070	
11,600.00	6,933.71	6,317.00	6,313.36	80.07	189.29	-51.00	-2,516.19	-3,001.86	2,167.17	1,936.20	230.97	9.383	
11,700.00	6,933.39	6,317.00	6,313.36	81.57	189.29	-51.00	-2,516.19	-3,001.86	2,248.72	2,017.02	231.70	9.705	
11,800.00	6,933.07	6,317.00	6,313.36	83.07	189.29	-51.00	-2,516.19	-3,001.86	2,331.70	2,099.37	232.33	10.036	
11,900.00	6,932.74	6,317.00	6,313.36	84.58	189.29	-51.00	-2,516.19	-3,001.86	2,415.98	2,183.10	232.88	10.374	
12,000.00	6,932.42	6,317.00	6,313.36	86.09	189.29	-51.00	-2,516.19	-3,001.86	2,501.41	2,268.06	233.35	10.720	
12,100.00	6,932.10	6,317.00	6,313.36	87.60	189.29	-51.00	-2,516.19	-3,001.86	2,587.89	2,354.13	233.76	11.071	
12,200.00	6,931.77	6,317.00	6,313.36	89.12	189.29	-51.00	-2,516.19	-3,001.86	2,675.30	2,441.19	234.11	11.428	
12,300.00	6,931.45	6,317.00	6,313.36	90.64	189.29	-51.00	-2,516.19	-3,001.86	2,763.58	2,529.16	234.42	11.789	
12,400.00	6,931.13	6,317.00	6,313.36	92.16	189.29	-51.00	-2,516.19	-3,001.86	2,852.62	2,617.94	234.68	12.155	
12,500.00	6,930.80	6,317.00	6,313.36	93.69	189.29	-51.00	-2,516.19	-3,001.86	2,942.38	2,707.47	234.91	12.526	
12,600.00	6,930.48	6,317.00	6,313.36	95.22	189.29	-51.00	-2,516.19	-3,001.86	3,032.77	2,797.66	235.11	12.899	
12,700.00	6,930.16	6,317.00	6,313.36	96.75	189.29	-51.00	-2,516.19	-3,001.86	3,123.75	2,888.47	235.28	13.277	
12,800.00	6,929.84	6,317.00	6,313.36	98.28	189.29	-51.00	-2,516.19	-3,001.86	3,215.26	2,979.83	235.43	13.657	
12,900.00	6,929.51	6,317.00	6,313.36	99.82	189.29	-51.00	-2,516.19	-3,001.86	3,307.26	3,071.71	235.56	14.040	
13,000.00	6,929.19	6,317.00	6,313.36	101.35	189.29	-51.00	-2,516.19	-3,001.86	3,399.72	3,164.05	235.67	14.426	
13,100.00	6,928.87	6,317.00	6,313.36	102.89	189.29	-51.00	-2,516.19	-3,001.86	3,492.59	3,256.83	235.76	14.814	
13,200.00	6,928.54	6,317.00	6,313.36	104.43	189.29	-51.00	-2,516.19	-3,001.86	3,585.85	3,350.00	235.85	15.204	
13,300.00	6,928.22	6,317.00	6,313.36	105.97	189.29	-51.00	-2,516.19	-3,001.86	3,679.46	3,443.54	235.92	15.596	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #030C - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	6,317.00	6,313.36	107.52	189.29	-51.00	-2,516.19	-3,001.86	3,773.40	3,537.42	235.98	15.990	
13,500.00	6,927.57	6,317.00	6,313.36	109.06	189.29	-51.00	-2,516.19	-3,001.86	3,867.64	3,631.61	236.03	16.386	
13,600.00	6,927.25	6,317.00	6,313.36	110.61	189.29	-51.00	-2,516.19	-3,001.86	3,962.16	3,726.08	236.08	16.783	
13,700.00	6,926.93	6,317.00	6,313.36	112.16	189.29	-51.00	-2,516.19	-3,001.86	4,056.95	3,820.83	236.12	17.182	
13,800.00	6,926.61	6,317.00	6,313.36	113.71	189.29	-51.00	-2,516.19	-3,001.86	4,151.98	3,915.83	236.15	17.582	
13,900.00	6,926.28	6,317.00	6,313.36	115.26	189.29	-51.00	-2,516.19	-3,001.86	4,247.24	4,011.06	236.18	17.983	
14,000.00	6,925.96	6,317.00	6,313.36	116.82	189.29	-51.00	-2,516.19	-3,001.86	4,342.71	4,106.50	236.21	18.385	
14,100.00	6,925.64	6,317.00	6,313.36	118.37	189.29	-51.00	-2,516.19	-3,001.86	4,438.39	4,202.15	236.23	18.788	
14,200.00	6,925.31	6,317.00	6,313.36	119.93	189.29	-51.00	-2,516.19	-3,001.86	4,534.25	4,297.99	236.25	19.192	
14,300.00	6,924.99	6,317.00	6,313.36	121.48	189.29	-51.00	-2,516.19	-3,001.86	4,630.28	4,394.01	236.27	19.597	
14,400.00	6,924.67	6,317.00	6,313.36	123.04	189.29	-51.00	-2,516.19	-3,001.86	4,726.48	4,490.19	236.29	20.003	
14,500.00	6,924.34	6,317.00	6,313.36	124.60	189.29	-51.00	-2,516.19	-3,001.86	4,822.83	4,586.53	236.30	20.410	
14,600.00	6,924.02	6,317.00	6,313.36	126.16	189.29	-51.00	-2,516.19	-3,001.86	4,919.33	4,683.02	236.31	20.817	
14,700.00	6,923.70	6,317.00	6,313.36	127.72	189.29	-51.00	-2,516.19	-3,001.86	5,015.97	4,779.64	236.32	21.225	
14,800.00	6,923.38	6,317.00	6,313.36	129.28	189.29	-51.00	-2,516.19	-3,001.86	5,112.73	4,876.40	236.33	21.634	
14,900.00	6,923.05	6,317.00	6,313.36	130.85	189.29	-51.00	-2,516.19	-3,001.86	5,209.62	4,973.27	236.34	22.043	
15,000.00	6,922.73	6,317.00	6,313.36	132.41	189.29	-51.00	-2,516.19	-3,001.86	5,306.62	5,070.27	236.35	22.452	
15,100.00	6,922.41	6,317.00	6,313.36	133.97	189.29	-51.00	-2,516.19	-3,001.86	5,403.73	5,167.37	236.36	22.862	
15,200.00	6,922.08	6,317.00	6,313.36	135.54	189.29	-51.00	-2,516.19	-3,001.86	5,500.95	5,264.58	236.37	23.273	
15,300.00	6,921.76	6,317.00	6,313.36	137.11	189.29	-51.00	-2,516.19	-3,001.86	5,598.26	5,361.88	236.38	23.683	
15,400.00	6,921.44	6,317.00	6,313.36	138.67	189.29	-51.00	-2,516.19	-3,001.86	5,695.67	5,459.28	236.39	24.095	
15,500.00	6,921.11	6,317.00	6,313.36	140.24	189.29	-51.00	-2,516.19	-3,001.86	5,793.16	5,556.77	236.40	24.506	
15,600.00	6,920.79	6,317.00	6,313.36	141.81	189.29	-51.00	-2,516.19	-3,001.86	5,890.74	5,654.34	236.41	24.918	
15,700.00	6,920.47	6,317.00	6,313.36	143.38	189.29	-51.00	-2,516.19	-3,001.86	5,988.40	5,751.99	236.42	25.330	
15,800.00	6,920.14	6,317.00	6,313.36	144.95	189.29	-51.00	-2,516.19	-3,001.86	6,086.14	5,849.71	236.43	25.742	
15,900.00	6,919.82	6,317.00	6,313.36	146.52	189.29	-51.00	-2,516.19	-3,001.86	6,183.95	5,947.51	236.44	26.155	
16,000.00	6,919.50	6,317.00	6,313.36	148.09	189.29	-51.00	-2,516.19	-3,001.86	6,281.82	6,045.37	236.45	26.567	
16,100.00	6,919.18	6,317.00	6,313.36	149.66	189.29	-51.00	-2,516.19	-3,001.86	6,379.76	6,143.30	236.46	26.980	
16,200.00	6,918.85	6,317.00	6,313.36	151.24	189.29	-51.00	-2,516.19	-3,001.86	6,477.77	6,241.29	236.47	27.393	
16,300.00	6,918.53	6,317.00	6,313.36	152.81	189.29	-51.00	-2,516.19	-3,001.86	6,575.84	6,339.35	236.49	27.806	
16,400.00	6,918.21	6,317.00	6,313.36	154.38	189.29	-51.00	-2,516.19	-3,001.86	6,673.96	6,437.46	236.50	28.219	
16,500.00	6,917.88	6,317.00	6,313.36	155.96	189.29	-51.00	-2,516.19	-3,001.86	6,772.14	6,535.62	236.52	28.633	
16,600.00	6,917.56	6,317.00	6,313.36	157.53	189.29	-51.00	-2,516.19	-3,001.86	6,870.37	6,633.83	236.53	29.046	
16,700.00	6,917.24	6,317.00	6,313.36	159.11	189.29	-51.00	-2,516.19	-3,001.86	6,968.65	6,732.10	236.55	29.460	
16,800.00	6,916.91	6,317.00	6,313.36	160.68	189.29	-51.00	-2,516.19	-3,001.86	7,066.98	6,830.41	236.57	29.873	
16,900.00	6,916.59	6,317.00	6,313.36	162.26	189.29	-51.00	-2,516.19	-3,001.86	7,165.35	6,928.77	236.58	30.287	
17,000.00	6,916.27	6,317.00	6,313.36	163.84	189.29	-51.00	-2,516.19	-3,001.86	7,263.77	7,027.17	236.60	30.700	
17,100.00	6,915.95	6,317.00	6,313.36	165.41	189.29	-51.00	-2,516.19	-3,001.86	7,362.23	7,125.61	236.62	31.114	
17,200.00	6,915.62	6,317.00	6,313.36	166.99	189.29	-51.00	-2,516.19	-3,001.86	7,460.73	7,224.09	236.64	31.527	
17,300.00	6,915.30	6,317.00	6,313.36	168.57	189.29	-51.00	-2,516.19	-3,001.86	7,559.28	7,322.61	236.66	31.941	
17,400.00	6,914.98	6,317.00	6,313.36	170.15	189.29	-51.00	-2,516.19	-3,001.86	7,657.86	7,421.17	236.69	32.354	
17,500.00	6,914.65	6,317.00	6,313.36	171.73	189.29	-51.00	-2,516.19	-3,001.86	7,756.47	7,519.76	236.71	32.768	
17,600.00	6,914.33	6,317.00	6,313.36	173.31	189.29	-51.00	-2,516.19	-3,001.86	7,855.13	7,618.39	236.73	33.181	
17,700.00	6,914.01	6,317.00	6,313.36	174.89	189.29	-51.00	-2,516.19	-3,001.86	7,953.81	7,717.05	236.76	33.595	
17,800.00	6,913.68	6,317.00	6,313.36	176.47	189.29	-51.00	-2,516.19	-3,001.86	8,052.53	7,815.74	236.78	34.008	
17,900.00	6,913.36	6,317.00	6,313.36	178.05	189.29	-51.00	-2,516.19	-3,001.86	8,151.28	7,914.47	236.81	34.421	
18,000.00	6,913.04	6,317.00	6,313.36	179.63	189.29	-51.00	-2,516.19	-3,001.86	8,250.06	8,013.22	236.84	34.834	
18,100.00	6,912.72	6,317.00	6,313.36	181.21	189.29	-51.00	-2,516.19	-3,001.86	8,348.86	8,112.00	236.87	35.247	
18,111.83	6,912.68	6,317.00	6,313.36	181.40	189.29	-51.00	-2,516.19	-3,001.86	8,360.56	8,123.69	236.87	35.296	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	127.92	127.92	0.00	0.27	-83.48	888.13	-7,766.65	7,817.31				
54.25	54.25	182.79	182.79	0.02	0.47	-145.02	888.45	-7,766.41	7,817.21	7,816.73	0.48	N/A	
64.38	64.38	193.03	193.03	0.03	0.50	-149.30	888.51	-7,766.37	7,817.21	7,816.68	0.53	N/A	
130.42	130.42	259.58	259.58	0.11	0.74	-172.18	888.86	-7,766.08	7,817.25	7,816.41	0.84	9,279.122	
219.69	219.69	352.37	352.36	0.23	1.06	-146.11	889.38	-7,765.66	7,817.35	7,816.07	1.28	6,122.996	
308.67	308.67	445.38	445.37	0.35	1.39	-155.02	889.88	-7,765.18	7,817.41	7,815.70	1.71	4,576.780	
454.00	453.99	585.98	585.97	0.51	1.88	70.42	890.66	-7,764.44	7,816.81	7,814.45	2.36	3,305.745	
544.00	543.93	679.97	679.95	0.74	2.21	70.78	891.21	-7,763.97	7,815.42	7,812.49	2.92	2,673.241	
667.00	666.63	792.67	792.65	1.13	2.60	57.85	891.91	-7,763.42	7,811.02	7,807.30	3.72	2,099.106	
756.00	755.27	877.16	877.14	1.44	2.90	72.77	892.46	-7,763.10	7,807.45	7,803.12	4.33	1,802.773	
850.00	848.62	957.87	957.84	1.79	3.18	74.49	893.07	-7,762.85	7,804.17	7,799.21	4.96	1,573.323	
942.00	939.50	1,041.27	1,041.24	2.14	3.48	81.01	893.86	-7,762.72	7,801.16	7,795.54	5.61	1,390.269	
1,033.00	1,028.89	1,141.29	1,141.26	2.52	3.83	90.35	894.85	-7,762.54	7,799.90	7,793.56	6.33	1,231.493	
1,037.05	1,032.86	1,146.39	1,146.35	2.54	3.84	90.65	894.91	-7,762.53	7,799.90	7,793.53	6.37	1,224.729	
1,123.00	1,117.00	1,249.39	1,249.35	2.90	4.21	96.63	896.09	-7,762.06	7,800.78	7,793.69	7.09	1,099.738	
1,214.00	1,206.00	1,346.20	1,346.15	3.29	4.54	96.11	897.25	-7,761.44	7,802.48	7,794.65	7.82	997.195	
1,309.00	1,298.75	1,439.36	1,439.30	3.71	4.87	99.15	898.49	-7,760.79	7,804.78	7,796.22	8.57	910.920	
1,403.00	1,390.39	1,538.32	1,538.24	4.13	5.22	102.30	899.76	-7,760.09	7,808.26	7,798.93	9.33	836.629	
1,498.00	1,482.88	1,643.35	1,643.27	4.56	5.59	99.22	900.38	-7,759.24	7,811.69	7,801.56	10.13	771.201	
1,592.00	1,573.82	1,723.23	1,723.15	5.00	5.87	98.89	900.63	-7,758.59	7,814.82	7,803.97	10.85	720.235	
1,687.00	1,665.32	1,800.00	1,799.92	5.46	6.14	101.94	900.85	-7,758.25	7,819.19	7,807.62	11.58	675.377	
1,876.00	1,847.35	1,922.20	1,922.12	6.38	6.56	104.73	901.34	-7,758.28	7,831.39	7,818.47	12.92	606.076	
1,970.00	1,937.87	2,000.00	1,999.91	6.84	6.83	105.06	901.94	-7,758.57	7,838.59	7,824.94	13.65	574.322	
2,064.00	2,028.42	2,080.03	2,079.94	7.30	7.11	105.76	902.80	-7,758.95	7,846.13	7,831.75	14.38	545.506	
2,159.00	2,119.97	2,165.03	2,164.93	7.77	7.41	107.13	903.85	-7,759.34	7,854.20	7,839.06	15.14	518.779	
2,348.00	2,302.44	2,382.11	2,382.00	8.69	8.17	102.96	906.42	-7,760.44	7,868.86	7,852.05	16.81	468.073	
2,443.00	2,394.41	2,495.71	2,495.58	9.15	8.57	102.57	907.74	-7,760.31	7,874.36	7,856.70	17.66	445.826	
2,537.00	2,485.45	2,580.61	2,580.48	9.61	8.87	102.50	908.81	-7,760.14	7,879.61	7,861.20	18.41	428.060	
2,632.00	2,577.48	2,656.69	2,656.56	10.07	9.13	102.93	909.74	-7,760.10	7,885.11	7,865.99	19.13	412.263	
2,727.00	2,669.50	2,735.32	2,735.18	10.53	9.41	103.12	910.63	-7,760.24	7,890.95	7,871.09	19.85	397.455	
2,821.00	2,760.56	2,822.88	2,822.73	10.98	9.72	103.05	911.50	-7,760.50	7,896.85	7,876.24	20.61	383.198	
2,916.00	2,852.68	2,918.39	2,918.24	11.44	10.05	103.17	912.26	-7,760.80	7,902.71	7,881.32	21.39	369.428	
3,011.00	2,945.03	3,015.17	3,015.02	11.89	10.39	103.48	912.87	-7,761.11	7,908.40	7,886.23	22.17	356.668	
3,105.00	3,036.57	3,147.63	3,147.48	12.33	10.85	98.11	913.15	-7,761.24	7,912.65	7,889.58	23.07	342.958	
3,200.00	3,128.81	3,275.31	3,275.15	12.78	11.30	95.07	912.84	-7,760.79	7,914.90	7,890.94	23.97	330.224	
3,294.00	3,219.76	3,366.33	3,366.17	13.24	11.61	94.87	912.49	-7,760.29	7,916.43	7,891.69	24.74	319.973	
3,389.00	3,311.82	3,453.47	3,453.31	13.69	11.91	96.03	912.19	-7,759.86	7,918.18	7,892.68	25.50	310.506	
3,483.00	3,403.03	3,529.67	3,529.51	14.14	12.18	96.50	911.89	-7,759.55	7,920.28	7,894.07	26.21	302.145	
3,578.00	3,495.31	3,600.00	3,599.84	14.60	12.42	97.17	911.62	-7,759.50	7,922.90	7,895.99	26.91	294.457	
3,672.00	3,586.65	3,703.77	3,703.61	15.04	12.78	98.42	911.32	-7,759.48	7,925.93	7,898.22	27.71	286.005	
3,767.00	3,678.95	3,791.77	3,791.61	15.49	13.09	99.08	911.19	-7,759.35	7,929.26	7,900.80	28.47	278.541	
3,862.00	3,771.63	3,890.13	3,889.97	15.93	13.43	99.05	911.12	-7,759.17	7,932.45	7,903.20	29.25	271.234	
3,956.00	3,863.70	3,977.50	3,977.34	16.35	13.74	99.52	911.08	-7,758.99	7,935.37	7,905.40	29.97	264.796	
4,052.00	3,957.54	4,073.73	4,073.57	16.79	14.07	98.45	911.06	-7,758.83	7,938.42	7,907.68	30.74	258.271	
4,146.00	4,048.88	4,179.20	4,179.03	17.24	14.44	98.53	910.78	-7,758.59	7,941.52	7,909.97	31.55	251.727	
4,241.00	4,140.47	4,282.22	4,282.05	17.71	14.80	101.20	910.27	-7,758.22	7,945.58	7,913.21	32.38	245.412	
4,336.00	4,231.25	4,403.68	4,403.51	18.21	15.22	104.60	909.47	-7,757.53	7,951.45	7,918.16	33.29	238.859	
4,430.00	4,320.59	4,508.36	4,508.18	18.71	15.59	103.15	908.56	-7,756.66	7,957.81	7,923.66	34.15	233.034	
4,524.00	4,409.51	4,609.67	4,609.48	19.22	15.94	99.79	907.54	-7,755.67	7,962.99	7,927.98	35.01	227.466	
4,619.00	4,498.98	4,696.63	4,696.43	19.75	16.24	99.28	906.69	-7,754.76	7,967.35	7,931.52	35.83	222.358	
4,713.00	4,587.83	4,783.03	4,782.82	20.27	16.54	99.58	905.98	-7,753.86	7,971.46	7,934.82	36.64	217.557	
4,807.00	4,676.97	4,864.72	4,864.51	20.78	16.83	101.01	905.47	-7,753.02	7,975.95	7,938.52	37.43	213.106	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,870.00	4,736.65	4,917.71	4,917.50	21.12	17.01	101.51	905.23	-7,752.50	7,979.40	7,941.45	37.95	210.268	
4,933.00	4,796.58	4,969.29	4,969.07	21.46	17.19	101.65	905.01	-7,752.04	7,982.85	7,944.39	38.46	207.567	
5,027.00	4,886.13	5,053.67	5,053.46	21.96	17.49	102.51	904.66	-7,751.39	7,988.28	7,949.04	39.24	203.553	
5,121.00	4,976.11	5,142.20	5,141.97	22.45	17.80	103.17	904.34	-7,750.71	7,993.75	7,953.72	40.03	199.683	
5,216.00	5,068.11	5,232.86	5,232.64	22.91	18.12	103.44	904.00	-7,750.03	7,998.57	7,957.77	40.80	196.032	
5,341.00	5,190.11	5,352.32	5,352.09	23.49	18.53	103.28	903.52	-7,749.17	8,003.98	7,962.19	41.78	191.553	
5,436.00	5,283.20	5,444.40	5,444.17	23.91	18.85	103.51	903.02	-7,748.59	8,007.73	7,965.20	42.52	188.319	
5,499.00	5,345.03	5,508.33	5,508.10	24.19	19.08	103.53	902.56	-7,748.19	8,010.10	7,967.09	43.02	186.206	
5,561.00	5,405.97	5,565.33	5,565.09	24.45	19.28	104.61	902.09	-7,747.87	8,012.45	7,968.97	43.48	184.280	
5,624.00	5,467.97	5,621.81	5,621.56	24.72	19.47	103.64	901.55	-7,747.60	8,014.76	7,970.82	43.94	182.400	
5,687.00	5,530.05	5,676.06	5,675.81	24.99	19.66	104.62	900.98	-7,747.41	8,017.02	7,972.63	44.39	180.603	
5,750.00	5,592.20	5,727.25	5,727.00	25.25	19.84	104.94	900.42	-7,747.29	8,019.36	7,974.53	44.83	178.903	
5,813.00	5,654.42	5,776.04	5,775.78	25.51	20.01	106.01	899.86	-7,747.27	8,021.80	7,976.56	45.25	177.286	
5,876.00	5,716.68	5,832.68	5,832.42	25.76	20.21	106.28	899.19	-7,747.34	8,024.37	7,978.67	45.70	175.603	
5,939.00	5,778.99	5,896.90	5,896.64	26.01	20.43	106.14	898.39	-7,747.42	8,026.86	7,980.69	46.17	173.857	
6,065.00	5,903.86	6,028.48	6,028.21	26.51	20.89	106.17	896.83	-7,747.45	8,031.21	7,984.10	47.11	170.464	
6,128.00	5,966.41	6,082.59	6,082.32	26.74	21.08	104.78	896.22	-7,747.48	8,033.05	7,985.52	47.54	168.987	
6,191.00	6,029.04	6,141.45	6,141.17	26.97	21.28	105.47	895.56	-7,747.57	8,034.74	7,986.77	47.97	167.490	
6,254.00	6,091.75	6,202.92	6,202.64	27.20	21.50	106.40	894.86	-7,747.68	8,036.31	7,987.90	48.41	166.006	
6,348.00	6,185.46	6,311.63	6,311.34	27.52	21.88	109.28	893.60	-7,747.81	8,038.38	7,989.27	49.11	163.674	
6,390.00	6,227.36	6,410.63	6,410.34	27.61	22.22	109.31	892.26	-7,747.50	8,039.06	7,989.52	49.54	162.266	
6,400.00	6,237.33	6,423.10	6,422.80	27.61	22.27	109.32	892.07	-7,747.42	8,039.19	7,989.60	49.59	162.110	
6,490.00	6,327.12	6,570.70	6,570.37	27.66	22.78	109.37	889.75	-7,745.91	8,040.00	7,989.84	50.15	160.305	
6,500.00	6,337.09	6,587.65	6,587.32	27.66	22.84	96.98	889.49	-7,745.66	8,039.98	7,989.76	50.22	160.098	
6,550.00	6,386.85	6,644.19	6,643.85	27.70	23.04	60.53	888.73	-7,744.74	8,037.68	7,987.23	50.45	159.313	
6,600.00	6,436.20	6,695.42	6,695.06	27.74	23.22	48.02	888.24	-7,743.83	8,031.84	7,981.16	50.68	158.479	
6,650.00	6,484.82	6,755.35	6,754.99	27.79	23.43	42.68	887.86	-7,742.67	8,022.46	7,971.51	50.95	157.445	
6,700.00	6,532.40	6,813.15	6,812.77	27.85	23.63	40.10	887.62	-7,741.42	8,009.60	7,958.36	51.23	156.334	
6,750.00	6,578.63	6,864.42	6,864.02	27.92	23.81	38.91	887.49	-7,740.24	7,993.35	7,941.85	51.50	155.197	
6,800.00	6,623.24	6,914.16	6,913.75	28.00	23.98	38.60	887.44	-7,739.03	7,973.86	7,922.07	51.78	153.984	
6,850.00	6,665.93	6,962.69	6,962.27	28.09	24.15	38.93	887.50	-7,737.79	7,951.24	7,899.16	52.07	152.697	
6,900.00	6,706.42	7,008.96	7,008.51	28.19	24.32	39.80	887.65	-7,736.53	7,925.65	7,873.28	52.37	151.352	
6,950.00	6,744.48	7,054.21	7,053.75	28.30	24.47	41.18	887.86	-7,735.24	7,897.26	7,844.59	52.67	149.942	
7,000.00	6,779.84	7,095.99	7,095.51	28.43	24.62	43.07	888.06	-7,734.01	7,866.27	7,813.30	52.97	148.499	
7,050.00	6,812.30	7,133.06	7,132.56	28.57	24.75	45.49	888.28	-7,732.86	7,832.89	7,779.62	53.27	147.041	
7,100.00	6,841.63	7,166.07	7,165.55	28.73	24.86	48.51	888.55	-7,731.80	7,797.34	7,743.78	53.56	145.569	
7,150.00	6,867.66	7,194.94	7,194.41	28.90	24.97	52.20	888.84	-7,730.83	7,759.88	7,706.03	53.85	144.089	
7,200.00	6,890.22	7,214.52	7,213.97	29.08	25.03	56.59	889.06	-7,730.17	7,720.76	7,666.64	54.12	142.656	
7,250.00	6,909.17	7,229.59	7,229.04	29.28	25.09	61.77	889.24	-7,729.65	7,680.24	7,625.86	54.38	141.233	
7,300.00	6,924.38	7,241.37	7,240.81	29.49	25.13	67.80	889.39	-7,729.26	7,638.58	7,583.95	54.63	139.815	
7,350.00	6,935.77	7,249.78	7,249.21	29.72	25.16	74.64	889.50	-7,728.97	7,596.06	7,541.18	54.88	138.410	
7,400.00	6,943.25	7,254.76	7,254.19	29.97	25.18	82.16	889.56	-7,728.80	7,552.93	7,497.81	55.12	137.027	
7,450.00	6,946.78	7,256.29	7,255.72	30.22	25.18	90.10	889.58	-7,728.75	7,509.48	7,454.13	55.35	135.674	
7,471.54	6,947.08	7,255.88	7,255.31	30.34	25.18	93.57	889.58	-7,728.77	7,490.73	7,435.28	55.45	135.101	
7,500.00	6,946.98	7,254.92	7,254.34	30.49	25.18	93.62	889.56	-7,728.80	7,465.90	7,410.33	55.57	134.350	
7,600.00	6,946.65	7,251.54	7,250.97	31.07	25.16	93.82	889.52	-7,728.91	7,377.78	7,321.77	56.01	131.726	
7,700.00	6,946.32	7,248.18	7,247.61	31.69	25.15	94.04	889.47	-7,729.03	7,288.35	7,231.91	56.44	129.133	
7,800.00	6,945.99	7,244.85	7,244.29	32.35	25.14	94.29	889.43	-7,729.14	7,197.66	7,140.79	56.86	126.578	
7,900.00	6,945.67	7,241.55	7,240.99	33.05	25.13	94.59	889.39	-7,729.25	7,105.78	7,048.51	57.27	124.068	
8,000.00	6,945.34	7,238.29	7,237.72	33.79	25.12	94.94	889.35	-7,729.36	7,012.78	6,955.11	57.67	121.607	
8,034.58	6,945.23	7,237.16	7,236.60	34.05	25.11	95.08	889.33	-7,729.40	6,980.37	6,922.57	57.80	120.767	
8,100.00	6,945.02	7,235.04	7,234.49	34.57	25.11	95.03	889.31	-7,729.47	6,918.97	6,860.92	58.05	119.188	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
8,200.00	6,944.69	7,231.80	7,231.24	35.41	25.10	94.95	889.27	-7,729.58	6,825.27	6,766.82	58.45	116.775	
8,300.00	6,944.37	7,228.55	7,228.00	36.30	25.08	94.88	889.23	-7,729.69	6,731.75	6,672.88	58.86	114.362	
8,400.00	6,944.05	7,225.30	7,224.75	37.25	25.07	94.80	889.19	-7,729.80	6,638.41	6,579.11	59.30	111.951	
8,500.00	6,943.73	7,222.04	7,221.49	38.25	25.06	94.72	889.15	-7,729.91	6,545.27	6,485.52	59.75	109.543	
8,600.00	6,943.40	7,218.78	7,218.23	39.29	25.05	94.64	889.11	-7,730.02	6,452.33	6,392.11	60.22	107.139	
8,700.00	6,943.08	7,215.51	7,214.96	40.37	25.04	94.57	889.07	-7,730.13	6,359.61	6,298.89	60.72	104.740	
8,800.00	6,942.76	7,212.24	7,211.69	41.49	25.03	94.49	889.03	-7,730.24	6,267.11	6,205.87	61.23	102.347	
8,900.00	6,942.43	7,208.96	7,208.42	42.64	25.02	94.41	889.00	-7,730.36	6,174.83	6,113.06	61.77	99.961	
9,000.00	6,942.11	7,200.00	7,199.46	43.82	24.98	94.20	888.89	-7,730.66	6,082.81	6,020.49	62.31	97.616	
9,100.00	6,941.79	7,202.90	7,202.36	45.03	24.99	94.27	888.93	-7,730.56	5,991.03	5,928.11	62.92	95.214	
9,200.00	6,941.46	7,198.90	7,198.37	46.27	24.98	94.17	888.88	-7,730.70	5,899.52	5,835.99	63.53	92.862	
9,300.00	6,941.14	7,194.94	7,194.40	47.53	24.97	94.08	888.84	-7,730.83	5,808.28	5,744.12	64.16	90.522	
9,400.00	6,940.82	7,191.00	7,190.47	48.81	24.95	93.98	888.80	-7,730.97	5,717.34	5,652.52	64.83	88.195	
9,500.00	6,940.50	7,187.10	7,186.57	50.11	24.94	93.89	888.76	-7,731.10	5,626.70	5,561.19	65.52	85.883	
9,600.00	6,940.17	7,183.23	7,182.70	51.43	24.92	93.80	888.72	-7,731.23	5,536.39	5,470.15	66.24	83.586	
9,700.00	6,939.85	7,179.39	7,178.86	52.76	24.91	93.71	888.68	-7,731.36	5,446.40	5,379.42	66.99	81.307	
9,800.00	6,939.53	7,175.58	7,175.05	54.11	24.90	93.61	888.64	-7,731.48	5,356.77	5,289.01	67.77	79.047	
9,900.00	6,939.20	7,171.80	7,171.28	55.48	24.89	93.52	888.60	-7,731.61	5,267.52	5,198.93	68.58	76.807	
10,000.00	6,938.88	7,168.05	7,167.53	56.86	24.87	93.44	888.57	-7,731.73	5,178.65	5,109.22	69.43	74.589	
10,100.00	6,938.56	7,164.33	7,163.82	58.25	24.86	93.35	888.53	-7,731.86	5,090.19	5,019.88	70.31	72.393	
10,200.00	6,938.23	7,160.64	7,160.13	59.65	24.85	93.26	888.50	-7,731.98	5,002.16	4,930.93	71.23	70.222	
10,300.00	6,937.91	7,156.98	7,156.47	61.06	24.83	93.17	888.47	-7,732.10	4,914.59	4,842.40	72.19	68.076	
10,400.00	6,937.59	7,153.35	7,152.84	62.48	24.82	93.08	888.44	-7,732.21	4,827.50	4,754.31	73.19	65.957	
10,500.00	6,937.27	7,149.75	7,149.24	63.91	24.81	93.00	888.41	-7,732.33	4,740.92	4,666.69	74.23	63.867	
10,600.00	6,936.94	7,146.17	7,145.67	65.34	24.80	92.91	888.38	-7,732.44	4,654.87	4,579.56	75.31	61.807	
10,700.00	6,936.62	7,142.62	7,142.12	66.79	24.78	92.83	888.35	-7,732.56	4,569.39	4,492.95	76.44	59.777	
10,800.00	6,936.30	7,139.10	7,138.60	68.24	24.77	92.74	888.33	-7,732.67	4,484.50	4,406.89	77.61	57.781	
10,900.00	6,935.97	7,135.61	7,135.11	69.70	24.76	92.66	888.30	-7,732.78	4,400.25	4,321.41	78.83	55.818	
11,000.00	6,935.65	7,132.14	7,131.65	71.17	24.75	92.58	888.28	-7,732.89	4,316.66	4,236.56	80.10	53.890	
11,100.00	6,935.33	7,128.71	7,128.21	72.64	24.73	92.50	888.25	-7,733.00	4,233.79	4,152.37	81.42	51.998	
11,200.00	6,935.00	7,125.29	7,124.80	74.11	24.72	92.41	888.23	-7,733.11	4,151.66	4,068.87	82.79	50.144	
11,300.00	6,934.68	7,121.90	7,121.41	75.60	24.71	92.33	888.21	-7,733.21	4,070.34	3,986.12	84.22	48.329	
11,400.00	6,934.36	7,118.54	7,118.05	77.08	24.70	92.25	888.19	-7,733.32	3,989.86	3,904.15	85.70	46.554	
11,500.00	6,934.03	7,115.21	7,114.72	78.57	24.69	92.17	888.16	-7,733.42	3,910.27	3,823.03	87.24	44.821	
11,600.00	6,933.71	7,111.89	7,111.41	80.07	24.68	92.09	888.15	-7,733.52	3,831.65	3,742.81	88.84	43.130	
11,700.00	6,933.39	7,108.61	7,108.12	81.57	24.66	92.02	888.13	-7,733.62	3,754.03	3,663.53	90.50	41.482	
11,800.00	6,933.07	7,105.35	7,104.86	83.07	24.65	91.94	888.11	-7,733.72	3,677.50	3,585.28	92.22	39.879	
11,900.00	6,932.74	7,102.30	7,101.82	84.58	24.64	91.86	888.09	-7,733.81	3,602.11	3,508.11	94.00	38.321	
12,000.00	6,932.42	7,098.79	7,098.31	86.09	24.63	91.78	888.07	-7,733.92	3,527.94	3,432.10	95.84	36.811	
12,100.00	6,932.10	7,095.30	7,094.82	87.60	24.62	91.70	888.06	-7,734.03	3,455.07	3,357.33	97.74	35.348	
12,200.00	6,931.77	7,091.82	7,091.34	89.12	24.61	91.61	888.04	-7,734.13	3,383.58	3,283.87	99.71	33.934	
12,300.00	6,931.45	7,088.37	7,087.89	90.64	24.59	91.53	888.02	-7,734.23	3,313.57	3,211.83	101.74	32.570	
12,400.00	6,931.13	7,084.93	7,084.46	92.16	24.58	91.45	888.00	-7,734.34	3,245.13	3,141.30	103.83	31.255	
12,500.00	6,930.80	7,081.51	7,081.04	93.69	24.57	91.37	887.99	-7,734.44	3,178.35	3,072.37	105.97	29.992	
12,600.00	6,930.48	7,078.11	7,077.64	95.22	24.56	91.29	887.97	-7,734.54	3,113.35	3,005.17	108.18	28.780	
12,700.00	6,930.16	7,074.73	7,074.26	96.75	24.55	91.20	887.95	-7,734.64	3,050.24	2,939.81	110.43	27.621	
12,800.00	6,929.84	7,071.37	7,070.90	98.28	24.53	91.12	887.94	-7,734.74	2,989.14	2,876.40	112.74	26.514	
12,900.00	6,929.51	7,068.03	7,067.56	99.82	24.52	91.04	887.92	-7,734.84	2,930.18	2,815.09	115.08	25.462	
13,000.00	6,929.19	7,064.70	7,064.24	101.35	24.51	90.96	887.91	-7,734.94	2,873.48	2,756.02	117.46	24.463	
13,100.00	6,928.87	7,061.40	7,060.93	102.89	24.50	90.88	887.89	-7,735.03	2,819.19	2,699.32	119.87	23.519	
13,200.00	6,928.54	7,058.11	7,057.64	104.43	24.49	90.81	887.87	-7,735.13	2,767.44	2,645.15	122.29	22.630	
13,300.00	6,928.22	7,054.83	7,054.37	105.97	24.48	90.73	887.86	-7,735.22	2,718.38	2,593.67	124.72	21.797	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	7,051.58	7,051.12	107.52	24.46	90.65	887.84	-7,735.32	2,672.17	2,545.03	127.13	21.018	
13,500.00	6,927.57	7,048.34	7,047.89	109.06	24.45	90.57	887.83	-7,735.41	2,628.94	2,499.41	129.53	20.296	
13,600.00	6,927.25	7,045.12	7,044.67	110.61	24.44	90.49	887.81	-7,735.51	2,588.85	2,456.96	131.89	19.629	
13,700.00	6,926.93	7,041.92	7,041.47	112.16	24.43	90.42	887.80	-7,735.60	2,552.05	2,417.86	134.19	19.018	
13,800.00	6,926.61	7,038.74	7,038.28	113.71	24.42	90.34	887.78	-7,735.69	2,518.68	2,382.26	136.42	18.463	
13,900.00	6,926.28	7,035.57	7,035.12	115.26	24.41	90.27	887.77	-7,735.78	2,488.88	2,350.32	138.56	17.963	
14,000.00	6,925.96	7,032.42	7,031.97	116.82	24.40	90.19	887.76	-7,735.87	2,462.77	2,322.19	140.59	17.518	
14,100.00	6,925.64	7,029.28	7,028.83	118.37	24.39	90.12	887.74	-7,735.96	2,440.49	2,298.00	142.48	17.128	
14,200.00	6,925.31	7,026.16	7,025.72	119.93	24.38	90.04	887.73	-7,736.05	2,422.12	2,277.89	144.23	16.793	
14,300.00	6,924.99	7,023.06	7,022.61	121.48	24.36	89.97	887.71	-7,736.13	2,407.77	2,261.95	145.82	16.512	
14,400.00	6,924.67	7,019.98	7,019.53	123.04	24.35	89.89	887.70	-7,736.22	2,397.50	2,250.28	147.22	16.285	
14,500.00	6,924.34	7,016.91	7,016.46	124.60	24.34	89.82	887.69	-7,736.31	2,391.38	2,242.93	148.44	16.110	
14,596.91	6,924.03	7,013.95	7,013.50	126.11	24.33	89.75	887.68	-7,736.39	2,389.41	2,239.99	149.43	15.991	CC
14,600.00	6,924.02	7,013.85	7,013.41	126.16	24.33	89.75	887.67	-7,736.39	2,389.41	2,239.96	149.45	15.988	ES
14,700.00	6,923.70	7,010.81	7,010.37	127.72	24.32	89.67	887.66	-7,736.48	2,391.63	2,241.37	150.26	15.916	
14,800.00	6,923.38	7,007.79	7,007.35	129.28	24.31	89.60	887.65	-7,736.56	2,398.02	2,247.16	150.86	15.896	SF
14,900.00	6,923.05	7,004.78	7,004.35	130.85	24.30	89.53	887.64	-7,736.65	2,408.54	2,257.30	151.24	15.925	
15,000.00	6,922.73	7,001.79	7,001.35	132.41	24.29	89.46	887.62	-7,736.73	2,423.14	2,271.72	151.42	16.002	
15,100.00	6,922.41	7,000.00	6,999.56	133.97	24.28	89.41	887.62	-7,736.78	2,441.75	2,290.35	151.41	16.127	
15,200.00	6,922.08	7,000.00	6,999.56	135.54	24.28	89.41	887.62	-7,736.78	2,464.28	2,313.08	151.21	16.298	
15,300.00	6,921.76	6,993.52	6,993.08	137.11	24.26	89.26	887.59	-7,736.96	2,490.62	2,339.82	150.80	16.516	
15,400.00	6,921.44	6,990.84	6,990.40	138.67	24.25	89.19	887.58	-7,737.03	2,520.65	2,370.40	150.24	16.777	
15,500.00	6,921.11	6,988.17	6,987.74	140.24	24.24	89.13	887.57	-7,737.10	2,554.24	2,404.70	149.53	17.081	
15,600.00	6,920.79	6,985.53	6,985.09	141.81	24.23	89.07	887.56	-7,737.18	2,591.25	2,442.56	148.69	17.428	
15,700.00	6,920.47	6,982.89	6,982.46	143.38	24.22	89.00	887.55	-7,737.25	2,631.54	2,483.82	147.72	17.815	
15,800.00	6,920.14	6,980.27	6,979.84	144.95	24.21	88.94	887.54	-7,737.32	2,674.96	2,528.32	146.65	18.241	
15,900.00	6,919.82	6,977.67	6,977.24	146.52	24.21	88.88	887.54	-7,737.39	2,721.37	2,575.88	145.48	18.706	
16,000.00	6,919.50	6,975.07	6,974.65	148.09	24.20	88.82	887.53	-7,737.46	2,770.60	2,626.35	144.25	19.207	
16,100.00	6,919.18	6,972.50	6,972.07	149.66	24.19	88.75	887.52	-7,737.53	2,822.52	2,679.57	142.95	19.745	
16,200.00	6,918.85	6,969.93	6,969.51	151.24	24.18	88.69	887.51	-7,737.59	2,876.97	2,735.37	141.60	20.317	
16,300.00	6,918.53	6,967.38	6,966.96	152.81	24.17	88.63	887.51	-7,737.66	2,933.82	2,793.60	140.22	20.923	
16,400.00	6,918.21	6,964.85	6,964.42	154.38	24.16	88.57	887.50	-7,737.73	2,992.93	2,854.12	138.81	21.562	
16,500.00	6,917.88	6,962.33	6,961.90	155.96	24.15	88.51	887.50	-7,737.80	3,054.17	2,916.78	137.38	22.231	
16,600.00	6,917.56	6,959.82	6,959.39	157.53	24.14	88.45	887.49	-7,737.86	3,117.41	2,981.46	135.95	22.931	
16,700.00	6,917.24	6,957.32	6,956.90	159.11	24.13	88.39	887.48	-7,737.93	3,182.53	3,048.02	134.51	23.660	
16,800.00	6,916.91	6,954.84	6,954.42	160.68	24.13	88.33	887.48	-7,737.99	3,249.43	3,116.35	133.08	24.417	
16,900.00	6,916.59	6,952.37	6,951.95	162.26	24.12	88.27	887.48	-7,738.06	3,317.99	3,186.33	131.66	25.201	
17,000.00	6,916.27	6,949.92	6,949.50	163.84	24.11	88.21	887.47	-7,738.12	3,388.11	3,257.85	130.26	26.011	
17,100.00	6,915.95	6,947.48	6,947.06	165.41	24.10	88.15	887.47	-7,738.19	3,459.69	3,330.83	128.87	26.846	
17,200.00	6,915.62	6,945.05	6,944.63	166.99	24.09	88.10	887.46	-7,738.25	3,532.66	3,405.16	127.51	27.706	
17,300.00	6,915.30	6,942.63	6,942.21	168.57	24.08	88.04	887.46	-7,738.31	3,606.92	3,480.76	126.17	28.588	
17,400.00	6,914.98	6,940.22	6,939.81	170.15	24.07	87.98	887.46	-7,738.37	3,682.40	3,557.54	124.86	29.493	
17,500.00	6,914.65	6,937.83	6,937.42	171.73	24.07	87.92	887.45	-7,738.43	3,759.02	3,635.45	123.57	30.420	
17,600.00	6,914.33	6,935.45	6,935.04	173.31	24.06	87.87	887.45	-7,738.49	3,836.72	3,714.40	122.32	31.367	
17,700.00	6,914.01	6,933.09	6,932.67	174.89	24.05	87.81	887.45	-7,738.55	3,915.42	3,794.33	121.10	32.333	
17,800.00	6,913.68	6,930.73	6,930.32	176.47	24.04	87.75	887.45	-7,738.61	3,995.08	3,875.18	119.90	33.319	
17,900.00	6,913.36	6,928.39	6,927.98	178.05	24.03	87.70	887.45	-7,738.67	4,075.63	3,956.89	118.74	34.323	
18,000.00	6,913.04	6,926.06	6,925.65	179.63	24.02	87.64	887.44	-7,738.73	4,157.03	4,039.41	117.61	35.345	
18,100.00	6,912.72	6,923.74	6,923.33	181.21	24.02	87.59	887.44	-7,738.79	4,239.22	4,122.70	116.51	36.384	
18,111.83	6,912.68	6,923.47	6,923.06	181.40	24.02	87.58	887.44	-7,738.80	4,248.99	4,132.61	116.39	36.508	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 300-B001Mb_MWD+HRGM **Offset Well Error:** 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	79.42	79.42	0.00	0.14	-84.39	878.47	-8,949.25	8,992.28				
54.25	54.25	124.30	124.30	0.02	0.22	-145.94	878.46	-8,949.36	8,992.50	8,992.27	0.24	N/A	
130.42	130.42	187.32	187.31	0.11	0.34	-173.11	878.43	-8,949.59	8,993.11	8,992.67	0.44	N/A	
219.69	219.69	261.16	261.16	0.23	0.47	-147.04	878.37	-8,949.98	8,994.02	8,993.33	0.69	N/A	
308.67	308.67	334.67	334.67	0.35	0.66	-155.95	878.30	-8,950.50	8,995.09	8,994.11	0.99	9,110.261	
454.00	453.99	372.00	372.00	0.51	0.80	69.46	878.26	-8,950.82	8,996.95	8,995.66	1.29	6,980.535	
544.00	543.93	372.00	372.00	0.74	0.80	69.73	878.26	-8,950.82	8,998.12	8,996.60	1.52	5,928.254	
667.00	666.63	372.00	372.00	1.13	0.80	56.70	878.26	-8,950.82	8,998.60	8,996.68	1.92	4,685.525	
678.04	677.63	372.00	372.00	1.17	0.80	58.74	878.26	-8,950.82	8,998.58	8,996.62	1.96	4,591.531	
756.00	755.27	372.00	372.00	1.44	0.80	71.51	878.26	-8,950.82	8,999.46	8,997.23	2.24	4,022.737	
850.00	848.62	386.78	386.76	1.79	0.86	73.04	878.12	-8,951.35	9,001.25	8,998.61	2.64	3,405.284	
942.00	939.50	552.00	550.99	2.14	1.49	79.41	866.97	-8,962.43	9,003.66	9,000.05	3.61	2,492.389	
1,033.00	1,028.89	584.00	582.83	2.52	1.60	88.54	864.45	-8,964.42	9,007.13	9,003.02	4.11	2,194.179	
1,123.00	1,117.00	616.00	614.60	2.90	1.72	94.64	861.42	-8,966.73	9,013.45	9,008.84	4.61	1,955.917	
1,214.00	1,206.00	648.00	646.29	3.29	1.84	93.98	857.84	-8,969.37	9,021.42	9,016.30	5.12	1,761.244	
1,309.00	1,298.75	681.08	678.97	3.71	1.97	96.82	853.67	-8,972.35	9,030.83	9,025.17	5.67	1,593.566	
1,403.00	1,390.39	729.91	727.08	4.13	2.17	99.84	846.81	-8,977.10	9,041.83	9,035.55	6.28	1,440.115	
1,498.00	1,482.88	810.89	806.70	4.56	2.51	96.53	834.56	-8,985.27	9,053.23	9,046.19	7.04	1,286.784	
1,592.00	1,573.82	834.00	829.43	5.00	2.61	95.90	831.04	-8,987.62	9,064.42	9,056.86	7.57	1,197.829	
1,687.00	1,665.32	898.00	892.34	5.46	2.88	98.85	821.59	-8,994.61	9,077.02	9,068.73	8.29	1,095.085	
1,876.00	1,847.35	1,108.78	1,099.50	6.38	3.80	101.57	790.24	-9,017.61	9,104.40	9,094.31	10.09	901.948	
1,970.00	1,937.87	1,280.12	1,267.54	6.84	4.57	101.83	762.18	-9,035.88	9,118.31	9,107.01	11.30	807.099	
2,064.00	2,028.42	1,399.00	1,384.32	7.30	5.10	102.47	743.38	-9,047.70	9,131.73	9,119.46	12.27	744.287	
2,159.00	2,119.97	1,462.00	1,446.26	7.77	5.38	103.70	733.80	-9,054.07	9,145.85	9,132.85	13.00	703.602	
2,348.00	2,302.44	1,642.98	1,624.07	8.69	6.19	99.28	705.96	-9,073.06	9,172.99	9,158.30	14.70	624.213	
2,443.00	2,394.41	1,692.79	1,673.06	9.15	6.41	98.72	698.57	-9,078.22	9,185.29	9,169.93	15.36	598.032	
2,537.00	2,485.45	1,739.03	1,718.56	9.61	6.61	98.52	692.00	-9,083.24	9,197.75	9,181.75	16.00	574.812	
2,632.00	2,577.48	1,821.59	1,799.76	10.07	6.98	98.86	680.31	-9,092.52	9,210.72	9,193.92	16.81	548.026	
2,727.00	2,669.50	1,902.00	1,878.82	10.53	7.33	98.95	668.76	-9,101.53	9,223.75	9,206.14	17.60	523.938	
2,821.00	2,760.56	2,127.88	2,100.87	10.98	8.34	98.84	635.17	-9,125.67	9,236.03	9,216.98	19.05	484.908	
2,916.00	2,852.68	2,291.10	2,261.56	11.44	9.06	98.90	611.26	-9,141.41	9,247.43	9,227.22	20.21	457.632	
3,011.00	2,945.03	2,364.04	2,333.46	11.89	9.38	99.13	601.01	-9,148.21	9,258.42	9,237.46	20.96	441.709	
3,105.00	3,036.57	2,458.81	2,426.87	12.33	9.79	93.59	587.68	-9,157.03	9,268.14	9,246.34	21.80	425.150	
3,200.00	3,128.81	2,509.89	2,477.20	12.78	10.01	90.26	580.45	-9,161.92	9,276.54	9,254.08	22.46	412.958	
3,294.00	3,219.76	2,586.68	2,552.75	13.24	10.35	89.94	569.11	-9,169.65	9,284.55	9,261.30	23.25	399.359	
3,389.00	3,311.82	2,666.55	2,631.33	13.69	10.71	91.04	557.32	-9,177.78	9,292.89	9,268.84	24.05	386.408	
3,483.00	3,403.03	2,773.67	2,736.61	14.14	11.19	91.43	540.86	-9,188.69	9,301.36	9,276.40	24.97	372.542	
3,578.00	3,495.31	2,844.00	2,805.67	14.60	11.50	92.05	529.74	-9,195.97	9,310.21	9,284.48	25.72	361.935	
3,672.00	3,586.65	2,907.00	2,867.50	15.04	11.79	93.12	519.72	-9,202.72	9,319.60	9,293.16	26.44	352.461	
3,767.00	3,678.95	2,970.00	2,929.37	15.49	12.07	93.69	509.94	-9,209.53	9,329.59	9,302.42	27.16	343.477	
3,862.00	3,771.63	3,034.00	2,992.24	15.93	12.36	93.65	500.37	-9,216.67	9,339.91	9,312.04	27.87	335.103	
3,956.00	3,863.70	3,240.00	3,195.07	16.35	13.27	94.09	471.79	-9,238.53	9,349.61	9,320.42	29.19	320.295	
4,052.00	3,957.54	3,285.00	3,239.41	16.79	13.46	92.79	465.65	-9,243.12	9,359.10	9,329.29	29.81	313.981	
4,146.00	4,048.88	3,349.00	3,302.39	17.24	13.75	92.63	456.63	-9,250.08	9,368.82	9,338.30	30.52	306.953	
4,241.00	4,140.47	3,799.50	3,747.48	17.71	15.64	95.37	400.99	-9,288.76	9,376.86	9,343.96	32.90	285.019	
4,336.00	4,231.25	3,899.35	3,846.84	18.21	16.00	98.61	393.43	-9,294.96	9,385.58	9,351.82	33.76	278.044	
4,430.00	4,320.59	3,997.67	3,944.71	18.71	16.36	97.05	386.10	-9,300.97	9,394.75	9,360.14	34.61	271.418	
4,524.00	4,409.51	4,095.69	4,042.29	19.22	16.71	93.59	378.90	-9,306.87	9,402.64	9,367.16	35.48	265.001	
4,619.00	4,498.98	4,194.44	4,140.60	19.75	17.07	93.02	371.76	-9,312.73	9,409.51	9,373.14	36.37	258.729	
4,713.00	4,587.83	4,292.37	4,238.12	20.27	17.42	93.32	364.79	-9,318.44	9,416.05	9,378.81	37.24	252.850	
4,807.00	4,676.97	4,390.48	4,335.82	20.78	17.78	94.70	357.92	-9,324.08	9,422.90	9,384.79	38.11	247.284	
4,870.00	4,736.65	4,456.14	4,401.22	21.12	18.02	95.18	353.39	-9,327.80	9,427.79	9,389.10	38.69	243.696	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 300-B001Mb_MWD+HRGM **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,521.98	4,466.81	21.46	18.26	95.34	348.89	-9,331.49	9,432.67	9,393.40	39.26	240.248	
5,027.00	4,886.13	4,620.28	4,564.73	21.96	18.62	96.13	342.26	-9,336.92	9,440.07	9,399.95	40.12	235.304	
5,121.00	4,976.11	4,718.87	4,662.96	22.45	18.97	96.80	335.73	-9,342.28	9,447.54	9,406.58	40.96	230.630	
5,216.00	5,068.11	4,819.34	4,763.07	22.91	19.34	97.08	329.19	-9,347.64	9,454.69	9,412.90	41.79	226.244	
5,341.00	5,190.11	4,952.24	4,895.52	23.49	19.82	96.90	320.72	-9,354.59	9,463.44	9,420.59	42.85	220.872	
5,436.00	5,283.20	5,053.49	4,996.44	23.91	20.19	97.10	314.40	-9,359.78	9,469.75	9,426.11	43.63	217.022	
5,499.00	5,345.03	5,120.69	5,063.43	24.19	20.43	97.09	310.27	-9,363.16	9,473.84	9,429.69	44.15	214.561	
5,561.00	5,405.97	5,186.88	5,129.41	24.45	20.68	98.17	306.25	-9,366.46	9,477.88	9,433.22	44.66	212.213	
5,624.00	5,467.97	5,254.18	5,196.51	24.72	20.92	97.18	302.22	-9,369.76	9,481.89	9,436.72	45.17	209.898	
5,687.00	5,530.05	5,321.53	5,263.67	24.99	21.17	98.15	298.24	-9,373.03	9,485.80	9,440.12	45.68	207.646	
5,750.00	5,592.20	5,388.92	5,330.86	25.25	21.41	98.47	294.31	-9,376.25	9,489.73	9,443.54	46.19	205.460	
5,813.00	5,654.42	5,456.34	5,398.10	25.51	21.66	99.53	290.43	-9,379.44	9,493.68	9,446.99	46.69	203.337	
5,876.00	5,716.68	5,523.78	5,465.36	25.76	21.90	99.79	286.60	-9,382.58	9,497.65	9,450.46	47.19	201.269	
5,939.00	5,778.99	5,591.25	5,532.65	26.01	22.15	99.64	282.82	-9,385.68	9,501.55	9,453.86	47.69	199.253	
6,065.00	5,903.86	5,726.33	5,667.39	26.51	22.64	99.65	275.41	-9,391.75	9,508.91	9,460.24	48.67	195.391	
6,128.00	5,966.41	5,793.95	5,734.84	26.74	22.89	98.25	271.78	-9,394.73	9,512.28	9,463.13	49.15	193.542	
6,191.00	6,029.04	5,861.61	5,802.34	26.97	23.13	98.93	268.20	-9,397.67	9,515.47	9,465.84	49.63	191.742	
6,254.00	6,091.75	5,929.30	5,869.88	27.20	23.38	99.87	264.68	-9,400.56	9,518.58	9,468.48	50.10	190.001	
6,348.00	6,185.46	6,030.36	5,970.72	27.52	23.75	102.73	259.51	-9,404.80	9,523.12	9,472.34	50.79	187.509	
6,390.00	6,227.36	6,075.52	6,015.78	27.61	23.91	102.74	257.24	-9,406.66	9,525.13	9,474.10	51.03	186.653	
6,400.00	6,237.33	6,086.28	6,026.51	27.61	23.95	102.74	256.70	-9,407.10	9,525.61	9,474.54	51.08	186.502	
6,490.00	6,327.12	6,183.05	6,123.09	27.66	24.31	102.75	251.92	-9,411.02	9,529.87	9,478.39	51.47	185.140	
6,500.00	6,337.09	6,193.81	6,133.83	27.66	24.34	90.33	251.40	-9,411.45	9,530.26	9,478.74	51.52	184.987	
6,550.00	6,386.85	6,247.59	6,187.51	27.70	24.54	53.78	248.80	-9,413.58	9,529.98	9,478.23	51.75	184.158	
6,600.00	6,436.20	6,301.13	6,240.94	27.74	24.74	41.12	246.24	-9,415.68	9,525.94	9,473.95	51.99	183.225	
6,650.00	6,484.82	6,354.07	6,293.78	27.79	24.93	35.58	243.75	-9,417.72	9,518.19	9,465.94	52.24	182.195	
6,700.00	6,532.40	6,406.06	6,345.68	27.85	25.12	32.77	241.33	-9,419.71	9,506.76	9,454.25	52.50	181.077	
6,750.00	6,578.63	6,456.78	6,396.31	27.92	25.30	31.30	239.00	-9,421.62	9,491.73	9,438.96	52.77	179.878	
6,800.00	6,623.24	6,505.89	6,445.34	28.00	25.48	30.66	236.78	-9,423.44	9,473.21	9,420.17	53.04	178.606	
6,850.00	6,665.93	6,553.08	6,492.45	28.09	25.66	30.60	234.66	-9,425.18	9,451.31	9,398.00	53.32	177.270	
6,900.00	6,706.42	6,598.05	6,537.34	28.19	25.82	31.01	232.67	-9,426.81	9,426.19	9,372.59	53.60	175.878	
6,950.00	6,744.48	6,640.49	6,579.72	28.30	25.97	31.86	230.82	-9,428.33	9,398.00	9,344.13	53.88	174.441	
7,000.00	6,779.84	6,680.15	6,619.31	28.43	26.12	33.16	229.10	-9,429.74	9,366.94	9,312.78	54.15	172.966	
7,050.00	6,812.30	6,716.77	6,655.88	28.57	26.25	34.94	227.53	-9,431.03	9,333.20	9,278.77	54.43	171.465	
7,100.00	6,841.63	6,750.12	6,689.17	28.73	26.37	37.27	226.12	-9,432.19	9,297.02	9,242.31	54.71	169.946	
7,150.00	6,867.66	6,779.98	6,719.00	28.90	26.48	40.26	224.86	-9,433.22	9,258.61	9,203.64	54.97	168.420	
7,200.00	6,890.22	6,806.18	6,745.16	29.08	26.58	44.06	223.77	-9,434.11	9,218.24	9,163.01	55.23	166.896	
7,250.00	6,909.17	6,828.55	6,767.49	29.28	26.66	48.86	222.84	-9,434.87	9,176.17	9,120.68	55.48	165.383	
7,300.00	6,924.38	6,846.95	6,785.87	29.49	26.73	54.89	222.08	-9,435.50	9,132.66	9,076.94	55.72	163.891	
7,350.00	6,935.77	6,861.28	6,800.17	29.72	26.78	62.36	221.49	-9,435.98	9,088.01	9,032.06	55.95	162.427	
7,400.00	6,943.25	6,871.44	6,810.32	29.97	26.82	71.39	221.08	-9,436.32	9,042.49	8,986.32	56.16	161.002	
7,450.00	6,946.78	6,877.39	6,816.26	30.22	26.84	81.82	220.83	-9,436.52	8,996.39	8,940.03	56.36	159.621	
7,471.54	6,947.08	6,878.64	6,817.51	30.34	26.84	86.62	220.78	-9,436.56	8,976.43	8,919.99	56.44	159.040	
7,500.00	6,946.98	6,879.77	6,818.64	30.49	26.85	86.55	220.74	-9,436.60	8,949.99	8,893.45	56.54	158.284	
7,600.00	6,946.65	6,883.64	6,822.51	31.07	26.86	86.30	220.58	-9,436.73	8,856.37	8,799.47	56.89	155.663	
7,700.00	6,946.32	6,887.38	6,826.24	31.69	26.88	85.98	220.43	-9,436.85	8,761.70	8,704.47	57.23	153.101	
7,800.00	6,945.99	6,890.97	6,829.83	32.35	26.89	85.58	220.28	-9,436.97	8,666.06	8,608.52	57.54	150.606	
7,900.00	6,945.67	6,894.42	6,833.27	33.05	26.90	85.07	220.14	-9,437.09	8,569.55	8,511.72	57.83	148.183	
8,000.00	6,945.34	6,897.71	6,836.56	33.79	26.91	84.40	220.01	-9,437.20	8,472.26	8,414.16	58.09	145.836	
8,034.58	6,945.23	6,898.82	6,837.66	34.05	26.92	84.11	219.96	-9,437.23	8,438.45	8,380.27	58.18	145.041	
8,100.00	6,945.02	6,900.89	6,839.73	34.57	26.92	84.18	219.88	-9,437.30	8,374.41	8,316.08	58.34	143.551	
8,200.00	6,944.69	6,904.05	6,842.88	35.41	26.94	84.28	219.75	-9,437.41	8,276.58	8,217.99	58.59	141.273	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 300-B001Mb_MWD+HRGM **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,907.20	6,846.03	36.30	26.95	84.38	219.62	-9,437.51	8,178.79	8,119.95	58.84	138.995	
8,400.00	6,944.05	6,910.35	6,849.17	37.25	26.96	84.49	219.50	-9,437.62	8,081.06	8,021.95	59.11	136.718	
8,500.00	6,943.73	6,913.49	6,852.31	38.25	26.97	84.59	219.37	-9,437.72	7,983.38	7,924.00	59.38	134.440	
8,600.00	6,943.40	6,916.62	6,855.44	39.29	26.98	84.69	219.24	-9,437.82	7,885.76	7,826.10	59.67	132.164	
8,700.00	6,943.08	6,919.75	6,858.56	40.37	26.99	84.80	219.12	-9,437.93	7,788.20	7,728.24	59.96	129.888	
8,800.00	6,942.76	6,922.87	6,861.68	41.49	27.00	84.90	218.99	-9,438.03	7,690.70	7,630.44	60.27	127.615	
8,900.00	6,942.43	6,925.99	6,864.79	42.64	27.02	85.00	218.87	-9,438.13	7,593.27	7,532.69	60.58	125.343	
9,000.00	6,942.11	6,929.09	6,867.90	43.82	27.03	85.11	218.74	-9,438.23	7,495.90	7,434.99	60.91	123.074	
9,100.00	6,941.79	6,932.20	6,871.00	45.03	27.04	85.21	218.62	-9,438.34	7,398.60	7,337.36	61.24	120.807	
9,200.00	6,941.46	6,935.29	6,874.09	46.27	27.05	85.31	218.49	-9,438.44	7,301.37	7,239.78	61.59	118.544	
9,300.00	6,941.14	6,938.39	6,877.18	47.53	27.06	85.41	218.37	-9,438.54	7,204.22	7,142.26	61.95	116.284	
9,400.00	6,940.82	6,941.47	6,880.26	48.81	27.07	85.52	218.24	-9,438.64	7,107.14	7,044.81	62.33	114.029	
9,500.00	6,940.50	6,944.55	6,883.33	50.11	27.08	85.62	218.12	-9,438.74	7,010.15	6,947.43	62.72	111.778	
9,600.00	6,940.17	6,947.62	6,886.40	51.43	27.10	85.72	218.00	-9,438.84	6,913.24	6,850.12	63.12	109.532	
9,700.00	6,939.85	6,950.69	6,889.46	52.76	27.11	85.82	217.88	-9,438.94	6,816.41	6,752.88	63.53	107.291	
9,800.00	6,939.53	6,953.75	6,892.52	54.11	27.12	85.92	217.75	-9,439.04	6,719.68	6,655.72	63.96	105.057	
9,900.00	6,939.20	6,956.80	6,895.57	55.48	27.13	86.02	217.63	-9,439.14	6,623.05	6,558.64	64.41	102.829	
10,000.00	6,938.88	6,959.85	6,898.61	56.86	27.14	86.12	217.51	-9,439.24	6,526.51	6,461.64	64.87	100.608	
10,100.00	6,938.56	6,962.89	6,901.65	58.25	27.15	86.23	217.39	-9,439.34	6,430.08	6,364.73	65.35	98.395	
10,200.00	6,938.23	6,965.93	6,904.68	59.65	27.16	86.33	217.27	-9,439.44	6,333.76	6,267.91	65.85	96.190	
10,300.00	6,937.91	6,968.96	6,907.71	61.06	27.17	86.43	217.15	-9,439.54	6,237.55	6,171.19	66.36	93.993	
10,400.00	6,937.59	6,971.99	6,910.73	62.48	27.18	86.53	217.03	-9,439.64	6,141.46	6,074.57	66.90	91.806	
10,500.00	6,937.27	6,975.00	6,913.75	63.91	27.20	86.63	216.91	-9,439.74	6,045.50	5,978.05	67.45	89.629	
10,600.00	6,936.94	6,978.02	6,916.75	65.34	27.21	86.73	216.79	-9,439.84	5,949.67	5,881.64	68.03	87.462	
10,700.00	6,936.62	6,981.02	6,919.76	66.79	27.22	86.83	216.67	-9,439.93	5,853.98	5,785.35	68.62	85.307	
10,800.00	6,936.30	6,984.03	6,922.76	68.24	27.23	86.93	216.55	-9,440.03	5,758.43	5,689.19	69.24	83.163	
10,900.00	6,935.97	6,987.02	6,925.75	69.70	27.24	87.03	216.43	-9,440.13	5,663.03	5,593.15	69.89	81.032	
11,000.00	6,935.65	6,990.01	6,928.73	71.17	27.25	87.13	216.32	-9,440.22	5,567.80	5,497.24	70.56	78.913	
11,100.00	6,935.33	6,992.99	6,931.71	72.64	27.26	87.23	216.20	-9,440.32	5,472.73	5,401.48	71.25	76.809	
11,200.00	6,935.00	6,995.97	6,934.69	74.11	27.27	87.33	216.08	-9,440.42	5,377.84	5,305.87	71.97	74.719	
11,300.00	6,934.68	6,998.94	6,937.65	75.60	27.28	87.43	215.96	-9,440.51	5,283.14	5,210.41	72.73	72.644	
11,400.00	6,934.36	7,001.91	6,940.62	77.08	27.29	87.52	215.85	-9,440.61	5,188.63	5,115.12	73.51	70.586	
11,500.00	6,934.03	7,004.87	6,943.57	78.57	27.30	87.62	215.73	-9,440.70	5,094.33	5,020.01	74.32	68.544	
11,600.00	6,933.71	7,007.83	6,946.52	80.07	27.32	87.72	215.61	-9,440.80	5,000.26	4,925.09	75.17	66.520	
11,700.00	6,933.39	7,010.78	6,949.47	81.57	27.33	87.82	215.50	-9,440.89	4,906.41	4,830.36	76.05	64.514	
11,800.00	6,933.07	7,013.72	6,952.41	83.07	27.34	87.92	215.38	-9,440.99	4,812.81	4,735.84	76.97	62.528	
11,900.00	6,932.74	7,016.66	6,955.34	84.58	27.35	88.02	215.27	-9,441.08	4,719.47	4,641.54	77.93	60.561	
12,000.00	6,932.42	7,019.59	6,958.27	86.09	27.36	88.11	215.15	-9,441.18	4,626.41	4,547.48	78.93	58.615	
12,100.00	6,932.10	7,022.52	6,961.20	87.60	27.37	88.21	215.04	-9,441.27	4,533.64	4,453.67	79.97	56.692	
12,200.00	6,931.77	7,025.44	6,964.11	89.12	27.38	88.31	214.92	-9,441.37	4,441.19	4,360.13	81.06	54.791	
12,300.00	6,931.45	7,028.35	6,967.02	90.64	27.39	88.41	214.81	-9,441.46	4,349.06	4,266.87	82.19	52.913	
12,400.00	6,931.13	7,031.26	6,969.93	92.16	27.40	88.50	214.70	-9,441.55	4,257.29	4,173.91	83.38	51.061	
12,500.00	6,930.80	7,034.17	6,972.83	93.69	27.41	88.60	214.58	-9,441.64	4,165.90	4,081.28	84.62	49.233	
12,600.00	6,930.48	7,037.06	6,975.73	95.22	27.42	88.70	214.47	-9,441.74	4,074.90	3,989.00	85.91	47.433	
12,700.00	6,930.16	7,039.96	6,978.61	96.75	27.43	88.80	214.36	-9,441.83	3,984.34	3,897.08	87.26	45.660	
12,800.00	6,929.84	7,042.84	6,981.50	98.28	27.44	88.89	214.25	-9,441.92	3,894.24	3,805.56	88.68	43.915	
12,900.00	6,929.51	7,045.73	6,984.38	99.82	27.45	88.99	214.13	-9,442.01	3,804.63	3,714.47	90.16	42.201	
13,000.00	6,929.19	7,048.60	6,987.25	101.35	27.46	89.08	214.02	-9,442.10	3,715.55	3,623.84	91.70	40.516	
13,100.00	6,928.87	7,051.47	6,990.12	102.89	27.47	89.18	213.91	-9,442.20	3,627.03	3,533.71	93.33	38.864	
13,200.00	6,928.54	7,054.34	6,992.98	104.43	27.48	89.28	213.80	-9,442.29	3,539.13	3,444.10	95.02	37.245	
13,300.00	6,928.22	7,057.20	6,995.84	105.97	27.50	89.37	213.69	-9,442.38	3,451.88	3,355.08	96.80	35.659	
13,400.00	6,927.90	7,060.05	6,998.69	107.52	27.51	89.47	213.58	-9,442.47	3,365.34	3,266.67	98.66	34.109	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 300-B001Mb_MWD+HRGM **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	7,062.90	7,001.53	109.06	27.52	89.56	213.47	-9,442.56	3,279.56	3,178.94	100.62	32.595	
13,600.00	6,927.25	7,065.75	7,004.37	110.61	27.53	89.66	213.36	-9,442.65	3,194.60	3,091.94	102.66	31.118	
13,700.00	6,926.93	7,068.59	7,007.21	112.16	27.54	89.75	213.25	-9,442.74	3,110.54	3,005.74	104.80	29.680	
13,800.00	6,926.61	7,071.42	7,010.04	113.71	27.55	89.85	213.14	-9,442.83	3,027.44	2,920.40	107.04	28.282	
13,900.00	6,926.28	7,074.25	7,012.86	115.26	27.56	89.94	213.03	-9,442.92	2,945.40	2,836.00	109.39	26.925	
14,000.00	6,925.96	7,077.07	7,015.68	116.82	27.57	90.04	212.92	-9,443.01	2,864.49	2,752.64	111.85	25.610	
14,100.00	6,925.64	7,079.89	7,018.49	118.37	27.58	90.13	212.81	-9,443.10	2,784.82	2,670.39	114.42	24.338	
14,200.00	6,925.31	7,082.70	7,021.30	119.93	27.59	90.23	212.71	-9,443.18	2,706.49	2,589.38	117.11	23.111	
14,300.00	6,924.99	7,085.50	7,024.11	121.48	27.60	90.32	212.60	-9,443.27	2,629.63	2,509.72	119.91	21.930	
14,400.00	6,924.67	7,088.31	7,026.90	123.04	27.61	90.42	212.49	-9,443.36	2,554.38	2,431.54	122.83	20.796	
14,500.00	6,924.34	7,091.10	7,029.70	124.60	27.62	90.51	212.38	-9,443.45	2,480.86	2,354.99	125.87	19.710	
14,600.00	6,924.02	7,093.89	7,032.48	126.16	27.63	90.60	212.28	-9,443.54	2,409.26	2,280.24	129.02	18.673	
14,700.00	6,923.70	7,096.68	7,035.26	127.72	27.64	90.70	212.17	-9,443.62	2,339.73	2,207.45	132.28	17.687	
14,800.00	6,923.38	7,099.46	7,038.04	129.28	27.65	90.79	212.06	-9,443.71	2,272.47	2,136.83	135.64	16.753	
14,900.00	6,923.05	7,102.23	7,040.81	130.85	27.66	90.88	211.96	-9,443.80	2,207.70	2,068.60	139.09	15.872	
15,000.00	6,922.73	7,105.00	7,043.58	132.41	27.67	90.98	211.85	-9,443.88	2,145.62	2,003.00	142.62	15.045	
15,100.00	6,922.41	7,107.77	7,046.34	133.97	27.68	91.07	211.75	-9,443.97	2,086.49	1,940.30	146.19	14.272	
15,200.00	6,922.08	7,110.53	7,049.10	135.54	27.69	91.16	211.64	-9,444.06	2,030.56	1,880.77	149.79	13.556	
15,300.00	6,921.76	7,113.28	7,051.85	137.11	27.70	91.25	211.54	-9,444.14	1,978.11	1,824.72	153.39	12.896	
15,400.00	6,921.44	7,116.03	7,054.59	138.67	27.71	91.35	211.43	-9,444.23	1,929.41	1,772.48	156.93	12.295	
15,500.00	6,921.11	7,118.77	7,057.33	140.24	27.72	91.44	211.33	-9,444.31	1,884.76	1,724.37	160.39	11.751	
15,600.00	6,920.79	7,121.51	7,060.07	141.81	27.73	91.53	211.22	-9,444.40	1,844.45	1,680.75	163.70	11.268	
15,700.00	6,920.47	7,124.25	7,062.80	143.38	27.74	91.62	211.12	-9,444.48	1,808.77	1,641.96	166.81	10.843	
15,800.00	6,920.14	7,126.98	7,065.53	144.95	27.75	91.71	211.02	-9,444.57	1,778.00	1,608.34	169.67	10.479	
15,900.00	6,919.82	7,129.70	7,068.25	146.52	27.76	91.80	210.91	-9,444.65	1,752.41	1,580.20	172.21	10.176	
16,000.00	6,919.50	7,132.42	7,070.96	148.09	27.77	91.90	210.81	-9,444.74	1,732.21	1,557.83	174.38	9.933	
16,100.00	6,919.18	7,135.13	7,073.67	149.66	27.78	91.99	210.71	-9,444.82	1,717.60	1,541.46	176.14	9.752	
16,200.00	6,918.85	7,137.84	7,076.38	151.24	27.79	92.08	210.61	-9,444.91	1,708.72	1,531.29	177.43	9.630	
16,300.00	6,918.53	7,140.54	7,079.08	152.81	27.80	92.17	210.50	-9,444.99	1,705.67	1,527.42	178.25	9.569	CC
16,304.45	6,918.52	7,140.66	7,079.20	152.88	27.80	92.17	210.50	-9,444.99	1,705.67	1,527.40	178.27	9.568	ES, SF
16,400.00	6,918.21	7,143.24	7,081.77	154.38	27.81	92.26	210.40	-9,445.07	1,708.47	1,529.91	178.56	9.568	
16,500.00	6,917.88	7,145.94	7,084.46	155.96	27.82	92.35	210.30	-9,445.16	1,717.09	1,538.71	178.39	9.626	
16,600.00	6,917.56	7,148.62	7,087.15	157.53	27.83	92.44	210.20	-9,445.24	1,731.46	1,553.72	177.74	9.742	
16,700.00	6,917.24	7,151.31	7,089.83	159.11	27.84	92.53	210.10	-9,445.32	1,751.41	1,574.77	176.64	9.915	
16,800.00	6,916.91	7,153.99	7,092.51	160.68	27.85	92.62	210.00	-9,445.40	1,776.78	1,601.64	175.15	10.145	
16,900.00	6,916.59	7,156.66	7,095.18	162.26	27.86	92.71	209.90	-9,445.49	1,807.33	1,634.03	173.30	10.429	
17,000.00	6,916.27	7,159.33	7,097.84	163.84	27.87	92.80	209.80	-9,445.57	1,842.80	1,671.65	171.15	10.767	
17,100.00	6,915.95	7,161.99	7,100.50	165.41	27.88	92.89	209.70	-9,445.65	1,882.91	1,714.15	168.76	11.157	
17,200.00	6,915.62	7,164.65	7,103.16	166.99	27.89	92.98	209.60	-9,445.73	1,927.38	1,761.21	166.18	11.598	
17,300.00	6,915.30	7,167.31	7,105.81	168.57	27.90	93.07	209.50	-9,445.81	1,975.91	1,812.46	163.45	12.089	
17,400.00	6,914.98	7,169.96	7,108.46	170.15	27.91	93.16	209.40	-9,445.90	2,028.21	1,867.57	160.64	12.626	
17,500.00	6,914.65	7,172.60	7,111.10	171.73	27.92	93.25	209.30	-9,445.98	2,083.99	1,926.23	157.76	13.210	
17,600.00	6,914.33	7,175.24	7,113.73	173.31	27.93	93.33	209.20	-9,446.06	2,142.99	1,988.12	154.87	13.837	
17,700.00	6,914.01	7,177.88	7,116.37	174.89	27.94	93.42	209.10	-9,446.14	2,204.95	2,052.96	151.98	14.508	
17,800.00	6,913.68	7,180.51	7,118.99	176.47	27.95	93.51	209.01	-9,446.22	2,269.61	2,120.48	149.13	15.219	
17,900.00	6,913.36	7,183.13	7,121.62	178.05	27.96	93.60	208.91	-9,446.30	2,336.77	2,190.44	146.32	15.970	
18,000.00	6,913.04	7,185.75	7,124.23	179.63	27.96	93.69	208.81	-9,446.38	2,406.20	2,262.62	143.58	16.758	
18,100.00	6,912.72	7,188.37	7,126.85	181.21	27.97	93.77	208.71	-9,446.46	2,477.72	2,336.81	140.91	17.583	
18,111.83	6,912.68	7,188.68	7,127.15	181.40	27.98	93.78	208.70	-9,446.47	2,486.32	2,345.71	140.60	17.683	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #040 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	488.00	488.00	0.00	14.62	87.10	915.69	18,106.26	18,129.40				
54.25	54.25	542.35	542.25	0.02	16.25	25.56	915.69	18,106.26	18,129.29	18,113.03	16.27	1,114.541	
130.42	130.42	618.52	618.42	0.11	18.53	-1.60	915.69	18,106.26	18,128.95	18,110.31	18.65	972.311	
219.69	219.69	707.79	707.69	0.23	21.21	24.47	915.69	18,106.26	18,128.49	18,107.06	21.43	845.792	
308.67	308.67	799.96	799.82	0.35	23.97	15.55	917.78	18,106.26	18,128.10	18,103.79	24.31	745.782	
382.33	382.33	878.66	878.50	0.43	26.33	-94.79	917.29	18,106.26	18,127.87	18,101.12	26.75	677.682 CC	
454.00	453.99	955.26	955.07	0.51	28.62	-119.03	916.40	18,106.26	18,128.09	18,098.96	29.13	622.385	
544.00	543.93	1,032.34	1,031.93	0.74	30.93	-118.70	915.69	18,106.26	18,129.53	18,097.86	31.66	572.584	
667.00	666.63	1,155.04	1,154.63	1.13	34.61	-131.71	915.69	18,106.26	18,134.61	18,098.87	35.74	507.414	
756.00	755.27	1,243.68	1,243.27	1.44	37.27	-116.85	915.69	18,106.26	18,139.08	18,100.37	38.71	468.625	
850.00	848.62	1,343.17	1,342.71	1.79	40.25	-115.21	917.57	18,106.26	18,143.99	18,101.96	42.03	431.664	
942.00	939.50	1,440.66	1,440.18	2.14	43.17	-108.77	916.60	18,106.26	18,149.26	18,103.95	45.31	400.555	
1,033.00	1,028.89	1,517.60	1,516.89	2.52	45.47	-99.55	915.69	18,106.26	18,153.34	18,105.36	47.98	378.323	
1,123.00	1,117.00	1,605.71	1,605.00	2.90	48.11	-93.48	915.69	18,106.26	18,155.45	18,104.45	51.00	355.979	
1,214.00	1,206.00	1,694.71	1,694.00	3.29	50.78	-94.22	915.69	18,106.26	18,156.75	18,102.69	54.06	335.870	
1,309.00	1,298.75	1,790.37	1,789.62	3.71	53.65	-91.37	917.81	18,106.26	18,157.87	18,100.53	57.34	316.660	
1,403.00	1,390.39	1,889.35	1,888.57	4.13	56.61	-88.47	917.19	18,106.26	18,157.81	18,097.08	60.73	299.010	
1,451.10	1,437.26	1,940.11	1,939.32	4.35	58.13	-90.19	916.61	18,106.26	18,157.65	18,095.18	62.46	290.686	
1,498.00	1,482.88	1,989.59	1,988.79	4.56	59.62	-91.76	915.86	18,106.26	18,157.80	18,093.64	64.16	283.008	
1,592.00	1,573.82	2,062.84	2,061.82	5.00	61.81	-92.21	915.69	18,106.26	18,158.64	18,091.84	66.80	271.847	
1,687.00	1,665.32	2,154.33	2,153.32	5.46	64.55	-89.40	915.69	18,106.26	18,159.01	18,089.01	70.00	259.420	
1,876.00	1,847.35	2,344.08	2,343.01	6.38	70.24	-87.02	917.56	18,106.26	18,157.48	18,080.87	76.61	237.013	
1,970.00	1,937.87	2,443.08	2,441.98	6.84	73.21	-86.92	916.57	18,106.26	18,156.02	18,075.99	80.04	226.845	
2,064.00	2,028.42	2,517.74	2,516.42	7.30	75.44	-86.46	915.69	18,106.26	18,154.44	18,071.71	82.74	219.425	
2,159.00	2,119.97	2,609.29	2,607.97	7.77	78.19	-85.33	915.69	18,106.26	18,152.56	18,066.61	85.95	211.207	
2,345.89	2,300.40	2,793.69	2,792.32	8.68	83.71	-90.05	917.80	18,106.26	18,150.61	18,058.22	92.39	196.459	
2,348.00	2,302.44	2,795.93	2,794.57	8.69	83.78	-90.11	917.80	18,106.26	18,150.61	18,058.14	92.47	196.294	
2,443.00	2,394.41	2,897.34	2,895.95	9.15	86.82	-90.80	917.11	18,106.26	18,150.75	18,054.79	95.96	189.140	
2,537.00	2,485.45	2,998.12	2,996.70	9.61	89.84	-91.10	915.72	18,106.26	18,151.06	18,051.62	99.44	182.536	
2,632.00	2,577.48	3,067.10	3,065.48	10.07	91.90	-90.87	915.69	18,106.26	18,151.46	18,049.49	101.96	178.018	
2,727.00	2,669.50	3,159.13	3,157.50	10.53	94.66	-90.90	915.69	18,106.26	18,151.83	18,046.65	105.18	172.578	
2,821.00	2,760.56	3,250.22	3,248.55	10.98	97.39	-91.21	917.87	18,106.26	18,152.44	18,044.08	108.36	167.514	
2,916.00	2,852.68	3,352.62	3,350.94	11.44	100.46	-91.37	917.50	18,106.26	18,152.95	18,041.07	111.89	162.241	
3,011.00	2,945.03	3,455.66	3,453.95	11.89	103.55	-91.34	916.39	18,106.26	18,153.41	18,037.99	115.43	157.273	
3,105.00	3,036.57	3,526.50	3,524.57	12.33	105.67	-96.97	915.69	18,106.26	18,154.92	18,036.94	117.99	153.872	
3,200.00	3,128.81	3,618.73	3,616.81	12.78	108.43	-100.21	915.69	18,106.26	18,158.45	18,037.25	121.20	149.820	
3,294.00	3,219.76	3,709.69	3,707.76	13.24	111.16	-100.64	915.69	18,106.26	18,162.88	18,038.50	124.38	146.024	
3,389.00	3,311.82	3,808.04	3,806.07	13.69	114.11	-99.76	917.75	18,106.26	18,167.35	18,039.56	127.79	142.171	
3,483.00	3,403.03	3,910.64	3,908.64	14.14	117.18	-99.48	916.97	18,106.26	18,171.19	18,039.88	131.31	138.387	
3,578.00	3,495.31	4,014.83	4,012.79	14.60	120.30	-99.04	915.42	18,106.26	18,174.80	18,039.92	134.88	134.749	
3,672.00	3,586.65	4,076.88	4,074.65	15.04	122.16	-97.98	915.69	18,106.26	18,178.18	18,041.00	137.18	132.511	
3,767.00	3,678.95	4,169.19	4,166.95	15.49	124.93	-97.57	915.69	18,106.26	18,181.31	18,040.91	140.40	129.498	
3,862.00	3,771.63	4,263.44	4,261.17	15.93	127.75	-97.92	917.86	18,106.26	18,184.38	18,040.72	143.66	126.580	
3,956.00	3,863.70	4,367.77	4,365.48	16.35	130.88	-97.67	917.38	18,106.26	18,186.97	18,039.76	147.20	123.549	
4,052.00	3,957.54	4,474.49	4,472.16	16.79	134.08	-98.86	916.11	18,106.26	18,189.84	18,039.01	150.84	120.593	
4,146.00	4,048.88	4,539.42	4,536.88	17.24	136.02	-98.90	915.69	18,106.26	18,193.31	18,040.08	153.23	118.735	
4,241.00	4,140.47	4,631.01	4,628.47	17.71	138.77	-96.35	915.69	18,106.26	18,196.74	18,040.29	156.44	116.316	
4,336.00	4,231.25	4,721.79	4,719.25	18.21	141.49	-93.16	915.69	18,106.26	18,199.12	18,039.47	159.66	113.989	
4,430.00	4,320.59	4,819.97	4,817.38	18.71	144.43	-94.89	917.70	18,106.26	18,201.48	18,038.38	163.10	111.597	
4,524.00	4,409.51	4,922.15	4,919.54	19.22	147.49	-98.46	916.83	18,106.26	18,205.17	18,038.50	166.67	109.227	
4,619.00	4,498.98	5,025.53	5,022.88	19.75	150.59	-99.25	915.22	18,106.26	18,210.23	18,039.93	170.29	106.933	
4,713.00	4,587.83	5,078.67	5,075.83	20.27	152.18	-99.35	915.69	18,106.26	18,215.47	18,043.07	172.40	105.659	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #040 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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
4,807.00	4,676.97	5,167.81	5,164.97	20.78	154.85	-98.14	915.69	18,106.26	18,220.24	18,044.66	175.58	103.774	
4,870.00	4,736.65	5,227.49	5,224.65	21.12	156.64	-97.83	915.69	18,106.26	18,223.19	18,045.49	177.70	102.548	
4,933.00	4,796.58	5,293.41	5,290.52	21.46	158.61	-98.00	917.80	18,106.26	18,226.22	18,046.21	180.01	101.249	
5,027.00	4,886.13	5,397.57	5,394.66	21.96	161.74	-97.34	917.11	18,106.26	18,230.15	18,046.52	183.63	99.275	
5,121.00	4,976.11	5,502.72	5,499.78	22.45	164.89	-97.19	915.64	18,106.26	18,233.60	18,046.33	187.27	97.365	
5,216.00	5,068.11	5,559.25	5,556.11	22.91	166.58	-97.30	915.69	18,106.26	18,236.64	18,047.22	189.42	96.275	
5,341.00	5,190.11	5,681.26	5,678.11	23.49	170.24	-97.83	915.69	18,106.26	18,240.30	18,046.65	193.65	94.192	
5,436.00	5,283.20	5,778.54	5,775.35	23.91	173.15	-97.83	917.84	18,106.26	18,243.18	18,046.19	196.99	92.612	
5,499.00	5,345.03	5,851.05	5,847.85	24.19	175.32	-97.96	917.51	18,106.26	18,244.84	18,045.41	199.43	91.483	
5,561.00	5,405.97	5,922.67	5,919.45	24.45	177.47	-97.02	916.83	18,106.26	18,246.29	18,044.44	201.85	90.397	
5,624.00	5,467.97	5,995.68	5,992.44	24.72	179.66	-98.11	915.76	18,106.26	18,247.67	18,043.37	204.30	89.317	
5,687.00	5,530.05	6,021.50	6,018.05	24.99	180.43	-97.23	915.69	18,106.26	18,249.08	18,043.74	205.34	88.873	
5,750.00	5,592.20	6,083.65	6,080.20	25.25	182.29	-97.02	915.69	18,106.26	18,250.38	18,042.92	207.46	87.971	
5,813.00	5,654.42	6,145.87	6,142.42	25.51	184.16	-96.05	915.69	18,106.26	18,251.52	18,041.94	209.58	87.086	
5,876.00	5,716.68	6,208.13	6,204.68	25.76	186.02	-95.88	915.69	18,106.26	18,252.53	18,040.83	211.70	86.218	
5,939.00	5,778.99	6,274.13	6,270.64	26.01	188.00	-96.13	917.85	18,106.26	18,253.77	18,039.84	213.93	85.326	
6,065.00	5,903.86	6,421.65	6,418.12	26.51	192.42	-96.32	916.84	18,106.26	18,255.50	18,036.66	218.84	83.419	
6,128.00	5,966.41	6,495.71	6,492.16	26.74	194.64	-97.80	915.76	18,106.26	18,256.31	18,035.01	221.30	82.497	
6,191.00	6,029.04	6,520.80	6,517.04	26.97	195.39	-97.18	915.69	18,106.26	18,257.16	18,034.88	222.28	82.136	
6,254.00	6,091.75	6,583.51	6,579.75	27.20	197.27	-96.33	915.69	18,106.26	18,257.88	18,033.49	224.38	81.369	
6,348.00	6,185.46	6,677.22	6,673.46	27.52	200.08	-93.56	915.69	18,106.26	18,258.54	18,031.02	227.52	80.252	
6,390.00	6,227.36	6,719.12	6,715.36	27.61	201.34	-93.57	915.69	18,106.26	18,258.72	18,029.87	228.85	79.784	
6,400.00	6,237.33	6,729.09	6,725.33	27.61	201.63	-93.57	915.69	18,106.26	18,258.76	18,029.61	229.16	79.678	
6,490.00	6,327.12	6,831.61	6,827.80	27.66	204.71	-93.60	917.64	18,106.26	18,259.40	18,027.12	232.28	78.611	
6,500.00	6,337.09	6,843.44	6,839.62	27.66	205.06	-106.01	917.56	18,106.26	18,259.51	18,026.88	232.64	78.490 ES	
6,550.00	6,386.85	6,902.45	6,898.63	27.70	206.83	-142.57	917.06	18,106.26	18,262.46	18,028.03	234.43	77.900	
6,600.00	6,436.20	6,961.04	6,957.19	27.74	208.58	-155.35	916.31	18,106.26	18,269.34	18,033.11	236.22	77.339	
6,650.00	6,484.82	7,018.82	7,014.96	27.79	210.32	-161.11	915.35	18,106.26	18,280.11	18,042.11	237.99	76.809	
6,700.00	6,532.40	7,024.46	7,020.40	27.85	210.48	-164.25	915.69	18,106.26	18,294.81	18,056.60	238.21	76.803	
6,750.00	6,578.63	7,070.70	7,066.63	27.92	211.87	-166.17	915.69	18,106.26	18,313.27	18,073.63	239.64	76.421	
6,800.00	6,623.24	7,115.30	7,111.24	28.00	213.21	-167.40	915.69	18,106.26	18,335.35	18,094.33	241.02	76.073	
6,850.00	6,665.93	7,157.99	7,153.93	28.09	214.49	-168.21	915.69	18,106.26	18,360.94	18,118.58	242.36	75.760	
6,900.00	6,706.42	7,198.49	7,194.42	28.19	215.70	-168.70	915.69	18,106.26	18,389.85	18,146.22	243.62	75.484	
6,950.00	6,744.48	7,236.54	7,232.48	28.30	216.84	-168.96	915.69	18,106.26	18,421.90	18,177.08	244.82	75.246	
7,000.00	6,779.84	7,276.12	7,272.02	28.43	218.03	-169.01	917.85	18,106.26	18,457.17	18,211.10	246.07	75.009	
7,050.00	6,812.30	7,314.84	7,310.73	28.57	219.19	-168.86	917.72	18,106.26	18,494.87	18,247.59	247.29	74.792	
7,100.00	6,841.63	7,349.90	7,345.78	28.73	220.24	-168.48	917.52	18,106.26	18,535.05	18,286.65	248.39	74.619	
7,150.00	6,867.66	7,381.07	7,376.95	28.90	221.17	-167.82	917.27	18,106.26	18,577.44	18,328.06	249.39	74.492	
7,200.00	6,890.22	7,408.16	7,404.03	29.08	221.98	-166.76	916.99	18,106.26	18,621.79	18,371.54	250.25	74.412	
7,250.00	6,909.17	7,430.97	7,426.83	29.28	222.67	-165.11	916.72	18,106.26	18,667.82	18,416.83	250.99	74.377 SF	
7,300.00	6,924.38	7,449.34	7,445.20	29.49	223.22	-162.40	916.48	18,106.26	18,715.22	18,463.63	251.59	74.388	
7,350.00	6,935.77	7,463.16	7,459.01	29.72	223.63	-157.51	916.28	18,106.26	18,763.71	18,511.66	252.05	74.445	
7,400.00	6,943.25	7,472.31	7,468.16	29.97	223.90	-146.92	916.14	18,106.26	18,812.98	18,560.62	252.36	74.548	
7,450.00	6,946.78	7,476.73	7,472.58	30.22	224.04	-116.06	916.07	18,106.26	18,862.71	18,610.19	252.53	74.696	
7,471.54	6,947.08	7,477.17	7,473.01	30.34	224.05	-88.85	916.07	18,106.26	18,884.20	18,631.65	252.55	74.773	
7,500.00	6,946.98	7,477.16	7,473.00	30.49	224.05	-88.64	916.07	18,106.26	18,912.61	18,660.04	252.57	74.882	
7,600.00	6,946.65	7,477.07	7,472.91	31.07	224.05	-86.24	916.07	18,106.26	19,012.54	18,759.94	252.60	75.268	
7,700.00	6,946.32	7,476.92	7,472.76	31.69	224.04	85.18	916.07	18,106.26	19,112.53	18,859.93	252.60	75.662	
7,800.00	6,945.99	7,476.70	7,472.55	32.35	224.04	88.54	916.07	18,106.26	19,212.47	18,959.89	252.58	76.064	
7,900.00	6,945.67	7,476.42	7,472.26	33.05	224.03	89.15	916.08	18,106.26	19,312.24	19,059.70	252.54	76.473	
8,000.00	6,945.34	7,476.07	7,471.92	33.79	224.02	89.41	916.08	18,106.26	19,411.72	19,159.25	252.47	76.889	
8,034.58	6,945.23	7,475.94	7,471.78	34.05	224.01	89.46	916.09	18,106.26	19,446.03	19,193.59	252.44	77.034	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #040 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,100.00	6,945.02	7,475.68	7,471.52	34.57	224.01	89.46	916.09	18,106.26	19,510.89	19,258.52	252.38	77.309	
8,200.00	6,944.69	7,475.28	7,471.12	35.41	223.99	89.45	916.10	18,106.26	19,610.05	19,357.76	252.29	77.729	
8,300.00	6,944.37	7,474.88	7,470.72	36.30	223.98	89.44	916.10	18,106.26	19,709.21	19,457.01	252.20	78.148	
8,400.00	6,944.05	7,474.48	7,470.32	37.25	223.97	89.43	916.11	18,106.26	19,808.39	19,556.27	252.12	78.567	
8,500.00	6,943.73	7,474.08	7,469.93	38.25	223.96	89.42	916.11	18,106.26	19,907.57	19,655.53	252.04	78.985	
8,600.00	6,943.40	7,473.68	7,469.53	39.29	223.95	89.41	916.12	18,106.26	20,006.76	19,754.79	251.97	79.403	
8,700.00	6,943.08	7,473.28	7,469.13	40.37	223.93	89.40	916.13	18,106.26	20,105.96	19,854.06	251.89	79.820	
8,800.00	6,942.76	7,472.88	7,468.73	41.49	223.92	89.39	916.13	18,106.26	20,205.16	19,953.34	251.82	80.236	
8,900.00	6,942.43	7,472.48	7,468.33	42.64	223.91	89.39	916.14	18,106.26	20,304.37	20,052.62	251.75	80.652	
9,000.00	6,942.11	7,472.08	7,467.93	43.82	223.90	89.38	916.15	18,106.26	20,403.60	20,151.91	251.69	81.068	
9,100.00	6,941.79	7,471.68	7,467.53	45.03	223.89	89.37	916.15	18,106.26	20,502.82	20,251.20	251.62	81.482	
9,200.00	6,941.46	7,471.28	7,467.13	46.27	223.87	89.36	916.16	18,106.26	20,602.06	20,350.50	251.56	81.897	
9,300.00	6,941.14	7,470.88	7,466.73	47.53	223.86	89.35	916.16	18,106.26	20,701.30	20,449.80	251.50	82.310	
9,400.00	6,940.82	7,470.48	7,466.33	48.81	223.85	89.34	916.17	18,106.26	20,800.55	20,549.11	251.45	82.723	
9,500.00	6,940.50	7,470.09	7,465.93	50.11	223.84	89.33	916.18	18,106.26	20,899.81	20,648.42	251.39	83.136	
9,600.00	6,940.17	7,469.69	7,465.53	51.43	223.83	89.32	916.18	18,106.26	20,999.08	20,747.73	251.34	83.547	
9,700.00	6,939.85	7,469.29	7,465.14	52.76	223.81	89.31	916.19	18,106.26	21,098.35	20,847.05	251.29	83.959	
9,800.00	6,939.53	7,468.89	7,464.74	54.11	223.80	89.30	916.20	18,106.26	21,197.63	20,946.38	251.25	84.369	
9,900.00	6,939.20	7,468.49	7,464.34	55.48	223.79	89.30	916.20	18,106.26	21,296.91	21,045.71	251.20	84.779	
10,000.00	6,938.88	7,468.09	7,463.94	56.86	223.78	89.29	916.21	18,106.26	21,396.20	21,145.04	251.16	85.189	
10,100.00	6,938.56	7,467.69	7,463.54	58.25	223.77	89.28	916.21	18,106.26	21,495.50	21,244.38	251.12	85.597	
10,200.00	6,938.23	7,467.29	7,463.14	59.65	223.75	89.27	916.22	18,106.26	21,594.81	21,343.72	251.09	86.005	
10,300.00	6,937.91	7,466.89	7,462.74	61.06	223.74	89.26	916.23	18,106.26	21,694.12	21,443.07	251.05	86.413	
10,400.00	6,937.59	7,466.49	7,462.34	62.48	223.73	89.25	916.23	18,106.26	21,793.44	21,542.42	251.02	86.820	
10,500.00	6,937.27	7,466.10	7,461.95	63.91	223.72	89.24	916.24	18,106.26	21,892.76	21,641.77	250.99	87.226	
10,600.00	6,936.94	7,465.70	7,461.55	65.34	223.71	89.23	916.24	18,106.26	21,992.09	21,741.13	250.96	87.632	
10,700.00	6,936.62	7,465.30	7,461.15	66.79	223.69	89.22	916.25	18,106.26	22,091.43	21,840.49	250.93	88.037	
10,800.00	6,936.30	7,464.90	7,460.75	68.24	223.68	89.21	916.26	18,106.26	22,190.77	21,939.86	250.91	88.441	
10,900.00	6,935.97	7,464.50	7,460.35	69.70	223.67	89.21	916.26	18,106.26	22,290.12	22,039.23	250.89	88.845	
11,000.00	6,935.65	7,464.10	7,459.95	71.17	223.66	89.20	916.27	18,106.26	22,389.47	22,138.60	250.87	89.248	
11,100.00	6,935.33	7,463.70	7,459.55	72.64	223.65	89.19	916.27	18,106.26	22,488.83	22,237.98	250.85	89.650	
11,200.00	6,935.00	7,463.31	7,459.16	74.11	223.63	89.18	916.28	18,106.26	22,588.19	22,337.36	250.84	90.052	
11,300.00	6,934.68	7,462.91	7,458.76	75.60	223.62	89.17	916.29	18,106.26	22,687.56	22,436.74	250.82	90.453	
11,400.00	6,934.36	7,462.51	7,458.36	77.08	223.61	89.16	916.29	18,106.26	22,786.94	22,536.13	250.81	90.853	
11,500.00	6,934.03	7,462.11	7,457.96	78.57	223.60	89.15	916.30	18,106.26	22,886.32	22,635.52	250.80	91.253	
11,600.00	6,933.71	7,461.71	7,457.56	80.07	223.59	89.14	916.30	18,106.26	22,985.71	22,734.92	250.79	91.652	
11,700.00	6,933.39	7,461.31	7,457.16	81.57	223.57	89.13	916.31	18,106.26	23,085.10	22,834.31	250.79	92.051	
11,800.00	6,933.07	7,460.91	7,456.77	83.07	223.56	89.12	916.31	18,106.26	23,184.50	22,933.72	250.78	92.448	
11,900.00	6,932.74	7,460.52	7,456.37	84.58	223.55	89.12	916.32	18,106.26	23,283.90	23,033.12	250.78	92.846	
12,000.00	6,932.42	7,460.12	7,455.97	86.09	223.54	89.11	916.33	18,106.26	23,383.31	23,132.53	250.78	93.242	
12,100.00	6,932.10	7,459.72	7,455.57	87.60	223.53	89.10	916.33	18,106.26	23,482.72	23,231.94	250.78	93.638	
12,200.00	6,931.77	7,459.32	7,455.17	89.12	223.52	89.09	916.34	18,106.26	23,582.14	23,331.35	250.78	94.033	
12,300.00	6,931.45	7,458.92	7,454.78	90.64	223.50	89.08	916.34	18,106.26	23,681.56	23,430.77	250.79	94.428	
12,400.00	6,931.13	7,458.53	7,454.38	92.16	223.49	89.07	916.35	18,106.26	23,780.99	23,530.19	250.80	94.822	
12,500.00	6,930.80	7,458.13	7,453.98	93.69	223.48	89.06	916.36	18,106.26	23,880.42	23,629.62	250.80	95.215	
12,600.00	6,930.48	7,457.73	7,453.58	95.22	223.47	89.05	916.36	18,106.26	23,979.86	23,729.04	250.81	95.608	
12,700.00	6,930.16	7,457.33	7,453.18	96.75	223.46	89.04	916.37	18,106.26	24,079.30	23,828.47	250.83	96.000	
12,800.00	6,929.84	7,456.93	7,452.79	98.28	223.44	89.03	916.37	18,106.26	24,178.74	23,927.91	250.84	96.391	
12,900.00	6,929.51	7,456.54	7,452.39	99.82	223.43	89.03	916.38	18,106.26	24,278.20	24,027.34	250.85	96.782	
13,000.00	6,929.19	7,456.14	7,451.99	101.35	223.42	89.02	916.38	18,106.26	24,377.65	24,126.78	250.87	97.172	
13,100.00	6,928.87	7,455.74	7,451.59	102.89	223.41	89.01	916.39	18,106.26	24,477.11	24,226.22	250.89	97.561	
13,200.00	6,928.54	7,455.34	7,451.20	104.43	223.40	89.00	916.40	18,106.26	24,576.57	24,325.66	250.91	97.950	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #040 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,300.00	6,928.22	7,454.94	7,450.80	105.97	223.38	88.99	916.40	18,106.26	24,676.04	24,425.11	250.93	98.338	
13,400.00	6,927.90	7,454.55	7,450.40	107.52	223.37	88.98	916.41	18,106.26	24,775.52	24,524.56	250.95	98.725	
13,500.00	6,927.57	7,454.15	7,450.00	109.06	223.36	88.97	916.41	18,106.26	24,874.99	24,624.01	250.98	99.112	
13,600.00	6,927.25	7,453.75	7,449.60	110.61	223.35	88.96	916.42	18,106.26	24,974.47	24,723.47	251.00	99.498	
13,700.00	6,926.93	7,453.35	7,449.21	112.16	223.34	88.95	916.42	18,106.26	25,073.96	24,822.93	251.03	99.884	
13,800.00	6,926.61	7,452.96	7,448.81	113.71	223.32	88.94	916.43	18,106.26	25,173.45	24,922.39	251.06	100.269	
13,900.00	6,926.28	7,452.56	7,448.41	115.26	223.31	88.94	916.44	18,106.26	25,272.94	25,021.85	251.09	100.653	
14,000.00	6,925.96	7,452.16	7,448.01	116.82	223.30	88.93	916.44	18,106.26	25,372.44	25,121.32	251.12	101.037	
14,100.00	6,925.64	7,451.76	7,447.62	118.37	223.29	88.92	916.45	18,106.26	25,471.94	25,220.78	251.15	101.420	
14,200.00	6,925.31	7,451.36	7,447.22	119.93	223.28	88.91	916.45	18,106.26	25,571.44	25,320.26	251.19	101.802	
14,300.00	6,924.99	7,450.97	7,446.82	121.48	223.26	88.90	916.46	18,106.26	25,670.95	25,419.73	251.22	102.184	
14,400.00	6,924.67	7,450.57	7,446.43	123.04	223.25	88.89	916.46	18,106.26	25,770.46	25,519.20	251.26	102.565	
14,500.00	6,924.34	7,450.17	7,446.03	124.60	223.24	88.88	916.47	18,106.26	25,869.98	25,618.68	251.30	102.945	
14,600.00	6,924.02	7,449.78	7,445.63	126.16	223.23	88.87	916.47	18,106.26	25,969.50	25,718.16	251.34	103.325	
14,700.00	6,923.70	7,449.38	7,445.23	127.72	223.22	88.86	916.48	18,106.26	26,069.03	25,817.65	251.38	103.704	
14,800.00	6,923.38	7,448.98	7,444.84	129.28	223.21	88.86	916.49	18,106.26	26,168.55	25,917.13	251.42	104.082	
14,900.00	6,923.05	7,448.58	7,444.44	130.85	223.19	88.85	916.49	18,106.26	26,268.08	26,016.62	251.46	104.460	
15,000.00	6,922.73	7,448.19	7,444.04	132.41	223.18	88.84	916.50	18,106.26	26,367.62	26,116.11	251.51	104.838	
15,100.00	6,922.41	7,447.79	7,443.65	133.97	223.17	88.83	916.50	18,106.26	26,467.16	26,215.60	251.55	105.214	
15,200.00	6,922.08	7,447.39	7,443.25	135.54	223.16	88.82	916.51	18,106.26	26,566.70	26,315.10	251.60	105.590	
15,300.00	6,921.76	7,446.99	7,442.85	137.11	223.15	88.81	916.51	18,106.26	26,666.24	26,414.59	251.65	105.966	
15,400.00	6,921.44	7,446.60	7,442.45	138.67	223.13	88.80	916.52	18,106.26	26,765.79	26,514.09	251.70	106.341	
15,500.00	6,921.11	7,446.20	7,442.06	140.24	223.12	88.79	916.52	18,106.26	26,865.34	26,613.59	251.75	106.715	
15,600.00	6,920.79	7,445.80	7,441.66	141.81	223.11	88.78	916.53	18,106.26	26,964.90	26,713.10	251.80	107.088	
15,700.00	6,920.47	7,445.41	7,441.26	143.38	223.10	88.77	916.53	18,106.26	27,064.46	26,812.60	251.85	107.461	
15,800.00	6,920.14	7,445.01	7,440.87	144.95	223.09	88.77	916.54	18,106.26	27,164.02	26,912.11	251.91	107.834	
15,900.00	6,919.82	7,444.61	7,440.47	146.52	223.07	88.76	916.55	18,106.26	27,263.58	27,011.62	251.96	108.206	
16,000.00	6,919.50	7,444.22	7,440.07	148.09	223.06	88.75	916.55	18,106.26	27,363.15	27,111.13	252.02	108.577	
16,100.00	6,919.18	7,443.82	7,439.68	149.66	223.05	88.74	916.56	18,106.26	27,462.72	27,210.65	252.07	108.947	
16,200.00	6,918.85	7,443.42	7,439.28	151.24	223.04	88.73	916.56	18,106.26	27,562.29	27,310.16	252.13	109.317	
16,300.00	6,918.53	7,443.03	7,438.88	152.81	223.03	88.72	916.57	18,106.26	27,661.87	27,409.68	252.19	109.687	
16,400.00	6,918.21	7,442.63	7,438.49	154.38	223.01	88.71	916.57	18,106.26	27,761.45	27,509.20	252.25	110.055	
16,500.00	6,917.88	7,442.23	7,438.09	155.96	223.00	88.70	916.58	18,106.26	27,861.04	27,608.72	252.31	110.424	
16,600.00	6,917.56	7,441.84	7,437.69	157.53	222.99	88.69	916.58	18,106.26	27,960.62	27,708.25	252.37	110.791	
16,700.00	6,917.24	7,441.44	7,437.30	159.11	222.98	88.69	916.59	18,106.26	28,060.21	27,807.78	252.43	111.158	
16,800.00	6,916.91	7,441.04	7,436.90	160.68	222.97	88.68	916.59	18,106.26	28,159.80	27,907.30	252.50	111.525	
16,900.00	6,916.59	7,440.65	7,436.50	162.26	222.96	88.67	916.60	18,106.26	28,259.40	28,006.83	252.56	111.891	
17,000.00	6,916.27	7,440.25	7,436.11	163.84	222.94	88.66	916.60	18,106.26	28,358.99	28,106.37	252.63	112.256	
17,100.00	6,915.95	7,439.85	7,435.71	165.41	222.93	88.65	916.61	18,106.26	28,458.60	28,205.90	252.69	112.621	
17,200.00	6,915.62	7,439.46	7,435.32	166.99	222.92	88.64	916.61	18,106.26	28,558.20	28,305.44	252.76	112.985	
17,300.00	6,915.30	7,439.06	7,434.92	168.57	222.91	88.63	916.62	18,106.26	28,657.80	28,404.98	252.83	113.348	
17,400.00	6,914.98	7,438.66	7,434.52	170.15	222.90	88.62	916.63	18,106.26	28,757.41	28,504.52	252.90	113.711	
17,500.00	6,914.65	7,438.27	7,434.13	171.73	222.88	88.61	916.63	18,106.26	28,857.03	28,604.06	252.97	114.074	
17,600.00	6,914.33	7,437.87	7,433.73	173.31	222.87	88.60	916.64	18,106.26	28,956.64	28,703.60	253.04	114.436	
17,700.00	6,914.01	7,437.47	7,433.33	174.89	222.86	88.60	916.64	18,106.26	29,056.26	28,803.15	253.11	114.797	
17,800.00	6,913.68	7,437.08	7,432.94	176.47	222.85	88.59	916.65	18,106.26	29,155.88	28,902.69	253.18	115.158	
17,900.00	6,913.36	7,436.68	7,432.54	178.05	222.84	88.58	916.65	18,106.26	29,255.50	29,002.24	253.25	115.518	
18,000.00	6,913.04	7,436.29	7,432.15	179.63	222.82	88.57	916.66	18,106.26	29,355.12	29,101.79	253.33	115.878	
18,100.00	6,912.72	7,435.89	7,431.75	181.21	222.81	88.56	916.66	18,106.26	29,454.75	29,201.35	253.40	116.237	
18,111.83	6,912.68	7,435.84	7,431.70	181.40	222.81	88.56	916.66	18,106.26	29,466.54	29,213.13	253.41	116.279	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #041C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
0.00	0.00	23.00	23.00	0.00	0.69	68.59	1,803.74	4,599.75	4,940.76				
54.25	54.25	77.25	77.25	0.02	2.31	7.04	1,803.74	4,599.75	4,940.65	4,938.32	2.33	2,119.727	
130.42	130.42	153.42	153.42	0.11	4.60	-20.12	1,803.74	4,599.75	4,940.30	4,935.59	4.71	1,048.698	
219.69	219.69	242.69	242.69	0.23	7.27	5.95	1,803.74	4,599.75	4,939.84	4,932.34	7.50	658.612	
308.67	308.67	331.67	331.67	0.35	9.94	-2.96	1,803.74	4,599.75	4,939.31	4,929.03	10.28	480.326	
363.68	363.67	386.67	386.67	0.41	11.59	-89.99	1,803.74	4,599.75	4,939.14	4,927.14	11.99	411.786	CC
454.00	453.99	476.99	476.99	0.51	14.29	-137.55	1,803.74	4,599.75	4,939.60	4,924.80	14.80	333.650	
544.00	543.93	567.04	566.93	0.74	16.99	-137.23	1,803.74	4,599.75	4,941.86	4,924.13	17.73	278.766	ES
667.00	666.63	689.73	689.63	1.13	20.67	-150.30	1,803.74	4,599.75	4,948.85	4,927.05	21.80	226.999	
756.00	755.27	782.55	782.40	1.44	23.45	-135.46	1,805.88	4,599.75	4,956.00	4,931.11	24.89	199.115	
850.00	848.62	889.71	889.55	1.79	26.66	-133.85	1,805.23	4,599.75	4,963.50	4,935.06	28.44	174.531	
942.00	939.50	994.30	994.10	2.14	29.79	-127.41	1,803.83	4,599.75	4,972.34	4,940.42	31.92	155.772	
1,033.00	1,028.89	1,052.29	1,051.89	2.52	31.53	-118.12	1,803.74	4,599.75	4,981.44	4,947.42	34.02	146.448	
1,123.00	1,117.00	1,140.40	1,140.00	2.90	34.17	-112.11	1,803.74	4,599.75	4,989.34	4,952.32	37.02	134.781	
1,214.00	1,206.00	1,229.41	1,229.00	3.29	36.84	-112.99	1,803.74	4,599.75	4,996.75	4,956.69	40.06	124.725	
1,309.00	1,298.75	1,333.41	1,332.96	3.71	39.96	-110.25	1,805.67	4,599.75	5,005.20	4,961.62	43.58	114.845	
1,403.00	1,390.39	1,439.67	1,439.18	4.13	43.14	-107.53	1,804.66	4,599.75	5,011.78	4,964.61	47.17	106.244	
1,498.00	1,482.88	1,506.59	1,505.88	4.56	45.14	-110.86	1,803.74	4,599.75	5,018.68	4,969.08	49.60	101.193	
1,592.00	1,573.82	1,597.54	1,596.82	5.00	47.87	-111.35	1,803.74	4,599.75	5,027.48	4,974.73	52.75	95.309	
1,687.00	1,665.32	1,689.03	1,688.32	5.46	50.61	-108.69	1,803.74	4,599.75	5,036.53	4,980.60	55.93	90.044	
1,876.00	1,847.35	1,891.57	1,890.79	6.38	56.68	-106.74	1,805.21	4,599.75	5,053.15	4,990.25	62.90	80.339	
1,970.00	1,937.87	1,997.96	1,997.14	6.84	59.87	-106.85	1,803.77	4,599.75	5,060.19	4,993.65	66.53	76.055	
2,064.00	2,028.42	2,052.44	2,051.42	7.30	61.50	-106.50	1,803.74	4,599.75	5,067.51	4,998.90	68.61	73.856	
2,159.00	2,119.97	2,143.98	2,142.97	7.77	64.24	-105.55	1,803.74	4,599.75	5,074.76	5,002.95	71.81	70.670	
2,348.00	2,302.44	2,340.33	2,339.26	8.69	70.13	-110.84	1,805.63	4,599.75	5,091.37	5,012.78	78.59	64.783	
2,443.00	2,394.41	2,449.37	2,448.27	9.15	73.39	-111.77	1,804.53	4,599.75	5,099.85	5,017.54	82.30	61.965	
2,537.00	2,485.45	2,509.77	2,508.45	9.61	75.20	-112.14	1,803.74	4,599.75	5,108.38	5,023.83	84.55	60.421	
2,632.00	2,577.48	2,601.80	2,600.48	10.07	77.96	-112.10	1,803.74	4,599.75	5,117.51	5,029.76	87.74	58.323	
2,727.00	2,669.50	2,693.82	2,692.50	10.53	80.72	-112.28	1,803.74	4,599.75	5,126.66	5,035.72	90.94	56.373	
2,821.00	2,760.56	2,791.62	2,790.26	10.98	83.65	-112.79	1,805.85	4,599.75	5,136.80	5,042.49	94.31	54.468	
2,916.00	2,852.68	2,901.80	2,900.41	11.44	86.95	-113.18	1,805.11	4,599.75	5,145.81	5,047.76	98.05	52.482	
3,011.00	2,945.03	3,012.69	3,011.27	11.89	90.27	-113.38	1,803.50	4,599.75	5,154.19	5,052.39	101.80	50.630	
3,105.00	3,036.57	3,061.19	3,059.57	12.33	91.73	-119.14	1,803.74	4,599.75	5,163.75	5,060.08	103.67	49.809	
3,200.00	3,128.81	3,153.43	3,151.81	12.78	94.49	-122.47	1,803.74	4,599.75	5,175.67	5,068.81	106.86	48.433	
3,294.00	3,219.76	3,244.39	3,242.76	13.24	97.22	-123.04	1,803.74	4,599.75	5,188.81	5,078.79	110.01	47.165	
3,389.00	3,311.82	3,354.31	3,352.63	13.69	100.51	-122.38	1,805.53	4,599.75	5,202.64	5,088.91	113.73	45.744	
3,483.00	3,403.03	3,464.79	3,463.08	14.14	103.82	-122.26	1,804.30	4,599.75	5,214.55	5,097.08	117.47	44.392	
3,578.00	3,495.31	3,520.24	3,518.31	14.60	105.48	-121.89	1,803.74	4,599.75	5,226.37	5,106.82	119.55	43.719	
3,672.00	3,586.65	3,611.58	3,609.65	15.04	108.22	-120.95	1,803.74	4,599.75	5,238.19	5,115.49	122.70	42.691	
3,767.00	3,678.95	3,703.88	3,701.95	15.49	110.99	-120.69	1,803.74	4,599.75	5,249.94	5,124.06	125.89	41.704	
3,862.00	3,771.63	3,806.73	3,804.75	15.93	114.07	-121.32	1,805.80	4,599.75	5,261.88	5,132.50	129.38	40.670	
3,956.00	3,863.70	3,919.13	3,917.13	16.35	117.43	-121.24	1,804.92	4,599.75	5,271.52	5,138.38	133.15	39.592	
4,052.00	3,957.54	4,034.13	4,032.09	16.79	120.88	-122.49	1,803.10	4,599.75	5,281.64	5,144.63	137.00	38.551	
4,146.00	4,048.88	4,074.11	4,071.88	17.24	122.08	-122.47	1,803.74	4,599.75	5,293.85	5,155.24	138.61	38.192	
4,241.00	4,140.47	4,165.70	4,163.47	17.71	124.82	-119.85	1,803.74	4,599.75	5,307.21	5,165.42	141.79	37.429	
4,336.00	4,231.25	4,258.01	4,255.74	18.21	127.59	-116.64	1,805.91	4,599.75	5,321.97	5,176.96	145.02	36.699	
4,430.00	4,320.59	4,368.17	4,365.88	18.71	130.89	-118.57	1,805.43	4,599.75	5,335.85	5,187.07	148.78	35.863	
4,524.00	4,409.51	4,478.43	4,476.10	19.22	134.19	-122.35	1,804.09	4,599.75	5,351.37	5,198.82	152.56	35.078	
4,619.00	4,498.98	4,524.52	4,521.98	19.75	135.58	-123.15	1,803.74	4,599.75	5,369.00	5,214.60	154.40	34.773	
4,713.00	4,587.83	4,613.37	4,610.83	20.27	138.24	-123.62	1,803.74	4,599.75	5,386.55	5,229.03	157.53	34.195	
4,807.00	4,676.97	4,702.50	4,699.97	20.78	140.91	-122.49	1,803.74	4,599.75	5,403.44	5,242.79	160.65	33.634	
4,870.00	4,736.65	4,765.25	4,762.67	21.12	142.79	-122.34	1,805.91	4,599.75	5,415.80	5,252.96	162.84	33.259	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #041C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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
4,933.00	4,796.58	4,840.20	4,837.61	21.46	145.03	-122.77	1,805.63	4,599.75	5,426.50	5,261.10	165.39	32.810	
5,027.00	4,886.13	4,952.70	4,950.08	21.96	148.41	-122.22	1,804.48	4,599.75	5,441.86	5,272.65	169.22	32.159	
5,121.00	4,976.11	5,001.95	4,999.11	22.45	149.88	-122.34	1,803.74	4,599.75	5,456.27	5,285.14	171.12	31.885	
5,216.00	5,068.11	5,093.95	5,091.11	22.91	152.64	-122.79	1,803.74	4,599.75	5,469.30	5,295.00	174.30	31.378	
5,341.00	5,190.11	5,215.96	5,213.11	23.49	156.29	-123.60	1,803.74	4,599.75	5,484.43	5,305.94	178.49	30.727	
5,436.00	5,283.20	5,324.67	5,321.78	23.91	159.55	-123.77	1,805.72	4,599.75	5,496.18	5,314.04	182.14	30.176	
5,499.00	5,345.03	5,403.01	5,400.10	24.19	161.90	-124.00	1,805.10	4,599.75	5,502.74	5,317.99	184.75	29.785	
5,561.00	5,405.97	5,480.38	5,477.45	24.45	164.22	-123.16	1,804.06	4,599.75	5,508.69	5,321.37	187.32	29.408	
5,624.00	5,467.97	5,559.27	5,556.30	24.72	166.58	-124.36	1,802.57	4,599.75	5,514.30	5,324.36	189.93	29.033	
5,687.00	5,530.05	5,556.20	5,553.05	24.99	166.49	-123.47	1,803.74	4,599.75	5,520.59	5,330.51	190.08	29.044	
5,750.00	5,592.20	5,618.35	5,615.20	25.25	168.35	-123.35	1,803.74	4,599.75	5,526.33	5,334.14	192.19	28.755	
5,813.00	5,654.42	5,680.56	5,677.42	25.51	170.22	-122.44	1,803.74	4,599.75	5,531.75	5,337.45	194.30	28.471	
5,876.00	5,716.68	5,742.83	5,739.68	25.76	172.08	-122.33	1,803.74	4,599.75	5,536.93	5,340.53	196.40	28.192	
5,939.00	5,778.99	5,820.26	5,817.06	26.01	174.40	-122.68	1,805.74	4,599.75	5,543.10	5,344.13	198.97	27.859	
6,065.00	5,903.86	5,979.68	5,976.44	26.51	179.18	-123.04	1,804.07	4,599.75	5,551.57	5,347.35	204.22	27.184	
6,128.00	5,966.41	6,059.72	6,056.44	26.74	181.58	-124.59	1,802.57	4,599.75	5,555.06	5,348.22	206.85	26.856	
6,191.00	6,029.04	6,055.49	6,052.04	26.97	181.45	-123.98	1,803.74	4,599.75	5,559.18	5,352.25	206.93	26.864	
6,254.00	6,091.75	6,118.20	6,114.75	27.20	183.33	-123.20	1,803.74	4,599.75	5,562.53	5,353.49	209.03	26.611	
6,348.00	6,185.46	6,211.91	6,208.46	27.52	186.14	-120.49	1,803.74	4,599.75	5,566.45	5,354.29	212.16	26.237	
6,390.00	6,227.36	6,254.92	6,251.42	27.61	187.43	-120.54	1,805.91	4,599.75	5,569.15	5,355.63	213.52	26.083	
6,400.00	6,237.33	6,267.67	6,264.18	27.61	187.81	-120.55	1,805.90	4,599.75	5,569.50	5,355.60	213.91	26.037	
6,490.00	6,327.12	6,382.59	6,379.08	27.66	191.25	-120.61	1,805.30	4,599.75	5,572.43	5,355.04	217.39	25.633	
6,500.00	6,337.09	6,395.37	6,391.85	27.66	191.63	-133.03	1,805.18	4,599.75	5,572.80	5,355.02	217.78	25.589	
6,550.00	6,386.85	6,459.16	6,455.62	27.70	193.55	-169.77	1,804.39	4,599.75	5,576.79	5,357.09	219.71	25.383	
6,600.00	6,436.20	6,522.48	6,518.92	27.74	195.44	177.16	1,803.32	4,599.75	5,584.30	5,362.68	221.61	25.198	
6,650.00	6,484.82	6,511.57	6,507.82	27.79	195.12	170.90	1,803.74	4,599.75	5,595.76	5,374.48	221.28	25.288	
6,700.00	6,532.40	6,559.15	6,555.40	27.85	196.54	167.10	1,803.74	4,599.75	5,610.82	5,388.12	222.70	25.194	
6,750.00	6,578.63	6,605.39	6,601.63	27.92	197.93	164.35	1,803.74	4,599.75	5,629.30	5,405.22	224.08	25.122	
6,800.00	6,623.24	6,650.00	6,646.24	28.00	199.26	162.07	1,803.74	4,599.75	5,651.09	5,425.69	225.40	25.071	
6,850.00	6,665.93	6,692.68	6,688.93	28.09	200.54	159.97	1,803.74	4,599.75	5,676.04	5,449.38	226.66	25.042	
6,900.00	6,706.42	6,733.18	6,729.42	28.19	201.76	157.89	1,803.74	4,599.75	5,704.01	5,476.16	227.85	25.034	
6,950.00	6,744.48	6,777.36	6,773.56	28.30	203.08	155.69	1,805.89	4,599.75	5,736.03	5,506.88	229.15	25.032	
7,000.00	6,779.84	6,822.92	6,819.12	28.43	204.45	153.30	1,805.73	4,599.75	5,769.43	5,538.94	230.49	25.031 SF	
7,050.00	6,812.30	6,864.82	6,861.00	28.57	205.70	150.59	1,805.45	4,599.75	5,805.23	5,573.52	231.71	25.054	
7,100.00	6,841.63	6,902.77	6,898.94	28.73	206.84	147.42	1,805.10	4,599.75	5,843.23	5,610.42	232.81	25.099	
7,150.00	6,867.66	6,936.52	6,932.69	28.90	207.85	143.63	1,804.70	4,599.75	5,883.21	5,649.43	233.78	25.166	
7,200.00	6,890.22	6,965.86	6,962.01	29.08	208.73	139.01	1,804.29	4,599.75	5,924.93	5,690.31	234.61	25.254	
7,250.00	6,909.17	6,990.57	6,986.72	29.28	209.47	133.34	1,803.89	4,599.75	5,968.14	5,732.84	235.31	25.363	
7,300.00	6,924.38	7,010.50	7,006.64	29.49	210.07	126.33	1,803.54	4,599.75	6,012.59	5,776.74	235.85	25.493	
7,350.00	6,935.77	7,025.50	7,021.63	29.72	210.52	117.78	1,803.26	4,599.75	6,058.01	5,821.77	236.25	25.643	
7,400.00	6,943.25	7,035.45	7,031.58	29.97	210.81	107.65	1,803.07	4,599.75	6,104.12	5,867.63	236.49	25.812	
7,450.00	6,946.78	7,040.29	7,036.42	30.22	210.96	96.30	1,802.97	4,599.75	6,150.63	5,914.06	236.57	25.999	
7,471.54	6,947.08	7,040.79	7,036.91	30.34	210.97	91.23	1,802.96	4,599.75	6,170.72	5,934.16	236.56	26.085	
7,500.00	6,946.98	7,040.81	7,036.93	30.49	210.97	91.20	1,802.96	4,599.75	6,197.22	5,960.70	236.52	26.201	
7,600.00	6,946.65	7,040.81	7,036.93	31.07	210.97	91.11	1,802.96	4,599.75	6,289.65	6,053.25	236.40	26.606	
7,700.00	6,946.32	7,040.72	7,036.84	31.69	210.97	91.03	1,802.96	4,599.75	6,380.95	6,144.67	236.27	27.007	
7,800.00	6,945.99	7,040.54	7,036.66	32.35	210.97	90.97	1,802.97	4,599.75	6,471.05	6,234.90	236.15	27.402	
7,900.00	6,945.67	7,040.27	7,036.40	33.05	210.96	90.91	1,802.97	4,599.75	6,559.91	6,323.88	236.04	27.792	
8,000.00	6,945.34	7,039.91	7,036.04	33.79	210.95	90.85	1,802.98	4,599.75	6,647.46	6,411.54	235.93	28.176	
8,034.58	6,945.23	7,039.77	7,035.89	34.05	210.94	90.84	1,802.98	4,599.75	6,677.42	6,441.54	235.89	28.307	
8,100.00	6,945.02	7,039.48	7,035.61	34.57	210.93	90.83	1,802.99	4,599.75	6,734.03	6,498.20	235.83	28.555	
8,200.00	6,944.69	7,039.05	7,035.17	35.41	210.92	90.82	1,803.00	4,599.75	6,820.87	6,585.12	235.75	28.933	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #041C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,038.62	7,034.74	36.30	210.91	90.82	1,803.01	4,599.75	6,908.06	6,672.37	235.69	29.310	
8,400.00	6,944.05	7,038.18	7,034.31	37.25	210.90	90.81	1,803.01	4,599.75	6,995.59	6,759.95	235.64	29.687	
8,500.00	6,943.73	7,037.75	7,033.87	38.25	210.88	90.80	1,803.02	4,599.75	7,083.46	6,847.84	235.62	30.064	
8,600.00	6,943.40	7,037.31	7,033.44	39.29	210.87	90.79	1,803.03	4,599.75	7,171.64	6,936.04	235.60	30.440	
8,700.00	6,943.08	7,036.88	7,033.00	40.37	210.86	90.79	1,803.04	4,599.75	7,260.12	7,024.53	235.60	30.816	
8,800.00	6,942.76	7,036.45	7,032.57	41.49	210.84	90.78	1,803.05	4,599.75	7,348.91	7,113.30	235.61	31.191	
8,900.00	6,942.43	7,036.01	7,032.14	42.64	210.83	90.77	1,803.06	4,599.75	7,437.98	7,202.35	235.63	31.566	
9,000.00	6,942.11	7,035.58	7,031.70	43.82	210.82	90.76	1,803.07	4,599.75	7,527.32	7,291.66	235.66	31.941	
9,100.00	6,941.79	7,035.14	7,031.27	45.03	210.80	90.76	1,803.08	4,599.75	7,616.93	7,381.22	235.70	32.316	
9,200.00	6,941.46	7,034.71	7,030.84	46.27	210.79	90.75	1,803.08	4,599.75	7,706.79	7,471.03	235.75	32.690	
9,300.00	6,941.14	7,034.28	7,030.40	47.53	210.78	90.74	1,803.09	4,599.75	7,796.90	7,561.08	235.81	33.064	
9,400.00	6,940.82	7,033.84	7,029.97	48.81	210.77	90.73	1,803.10	4,599.75	7,887.25	7,651.36	235.88	33.437	
9,500.00	6,940.50	7,033.41	7,029.54	50.11	210.75	90.73	1,803.11	4,599.75	7,977.82	7,741.87	235.96	33.811	
9,600.00	6,940.17	7,032.98	7,029.10	51.43	210.74	90.72	1,803.12	4,599.75	8,068.63	7,832.59	236.04	34.184	
9,700.00	6,939.85	7,032.54	7,028.67	52.76	210.73	90.71	1,803.13	4,599.75	8,159.64	7,923.52	236.13	34.556	
9,800.00	6,939.53	7,032.11	7,028.24	54.11	210.71	90.71	1,803.14	4,599.75	8,250.87	8,014.65	236.22	34.929	
9,900.00	6,939.20	7,031.67	7,027.80	55.48	210.70	90.70	1,803.14	4,599.75	8,342.29	8,105.97	236.32	35.301	
10,000.00	6,938.88	7,031.24	7,027.37	56.86	210.69	90.69	1,803.15	4,599.75	8,433.91	8,197.49	236.42	35.673	
10,100.00	6,938.56	7,030.81	7,026.94	58.25	210.67	90.68	1,803.16	4,599.75	8,525.72	8,289.19	236.53	36.045	
10,200.00	6,938.23	7,030.37	7,026.50	59.65	210.66	90.68	1,803.17	4,599.75	8,617.71	8,381.07	236.64	36.417	
10,300.00	6,937.91	7,029.94	7,026.07	61.06	210.65	90.67	1,803.18	4,599.75	8,709.88	8,473.12	236.76	36.788	
10,400.00	6,937.59	7,029.51	7,025.64	62.48	210.64	90.66	1,803.19	4,599.75	8,802.21	8,565.34	236.87	37.160	
10,500.00	6,937.27	7,029.07	7,025.20	63.91	210.62	90.65	1,803.19	4,599.75	8,894.72	8,657.72	237.00	37.531	
10,600.00	6,936.94	7,028.64	7,024.77	65.34	210.61	90.65	1,803.20	4,599.75	8,987.38	8,750.26	237.12	37.902	
10,700.00	6,936.62	7,028.21	7,024.34	66.79	210.60	90.64	1,803.21	4,599.75	9,080.20	8,842.95	237.25	38.273	
10,800.00	6,936.30	7,027.77	7,023.90	68.24	210.58	90.63	1,803.22	4,599.75	9,173.17	8,935.80	237.38	38.644	
10,900.00	6,935.97	7,027.34	7,023.47	69.70	210.57	90.62	1,803.23	4,599.75	9,266.29	9,028.78	237.51	39.015	
11,000.00	6,935.65	7,026.91	7,023.04	71.17	210.56	90.62	1,803.24	4,599.75	9,359.55	9,121.91	237.64	39.385	
11,100.00	6,935.33	7,026.48	7,022.61	72.64	210.54	90.61	1,803.25	4,599.75	9,452.95	9,215.17	237.77	39.756	
11,200.00	6,935.00	7,026.04	7,022.17	74.11	210.53	90.60	1,803.25	4,599.75	9,546.48	9,308.57	237.91	40.127	
11,300.00	6,934.68	7,025.61	7,021.74	75.60	210.52	90.59	1,803.26	4,599.75	9,640.14	9,402.09	238.05	40.497	
11,400.00	6,934.36	7,025.18	7,021.31	77.08	210.51	90.59	1,803.27	4,599.75	9,733.92	9,495.74	238.18	40.867	
11,500.00	6,934.03	7,024.74	7,020.87	78.57	210.49	90.58	1,803.28	4,599.75	9,827.83	9,589.51	238.32	41.238	
11,600.00	6,933.71	7,024.31	7,020.44	80.07	210.48	90.57	1,803.29	4,599.75	9,921.86	9,683.40	238.46	41.608	
11,700.00	6,933.39	7,023.88	7,020.01	81.57	210.47	90.56	1,803.30	4,599.75	10,016.01	9,777.40	238.60	41.978	
11,800.00	6,933.07	7,023.45	7,019.58	83.07	210.45	90.56	1,803.30	4,599.75	10,110.26	9,871.52	238.74	42.348	
11,900.00	6,932.74	7,023.01	7,019.14	84.58	210.44	90.55	1,803.31	4,599.75	10,204.63	9,965.74	238.88	42.718	
12,000.00	6,932.42	7,022.58	7,018.71	86.09	210.43	90.54	1,803.32	4,599.75	10,299.10	10,060.07	239.02	43.088	
12,100.00	6,932.10	7,022.15	7,018.28	87.60	210.42	90.54	1,803.33	4,599.75	10,393.67	10,154.51	239.17	43.458	
12,200.00	6,931.77	7,021.71	7,017.85	89.12	210.40	90.53	1,803.34	4,599.75	10,488.35	10,249.04	239.31	43.828	
12,300.00	6,931.45	7,021.28	7,017.41	90.64	210.39	90.52	1,803.34	4,599.75	10,583.12	10,343.67	239.45	44.198	
12,400.00	6,931.13	7,020.85	7,016.98	92.16	210.38	90.51	1,803.35	4,599.75	10,677.99	10,438.40	239.59	44.567	
12,500.00	6,930.80	7,020.42	7,016.55	93.69	210.36	90.51	1,803.36	4,599.75	10,772.96	10,533.22	239.73	44.937	
12,600.00	6,930.48	7,019.98	7,016.12	95.22	210.35	90.50	1,803.37	4,599.75	10,868.01	10,628.13	239.88	45.307	
12,700.00	6,930.16	7,019.55	7,015.69	96.75	210.34	90.49	1,803.38	4,599.75	10,963.15	10,723.13	240.02	45.676	
12,800.00	6,929.84	7,019.12	7,015.25	98.28	210.32	90.48	1,803.39	4,599.75	11,058.37	10,818.21	240.16	46.046	
12,900.00	6,929.51	7,018.69	7,014.82	99.82	210.31	90.48	1,803.39	4,599.75	11,153.68	10,913.38	240.30	46.416	
13,000.00	6,929.19	7,018.25	7,014.39	101.35	210.30	90.47	1,803.40	4,599.75	11,249.08	11,008.63	240.44	46.785	
13,100.00	6,928.87	7,017.82	7,013.96	102.89	210.29	90.46	1,803.41	4,599.75	11,344.55	11,103.96	240.58	47.154	
13,200.00	6,928.54	7,017.39	7,013.52	104.43	210.27	90.45	1,803.42	4,599.75	11,440.09	11,199.37	240.72	47.524	
13,300.00	6,928.22	7,016.96	7,013.09	105.97	210.26	90.45	1,803.43	4,599.75	11,535.72	11,294.85	240.86	47.893	
13,400.00	6,927.90	7,016.53	7,012.66	107.52	210.25	90.44	1,803.43	4,599.75	11,631.41	11,390.41	241.00	48.262	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #041C - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
13,500.00	6,927.57	7,016.09	7,012.23	109.06	210.23	90.43	1,803.44	4,599.75	11,727.18	11,486.04	241.14	48.632	
13,600.00	6,927.25	7,015.66	7,011.80	110.61	210.22	90.42	1,803.45	4,599.75	11,823.02	11,581.74	241.28	49.001	
13,700.00	6,926.93	7,015.23	7,011.36	112.16	210.21	90.42	1,803.46	4,599.75	11,918.93	11,677.51	241.42	49.370	
13,800.00	6,926.61	7,014.80	7,010.93	113.71	210.20	90.41	1,803.47	4,599.75	12,014.90	11,773.34	241.56	49.739	
13,900.00	6,926.28	7,014.37	7,010.50	115.26	210.18	90.40	1,803.47	4,599.75	12,110.94	11,869.24	241.70	50.108	
14,000.00	6,925.96	7,013.93	7,010.07	116.82	210.17	90.40	1,803.48	4,599.75	12,207.04	11,965.21	241.83	50.477	
14,100.00	6,925.64	7,013.50	7,009.64	118.37	210.16	90.39	1,803.49	4,599.75	12,303.21	12,061.24	241.97	50.846	
14,200.00	6,925.31	7,013.07	7,009.21	119.93	210.14	90.38	1,803.50	4,599.75	12,399.43	12,157.33	242.11	51.215	
14,300.00	6,924.99	7,012.64	7,008.77	121.48	210.13	90.37	1,803.51	4,599.75	12,495.72	12,253.47	242.24	51.583	
14,400.00	6,924.67	7,012.21	7,008.34	123.04	210.12	90.37	1,803.51	4,599.75	12,592.06	12,349.68	242.38	51.952	
14,500.00	6,924.34	7,011.77	7,007.91	124.60	210.10	90.36	1,803.52	4,599.75	12,688.46	12,445.95	242.51	52.321	
14,600.00	6,924.02	7,011.34	7,007.48	126.16	210.09	90.35	1,803.53	4,599.75	12,784.91	12,542.27	242.65	52.689	
14,700.00	6,923.70	7,010.91	7,007.05	127.72	210.08	90.34	1,803.54	4,599.75	12,881.42	12,638.64	242.78	53.057	
14,800.00	6,923.38	7,010.48	7,006.62	129.28	210.07	90.34	1,803.55	4,599.75	12,977.98	12,735.07	242.92	53.426	
14,900.00	6,923.05	7,010.05	7,006.18	130.85	210.05	90.33	1,803.55	4,599.75	13,074.60	12,831.55	243.05	53.794	
15,000.00	6,922.73	7,009.62	7,005.75	132.41	210.04	90.32	1,803.56	4,599.75	13,171.26	12,928.08	243.18	54.162	
15,100.00	6,922.41	7,009.18	7,005.32	133.97	210.03	90.31	1,803.57	4,599.75	13,267.97	13,024.66	243.31	54.530	
15,200.00	6,922.08	7,008.75	7,004.89	135.54	210.01	90.31	1,803.58	4,599.75	13,364.73	13,121.29	243.44	54.898	
15,300.00	6,921.76	7,008.32	7,004.46	137.11	210.00	90.30	1,803.58	4,599.75	13,461.54	13,217.97	243.58	55.266	
15,400.00	6,921.44	7,007.89	7,004.03	138.67	209.99	90.29	1,803.59	4,599.75	13,558.40	13,314.69	243.71	55.634	
15,500.00	6,921.11	7,007.46	7,003.60	140.24	209.98	90.29	1,803.60	4,599.75	13,655.30	13,411.46	243.84	56.002	
15,600.00	6,920.79	7,007.03	7,003.17	141.81	209.96	90.28	1,803.61	4,599.75	13,752.24	13,508.28	243.97	56.369	
15,700.00	6,920.47	7,006.60	7,002.73	143.38	209.95	90.27	1,803.62	4,599.75	13,849.23	13,605.14	244.10	56.737	
15,800.00	6,920.14	7,006.16	7,002.30	144.95	209.94	90.26	1,803.62	4,599.75	13,946.26	13,702.04	244.22	57.104	
15,900.00	6,919.82	7,005.73	7,001.87	146.52	209.92	90.26	1,803.63	4,599.75	14,043.33	13,798.98	244.35	57.472	
16,000.00	6,919.50	7,005.30	7,001.44	148.09	209.91	90.25	1,803.64	4,599.75	14,140.45	13,895.97	244.48	57.839	
16,100.00	6,919.18	7,004.87	7,001.01	149.66	209.90	90.24	1,803.65	4,599.75	14,237.60	13,992.99	244.61	58.206	
16,200.00	6,918.85	7,004.44	7,000.58	151.24	209.88	90.23	1,803.65	4,599.75	14,334.79	14,090.06	244.73	58.573	
16,300.00	6,918.53	7,004.01	7,000.15	152.81	209.87	90.23	1,803.66	4,599.75	14,432.02	14,187.16	244.86	58.940	
16,400.00	6,918.21	7,003.58	6,999.72	154.38	209.86	90.22	1,803.67	4,599.75	14,529.29	14,284.31	244.99	59.307	
16,500.00	6,917.88	7,003.15	6,999.29	155.96	209.85	90.21	1,803.68	4,599.75	14,626.60	14,381.49	245.11	59.673	
16,600.00	6,917.56	7,002.71	6,998.86	157.53	209.83	90.20	1,803.68	4,599.75	14,723.94	14,478.70	245.24	60.040	
16,700.00	6,917.24	7,002.28	6,998.42	159.11	209.82	90.20	1,803.69	4,599.75	14,821.31	14,575.95	245.36	60.406	
16,800.00	6,916.91	7,001.85	6,997.99	160.68	209.81	90.19	1,803.70	4,599.75	14,918.73	14,673.24	245.49	60.772	
16,900.00	6,916.59	7,001.42	6,997.56	162.26	209.79	90.18	1,803.71	4,599.75	15,016.17	14,770.56	245.61	61.138	
17,000.00	6,916.27	7,000.99	6,997.13	163.84	209.78	90.17	1,803.71	4,599.75	15,113.65	14,867.92	245.73	61.504	
17,100.00	6,915.95	7,000.56	6,996.70	165.41	209.77	90.17	1,803.72	4,599.75	15,211.16	14,965.31	245.86	61.870	
17,200.00	6,915.62	7,000.00	6,995.94	166.99	209.75	90.15	1,803.74	4,599.75	15,308.70	15,062.73	245.97	62.237	
17,300.00	6,915.30	6,999.70	6,995.84	168.57	209.74	90.15	1,803.74	4,599.75	15,406.28	15,160.18	246.10	62.602	
17,400.00	6,914.98	6,999.27	6,995.41	170.15	209.73	90.15	1,803.74	4,599.75	15,503.89	15,257.66	246.22	62.967	
17,500.00	6,914.65	6,998.84	6,994.98	171.73	209.72	90.14	1,803.75	4,599.75	15,601.52	15,355.18	246.34	63.332	
17,600.00	6,914.33	6,998.41	6,994.55	173.31	209.70	90.13	1,803.76	4,599.75	15,699.19	15,452.72	246.47	63.697	
17,700.00	6,914.01	6,997.98	6,994.12	174.89	209.69	90.12	1,803.77	4,599.75	15,796.88	15,550.30	246.59	64.062	
17,800.00	6,913.68	6,997.55	6,993.69	176.47	209.68	90.12	1,803.77	4,599.75	15,894.61	15,647.90	246.71	64.427	
17,900.00	6,913.36	6,997.12	6,993.26	178.05	209.67	90.11	1,803.78	4,599.75	15,992.36	15,745.53	246.83	64.792	
18,000.00	6,913.04	6,996.68	6,992.83	179.63	209.65	90.10	1,803.79	4,599.75	16,090.14	15,843.19	246.95	65.156	
18,100.00	6,912.72	6,996.25	6,992.40	181.21	209.64	90.09	1,803.80	4,599.75	16,187.94	15,940.88	247.07	65.521	
18,111.83	6,912.68	6,996.20	6,992.35	181.40	209.64	90.09	1,803.80	4,599.75	16,199.52	15,952.44	247.08	65.564	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #045 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	233.00	233.00	0.00	6.98	103.62	-1,794.12	7,406.06	7,620.27				
54.25	54.25	287.25	287.25	0.02	8.61	42.07	-1,794.12	7,406.06	7,620.19	7,611.56	8.62	883.958	
130.42	130.42	363.42	363.42	0.11	10.89	14.91	-1,794.12	7,406.06	7,619.87	7,608.88	10.99	693.169	
219.69	219.69	452.69	452.69	0.23	13.56	40.98	-1,794.12	7,406.06	7,619.46	7,605.69	13.77	553.194	
308.67	308.67	541.77	541.67	0.35	16.23	32.07	-1,794.12	7,406.06	7,619.04	7,602.49	16.54	460.542	
401.36	401.35	634.45	634.35	0.45	19.01	-90.00	-1,794.12	7,406.06	7,618.79	7,599.36	19.43	392.205	
454.00	453.99	687.09	686.99	0.51	20.59	-102.51	-1,794.12	7,406.06	7,618.87	7,597.81	21.06	361.733	
516.90	516.87	749.95	749.81	0.67	22.47	-102.26	-1,791.94	7,406.05	7,618.73	7,595.62	23.11	329.674	
544.00	543.93	774.02	773.88	0.74	23.19	-102.23	-1,791.96	7,406.05	7,619.01	7,595.11	23.90	318.768	
667.00	666.63	883.22	883.05	1.13	26.47	-115.28	-1,792.56	7,406.05	7,622.12	7,594.54	27.58	276.357	
756.00	755.27	962.20	962.01	1.44	28.83	-100.47	-1,793.51	7,406.06	7,624.77	7,594.51	30.26	251.940	
850.00	848.62	1,082.03	1,081.62	1.79	32.42	-98.95	-1,794.12	7,406.06	7,626.70	7,592.50	34.20	222.971	
942.00	939.50	1,172.90	1,172.50	2.14	35.15	-92.68	-1,794.12	7,406.06	7,628.07	7,590.78	37.29	204.562	
1,033.00	1,028.89	1,260.95	1,260.51	2.52	37.78	-83.65	-1,791.94	7,406.05	7,626.92	7,586.62	40.30	189.237	
1,123.00	1,117.00	1,339.68	1,339.22	2.90	40.14	-77.67	-1,792.22	7,406.05	7,623.93	7,580.89	43.05	177.115	
1,214.00	1,206.00	1,419.42	1,418.94	3.29	42.53	-78.46	-1,792.94	7,406.06	7,620.12	7,574.29	45.83	166.283	
1,309.00	1,298.75	1,532.46	1,531.75	3.71	45.92	-75.76	-1,794.12	7,406.06	7,615.65	7,566.02	49.63	153.448	
1,403.00	1,390.39	1,624.10	1,623.39	4.13	48.67	-72.92	-1,794.12	7,406.06	7,609.87	7,557.08	52.79	144.145	
1,498.00	1,482.88	1,716.59	1,715.88	4.56	51.44	-76.36	-1,794.12	7,406.06	7,604.00	7,548.01	55.99	135.806	
1,592.00	1,573.82	1,801.72	1,800.97	5.00	53.99	-77.06	-1,792.03	7,406.05	7,597.93	7,538.95	58.98	128.816	
1,687.00	1,665.32	1,884.23	1,883.46	5.46	56.46	-74.32	-1,792.57	7,406.05	7,591.52	7,529.61	61.91	122.618	
1,876.00	1,847.35	2,081.37	2,080.35	6.38	62.37	-72.12	-1,794.12	7,406.06	7,576.65	7,507.92	68.73	110.231	
1,970.00	1,937.87	2,171.89	2,170.87	6.84	65.08	-72.13	-1,794.12	7,406.06	7,568.61	7,496.70	71.90	105.263	
2,064.00	2,028.42	2,261.26	2,260.20	7.30	67.76	-71.77	-1,791.94	7,406.05	7,560.09	7,485.06	75.04	100.753	
2,159.00	2,119.97	2,344.40	2,343.33	7.77	70.25	-70.72	-1,792.25	7,406.05	7,551.72	7,473.74	77.99	96.833	
2,348.00	2,302.44	2,536.76	2,535.44	8.69	76.01	-75.66	-1,794.12	7,406.06	7,537.33	7,452.66	84.67	89.023	
2,443.00	2,394.41	2,628.73	2,627.41	9.15	78.77	-76.44	-1,794.12	7,406.06	7,531.41	7,443.53	87.88	85.702	
2,537.00	2,485.45	2,719.77	2,718.45	9.61	81.50	-76.83	-1,794.12	7,406.06	7,525.83	7,434.78	91.06	82.649	
2,632.00	2,577.48	2,806.52	2,805.15	10.07	84.10	-76.72	-1,792.05	7,406.05	7,519.90	7,425.79	94.11	79.902	
2,727.00	2,669.50	2,890.94	2,889.56	10.53	86.63	-76.83	-1,792.63	7,406.05	7,514.46	7,417.36	97.10	77.388	
2,821.00	2,760.56	2,974.74	2,973.33	10.98	89.14	-77.21	-1,793.70	7,406.06	7,509.27	7,409.21	100.06	75.045	
2,916.00	2,852.68	3,087.30	3,085.68	11.44	92.51	-77.46	-1,794.12	7,406.06	7,504.08	7,400.19	103.89	72.230	
3,011.00	2,945.03	3,179.65	3,178.03	11.89	95.28	-77.48	-1,794.12	7,406.06	7,499.12	7,392.01	107.11	70.016	
3,105.00	3,036.57	3,269.51	3,267.85	12.33	97.97	-83.23	-1,791.95	7,406.05	7,495.08	7,384.84	110.24	67.990	
3,200.00	3,128.81	3,354.68	3,353.00	12.78	100.52	-86.64	-1,792.32	7,406.05	7,493.12	7,379.88	113.24	66.167	
3,294.00	3,219.76	3,438.94	3,437.23	13.24	103.05	-87.16	-1,793.18	7,406.06	7,491.96	7,375.73	116.23	64.458	
3,389.00	3,311.82	3,546.74	3,544.82	13.69	106.28	-86.35	-1,794.12	7,406.06	7,490.73	7,370.81	119.92	62.464	
3,483.00	3,403.03	3,637.96	3,636.03	14.14	109.01	-86.17	-1,794.12	7,406.06	7,489.20	7,366.10	123.11	60.836	
3,578.00	3,495.31	3,730.24	3,728.31	14.60	111.77	-85.80	-1,794.12	7,406.06	7,487.58	7,361.25	126.32	59.273	
3,672.00	3,586.65	3,816.54	3,814.56	15.04	114.36	-84.89	-1,792.09	7,406.05	7,485.42	7,356.06	129.36	57.866	
3,767.00	3,678.95	3,902.60	3,900.60	15.49	116.94	-84.53	-1,792.75	7,406.06	7,483.40	7,351.01	132.39	56.525	
3,862.00	3,771.63	4,006.87	4,004.63	15.93	120.06	-84.90	-1,794.12	7,406.06	7,481.62	7,345.66	135.95	55.030	
3,956.00	3,863.70	4,098.93	4,096.70	16.35	122.82	-84.71	-1,794.12	7,406.06	7,479.87	7,340.73	139.14	53.760	
4,052.00	3,957.54	4,192.77	4,190.54	16.79	125.63	-86.05	-1,794.12	7,406.06	7,478.21	7,335.83	142.39	52.521	
4,146.00	4,048.88	4,281.92	4,279.64	17.24	128.31	-86.30	-1,791.97	7,406.05	7,476.40	7,330.90	145.51	51.382	
4,241.00	4,140.47	4,367.86	4,365.57	17.71	130.88	-83.96	-1,792.42	7,406.05	7,474.21	7,325.66	148.56	50.312	
4,336.00	4,231.25	4,453.39	4,451.07	18.21	133.44	-80.97	-1,793.38	7,406.06	7,470.48	7,318.86	151.62	49.273	
4,430.00	4,320.59	4,556.13	4,553.59	18.71	136.52	-82.86	-1,794.12	7,406.06	7,466.25	7,311.06	155.20	48.108	
4,524.00	4,409.51	4,645.05	4,642.51	19.22	139.19	-86.63	-1,794.12	7,406.06	7,463.34	7,304.96	158.38	47.124	
4,619.00	4,498.98	4,734.52	4,731.98	19.75	141.87	-87.56	-1,794.12	7,406.06	7,461.62	7,300.03	161.59	46.176	
4,713.00	4,587.83	4,819.47	4,816.88	20.27	144.41	-87.73	-1,792.11	7,406.05	7,460.07	7,295.42	164.65	45.308	
4,807.00	4,676.97	4,904.20	4,901.59	20.78	146.95	-86.67	-1,792.77	7,406.06	7,458.61	7,290.91	167.71	44.475	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #045 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
4,870.00	4,736.65	4,961.14	4,958.51	21.12	148.66	-86.43	-1,793.49	7,406.06	7,457.42	7,287.67	169.76	43.930	
4,933.00	4,796.58	5,032.43	5,029.58	21.46	150.79	-86.61	-1,794.12	7,406.06	7,456.24	7,284.01	172.23	43.292	
5,027.00	4,886.13	5,121.97	5,119.13	21.96	153.48	-86.12	-1,794.12	7,406.06	7,454.34	7,278.92	175.42	42.495	
5,121.00	4,976.11	5,211.95	5,209.11	22.45	156.17	-85.93	-1,794.12	7,406.06	7,452.37	7,273.77	178.60	41.726	
5,216.00	5,068.11	5,301.59	5,298.70	22.91	158.86	-86.07	-1,792.03	7,406.05	7,450.48	7,268.73	181.75	40.992	
5,341.00	5,190.11	5,418.60	5,415.69	23.49	162.37	-86.65	-1,792.93	7,406.06	7,448.79	7,262.96	185.84	40.082	
5,436.00	5,283.20	5,519.35	5,516.20	23.91	165.38	-86.70	-1,794.12	7,406.06	7,447.77	7,258.49	189.28	39.348	
5,499.00	5,345.03	5,581.18	5,578.03	24.19	167.24	-86.86	-1,794.12	7,406.06	7,447.08	7,255.67	191.41	38.907	
5,561.00	5,405.97	5,642.11	5,638.97	24.45	169.06	-85.95	-1,794.12	7,406.06	7,446.35	7,252.84	193.50	38.482	
5,624.00	5,467.97	5,704.12	5,700.97	24.72	170.92	-87.08	-1,794.12	7,406.06	7,445.66	7,250.03	195.63	38.060	
5,687.00	5,530.05	5,765.58	5,762.39	24.99	172.76	-86.27	-1,791.94	7,406.05	7,444.86	7,247.12	197.74	37.650	
5,750.00	5,592.20	5,825.43	5,822.24	25.25	174.56	-86.09	-1,792.14	7,406.05	7,444.18	7,244.39	199.79	37.260	
5,813.00	5,654.42	5,885.45	5,882.24	25.51	176.35	-85.15	-1,792.58	7,406.05	7,443.45	7,241.60	201.85	36.876	
5,876.00	5,716.68	5,945.59	5,942.36	25.76	178.16	-85.01	-1,793.27	7,406.06	7,442.67	7,238.77	203.91	36.500	
5,939.00	5,778.99	6,015.44	6,011.99	26.01	180.25	-85.28	-1,794.12	7,406.06	7,441.93	7,235.68	206.25	36.082	
6,065.00	5,903.86	6,117.00	6,113.48	26.51	183.29	-85.49	-1,794.12	7,406.06	7,440.61	7,230.82	209.79	35.467	
6,099.13	5,937.73	6,117.00	6,113.48	26.63	183.29	-86.25	-1,794.12	7,406.06	7,440.49	7,230.58	209.91	35.446	CC
6,128.00	5,966.41	6,117.00	6,113.48	26.74	183.29	-86.94	-1,794.12	7,406.06	7,440.57	7,230.56	210.01	35.429	ES
6,191.00	6,029.04	6,117.00	6,113.48	26.97	183.29	-86.31	-1,794.12	7,406.06	7,441.17	7,230.95	210.22	35.397	
6,254.00	6,091.75	6,117.00	6,113.48	27.20	183.29	-85.45	-1,794.12	7,406.06	7,442.27	7,231.86	210.41	35.371	
6,348.00	6,185.46	6,117.00	6,113.48	27.52	183.29	-82.68	-1,794.12	7,406.06	7,444.79	7,234.15	210.64	35.343	SF
6,390.00	6,227.36	6,117.00	6,113.48	27.61	183.29	-82.68	-1,794.12	7,406.06	7,446.26	7,235.59	210.68	35.345	
6,400.00	6,237.33	6,117.00	6,113.48	27.61	183.29	-82.68	-1,794.12	7,406.06	7,446.65	7,235.98	210.67	35.348	
6,490.00	6,327.12	6,117.00	6,113.48	27.66	183.29	-82.68	-1,794.12	7,406.06	7,450.71	7,240.13	210.59	35.381	
6,500.00	6,337.09	6,117.00	6,113.48	27.66	183.29	-95.07	-1,794.12	7,406.06	7,451.31	7,240.73	210.58	35.385	
6,550.00	6,386.85	6,117.00	6,113.48	27.70	183.29	-131.51	-1,794.12	7,406.06	7,456.79	7,246.27	210.52	35.420	
6,600.00	6,436.20	6,117.00	6,113.48	27.74	183.29	-144.08	-1,794.12	7,406.06	7,466.40	7,255.92	210.48	35.474	
6,650.00	6,484.82	6,117.00	6,113.48	27.79	183.29	-149.55	-1,794.12	7,406.06	7,480.06	7,269.63	210.43	35.547	
6,700.00	6,532.40	6,117.00	6,113.48	27.85	183.29	-152.32	-1,794.12	7,406.06	7,497.67	7,287.28	210.39	35.637	
6,750.00	6,578.63	6,117.00	6,113.48	27.92	183.29	-153.75	-1,794.12	7,406.06	7,519.08	7,308.73	210.35	35.745	
6,800.00	6,623.24	6,117.00	6,113.48	28.00	183.29	-154.36	-1,794.12	7,406.06	7,544.13	7,333.81	210.32	35.869	
6,850.00	6,665.93	6,117.00	6,113.48	28.09	183.29	-154.39	-1,794.12	7,406.06	7,572.62	7,362.32	210.30	36.008	
6,900.00	6,706.42	6,117.00	6,113.48	28.19	183.29	-153.91	-1,794.12	7,406.06	7,604.34	7,394.05	210.29	36.161	
6,950.00	6,744.48	6,117.00	6,113.48	28.30	183.29	-152.94	-1,794.12	7,406.06	7,639.04	7,428.76	210.29	36.327	
7,000.00	6,779.84	6,117.00	6,113.48	28.43	183.29	-151.44	-1,794.12	7,406.06	7,676.47	7,466.18	210.30	36.503	
7,050.00	6,812.30	6,117.00	6,113.48	28.57	183.29	-149.29	-1,794.12	7,406.06	7,716.35	7,506.04	210.32	36.689	
7,100.00	6,841.63	6,117.00	6,113.48	28.73	183.29	-146.31	-1,794.12	7,406.06	7,758.39	7,548.04	210.35	36.884	
7,150.00	6,867.66	6,117.00	6,113.48	28.90	183.29	-142.21	-1,794.12	7,406.06	7,802.29	7,591.90	210.39	37.085	
7,200.00	6,890.22	6,117.00	6,113.48	29.08	183.29	-136.49	-1,794.12	7,406.06	7,847.74	7,637.30	210.44	37.292	
7,250.00	6,909.17	6,117.00	6,113.48	29.28	183.29	-128.46	-1,794.12	7,406.06	7,894.43	7,683.93	210.51	37.502	
7,300.00	6,924.38	6,117.00	6,113.48	29.49	183.29	-117.17	-1,794.12	7,406.06	7,942.05	7,731.47	210.58	37.715	
7,350.00	6,935.77	6,117.00	6,113.48	29.72	183.29	-101.99	-1,794.12	7,406.06	7,990.28	7,779.61	210.67	37.928	
7,400.00	6,943.25	6,117.00	6,113.48	29.97	183.29	-83.90	-1,794.12	7,406.06	8,038.79	7,828.03	210.76	38.142	
7,450.00	6,946.78	6,117.00	6,113.48	30.22	183.29	-66.10	-1,794.12	7,406.06	8,087.30	7,876.43	210.86	38.353	
7,471.54	6,947.08	6,117.00	6,113.48	30.34	183.29	-59.32	-1,794.12	7,406.06	8,108.11	7,897.20	210.91	38.443	
7,500.00	6,946.98	6,117.00	6,113.48	30.49	183.29	-58.22	-1,794.12	7,406.06	8,135.59	7,924.62	210.97	38.562	
7,600.00	6,946.65	6,117.00	6,113.48	31.07	183.29	-53.68	-1,794.12	7,406.06	8,232.68	8,021.51	211.17	38.985	
7,700.00	6,946.32	6,117.00	6,113.48	31.69	183.29	-47.76	-1,794.12	7,406.06	8,330.46	8,119.11	211.35	39.416	
7,800.00	6,945.99	6,117.00	6,113.48	32.35	183.29	-39.97	-1,794.12	7,406.06	8,428.79	8,217.29	211.50	39.853	
7,900.00	6,945.67	6,117.00	6,113.48	33.05	183.29	-29.71	-1,794.12	7,406.06	8,527.53	8,315.92	211.61	40.298	
8,000.00	6,945.34	6,117.00	6,113.48	33.79	183.29	-16.66	-1,794.12	7,406.06	8,626.56	8,414.85	211.70	40.748	
8,034.58	6,945.23	6,117.00	6,113.48	34.05	183.29	-11.56	-1,794.12	7,406.06	8,660.84	8,449.11	211.73	40.905	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #045 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,100.00	6,945.02	6,117.00	6,113.48	34.57	183.29	-11.56	-1,794.12	7,406.06	8,725.72	8,513.95	211.77	41.203	
8,200.00	6,944.69	6,117.00	6,113.48	35.41	183.29	-11.56	-1,794.12	7,406.06	8,824.91	8,613.07	211.84	41.658	
8,300.00	6,944.37	6,117.00	6,113.48	36.30	183.29	-11.56	-1,794.12	7,406.06	8,924.12	8,712.21	211.91	42.113	
8,400.00	6,944.05	6,117.00	6,113.48	37.25	183.29	-11.56	-1,794.12	7,406.06	9,023.34	8,811.37	211.97	42.568	
8,500.00	6,943.73	6,117.00	6,113.48	38.25	183.29	-11.56	-1,794.12	7,406.06	9,122.58	8,910.55	212.04	43.023	
8,600.00	6,943.40	6,117.00	6,113.48	39.29	183.29	-11.56	-1,794.12	7,406.06	9,221.84	9,009.74	212.10	43.478	
8,700.00	6,943.08	6,117.00	6,113.48	40.37	183.29	-11.56	-1,794.12	7,406.06	9,321.12	9,108.95	212.17	43.933	
8,800.00	6,942.76	6,117.00	6,113.48	41.49	183.29	-11.56	-1,794.12	7,406.06	9,420.41	9,208.17	212.23	44.387	
8,900.00	6,942.43	6,117.00	6,113.48	42.64	183.29	-11.56	-1,794.12	7,406.06	9,519.71	9,307.41	212.30	44.842	
9,000.00	6,942.11	6,117.00	6,113.48	43.82	183.29	-11.56	-1,794.12	7,406.06	9,619.03	9,406.67	212.36	45.296	
9,100.00	6,941.79	6,117.00	6,113.48	45.03	183.29	-11.56	-1,794.12	7,406.06	9,718.36	9,505.94	212.42	45.750	
9,200.00	6,941.46	6,117.00	6,113.48	46.27	183.29	-11.56	-1,794.12	7,406.06	9,817.71	9,605.22	212.49	46.204	
9,300.00	6,941.14	6,117.00	6,113.48	47.53	183.29	-11.56	-1,794.12	7,406.06	9,917.07	9,704.52	212.55	46.658	
9,400.00	6,940.82	6,117.00	6,113.48	48.81	183.29	-11.56	-1,794.12	7,406.06	10,016.44	9,803.83	212.61	47.112	
9,500.00	6,940.50	6,117.00	6,113.48	50.11	183.29	-11.56	-1,794.12	7,406.06	10,115.82	9,903.15	212.67	47.565	
9,600.00	6,940.17	6,117.00	6,113.48	51.43	183.29	-11.56	-1,794.12	7,406.06	10,215.22	10,002.49	212.73	48.019	
9,700.00	6,939.85	6,117.00	6,113.48	52.76	183.29	-11.56	-1,794.12	7,406.06	10,314.63	10,101.83	212.80	48.472	
9,800.00	6,939.53	6,117.00	6,113.48	54.11	183.29	-11.56	-1,794.12	7,406.06	10,414.05	10,201.19	212.86	48.925	
9,900.00	6,939.20	6,117.00	6,113.48	55.48	183.29	-11.56	-1,794.12	7,406.06	10,513.48	10,300.56	212.92	49.378	
10,000.00	6,938.88	6,117.00	6,113.48	56.86	183.29	-11.56	-1,794.12	7,406.06	10,612.92	10,399.94	212.98	49.830	
10,100.00	6,938.56	6,117.00	6,113.48	58.25	183.29	-11.56	-1,794.12	7,406.06	10,712.37	10,499.33	213.04	50.283	
10,200.00	6,938.23	6,117.00	6,113.48	59.65	183.29	-11.56	-1,794.12	7,406.06	10,811.83	10,598.73	213.10	50.735	
10,300.00	6,937.91	6,117.00	6,113.48	61.06	183.29	-11.56	-1,794.12	7,406.06	10,911.31	10,698.14	213.17	51.187	
10,400.00	6,937.59	6,117.00	6,113.48	62.48	183.29	-11.56	-1,794.12	7,406.06	11,010.79	10,797.56	213.23	51.639	
10,500.00	6,937.27	6,117.00	6,113.48	63.91	183.29	-11.56	-1,794.12	7,406.06	11,110.28	10,896.99	213.29	52.090	
10,600.00	6,936.94	6,117.00	6,113.48	65.34	183.29	-11.56	-1,794.12	7,406.06	11,209.78	10,996.43	213.35	52.542	
10,700.00	6,936.62	6,117.00	6,113.48	66.79	183.29	-11.56	-1,794.12	7,406.06	11,309.28	11,095.87	213.41	52.993	
10,800.00	6,936.30	6,117.00	6,113.48	68.24	183.29	-11.56	-1,794.12	7,406.06	11,408.80	11,195.33	213.47	53.443	
10,900.00	6,935.97	6,117.00	6,113.48	69.70	183.29	-11.56	-1,794.12	7,406.06	11,508.33	11,294.79	213.54	53.894	
11,000.00	6,935.65	6,117.00	6,113.48	71.17	183.29	-11.56	-1,794.12	7,406.06	11,607.86	11,394.26	213.60	54.344	
11,100.00	6,935.33	6,117.00	6,113.48	72.64	183.29	-11.56	-1,794.12	7,406.06	11,707.40	11,493.74	213.66	54.795	
11,200.00	6,935.00	6,117.00	6,113.48	74.11	183.29	-11.56	-1,794.12	7,406.06	11,806.95	11,593.23	213.72	55.244	
11,300.00	6,934.68	6,117.00	6,113.48	75.60	183.29	-11.56	-1,794.12	7,406.06	11,906.51	11,692.72	213.78	55.694	
11,400.00	6,934.36	6,117.00	6,113.48	77.08	183.29	-11.56	-1,794.12	7,406.06	12,006.07	11,792.23	213.85	56.143	
11,500.00	6,934.03	6,117.00	6,113.48	78.57	183.29	-11.56	-1,794.12	7,406.06	12,105.64	11,891.73	213.91	56.592	
11,600.00	6,933.71	6,117.00	6,113.48	80.07	183.29	-11.56	-1,794.12	7,406.06	12,205.22	11,991.25	213.97	57.041	
11,700.00	6,933.39	6,117.00	6,113.48	81.57	183.29	-11.56	-1,794.12	7,406.06	12,304.81	12,090.77	214.04	57.490	
11,800.00	6,933.07	6,117.00	6,113.48	83.07	183.29	-11.56	-1,794.12	7,406.06	12,404.40	12,190.30	214.10	57.938	
11,900.00	6,932.74	6,117.00	6,113.48	84.58	183.29	-11.56	-1,794.12	7,406.06	12,504.00	12,289.83	214.16	58.386	
12,000.00	6,932.42	6,117.00	6,113.48	86.09	183.29	-11.56	-1,794.12	7,406.06	12,603.60	12,389.38	214.23	58.833	
12,100.00	6,932.10	6,117.00	6,113.48	87.60	183.29	-11.56	-1,794.12	7,406.06	12,703.21	12,488.92	214.29	59.280	
12,200.00	6,931.77	6,117.00	6,113.48	89.12	183.29	-11.56	-1,794.12	7,406.06	12,802.83	12,588.48	214.35	59.727	
12,300.00	6,931.45	6,117.00	6,113.48	90.64	183.29	-11.56	-1,794.12	7,406.06	12,902.45	12,688.03	214.42	60.174	
12,400.00	6,931.13	6,117.00	6,113.48	92.16	183.29	-11.56	-1,794.12	7,406.06	13,002.08	12,787.60	214.48	60.621	
12,500.00	6,930.80	6,117.00	6,113.48	93.69	183.29	-11.56	-1,794.12	7,406.06	13,101.72	12,887.17	214.55	61.067	
12,600.00	6,930.48	6,117.00	6,113.48	95.22	183.29	-11.56	-1,794.12	7,406.06	13,201.36	12,986.74	214.61	61.512	
12,700.00	6,930.16	6,117.00	6,113.48	96.75	183.29	-11.56	-1,794.12	7,406.06	13,301.00	13,086.32	214.68	61.958	
12,800.00	6,929.84	6,117.00	6,113.48	98.28	183.29	-11.56	-1,794.12	7,406.06	13,400.65	13,185.91	214.74	62.403	
12,900.00	6,929.51	6,117.00	6,113.48	99.82	183.29	-11.56	-1,794.12	7,406.06	13,500.31	13,285.50	214.81	62.848	
13,000.00	6,929.19	6,117.00	6,113.48	101.35	183.29	-11.56	-1,794.12	7,406.06	13,599.97	13,385.09	214.88	63.292	
13,100.00	6,928.87	6,117.00	6,113.48	102.89	183.29	-11.56	-1,794.12	7,406.06	13,699.63	13,484.69	214.94	63.736	
13,200.00	6,928.54	6,117.00	6,113.48	104.43	183.29	-11.56	-1,794.12	7,406.06	13,799.30	13,584.29	215.01	64.180	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #045 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,300.00	6,928.22	6,117.00	6,113.48	105.97	183.29	-11.56	-1,794.12	7,406.06	13,898.98	13,683.90	215.08	64.623	
13,400.00	6,927.90	6,117.00	6,113.48	107.52	183.29	-11.56	-1,794.12	7,406.06	13,998.66	13,783.51	215.15	65.066	
13,500.00	6,927.57	6,117.00	6,113.48	109.06	183.29	-11.56	-1,794.12	7,406.06	14,098.34	13,883.13	215.21	65.509	
13,600.00	6,927.25	6,117.00	6,113.48	110.61	183.29	-11.56	-1,794.12	7,406.06	14,198.03	13,982.75	215.28	65.951	
13,700.00	6,926.93	6,117.00	6,113.48	112.16	183.29	-11.56	-1,794.12	7,406.06	14,297.73	14,082.38	215.35	66.393	
13,800.00	6,926.61	6,117.00	6,113.48	113.71	183.29	-11.56	-1,794.12	7,406.06	14,397.42	14,182.01	215.42	66.835	
13,900.00	6,926.28	6,117.00	6,113.48	115.26	183.29	-11.56	-1,794.12	7,406.06	14,497.13	14,281.64	215.49	67.276	
14,000.00	6,925.96	6,117.00	6,113.48	116.82	183.29	-11.56	-1,794.12	7,406.06	14,596.83	14,381.27	215.56	67.717	
14,100.00	6,925.64	6,117.00	6,113.48	118.37	183.29	-11.56	-1,794.12	7,406.06	14,696.54	14,480.91	215.63	68.157	
14,200.00	6,925.31	6,117.00	6,113.48	119.93	183.29	-11.56	-1,794.12	7,406.06	14,796.25	14,580.56	215.70	68.597	
14,300.00	6,924.99	6,117.00	6,113.48	121.48	183.29	-11.56	-1,794.12	7,406.06	14,895.97	14,680.20	215.77	69.037	
14,400.00	6,924.67	6,117.00	6,113.48	123.04	183.29	-11.56	-1,794.12	7,406.06	14,995.69	14,779.86	215.84	69.477	
14,500.00	6,924.34	6,117.00	6,113.48	124.60	183.29	-11.56	-1,794.12	7,406.06	15,095.42	14,879.51	215.91	69.916	
14,600.00	6,924.02	6,117.00	6,113.48	126.16	183.29	-11.56	-1,794.12	7,406.06	15,195.15	14,979.17	215.98	70.354	
14,700.00	6,923.70	6,117.00	6,113.48	127.72	183.29	-11.56	-1,794.12	7,406.06	15,294.88	15,078.83	216.05	70.792	
14,800.00	6,923.38	6,117.00	6,113.48	129.28	183.29	-11.56	-1,794.12	7,406.06	15,394.61	15,178.49	216.12	71.230	
14,900.00	6,923.05	6,117.00	6,113.48	130.85	183.29	-11.56	-1,794.12	7,406.06	15,494.35	15,278.16	216.20	71.668	
15,000.00	6,922.73	6,117.00	6,113.48	132.41	183.29	-11.56	-1,794.12	7,406.06	15,594.10	15,377.83	216.27	72.105	
15,100.00	6,922.41	6,117.00	6,113.48	133.97	183.29	-11.56	-1,794.12	7,406.06	15,693.84	15,477.50	216.34	72.541	
15,200.00	6,922.08	6,117.00	6,113.48	135.54	183.29	-11.56	-1,794.12	7,406.06	15,793.59	15,577.17	216.42	72.978	
15,300.00	6,921.76	6,117.00	6,113.48	137.11	183.29	-11.56	-1,794.12	7,406.06	15,893.34	15,676.85	216.49	73.413	
15,400.00	6,921.44	6,117.00	6,113.48	138.67	183.29	-11.56	-1,794.12	7,406.06	15,993.10	15,776.53	216.57	73.849	
15,500.00	6,921.11	6,117.00	6,113.48	140.24	183.29	-11.56	-1,794.12	7,406.06	16,092.86	15,876.22	216.64	74.284	
15,600.00	6,920.79	6,117.00	6,113.48	141.81	183.29	-11.56	-1,794.12	7,406.06	16,192.62	15,975.90	216.72	74.718	
15,700.00	6,920.47	6,117.00	6,113.48	143.38	183.29	-11.56	-1,794.12	7,406.06	16,292.38	16,075.59	216.79	75.153	
15,800.00	6,920.14	6,117.00	6,113.48	144.95	183.29	-11.56	-1,794.12	7,406.06	16,392.15	16,175.28	216.87	75.586	
15,900.00	6,919.82	6,117.00	6,113.48	146.52	183.29	-11.56	-1,794.12	7,406.06	16,491.92	16,274.97	216.94	76.020	
16,000.00	6,919.50	6,117.00	6,113.48	148.09	183.29	-11.56	-1,794.12	7,406.06	16,591.69	16,374.67	217.02	76.453	
16,100.00	6,919.18	6,117.00	6,113.48	149.66	183.29	-11.56	-1,794.12	7,406.06	16,691.47	16,474.37	217.10	76.885	
16,200.00	6,918.85	6,117.00	6,113.48	151.24	183.29	-11.56	-1,794.12	7,406.06	16,791.24	16,574.07	217.17	77.317	
16,300.00	6,918.53	6,117.00	6,113.48	152.81	183.29	-11.56	-1,794.12	7,406.06	16,891.02	16,673.77	217.25	77.749	
16,400.00	6,918.21	6,117.00	6,113.48	154.38	183.29	-11.56	-1,794.12	7,406.06	16,990.81	16,773.48	217.33	78.180	
16,500.00	6,917.88	6,117.00	6,113.48	155.96	183.29	-11.56	-1,794.12	7,406.06	17,090.59	16,873.19	217.41	78.611	
16,600.00	6,917.56	6,117.00	6,113.48	157.53	183.29	-11.56	-1,794.12	7,406.06	17,190.38	16,972.89	217.49	79.041	
16,700.00	6,917.24	6,117.00	6,113.48	159.11	183.29	-11.56	-1,794.12	7,406.06	17,290.17	17,072.61	217.57	79.471	
16,800.00	6,916.91	6,117.00	6,113.48	160.68	183.29	-11.56	-1,794.12	7,406.06	17,389.96	17,172.32	217.64	79.901	
16,900.00	6,916.59	6,117.00	6,113.48	162.26	183.29	-11.56	-1,794.12	7,406.06	17,489.76	17,272.04	217.72	80.330	
17,000.00	6,916.27	6,117.00	6,113.48	163.84	183.29	-11.56	-1,794.12	7,406.06	17,589.56	17,371.75	217.80	80.758	
17,100.00	6,915.95	6,117.00	6,113.48	165.41	183.29	-11.56	-1,794.12	7,406.06	17,689.36	17,471.47	217.89	81.187	
17,200.00	6,915.62	6,117.00	6,113.48	166.99	183.29	-11.56	-1,794.12	7,406.06	17,789.16	17,571.19	217.97	81.614	
17,300.00	6,915.30	6,117.00	6,113.48	168.57	183.29	-11.56	-1,794.12	7,406.06	17,888.96	17,670.92	218.05	82.042	
17,400.00	6,914.98	6,117.00	6,113.48	170.15	183.29	-11.56	-1,794.12	7,406.06	17,988.77	17,770.64	218.13	82.468	
17,500.00	6,914.65	6,117.00	6,113.48	171.73	183.29	-11.56	-1,794.12	7,406.06	18,088.58	17,870.37	218.21	82.895	
17,600.00	6,914.33	6,117.00	6,113.48	173.31	183.29	-11.56	-1,794.12	7,406.06	18,188.39	17,970.10	218.29	83.321	
17,700.00	6,914.01	6,117.00	6,113.48	174.89	183.29	-11.56	-1,794.12	7,406.06	18,288.20	18,069.83	218.38	83.746	
17,800.00	6,913.68	6,117.00	6,113.48	176.47	183.29	-11.56	-1,794.12	7,406.06	18,388.02	18,169.56	218.46	84.171	
17,900.00	6,913.36	6,117.00	6,113.48	178.05	183.29	-11.56	-1,794.12	7,406.06	18,487.84	18,269.29	218.54	84.596	
18,000.00	6,913.04	6,117.00	6,113.48	179.63	183.29	-11.56	-1,794.12	7,406.06	18,587.65	18,369.03	218.63	85.020	
18,100.00	6,912.72	6,117.00	6,113.48	181.21	183.29	-11.56	-1,794.12	7,406.06	18,687.47	18,468.76	218.71	85.444	
18,111.83	6,912.68	6,117.00	6,113.48	181.40	183.29	-11.56	-1,794.12	7,406.06	18,699.29	18,480.57	218.72	85.494	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #046A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 321-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	122.29	-2,602.07	4,117.73	4,872.83				
54.25	54.25	0.00	0.00	0.02	0.00	60.74	-2,602.07	4,117.73	4,871.58				
130.42	130.42	0.00	0.00	0.11	0.00	33.58	-2,602.07	4,117.73	4,870.69	4,870.60	0.09	N/A	
219.69	219.69	80.04	80.04	0.23	0.09	59.66	-2,602.08	4,117.78	4,870.42	4,870.15	0.27	N/A	
308.67	308.67	163.15	163.15	0.35	0.18	50.75	-2,602.09	4,117.95	4,870.27	4,869.82	0.45	N/A	
361.38	361.38	212.39	212.39	0.41	0.24	-32.14	-2,602.10	4,118.10	4,870.23	4,869.67	0.56	8,687.330	
454.00	453.99	298.89	298.89	0.51	0.34	-83.84	-2,602.14	4,118.46	4,870.36	4,869.60	0.76	6,402.083	
544.00	543.93	425.61	425.58	0.74	0.59	-83.62	-2,600.49	4,119.75	4,870.21	4,868.95	1.26	3,852.991	
638.83	638.56	536.25	535.94	1.04	0.85	-94.76	-2,593.54	4,123.01	4,869.36	4,867.52	1.84	2,640.551	
667.00	666.63	551.12	550.72	1.13	0.89	-96.86	-2,592.18	4,123.77	4,869.45	4,867.48	1.98	2,463.065	
756.00	755.27	591.00	590.32	1.44	0.99	-82.14	-2,588.10	4,126.31	4,869.38	4,866.98	2.40	2,027.697	
850.00	848.62	654.31	653.01	1.79	1.17	-80.78	-2,580.88	4,131.39	4,868.54	4,865.59	2.94	1,655.374	
942.00	939.50	718.30	716.23	2.14	1.38	-74.70	-2,573.02	4,137.41	4,866.85	4,863.34	3.51	1,386.047	
1,033.00	1,028.89	885.79	880.48	2.52	2.00	-66.28	-2,546.26	4,155.98	4,862.32	4,857.80	4.52	1,076.901	
1,123.00	1,117.00	958.39	950.85	2.90	2.33	-60.52	-2,531.10	4,165.33	4,854.38	4,849.16	5.22	930.501	
1,214.00	1,206.00	1,034.33	1,023.80	3.29	2.72	-61.61	-2,513.17	4,176.44	4,845.81	4,839.82	5.99	809.130	
1,309.00	1,298.75	1,107.97	1,093.75	3.71	3.14	-59.17	-2,493.62	4,188.58	4,836.64	4,829.82	6.82	709.431	
1,403.00	1,390.39	1,166.22	1,148.42	4.13	3.50	-56.51	-2,476.59	4,199.22	4,827.01	4,819.42	7.59	636.367	
1,498.00	1,482.88	1,214.04	1,192.92	4.56	3.82	-60.15	-2,461.87	4,208.69	4,818.04	4,809.73	8.32	579.355	
1,592.00	1,573.82	1,281.47	1,255.11	5.00	4.30	-61.18	-2,440.08	4,223.02	4,809.59	4,800.37	9.22	521.658	
1,687.00	1,665.32	1,348.30	1,316.14	5.46	4.80	-58.74	-2,417.24	4,237.82	4,800.39	4,790.23	10.16	472.621	
1,876.00	1,847.35	1,443.06	1,401.81	6.38	5.54	-56.87	-2,383.52	4,260.29	4,783.20	4,771.42	11.78	406.112	
1,970.00	1,937.87	1,495.23	1,448.63	6.84	5.97	-57.08	-2,364.53	4,273.27	4,775.72	4,763.08	12.64	377.916	
2,064.00	2,028.42	1,555.00	1,501.99	7.30	6.48	-57.00	-2,342.38	4,288.57	4,769.17	4,755.60	13.57	351.379	
2,159.00	2,119.97	1,626.87	1,565.66	7.77	7.10	-56.35	-2,314.90	4,307.46	4,763.18	4,748.55	14.62	325.719	
2,348.00	2,302.44	1,756.14	1,679.53	8.69	8.23	-61.99	-2,264.14	4,341.63	4,755.29	4,738.68	16.61	286.338	
2,438.55	2,390.10	1,799.36	1,717.35	9.13	8.61	-62.92	-2,246.93	4,353.50	4,754.56	4,737.17	17.39	273.427	
2,443.00	2,394.41	1,803.01	1,720.54	9.15	8.64	-62.98	-2,245.47	4,354.51	4,754.56	4,737.12	17.44	272.641	
2,537.00	2,485.45	2,448.00	2,289.37	9.61	13.81	-68.26	-1,982.03	4,498.28	4,754.46	4,731.46	23.01	206.664	
2,632.00	2,577.48	2,448.00	2,289.37	10.07	13.81	-67.97	-1,982.03	4,498.28	4,747.64	4,724.19	23.45	202.456	
2,727.00	2,669.50	2,448.00	2,289.37	10.53	13.81	-67.93	-1,982.03	4,498.28	4,742.65	4,718.76	23.89	198.539	
2,821.00	2,760.56	2,448.00	2,289.37	10.98	13.81	-68.16	-1,982.03	4,498.28	4,739.61	4,715.30	24.31	194.936	
2,909.93	2,846.78	2,448.00	2,289.37	11.41	13.81	-68.23	-1,982.03	4,498.28	4,738.64	4,713.93	24.71	191.791 CC	
2,916.00	2,852.68	2,448.00	2,289.37	11.44	13.81	-68.23	-1,982.03	4,498.28	4,738.64	4,713.91	24.73	191.585 ES	
3,011.00	2,945.03	2,448.00	2,289.37	11.89	13.81	-68.14	-1,982.03	4,498.28	4,739.94	4,714.80	25.14	188.549	
3,105.00	3,036.57	2,448.00	2,289.37	12.33	13.81	-73.70	-1,982.03	4,498.28	4,744.32	4,718.79	25.53	185.846	
3,200.00	3,128.81	2,513.33	2,346.68	12.78	14.38	-77.32	-1,955.27	4,514.65	4,751.55	4,725.07	26.49	179.393	
3,294.00	3,219.76	2,639.06	2,457.34	13.24	15.43	-78.68	-1,903.98	4,545.14	4,759.31	4,731.38	27.94	170.371	
3,389.00	3,311.82	2,733.28	2,541.24	13.69	16.18	-78.50	-1,867.13	4,567.03	4,767.57	4,738.49	29.08	163.960	
3,483.00	3,403.03	2,826.20	2,625.23	14.14	16.88	-78.83	-1,833.20	4,587.73	4,776.00	4,745.84	30.16	158.347	
3,578.00	3,495.31	2,909.02	2,700.93	14.60	17.48	-78.94	-1,804.76	4,605.60	4,784.90	4,753.76	31.14	153.671	
3,672.00	3,586.65	3,075.36	2,855.33	15.04	18.60	-78.94	-1,752.55	4,638.62	4,792.97	4,760.34	32.63	146.899	
3,767.00	3,678.95	3,276.29	3,046.68	15.49	19.73	-79.68	-1,701.24	4,671.83	4,799.41	4,765.27	34.14	140.595	
3,862.00	3,771.63	3,568.86	3,332.28	15.93	20.95	-81.42	-1,648.34	4,705.55	4,802.74	4,767.01	35.73	134.412	
3,956.00	3,863.70	3,713.95	3,476.12	16.35	21.35	-81.65	-1,633.43	4,716.74	4,805.34	4,768.84	36.50	131.647	
4,052.00	3,957.54	3,796.11	3,557.90	16.79	21.54	-83.05	-1,627.68	4,722.28	4,807.91	4,770.83	37.07	129.681	
4,146.00	4,048.88	3,876.00	3,637.41	17.24	21.71	-83.35	-1,622.28	4,727.79	4,810.67	4,773.02	37.65	127.772	
4,241.00	4,140.47	3,956.06	3,717.10	17.71	21.89	-81.07	-1,617.05	4,733.44	4,812.89	4,774.64	38.25	125.833	
4,336.00	4,231.25	4,048.82	3,809.44	18.21	22.09	-78.23	-1,611.20	4,740.06	4,813.61	4,774.73	38.88	123.793	
4,373.51	4,266.93	4,089.65	3,850.09	18.41	22.18	-79.08	-1,608.68	4,742.90	4,813.56	4,774.41	39.15	122.962	
4,430.00	4,320.59	4,151.09	3,911.28	18.71	22.31	-80.32	-1,604.94	4,747.07	4,813.68	4,774.14	39.54	121.739	
4,524.00	4,409.51	4,252.87	4,012.66	19.22	22.52	-84.28	-1,598.89	4,753.69	4,814.95	4,774.75	40.21	119.759	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #046A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 321-APC_ISCWSA REV 2 MWD

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,619.00	4,498.98	4,355.31	4,114.74	19.75	22.74	-85.45	-1,592.99	4,760.01	4,817.29	4,776.41	40.88	117.832	
4,713.00	4,587.83	4,457.32	4,216.41	20.27	22.95	-85.92	-1,587.31	4,765.94	4,819.89	4,778.34	41.55	116.011	
4,807.00	4,676.97	4,545.65	4,304.48	20.78	23.12	-85.03	-1,582.64	4,770.89	4,822.28	4,780.12	42.16	114.382	
4,870.00	4,736.65	4,604.20	4,362.87	21.12	23.23	-84.92	-1,579.78	4,774.15	4,823.72	4,781.15	42.57	113.317	
4,933.00	4,796.58	4,663.18	4,421.70	21.46	23.34	-85.24	-1,577.07	4,777.40	4,825.27	4,782.30	42.97	112.287	
5,027.00	4,886.13	4,751.60	4,509.90	21.96	23.50	-84.88	-1,573.36	4,782.24	4,827.62	4,784.05	43.57	110.791	
5,121.00	4,976.11	4,840.82	4,598.93	22.45	23.67	-84.95	-1,570.02	4,787.08	4,830.05	4,785.88	44.17	109.360	
5,216.00	5,068.11	4,932.47	4,690.41	22.91	23.84	-85.32	-1,567.03	4,791.99	4,832.92	4,788.18	44.74	108.018	
5,341.00	5,190.11	5,051.85	4,809.57	23.49	24.02	-86.14	-1,563.85	4,798.34	4,837.33	4,791.90	45.43	106.476	
5,436.00	5,283.20	5,143.10	4,900.68	23.91	24.17	-86.31	-1,562.01	4,803.17	4,841.02	4,795.07	45.94	105.373	
5,499.00	5,345.03	5,203.85	4,961.33	24.19	24.26	-86.55	-1,561.06	4,806.38	4,843.55	4,797.27	46.28	104.663	
5,561.00	5,405.97	5,263.81	5,021.21	24.45	24.35	-85.72	-1,560.35	4,809.54	4,846.03	4,799.42	46.61	103.980	
5,624.00	5,467.97	5,324.93	5,082.24	24.72	24.45	-86.93	-1,559.85	4,812.75	4,848.62	4,801.68	46.94	103.304	
5,687.00	5,530.05	5,386.21	5,143.43	24.99	24.54	-86.17	-1,559.59	4,815.97	4,851.29	4,804.03	47.26	102.644	
5,750.00	5,592.20	5,447.95	5,205.08	25.25	24.63	-86.06	-1,559.51	4,819.20	4,853.91	4,806.33	47.58	102.012	
5,813.00	5,654.42	5,509.97	5,267.02	25.51	24.72	-85.18	-1,559.50	4,822.44	4,856.48	4,808.58	47.89	101.401	
5,876.00	5,716.68	5,572.07	5,329.03	25.76	24.80	-85.10	-1,559.55	4,825.68	4,858.98	4,810.78	48.20	100.801	
5,939.00	5,778.99	5,634.22	5,391.10	26.01	24.89	-85.43	-1,559.64	4,828.93	4,861.53	4,813.02	48.51	100.213	
6,065.00	5,903.86	5,758.81	5,515.52	26.51	25.06	-85.80	-1,559.99	4,835.43	4,866.87	4,817.75	49.12	99.087	
6,128.00	5,966.41	5,821.24	5,577.87	26.74	25.15	-87.36	-1,560.25	4,838.68	4,869.74	4,820.32	49.41	98.551	
6,191.00	6,029.04	5,883.77	5,640.32	26.97	25.24	-86.83	-1,560.55	4,841.94	4,872.70	4,823.00	49.71	98.030	
6,254.00	6,091.75	5,946.66	5,703.11	27.20	25.33	-86.06	-1,560.84	4,845.22	4,875.64	4,825.64	50.00	97.519	
6,348.00	6,185.46	6,040.60	5,796.93	27.52	25.46	-83.40	-1,561.14	4,850.11	4,879.90	4,829.48	50.42	96.787	
6,390.00	6,227.36	6,082.60	5,838.87	27.61	25.52	-83.43	-1,561.22	4,852.30	4,881.76	4,831.22	50.55	96.582	
6,400.00	6,237.33	6,092.60	5,848.85	27.61	25.54	-83.44	-1,561.24	4,852.82	4,882.21	4,831.64	50.56	96.560	
6,490.00	6,327.12	6,182.58	5,938.71	27.66	25.66	-83.52	-1,561.28	4,857.51	4,886.19	4,835.49	50.71	96.364	
6,500.00	6,337.09	6,192.57	5,948.69	27.66	25.68	-95.92	-1,561.28	4,858.03	4,886.71	4,835.99	50.72	96.343	
6,550.00	6,386.85	6,242.29	5,998.34	27.70	25.75	-132.43	-1,561.23	4,860.63	4,891.63	4,840.82	50.81	96.277	
6,600.00	6,436.20	6,291.37	6,047.36	27.74	25.82	-145.10	-1,561.14	4,863.19	4,900.37	4,849.47	50.90	96.272 SF	
6,650.00	6,484.82	6,339.52	6,095.44	27.79	25.89	-150.70	-1,561.01	4,865.70	4,912.90	4,861.90	51.00	96.330	
6,700.00	6,532.40	6,390.52	6,146.37	27.85	25.96	-153.63	-1,560.83	4,868.35	4,929.12	4,878.01	51.11	96.444	
6,750.00	6,578.63	6,453.92	6,209.69	27.92	26.03	-155.30	-1,560.77	4,871.49	4,948.82	4,897.59	51.23	96.591	
6,800.00	6,623.24	6,515.11	6,270.82	28.00	26.11	-156.21	-1,560.95	4,874.28	4,971.86	4,920.50	51.36	96.796	
6,850.00	6,665.93	6,573.72	6,329.38	28.09	26.18	-156.59	-1,561.34	4,876.74	4,998.10	4,946.60	51.50	97.057	
6,900.00	6,706.42	6,629.43	6,385.04	28.19	26.25	-156.57	-1,561.91	4,878.88	5,027.40	4,975.77	51.63	97.373	
6,950.00	6,744.48	6,681.89	6,437.46	28.30	26.31	-156.18	-1,562.62	4,880.73	5,059.59	5,007.83	51.76	97.742	
7,000.00	6,779.84	6,730.78	6,486.32	28.43	26.37	-155.42	-1,563.43	4,882.31	5,094.51	5,042.61	51.90	98.163	
7,050.00	6,812.30	6,775.78	6,531.30	28.57	26.43	-154.24	-1,564.31	4,883.63	5,131.95	5,079.92	52.03	98.632	
7,100.00	6,841.63	6,816.60	6,572.08	28.73	26.48	-152.56	-1,565.22	4,884.72	5,171.70	5,119.54	52.16	99.150	
7,150.00	6,867.66	6,852.93	6,608.40	28.90	26.52	-150.23	-1,566.12	4,885.60	5,213.53	5,161.25	52.29	99.713	
7,200.00	6,890.22	6,892.00	6,647.44	29.08	26.56	-147.09	-1,567.17	4,886.46	5,257.20	5,204.79	52.41	100.313	
7,250.00	6,909.17	6,936.33	6,691.75	29.28	26.59	-142.86	-1,568.40	4,887.23	5,302.39	5,249.86	52.53	100.944	
7,300.00	6,924.38	6,972.60	6,728.01	29.49	26.62	-136.83	-1,569.43	4,887.70	5,348.86	5,296.22	52.64	101.615	
7,350.00	6,935.77	7,000.31	6,755.70	29.72	26.64	-127.99	-1,570.23	4,887.97	5,396.36	5,343.62	52.74	102.324	
7,400.00	6,943.25	7,018.92	6,774.30	29.97	26.65	-114.95	-1,570.78	4,888.09	5,444.61	5,391.79	52.83	103.069	
7,450.00	6,946.78	7,027.95	6,783.33	30.22	26.66	-96.75	-1,571.04	4,888.14	5,493.34	5,440.44	52.90	103.845	
7,471.54	6,947.08	7,028.77	6,784.15	30.34	26.66	-87.65	-1,571.07	4,888.15	5,514.40	5,461.48	52.93	104.187	
7,500.00	6,946.98	7,028.59	6,783.96	30.49	26.66	-87.53	-1,571.06	4,888.14	5,542.28	5,489.31	52.96	104.646	
7,600.00	6,946.65	7,027.75	6,783.12	31.07	26.66	-86.94	-1,571.04	4,888.14	5,640.68	5,587.61	53.07	106.290	
7,700.00	6,946.32	7,026.57	6,781.94	31.69	26.66	-85.98	-1,571.00	4,888.13	5,739.68	5,686.52	53.15	107.981	
7,800.00	6,945.99	7,025.02	6,780.39	32.35	26.66	-84.20	-1,570.96	4,888.13	5,839.13	5,785.91	53.22	109.718	
7,900.00	6,945.67	7,023.06	6,778.44	33.05	26.65	-79.85	-1,570.90	4,888.12	5,938.89	5,885.63	53.26	111.499	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #046A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 321-APC_ISCWSA REV 2 MWD **Rule Assigned:** **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,000.00	6,945.34	7,020.67	6,776.05	33.79	26.65	-57.07	-1,570.83	4,888.10	6,038.83	5,985.54	53.29	113.322	
8,034.58	6,945.23	7,019.73	6,775.11	34.05	26.65	-11.74	-1,570.80	4,888.10	6,073.41	6,020.12	53.29	113.962	
8,100.00	6,945.02	7,017.85	6,773.24	34.57	26.65	-11.31	-1,570.74	4,888.09	6,138.83	6,085.53	53.30	115.177	
8,200.00	6,944.69	7,014.82	6,770.20	35.41	26.65	-10.68	-1,570.66	4,888.07	6,238.82	6,185.51	53.31	117.032	
8,300.00	6,944.37	7,011.56	6,766.94	36.30	26.65	-10.06	-1,570.56	4,888.05	6,338.82	6,285.50	53.32	118.886	
8,400.00	6,944.05	7,008.04	6,763.43	37.25	26.64	-9.46	-1,570.46	4,888.02	6,438.81	6,385.48	53.33	120.738	
8,500.00	6,943.73	7,004.24	6,759.62	38.25	26.64	-8.88	-1,570.34	4,888.00	6,538.81	6,485.47	53.34	122.588	
8,600.00	6,943.40	7,000.11	6,755.50	39.29	26.64	-8.31	-1,570.22	4,887.96	6,638.80	6,585.45	53.35	124.436	
8,700.00	6,943.08	6,995.63	6,751.02	40.37	26.63	-7.76	-1,570.09	4,887.93	6,738.79	6,685.43	53.36	126.282	
8,800.00	6,942.76	6,990.72	6,746.12	41.49	26.63	-7.22	-1,569.95	4,887.88	6,838.78	6,785.41	53.38	128.127	
8,900.00	6,942.43	6,985.35	6,740.74	42.64	26.63	-6.69	-1,569.79	4,887.83	6,938.78	6,885.39	53.39	129.969	
9,000.00	6,942.11	6,979.42	6,734.82	43.82	26.62	-6.18	-1,569.62	4,887.78	7,038.77	6,985.37	53.40	131.811	
9,100.00	6,941.79	6,972.87	6,728.27	45.03	26.62	-5.69	-1,569.43	4,887.71	7,138.76	7,085.34	53.41	133.651	
9,200.00	6,941.46	6,965.57	6,720.97	46.27	26.61	-5.20	-1,569.23	4,887.62	7,238.75	7,185.32	53.43	135.490	
9,300.00	6,941.14	6,957.39	6,712.80	47.53	26.61	-4.73	-1,568.99	4,887.52	7,338.73	7,285.30	53.44	137.328	
9,400.00	6,940.82	6,948.17	6,703.58	48.81	26.60	-4.28	-1,568.73	4,887.40	7,438.72	7,385.27	53.45	139.166	
9,500.00	6,940.50	6,937.69	6,693.11	50.11	26.59	-3.83	-1,568.43	4,887.25	7,538.70	7,485.24	53.46	141.004	
9,600.00	6,940.17	6,925.68	6,681.10	51.43	26.58	-3.39	-1,568.10	4,887.07	7,638.69	7,585.21	53.48	142.843	
9,700.00	6,939.85	6,911.77	6,667.20	52.76	26.57	-2.97	-1,567.71	4,886.83	7,738.67	7,685.18	53.49	144.684	
9,800.00	6,939.53	6,895.48	6,650.92	54.11	26.56	-2.56	-1,567.26	4,886.53	7,838.64	7,785.15	53.50	146.528	
9,900.00	6,939.20	6,876.13	6,631.58	55.48	26.55	-2.16	-1,566.73	4,886.13	7,938.61	7,885.11	53.50	148.377	
10,000.00	6,938.88	6,868.79	6,624.24	56.86	26.54	-2.03	-1,566.54	4,885.96	8,038.58	7,985.06	53.52	150.195	
10,100.00	6,938.56	6,863.74	6,619.20	58.25	26.53	-1.95	-1,566.40	4,885.85	8,138.55	8,085.01	53.54	152.005	
10,200.00	6,938.23	6,858.58	6,614.04	59.65	26.53	-1.86	-1,566.27	4,885.73	8,238.51	8,184.95	53.56	153.811	
10,300.00	6,937.91	6,853.29	6,608.76	61.06	26.52	-1.78	-1,566.13	4,885.61	8,338.48	8,284.89	53.58	155.614	
10,400.00	6,937.59	6,847.87	6,603.34	62.48	26.51	-1.71	-1,565.99	4,885.48	8,438.44	8,384.83	53.61	157.414	
10,500.00	6,937.27	6,842.32	6,597.79	63.91	26.51	-1.63	-1,565.85	4,885.35	8,538.40	8,484.77	53.63	159.210	
10,600.00	6,936.94	6,836.62	6,592.10	65.34	26.50	-1.56	-1,565.71	4,885.21	8,638.37	8,584.71	53.65	161.003	
10,700.00	6,936.62	6,830.78	6,586.26	66.79	26.49	-1.49	-1,565.56	4,885.07	8,738.33	8,684.65	53.68	162.792	
10,800.00	6,936.30	6,824.79	6,580.27	68.24	26.49	-1.42	-1,565.42	4,884.92	8,838.29	8,784.59	53.70	164.578	
10,900.00	6,935.97	6,818.64	6,574.13	69.70	26.48	-1.35	-1,565.27	4,884.77	8,938.25	8,884.52	53.73	166.361	
11,000.00	6,935.65	6,812.33	6,567.82	71.17	26.47	-1.29	-1,565.12	4,884.61	9,038.21	8,984.45	53.75	168.140	
11,100.00	6,935.33	6,805.85	6,561.34	72.64	26.46	-1.23	-1,564.97	4,884.44	9,138.16	9,084.38	53.78	169.915	
11,200.00	6,935.00	6,799.19	6,554.69	74.11	26.45	-1.17	-1,564.82	4,884.26	9,238.12	9,184.31	53.81	171.687	
11,300.00	6,934.68	6,792.35	6,547.85	75.60	26.45	-1.11	-1,564.67	4,884.08	9,338.07	9,284.24	53.84	173.455	
11,400.00	6,934.36	6,785.31	6,540.82	77.08	26.44	-1.05	-1,564.52	4,883.89	9,438.03	9,384.16	53.86	175.219	
11,500.00	6,934.03	6,778.08	6,533.59	78.57	26.43	-1.00	-1,564.36	4,883.69	9,537.98	9,484.09	53.89	176.980	
11,600.00	6,933.71	6,770.63	6,526.15	80.07	26.42	-0.94	-1,564.21	4,883.48	9,637.93	9,584.01	53.92	178.737	
11,700.00	6,933.39	6,762.97	6,518.49	81.57	26.41	-0.89	-1,564.05	4,883.26	9,737.88	9,683.93	53.95	180.490	
11,800.00	6,933.07	6,755.08	6,510.61	83.07	26.40	-0.84	-1,563.89	4,883.03	9,837.83	9,783.84	53.98	182.239	
11,900.00	6,932.74	6,746.96	6,502.49	84.58	26.39	-0.79	-1,563.73	4,882.79	9,937.77	9,883.76	54.01	183.985	
12,000.00	6,932.42	6,738.58	6,494.12	86.09	26.38	-0.75	-1,563.58	4,882.54	10,037.72	9,983.67	54.05	185.726	
12,100.00	6,932.10	6,729.94	6,485.48	87.60	26.37	-0.70	-1,563.42	4,882.28	10,137.66	10,083.58	54.08	187.464	
12,200.00	6,931.77	7,064.49	6,819.84	89.12	26.69	-50.47	-1,572.54	4,885.61	10,236.24	10,181.80	54.45	188.008	
12,300.00	6,931.45	7,064.39	6,819.74	90.64	26.69	-50.20	-1,572.54	4,885.61	10,336.24	10,281.75	54.49	189.698	
12,400.00	6,931.13	7,064.29	6,819.63	92.16	26.69	-49.94	-1,572.53	4,885.61	10,436.24	10,381.71	54.53	191.382	
12,500.00	6,930.80	7,064.18	6,819.53	93.69	26.69	-49.67	-1,572.53	4,885.61	10,536.24	10,481.67	54.57	193.062	
12,600.00	6,930.48	7,064.08	6,819.43	95.22	26.69	-49.41	-1,572.53	4,885.61	10,636.24	10,581.62	54.62	194.736	
12,700.00	6,930.16	7,063.98	6,819.32	96.75	26.68	-49.14	-1,572.52	4,885.61	10,736.24	10,681.58	54.66	196.406	
12,800.00	6,929.84	7,063.87	6,819.22	98.28	26.68	-48.88	-1,572.52	4,885.61	10,836.24	10,781.53	54.71	198.070	
12,900.00	6,929.51	7,063.77	6,819.12	99.82	26.68	-48.62	-1,572.52	4,885.61	10,936.24	10,881.49	54.76	199.728	
13,000.00	6,929.19	7,063.67	6,819.01	101.35	26.68	-48.37	-1,572.51	4,885.61	11,036.24	10,981.44	54.80	201.382	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #046A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 321-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,100.00	6,928.87	7,063.56	6,818.91	102.89	26.68	-48.11	-1,572.51	4,885.61	11,136.24	11,081.39	54.85	203.030	
13,200.00	6,928.54	6,613.55	6,369.17	104.43	26.23	-0.32	-1,561.72	4,878.29	11,236.89	11,182.43	54.46	206.321	
13,300.00	6,928.22	6,600.54	6,356.18	105.97	26.21	-0.29	-1,561.59	4,877.79	11,336.80	11,282.30	54.50	208.011	
13,400.00	6,927.90	6,587.03	6,342.67	107.52	26.20	-0.27	-1,561.46	4,877.27	11,436.72	11,382.18	54.54	209.697	
13,500.00	6,927.57	6,572.98	6,328.63	109.06	26.18	-0.25	-1,561.33	4,876.71	11,536.62	11,482.04	54.58	211.380	
13,600.00	6,927.25	6,558.36	6,314.03	110.61	26.16	-0.23	-1,561.22	4,876.11	11,636.53	11,581.91	54.62	213.058	
13,700.00	6,926.93	6,543.13	6,298.81	112.16	26.14	-0.21	-1,561.11	4,875.48	11,736.42	11,681.77	54.66	214.732	
13,800.00	6,926.61	6,527.26	6,282.96	113.71	26.12	-0.19	-1,561.01	4,874.80	11,836.32	11,781.62	54.70	216.403	
13,900.00	6,926.28	6,510.71	6,266.42	115.26	26.10	-0.18	-1,560.93	4,874.08	11,936.21	11,881.47	54.74	218.069	
14,000.00	6,925.96	6,493.43	6,249.16	116.82	26.08	-0.17	-1,560.86	4,873.31	12,036.10	11,981.32	54.78	219.731	
14,100.00	6,925.64	6,475.36	6,231.11	118.37	26.06	-0.16	-1,560.81	4,872.49	12,135.98	12,081.16	54.82	221.389	
14,200.00	6,925.31	6,456.47	6,212.24	119.93	26.04	-0.15	-1,560.78	4,871.61	12,235.85	12,180.99	54.86	223.043	
14,300.00	6,924.99	6,436.68	6,192.47	121.48	26.01	-0.15	-1,560.76	4,870.66	12,335.72	12,280.82	54.90	224.693	
14,400.00	6,924.67	6,415.94	6,171.76	123.04	25.99	-0.14	-1,560.78	4,869.64	12,435.58	12,380.64	54.94	226.338	
14,500.00	6,924.34	6,394.17	6,150.01	124.60	25.96	-0.14	-1,560.82	4,868.54	12,535.44	12,480.45	54.98	227.979	
14,600.00	6,924.02	6,374.88	6,130.76	126.16	25.94	-0.14	-1,560.89	4,867.54	12,635.29	12,580.26	55.03	229.606	
14,700.00	6,923.70	6,369.36	6,125.24	127.72	25.93	-0.14	-1,560.91	4,867.26	12,735.13	12,680.05	55.09	231.188	
14,800.00	6,923.38	6,363.83	6,119.71	129.28	25.92	-0.15	-1,560.93	4,866.97	12,834.98	12,779.84	55.14	232.764	
14,900.00	6,923.05	6,358.30	6,114.19	130.85	25.91	-0.15	-1,560.95	4,866.68	12,934.83	12,879.63	55.20	234.334	
15,000.00	6,922.73	6,352.77	6,108.67	132.41	25.91	-0.15	-1,560.97	4,866.39	13,034.67	12,979.42	55.26	235.897	
15,100.00	6,922.41	6,347.24	6,103.15	133.97	25.90	-0.15	-1,560.99	4,866.10	13,134.52	13,079.21	55.31	237.455	
15,200.00	6,922.08	6,341.72	6,097.63	135.54	25.89	-0.15	-1,561.00	4,865.81	13,234.37	13,178.99	55.37	239.007	
15,300.00	6,921.76	6,336.19	6,092.11	137.11	25.88	-0.15	-1,561.02	4,865.52	13,334.21	13,278.78	55.43	240.553	
15,400.00	6,921.44	6,330.66	6,086.59	138.67	25.88	-0.15	-1,561.04	4,865.24	13,434.06	13,378.57	55.49	242.092	
15,500.00	6,921.11	6,325.13	6,081.07	140.24	25.87	-0.15	-1,561.05	4,864.95	13,533.91	13,478.35	55.55	243.626	
15,600.00	6,920.79	6,319.61	6,075.56	141.81	25.86	-0.15	-1,561.07	4,864.66	13,633.75	13,578.14	55.61	245.153	
15,700.00	6,920.47	6,314.08	6,070.04	143.38	25.85	-0.15	-1,561.09	4,864.37	13,733.60	13,677.92	55.67	246.675	
15,800.00	6,920.14	6,308.55	6,064.52	144.95	25.84	-0.15	-1,561.10	4,864.08	13,833.45	13,777.71	55.74	248.190	
15,900.00	6,919.82	6,303.03	6,059.00	146.52	25.84	-0.15	-1,561.11	4,863.79	13,933.29	13,877.49	55.80	249.699	
16,000.00	6,919.50	6,297.50	6,053.48	148.09	25.83	-0.15	-1,561.13	4,863.51	14,033.14	13,977.27	55.86	251.202	
16,100.00	6,919.18	6,291.98	6,047.96	149.66	25.82	-0.15	-1,561.14	4,863.22	14,132.99	14,077.06	55.93	252.698	
16,200.00	6,918.85	6,286.45	6,042.44	151.24	25.81	-0.15	-1,561.15	4,862.93	14,232.83	14,176.84	55.99	254.189	
16,300.00	6,918.53	6,280.93	6,036.93	152.81	25.80	-0.15	-1,561.17	4,862.64	14,332.68	14,276.62	56.06	255.673	
16,400.00	6,918.21	6,275.40	6,031.41	154.38	25.80	-0.15	-1,561.18	4,862.35	14,432.52	14,376.40	56.12	257.151	
16,500.00	6,917.88	6,269.87	6,025.89	155.96	25.79	-0.15	-1,561.19	4,862.06	14,532.37	14,476.18	56.19	258.623	
16,600.00	6,917.56	6,264.35	6,020.37	157.53	25.78	-0.15	-1,561.20	4,861.78	14,632.22	14,575.96	56.26	260.089	
16,700.00	6,917.24	6,258.83	6,014.86	159.11	25.77	-0.15	-1,561.21	4,861.49	14,732.06	14,675.74	56.33	261.548	
16,800.00	6,916.91	6,253.30	6,009.34	160.68	25.76	-0.15	-1,561.22	4,861.20	14,831.91	14,775.52	56.39	263.002	
16,900.00	6,916.59	6,247.78	6,003.82	162.26	25.76	-0.15	-1,561.22	4,860.91	14,931.76	14,875.29	56.46	264.449	
17,000.00	6,916.27	6,242.25	5,998.30	163.84	25.75	-0.15	-1,561.23	4,860.62	15,031.60	14,975.07	56.53	265.889	
17,100.00	6,915.95	6,236.73	5,992.79	165.41	25.74	-0.15	-1,561.24	4,860.34	15,131.45	15,074.85	56.60	267.324	
17,200.00	6,915.62	6,231.20	5,987.27	166.99	25.73	-0.15	-1,561.25	4,860.05	15,231.30	15,174.62	56.67	268.752	
17,300.00	6,915.30	6,225.68	5,981.76	168.57	25.73	-0.15	-1,561.25	4,859.76	15,331.14	15,274.40	56.75	270.174	
17,400.00	6,914.98	6,220.16	5,976.24	170.15	25.72	-0.15	-1,561.26	4,859.47	15,430.99	15,374.17	56.82	271.590	
17,500.00	6,914.65	6,214.63	5,970.72	171.73	25.71	-0.14	-1,561.26	4,859.18	15,530.84	15,473.95	56.89	273.000	
17,600.00	6,914.33	6,209.11	5,965.21	173.31	25.70	-0.14	-1,561.27	4,858.89	15,630.68	15,573.72	56.96	274.403	
17,700.00	6,914.01	6,203.59	5,959.69	174.89	25.69	-0.14	-1,561.27	4,858.61	15,730.53	15,673.49	57.04	275.800	
17,800.00	6,913.68	6,198.06	5,954.18	176.47	25.69	-0.14	-1,561.28	4,858.32	15,830.38	15,773.27	57.11	277.191	
17,900.00	6,913.36	6,192.54	5,948.66	178.05	25.68	-0.14	-1,561.28	4,858.03	15,930.22	15,873.04	57.18	278.576	
18,000.00	6,913.04	6,187.02	5,943.15	179.63	25.67	-0.14	-1,561.28	4,857.74	16,030.07	15,972.81	57.26	279.955	
18,100.00	6,912.72	6,181.50	5,937.63	181.21	25.66	-0.14	-1,561.28	4,857.45	16,129.92	16,072.58	57.34	281.327	
18,111.83	6,912.68	6,180.84	5,936.98	181.40	25.66	-0.14	-1,561.28	4,857.42	16,141.73	16,084.39	57.34	281.489	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #070 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	193.00	193.00	0.00	5.78	81.02	2,078.49	13,149.76	13,313.01				
54.25	54.25	247.25	247.25	0.02	7.41	19.47	2,078.49	13,149.76	13,312.90	13,305.48	7.42	1,793.193	
130.42	130.42	323.42	323.42	0.11	9.69	-7.69	2,078.49	13,149.76	13,312.55	13,302.75	9.80	1,357.826	
219.69	219.69	412.69	412.69	0.23	12.37	18.38	2,078.49	13,149.76	13,312.09	13,299.49	12.59	1,057.012	
308.67	308.67	501.77	501.67	0.35	15.04	9.47	2,078.49	13,149.76	13,311.57	13,296.20	15.38	865.649	
372.54	372.54	565.64	565.54	0.42	16.95	-90.72	2,078.49	13,149.76	13,311.38	13,294.01	17.36	766.580 CC	
454.00	453.99	647.09	646.99	0.51	19.39	-125.11	2,078.49	13,149.76	13,311.71	13,291.81	19.90	668.969	
544.00	543.93	737.04	736.93	0.74	22.08	-124.79	2,078.49	13,149.76	13,313.46	13,290.64	22.82	583.448	
667.00	666.63	878.55	878.39	1.13	26.33	-137.82	2,080.09	13,149.76	13,319.51	13,292.05	27.46	485.101	
756.00	755.27	982.54	982.34	1.44	29.44	-122.95	2,078.78	13,149.76	13,324.48	13,293.60	30.88	431.450	
850.00	848.62	1,042.03	1,041.62	1.79	31.22	-121.28	2,078.49	13,149.76	13,330.23	13,297.22	33.01	403.843	
942.00	939.50	1,132.90	1,132.50	2.14	33.95	-114.81	2,078.49	13,149.76	13,336.93	13,300.84	36.09	369.596	
1,033.00	1,028.89	1,222.29	1,221.89	2.52	36.63	-105.58	2,078.49	13,149.76	13,342.80	13,303.67	39.13	341.004	
1,123.00	1,117.00	1,321.15	1,320.69	2.90	39.59	-99.53	2,080.49	13,149.76	13,347.17	13,304.71	42.46	314.320	
1,214.00	1,206.00	1,426.25	1,425.77	3.29	42.74	-100.29	2,079.59	13,149.76	13,350.37	13,304.37	46.00	290.222	
1,309.00	1,298.75	1,536.18	1,535.65	3.71	46.03	-97.44	2,077.81	13,149.76	13,353.34	13,303.63	49.71	268.635	
1,403.00	1,390.39	1,584.10	1,583.39	4.13	47.47	-94.53	2,078.49	13,149.76	13,355.61	13,304.05	51.56	259.027	
1,498.00	1,482.88	1,676.59	1,675.88	4.56	50.24	-97.82	2,078.49	13,149.76	13,358.03	13,303.27	54.76	243.938	
1,592.00	1,573.82	1,770.85	1,770.10	5.00	53.06	-98.27	2,080.66	13,149.76	13,361.83	13,303.81	58.02	230.279	
1,687.00	1,665.32	1,879.82	1,879.04	5.46	56.33	-95.50	2,080.08	13,149.76	13,364.92	13,303.18	61.75	216.447	
1,876.00	1,847.35	2,041.37	2,040.35	6.38	61.17	-93.13	2,078.49	13,149.76	13,368.60	13,301.09	67.51	198.027	
1,970.00	1,937.87	2,131.89	2,130.87	6.84	63.88	-93.05	2,078.49	13,149.76	13,370.02	13,299.33	70.68	189.160	
2,064.00	2,028.42	2,222.44	2,221.42	7.30	66.59	-92.64	2,078.49	13,149.76	13,371.32	13,297.46	73.86	181.048	
2,159.00	2,119.97	2,327.00	2,325.93	7.77	69.73	-91.56	2,080.46	13,149.76	13,372.64	13,295.18	77.45	172.651	
2,348.00	2,302.44	2,547.82	2,546.68	8.69	76.34	-96.44	2,077.57	13,149.76	13,375.66	13,290.67	85.00	157.368	
2,443.00	2,394.41	2,588.73	2,587.41	9.15	77.57	-97.11	2,078.49	13,149.76	13,378.62	13,291.95	86.68	154.346	
2,537.00	2,485.45	2,679.77	2,678.45	9.61	80.30	-97.43	2,078.49	13,149.76	13,381.68	13,291.82	89.86	148.919	
2,632.00	2,577.48	2,776.51	2,775.15	10.07	83.20	-97.26	2,080.65	13,149.76	13,385.20	13,291.98	93.21	143.597	
2,727.00	2,669.50	2,888.63	2,887.25	10.53	86.56	-97.33	2,080.00	13,149.76	13,388.18	13,291.15	97.03	137.980	
2,821.00	2,760.56	3,000.00	2,998.38	10.98	89.89	-97.67	2,078.49	13,149.76	13,391.07	13,290.25	100.82	132.823 ES	
2,916.00	2,852.68	3,047.30	3,045.68	11.44	91.31	-97.81	2,078.49	13,149.76	13,394.21	13,291.52	102.69	130.433	
3,011.00	2,945.03	3,139.65	3,138.03	11.89	94.08	-97.82	2,078.49	13,149.76	13,397.33	13,291.42	105.90	126.504	
3,105.00	3,036.57	3,231.19	3,229.57	12.33	96.82	-103.50	2,078.49	13,149.76	13,401.38	13,292.29	109.08	122.855	
3,200.00	3,128.81	3,340.31	3,338.63	12.78	100.09	-106.77	2,080.39	13,149.76	13,407.89	13,295.09	112.80	118.865	
3,294.00	3,219.76	3,452.57	3,450.86	13.24	103.45	-107.23	2,079.24	13,149.76	13,414.84	13,298.23	116.61	115.037	
3,389.00	3,311.82	3,506.74	3,504.82	13.69	105.08	-106.34	2,078.49	13,149.76	13,421.61	13,302.93	118.69	113.085	
3,483.00	3,403.03	3,597.96	3,596.03	14.14	107.81	-106.07	2,078.49	13,149.76	13,428.13	13,306.27	121.86	110.192	
3,578.00	3,495.31	3,690.24	3,688.31	14.60	110.58	-105.66	2,078.49	13,149.76	13,434.47	13,309.39	125.07	107.414	
3,672.00	3,586.65	3,789.24	3,787.26	15.04	113.54	-104.65	2,080.62	13,149.76	13,440.87	13,312.39	128.48	104.617	
3,767.00	3,678.95	3,904.16	3,902.16	15.49	116.99	-104.28	2,079.84	13,149.76	13,446.50	13,314.13	132.37	101.586	
3,862.00	3,771.63	4,019.99	4,017.95	15.93	120.46	-104.70	2,078.13	13,149.76	13,451.54	13,315.27	136.27	98.713	
3,956.00	3,863.70	4,058.93	4,056.70	16.35	121.62	-104.43	2,078.49	13,149.76	13,456.37	13,318.51	137.85	97.615	
4,052.00	3,957.54	4,152.77	4,150.54	16.79	124.44	-105.60	2,078.49	13,149.76	13,461.73	13,320.64	141.09	95.410	
4,146.00	4,048.88	4,244.11	4,241.88	17.24	127.17	-105.64	2,078.49	13,149.76	13,467.87	13,323.60	144.27	93.352	
4,241.00	4,140.47	4,357.65	4,355.36	17.71	130.58	-103.08	2,080.27	13,149.76	13,474.70	13,326.56	148.14	90.961	
4,336.00	4,231.25	4,472.24	4,469.91	18.21	134.01	-99.89	2,078.95	13,149.76	13,480.23	13,328.17	152.06	88.651	
4,430.00	4,320.59	4,516.13	4,513.59	18.71	135.32	-101.55	2,078.49	13,149.76	13,485.75	13,331.88	153.87	87.644	
4,524.00	4,409.51	4,605.05	4,602.51	19.22	137.99	-105.12	2,078.49	13,149.76	13,493.19	13,336.15	157.04	85.923	
4,619.00	4,498.98	4,694.52	4,691.98	19.75	140.67	-105.91	2,078.49	13,149.76	13,502.22	13,341.99	160.23	84.266	
4,713.00	4,587.83	4,792.50	4,789.91	20.27	143.60	-106.16	2,080.61	13,149.76	13,511.63	13,347.95	163.67	82.553	
4,807.00	4,676.97	4,906.35	4,903.74	20.78	147.02	-104.98	2,079.82	13,149.76	13,519.88	13,352.30	167.58	80.676	
4,870.00	4,736.65	4,982.94	4,980.31	21.12	149.31	-104.72	2,078.78	13,149.76	13,525.11	13,354.90	170.21	79.460	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #070 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-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
4,933.00	4,796.58	5,060.12	5,057.46	21.46	151.62	-104.95	2,077.31	13,149.76	13,530.03	13,357.18	172.85	78.274	
5,027.00	4,886.13	5,081.97	5,079.13	21.96	152.28	-104.20	2,078.49	13,149.76	13,537.63	13,363.64	174.00	77.804	
5,121.00	4,976.11	5,171.95	5,169.11	22.45	154.98	-104.15	2,078.49	13,149.76	13,544.58	13,367.40	177.17	76.449	
5,216.00	5,068.11	5,268.03	5,265.14	22.91	157.85	-104.38	2,080.66	13,149.76	13,551.10	13,370.60	180.50	75.074	
5,341.00	5,190.11	5,425.81	5,422.89	23.49	162.58	-105.02	2,079.59	13,149.76	13,557.94	13,372.14	185.80	72.971	
5,436.00	5,283.20	5,546.70	5,543.74	23.91	166.20	-105.04	2,077.60	13,149.76	13,562.57	13,372.73	189.84	71.443	
5,499.00	5,345.03	5,541.18	5,538.03	24.19	166.04	-105.14	2,078.49	13,149.76	13,565.82	13,375.88	189.94	71.421	
5,561.00	5,405.97	5,602.11	5,598.97	24.45	167.86	-104.21	2,078.49	13,149.76	13,568.77	13,376.73	192.03	70.659	
5,624.00	5,467.97	5,664.12	5,660.97	24.72	169.72	-105.33	2,078.49	13,149.76	13,571.65	13,377.49	194.15	69.902	
5,687.00	5,530.05	5,726.20	5,723.05	24.99	171.58	-104.48	2,078.49	13,149.76	13,574.45	13,378.18	196.27	69.161	
5,750.00	5,592.20	5,799.95	5,796.75	25.25	173.79	-104.31	2,080.58	13,149.76	13,577.56	13,378.82	198.74	68.318	
5,813.00	5,654.42	5,881.05	5,877.83	25.51	176.22	-103.36	2,080.07	13,149.76	13,579.86	13,378.43	201.43	67.418	
5,876.00	5,716.68	5,962.36	5,959.13	25.76	178.66	-103.21	2,079.10	13,149.76	13,581.90	13,377.78	204.12	66.540	
5,939.00	5,778.99	6,043.89	6,040.62	26.01	181.10	-103.47	2,077.65	13,149.76	13,583.79	13,376.98	206.81	65.682	
6,065.00	5,903.86	6,100.31	6,096.86	26.51	182.79	-103.66	2,078.49	13,149.76	13,587.80	13,378.82	208.98	65.018	
6,128.00	5,966.41	6,162.87	6,159.41	26.74	184.67	-105.15	2,078.49	13,149.76	13,589.66	13,378.57	211.09	64.377	
6,191.00	6,029.04	6,225.49	6,222.04	26.97	186.54	-104.56	2,078.49	13,149.76	13,591.43	13,378.23	213.20	63.749	
6,254.00	6,091.75	6,300.06	6,296.56	27.20	188.78	-103.74	2,080.58	13,149.76	13,593.44	13,377.77	215.66	63.032	
6,348.00	6,185.46	6,422.89	6,419.36	27.52	192.46	-100.99	2,079.63	13,149.76	13,594.86	13,375.19	219.66	61.889	
6,390.00	6,227.36	6,477.87	6,474.32	27.61	194.11	-101.00	2,078.86	13,149.76	13,595.27	13,373.88	221.39	61.408	
6,400.00	6,237.33	6,490.96	6,487.41	27.61	194.50	-101.01	2,078.64	13,149.76	13,595.36	13,373.57	221.79	61.298	
6,490.00	6,327.12	6,518.00	6,514.23	27.66	195.31	-101.01	2,078.49	13,149.76	13,596.40	13,373.76	222.64	61.068	
6,500.00	6,337.09	6,518.00	6,514.23	27.66	195.31	-113.42	2,078.49	13,149.76	13,596.63	13,373.98	222.65	61.068 SF	
6,550.00	6,386.85	6,518.00	6,514.23	27.70	195.31	-150.01	2,078.49	13,149.76	13,600.22	13,377.56	222.67	61.079	
6,600.00	6,436.20	6,518.00	6,514.23	27.74	195.31	-162.86	2,078.49	13,149.76	13,607.95	13,385.27	222.69	61.108	
6,650.00	6,484.82	6,518.00	6,514.23	27.79	195.31	-168.75	2,078.49	13,149.76	13,619.76	13,397.05	222.70	61.156	
6,700.00	6,532.40	6,518.00	6,514.23	27.85	195.31	-172.08	2,078.49	13,149.76	13,635.55	13,412.83	222.72	61.223	
6,750.00	6,578.63	6,518.00	6,514.23	27.92	195.31	-174.25	2,078.49	13,149.76	13,655.22	13,432.49	222.73	61.308	
6,800.00	6,623.24	6,518.00	6,514.23	28.00	195.31	-175.80	2,078.49	13,149.76	13,678.63	13,455.89	222.75	61.409	
6,850.00	6,665.93	6,518.00	6,514.23	28.09	195.31	-177.01	2,078.49	13,149.76	13,705.61	13,482.85	222.76	61.527	
6,900.00	6,706.42	6,518.00	6,514.23	28.19	195.31	-178.02	2,078.49	13,149.76	13,735.96	13,513.19	222.77	61.661	
6,950.00	6,744.48	6,518.00	6,514.23	28.30	195.31	-178.92	2,078.49	13,149.76	13,769.47	13,546.69	222.78	61.809	
7,000.00	6,779.84	6,518.00	6,514.23	28.43	195.31	-179.79	2,078.49	13,149.76	13,805.91	13,583.12	222.78	61.970	
7,050.00	6,812.30	6,518.00	6,514.23	28.57	195.31	179.31	2,078.49	13,149.76	13,845.02	13,622.23	222.79	62.144	
7,100.00	6,841.63	6,518.00	6,514.23	28.73	195.31	178.31	2,078.49	13,149.76	13,886.53	13,663.74	222.79	62.329	
7,150.00	6,867.66	6,518.00	6,514.23	28.90	195.31	177.09	2,078.49	13,149.76	13,930.17	13,707.37	222.80	62.524	
7,200.00	6,890.22	6,518.00	6,514.23	29.08	195.31	175.50	2,078.49	13,149.76	13,975.62	13,752.82	222.80	62.727	
7,250.00	6,909.17	6,518.00	6,514.23	29.28	195.31	173.19	2,078.49	13,149.76	14,022.60	13,799.80	222.80	62.939	
7,300.00	6,924.38	6,518.00	6,514.23	29.49	195.31	169.41	2,078.49	13,149.76	14,070.78	13,847.98	222.79	63.156	
7,350.00	6,935.77	6,518.00	6,514.23	29.72	195.31	161.90	2,078.49	13,149.76	14,119.85	13,897.06	222.79	63.378	
7,400.00	6,943.25	6,518.00	6,514.23	29.97	195.31	141.36	2,078.49	13,149.76	14,169.49	13,946.71	222.78	63.603	
7,450.00	6,946.78	6,518.00	6,514.23	30.22	195.31	77.34	2,078.49	13,149.76	14,219.38	13,996.61	222.77	63.831	
7,471.54	6,947.08	6,518.00	6,514.23	30.34	195.31	52.08	2,078.49	13,149.76	14,240.87	14,018.11	222.76	63.929	
7,500.00	6,946.98	6,518.00	6,514.23	30.49	195.31	56.19	2,078.49	13,149.76	14,269.24	14,046.49	222.75	64.059	
7,600.00	6,946.65	6,518.00	6,514.23	31.07	195.31	65.88	2,078.49	13,149.76	14,368.74	14,146.03	222.71	64.518	
7,700.00	6,946.32	6,518.00	6,514.23	31.69	195.31	71.43	2,078.49	13,149.76	14,467.88	14,245.24	222.64	64.982	
7,800.00	6,945.99	6,518.00	6,514.23	32.35	195.31	74.97	2,078.49	13,149.76	14,566.56	14,344.00	222.56	65.450	
7,900.00	6,945.67	6,518.00	6,514.23	33.05	195.31	77.40	2,078.49	13,149.76	14,664.66	14,442.20	222.46	65.920	
8,000.00	6,945.34	6,518.00	6,514.23	33.79	195.31	79.16	2,078.49	13,149.76	14,762.08	14,539.73	222.35	66.393	
8,034.58	6,945.23	6,518.00	6,514.23	34.05	195.31	79.66	2,078.49	13,149.76	14,795.59	14,573.28	222.30	66.556	
8,100.00	6,945.02	6,518.00	6,514.23	34.57	195.31	79.66	2,078.49	13,149.76	14,858.89	14,636.67	222.22	66.865	
8,200.00	6,944.69	6,518.00	6,514.23	35.41	195.31	79.66	2,078.49	13,149.76	14,955.70	14,733.60	222.10	67.337	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #070 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,518.00	6,514.23	36.30	195.31	79.66	2,078.49	13,149.76	15,052.55	14,830.56	221.99	67.806	
8,400.00	6,944.05	6,518.00	6,514.23	37.25	195.31	79.66	2,078.49	13,149.76	15,149.45	14,927.56	221.89	68.275	
8,500.00	6,943.73	6,518.00	6,514.23	38.25	195.31	79.66	2,078.49	13,149.76	15,246.38	15,024.59	221.79	68.742	
8,600.00	6,943.40	6,518.00	6,514.23	39.29	195.31	79.66	2,078.49	13,149.76	15,343.35	15,121.65	221.70	69.208	
8,700.00	6,943.08	6,518.00	6,514.23	40.37	195.31	79.66	2,078.49	13,149.76	15,440.36	15,218.74	221.61	69.672	
8,800.00	6,942.76	6,518.00	6,514.23	41.49	195.31	79.66	2,078.49	13,149.76	15,537.41	15,315.87	221.53	70.135	
8,900.00	6,942.43	6,518.00	6,514.23	42.64	195.31	79.66	2,078.49	13,149.76	15,634.49	15,413.03	221.46	70.597	
9,000.00	6,942.11	6,518.00	6,514.23	43.82	195.31	79.66	2,078.49	13,149.76	15,731.61	15,510.22	221.39	71.057	
9,100.00	6,941.79	6,518.00	6,514.23	45.03	195.31	79.66	2,078.49	13,149.76	15,828.77	15,607.44	221.33	71.516	
9,200.00	6,941.46	6,518.00	6,514.23	46.27	195.31	79.66	2,078.49	13,149.76	15,925.96	15,704.69	221.27	71.974	
9,300.00	6,941.14	6,518.00	6,514.23	47.53	195.31	79.66	2,078.49	13,149.76	16,023.19	15,801.96	221.22	72.430	
9,400.00	6,940.82	6,518.00	6,514.23	48.81	195.31	79.66	2,078.49	13,149.76	16,120.45	15,899.27	221.18	72.884	
9,500.00	6,940.50	6,518.00	6,514.23	50.11	195.31	79.66	2,078.49	13,149.76	16,217.74	15,996.60	221.14	73.338	
9,600.00	6,940.17	6,518.00	6,514.23	51.43	195.31	79.66	2,078.49	13,149.76	16,315.07	16,093.97	221.10	73.790	
9,700.00	6,939.85	6,518.00	6,514.23	52.76	195.31	79.66	2,078.49	13,149.76	16,412.43	16,191.36	221.07	74.240	
9,800.00	6,939.53	6,518.00	6,514.23	54.11	195.31	79.66	2,078.49	13,149.76	16,509.82	16,288.77	221.05	74.690	
9,900.00	6,939.20	6,518.00	6,514.23	55.48	195.31	79.66	2,078.49	13,149.76	16,607.24	16,386.22	221.03	75.137	
10,000.00	6,938.88	6,518.00	6,514.23	56.86	195.31	79.66	2,078.49	13,149.76	16,704.69	16,483.68	221.01	75.584	
10,100.00	6,938.56	6,518.00	6,514.23	58.25	195.31	79.66	2,078.49	13,149.76	16,802.17	16,581.18	221.00	76.029	
10,200.00	6,938.23	6,518.00	6,514.23	59.65	195.31	79.66	2,078.49	13,149.76	16,899.69	16,678.70	220.99	76.473	
10,300.00	6,937.91	6,518.00	6,514.23	61.06	195.31	79.66	2,078.49	13,149.76	16,997.23	16,776.24	220.99	76.915	
10,400.00	6,937.59	6,518.00	6,514.23	62.48	195.31	79.66	2,078.49	13,149.76	17,094.79	16,873.81	220.99	77.356	
10,500.00	6,937.27	6,518.00	6,514.23	63.91	195.31	79.66	2,078.49	13,149.76	17,192.39	16,971.40	220.99	77.796	
10,600.00	6,936.94	6,518.00	6,514.23	65.34	195.31	79.66	2,078.49	13,149.76	17,290.02	17,069.01	221.00	78.235	
10,700.00	6,936.62	6,518.00	6,514.23	66.79	195.31	79.66	2,078.49	13,149.76	17,387.67	17,166.65	221.02	78.672	
10,800.00	6,936.30	6,518.00	6,514.23	68.24	195.31	79.66	2,078.49	13,149.76	17,485.34	17,264.31	221.03	79.108	
10,900.00	6,935.97	6,518.00	6,514.23	69.70	195.31	79.66	2,078.49	13,149.76	17,583.05	17,362.00	221.05	79.542	
11,000.00	6,935.65	6,518.00	6,514.23	71.17	195.31	79.66	2,078.49	13,149.76	17,680.78	17,459.70	221.08	79.976	
11,100.00	6,935.33	6,518.00	6,514.23	72.64	195.31	79.66	2,078.49	13,149.76	17,778.53	17,557.43	221.10	80.408	
11,200.00	6,935.00	6,518.00	6,514.23	74.11	195.31	79.66	2,078.49	13,149.76	17,876.31	17,655.18	221.14	80.839	
11,300.00	6,934.68	6,518.00	6,514.23	75.60	195.31	79.66	2,078.49	13,149.76	17,974.12	17,752.95	221.17	81.268	
11,400.00	6,934.36	6,518.00	6,514.23	77.08	195.31	79.66	2,078.49	13,149.76	18,071.94	17,850.74	221.21	81.697	
11,500.00	6,934.03	6,518.00	6,514.23	78.57	195.31	79.66	2,078.49	13,149.76	18,169.80	17,948.55	221.25	82.124	
11,600.00	6,933.71	6,518.00	6,514.23	80.07	195.31	79.66	2,078.49	13,149.76	18,267.67	18,046.38	221.29	82.550	
11,700.00	6,933.39	6,518.00	6,514.23	81.57	195.31	79.66	2,078.49	13,149.76	18,365.57	18,144.23	221.34	82.975	
11,800.00	6,933.07	6,518.00	6,514.23	83.07	195.31	79.66	2,078.49	13,149.76	18,463.49	18,242.10	221.39	83.398	
11,900.00	6,932.74	6,518.00	6,514.23	84.58	195.31	79.66	2,078.49	13,149.76	18,561.43	18,339.99	221.44	83.821	
12,000.00	6,932.42	6,518.00	6,514.23	86.09	195.31	79.66	2,078.49	13,149.76	18,659.40	18,437.90	221.50	84.242	
12,100.00	6,932.10	6,518.00	6,514.23	87.60	195.31	79.66	2,078.49	13,149.76	18,757.38	18,535.83	221.55	84.663	
12,200.00	6,931.77	6,518.00	6,514.23	89.12	195.31	79.66	2,078.49	13,149.76	18,855.39	18,633.77	221.61	85.082	
12,300.00	6,931.45	6,518.00	6,514.23	90.64	195.31	79.66	2,078.49	13,149.76	18,953.42	18,731.74	221.68	85.500	
12,400.00	6,931.13	6,518.00	6,514.23	92.16	195.31	79.66	2,078.49	13,149.76	19,051.46	18,829.72	221.74	85.917	
12,500.00	6,930.80	6,518.00	6,514.23	93.69	195.31	79.66	2,078.49	13,149.76	19,149.53	18,927.72	221.81	86.333	
12,600.00	6,930.48	6,518.00	6,514.23	95.22	195.31	79.66	2,078.49	13,149.76	19,247.62	19,025.74	221.88	86.748	
12,700.00	6,930.16	6,518.00	6,514.23	96.75	195.31	79.66	2,078.49	13,149.76	19,345.73	19,123.78	221.95	87.162	
12,800.00	6,929.84	6,518.00	6,514.23	98.28	195.31	79.66	2,078.49	13,149.76	19,443.86	19,221.83	222.03	87.574	
12,900.00	6,929.51	6,518.00	6,514.23	99.82	195.31	79.66	2,078.49	13,149.76	19,542.00	19,319.90	222.10	87.986	
13,000.00	6,929.19	6,518.00	6,514.23	101.35	195.31	79.66	2,078.49	13,149.76	19,640.17	19,417.99	222.18	88.397	
13,100.00	6,928.87	6,518.00	6,514.23	102.89	195.31	79.66	2,078.49	13,149.76	19,738.35	19,516.09	222.26	88.807	
13,200.00	6,928.54	6,518.00	6,514.23	104.43	195.31	79.66	2,078.49	13,149.76	19,836.55	19,614.21	222.34	89.216	
13,300.00	6,928.22	6,518.00	6,514.23	105.97	195.31	79.66	2,078.49	13,149.76	19,934.77	19,712.34	222.43	89.623	
13,400.00	6,927.90	6,518.00	6,514.23	107.52	195.31	79.66	2,078.49	13,149.76	20,033.01	19,810.50	222.51	90.030	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #070 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 500-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)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,518.00	6,514.23	109.06	195.31	79.66	2,078.49	13,149.76	20,131.26	19,908.66	222.60	90.436	
13,600.00	6,927.25	6,518.00	6,514.23	110.61	195.31	79.66	2,078.49	13,149.76	20,229.54	20,006.84	222.69	90.841	
13,700.00	6,926.93	6,518.00	6,514.23	112.16	195.31	79.66	2,078.49	13,149.76	20,327.82	20,105.04	222.78	91.246	
13,800.00	6,926.61	6,518.00	6,514.23	113.71	195.31	79.66	2,078.49	13,149.76	20,426.13	20,203.25	222.87	91.649	
13,900.00	6,926.28	6,518.00	6,514.23	115.26	195.31	79.66	2,078.49	13,149.76	20,524.45	20,301.48	222.97	92.051	
14,000.00	6,925.96	6,518.00	6,514.23	116.82	195.31	79.66	2,078.49	13,149.76	20,622.79	20,399.72	223.06	92.453	
14,100.00	6,925.64	6,518.00	6,514.23	118.37	195.31	79.66	2,078.49	13,149.76	20,721.14	20,497.98	223.16	92.853	
14,200.00	6,925.31	6,518.00	6,514.23	119.93	195.31	79.66	2,078.49	13,149.76	20,819.51	20,596.25	223.26	93.253	
14,300.00	6,924.99	6,518.00	6,514.23	121.48	195.31	79.66	2,078.49	13,149.76	20,917.89	20,694.54	223.36	93.652	
14,400.00	6,924.67	6,518.00	6,514.23	123.04	195.31	79.66	2,078.49	13,149.76	21,016.29	20,792.84	223.46	94.050	
14,500.00	6,924.34	6,518.00	6,514.23	124.60	195.31	79.66	2,078.49	13,149.76	21,114.71	20,891.15	223.56	94.447	
14,600.00	6,924.02	6,518.00	6,514.23	126.16	195.31	79.66	2,078.49	13,149.76	21,213.14	20,989.47	223.66	94.844	
14,700.00	6,923.70	6,518.00	6,514.23	127.72	195.31	79.66	2,078.49	13,149.76	21,311.58	21,087.81	223.77	95.239	
14,800.00	6,923.38	6,518.00	6,514.23	129.28	195.31	79.66	2,078.49	13,149.76	21,410.04	21,186.17	223.87	95.634	
14,900.00	6,923.05	6,518.00	6,514.23	130.85	195.31	79.66	2,078.49	13,149.76	21,508.51	21,284.53	223.98	96.028	
15,000.00	6,922.73	6,518.00	6,514.23	132.41	195.31	79.66	2,078.49	13,149.76	21,607.00	21,382.91	224.09	96.422	
15,100.00	6,922.41	6,518.00	6,514.23	133.97	195.31	79.66	2,078.49	13,149.76	21,705.50	21,481.31	224.20	96.814	
15,200.00	6,922.08	6,518.00	6,514.23	135.54	195.31	79.66	2,078.49	13,149.76	21,804.02	21,579.71	224.31	97.206	
15,300.00	6,921.76	6,518.00	6,514.23	137.11	195.31	79.66	2,078.49	13,149.76	21,902.54	21,678.13	224.42	97.597	
15,400.00	6,921.44	6,518.00	6,514.23	138.67	195.31	79.66	2,078.49	13,149.76	22,001.09	21,776.56	224.53	97.987	
15,500.00	6,921.11	6,518.00	6,514.23	140.24	195.31	79.66	2,078.49	13,149.76	22,099.64	21,875.00	224.64	98.377	
15,600.00	6,920.79	6,518.00	6,514.23	141.81	195.31	79.66	2,078.49	13,149.76	22,198.21	21,973.45	224.76	98.766	
15,700.00	6,920.47	6,518.00	6,514.23	143.38	195.31	79.66	2,078.49	13,149.76	22,296.79	22,071.92	224.87	99.154	
15,800.00	6,920.14	6,518.00	6,514.23	144.95	195.31	79.66	2,078.49	13,149.76	22,395.38	22,170.39	224.99	99.542	
15,900.00	6,919.82	6,518.00	6,514.23	146.52	195.31	79.66	2,078.49	13,149.76	22,493.99	22,268.88	225.10	99.928	
16,000.00	6,919.50	6,518.00	6,514.23	148.09	195.31	79.66	2,078.49	13,149.76	22,592.60	22,367.38	225.22	100.315	
16,100.00	6,919.18	6,518.00	6,514.23	149.66	195.31	79.66	2,078.49	13,149.76	22,691.23	22,465.90	225.34	100.700	
16,200.00	6,918.85	6,518.00	6,514.23	151.24	195.31	79.66	2,078.49	13,149.76	22,789.87	22,564.42	225.45	101.085	
16,300.00	6,918.53	6,518.00	6,514.23	152.81	195.31	79.66	2,078.49	13,149.76	22,888.53	22,662.95	225.57	101.469	
16,400.00	6,918.21	6,518.00	6,514.23	154.38	195.31	79.66	2,078.49	13,149.76	22,987.19	22,761.50	225.69	101.852	
16,500.00	6,917.88	6,518.00	6,514.23	155.96	195.31	79.66	2,078.49	13,149.76	23,085.87	22,860.06	225.81	102.235	
16,600.00	6,917.56	6,518.00	6,514.23	157.53	195.31	79.66	2,078.49	13,149.76	23,184.55	22,958.62	225.93	102.617	
16,700.00	6,917.24	6,518.00	6,514.23	159.11	195.31	79.66	2,078.49	13,149.76	23,283.25	23,057.20	226.05	102.999	
16,800.00	6,916.91	6,518.00	6,514.23	160.68	195.31	79.66	2,078.49	13,149.76	23,381.96	23,155.79	226.18	103.380	
16,900.00	6,916.59	6,518.00	6,514.23	162.26	195.31	79.66	2,078.49	13,149.76	23,480.68	23,254.39	226.30	103.760	
17,000.00	6,916.27	6,518.00	6,514.23	163.84	195.31	79.66	2,078.49	13,149.76	23,579.42	23,352.99	226.42	104.140	
17,100.00	6,915.95	6,518.00	6,514.23	165.41	195.31	79.66	2,078.49	13,149.76	23,678.16	23,451.61	226.54	104.519	
17,200.00	6,915.62	6,518.00	6,514.23	166.99	195.31	79.66	2,078.49	13,149.76	23,776.91	23,550.24	226.67	104.897	
17,300.00	6,915.30	6,518.00	6,514.23	168.57	195.31	79.66	2,078.49	13,149.76	23,875.67	23,648.88	226.79	105.275	
17,400.00	6,914.98	6,518.00	6,514.23	170.15	195.31	79.66	2,078.49	13,149.76	23,974.45	23,747.53	226.92	105.652	
17,500.00	6,914.65	6,518.00	6,514.23	171.73	195.31	79.66	2,078.49	13,149.76	24,073.23	23,846.19	227.04	106.029	
17,600.00	6,914.33	6,518.00	6,514.23	173.31	195.31	79.66	2,078.49	13,149.76	24,172.02	23,944.85	227.17	106.405	
17,700.00	6,914.01	6,518.00	6,514.23	174.89	195.31	79.66	2,078.49	13,149.76	24,270.83	24,043.53	227.30	106.781	
17,800.00	6,913.68	6,518.00	6,514.23	176.47	195.31	79.66	2,078.49	13,149.76	24,369.64	24,142.22	227.42	107.155	
17,900.00	6,913.36	6,518.00	6,514.23	178.05	195.31	79.66	2,078.49	13,149.76	24,468.46	24,240.91	227.55	107.530	
18,000.00	6,913.04	6,518.00	6,514.23	179.63	195.31	79.66	2,078.49	13,149.76	24,567.30	24,339.62	227.68	107.904	
18,100.00	6,912.72	6,518.00	6,514.23	181.21	195.31	79.66	2,078.49	13,149.76	24,666.14	24,438.33	227.81	108.277	
18,111.83	6,912.68	6,518.00	6,514.23	181.40	195.31	79.66	2,078.49	13,149.76	24,677.83	24,450.01	227.82	108.321	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	107.15	-953.33	3,089.87	3,234.23				
54.25	54.25	0.00	0.00	0.02	0.00	45.60	-953.33	3,089.87	3,233.53				
130.42	130.42	64.68	64.68	0.11	0.11	18.44	-953.41	3,089.87	3,233.23	3,233.02	0.21	N/A	
219.69	219.69	152.45	152.45	0.23	0.36	44.52	-953.75	3,089.84	3,232.91	3,232.34	0.56	5,744.407	
308.67	308.67	245.45	245.44	0.35	0.69	35.63	-954.37	3,089.72	3,232.57	3,231.59	0.99	3,277.488	
454.00	453.99	400.01	400.00	0.51	1.23	-98.94	-955.67	3,088.99	3,232.07	3,230.37	1.69	1,911.210	
469.12	469.11	415.38	415.37	0.55	1.28	-98.81	-955.81	3,088.90	3,232.06	3,230.27	1.79	1,810.592	
544.00	543.93	491.46	491.44	0.74	1.55	-98.67	-956.53	3,088.41	3,232.23	3,229.98	2.25	1,437.714	
667.00	666.63	615.25	615.22	1.13	1.98	-111.80	-957.80	3,087.53	3,234.22	3,231.13	3.09	1,046.504	
756.00	755.27	704.85	704.82	1.44	2.30	-97.08	-958.74	3,086.87	3,235.80	3,232.07	3.72	869.342	
850.00	848.62	796.75	796.71	1.79	2.62	-95.66	-959.61	3,086.22	3,236.62	3,232.22	4.39	736.437	
942.00	939.50	885.25	885.21	2.14	2.93	-89.54	-960.35	3,085.69	3,236.86	3,231.79	5.07	638.835	
1,033.00	1,028.89	975.69	975.64	2.52	3.25	-80.68	-961.00	3,085.21	3,235.00	3,229.25	5.76	561.760	
1,123.00	1,117.00	1,066.68	1,066.63	2.90	3.56	-74.89	-961.56	3,084.70	3,230.68	3,224.22	6.46	500.150	
1,214.00	1,206.00	1,157.72	1,157.66	3.29	3.88	-75.88	-962.08	3,084.11	3,225.37	3,218.20	7.17	449.934	
1,309.00	1,298.75	1,251.30	1,251.25	3.71	4.21	-73.35	-962.41	3,083.53	3,219.29	3,211.38	7.91	406.948	
1,403.00	1,390.39	1,341.31	1,341.26	4.13	4.53	-70.70	-962.50	3,083.04	3,212.20	3,203.56	8.64	371.715	
1,498.00	1,482.88	1,431.73	1,431.67	4.56	4.84	-74.35	-962.46	3,082.67	3,205.14	3,195.76	9.38	341.562	
1,592.00	1,573.82	1,523.48	1,523.42	5.00	5.16	-75.30	-962.37	3,082.29	3,198.34	3,188.19	10.14	315.293	
1,687.00	1,665.32	1,613.86	1,613.80	5.46	5.48	-72.81	-962.34	3,081.92	3,190.66	3,179.75	10.92	292.268	
1,876.00	1,847.35	1,795.36	1,795.30	6.38	6.11	-71.08	-962.53	3,081.15	3,173.61	3,161.14	12.47	254.574	
1,970.00	1,937.87	1,887.34	1,887.27	6.84	6.44	-71.33	-962.63	3,080.75	3,164.78	3,151.54	13.24	238.963	
2,064.00	2,028.42	1,980.46	1,980.40	7.30	6.76	-71.21	-962.74	3,080.28	3,155.96	3,141.93	14.03	225.006	
2,159.00	2,119.97	2,073.05	2,072.99	7.77	7.09	-70.43	-962.83	3,079.76	3,146.82	3,132.01	14.81	212.455	
2,348.00	2,302.44	2,259.46	2,259.39	8.69	7.74	-75.85	-963.24	3,078.50	3,130.81	3,114.43	16.38	191.102	
2,443.00	2,394.41	2,350.31	2,350.24	9.15	8.06	-76.85	-963.63	3,077.82	3,124.37	3,107.21	17.16	182.083	
2,537.00	2,485.45	2,437.73	2,437.65	9.61	8.37	-77.46	-963.99	3,077.23	3,118.44	3,100.52	17.92	174.032	
2,632.00	2,577.48	2,523.03	2,522.95	10.07	8.66	-77.55	-964.35	3,076.81	3,112.77	3,094.09	18.68	166.668	
2,727.00	2,669.50	2,607.35	2,607.27	10.53	8.96	-77.87	-964.76	3,076.59	3,107.43	3,088.00	19.43	159.924	
2,821.00	2,760.56	2,698.43	2,698.35	10.98	9.28	-78.50	-965.27	3,076.46	3,102.44	3,082.24	20.20	153.560	
2,916.00	2,852.68	2,789.37	2,789.29	11.44	9.60	-78.95	-965.83	3,076.34	3,097.73	3,076.75	20.98	147.664	
3,011.00	2,945.03	2,880.76	2,880.68	11.89	9.92	-79.19	-966.49	3,076.25	3,093.39	3,071.64	21.75	142.240	
3,105.00	3,036.57	2,976.34	2,976.25	12.33	10.25	-85.15	-967.30	3,076.10	3,090.36	3,067.84	22.52	137.212	
3,200.00	3,128.81	3,079.02	3,078.93	12.78	10.61	-88.84	-968.17	3,075.71	3,088.91	3,065.57	23.34	132.361	
3,294.00	3,219.76	3,175.19	3,175.10	13.24	10.95	-89.64	-968.81	3,075.09	3,088.03	3,063.90	24.13	127.951	
3,389.00	3,311.82	3,265.08	3,264.98	13.69	11.26	-89.05	-969.21	3,074.49	3,087.16	3,062.25	24.91	123.922	
3,483.00	3,403.03	3,351.84	3,351.74	14.14	11.57	-89.08	-969.33	3,074.05	3,086.31	3,060.64	25.67	120.229	
3,578.00	3,495.31	3,443.05	3,442.94	14.60	11.89	-88.95	-969.27	3,073.73	3,085.55	3,059.11	26.45	116.676	
3,672.00	3,586.65	3,536.11	3,536.01	15.04	12.21	-88.27	-969.06	3,073.35	3,084.59	3,057.37	27.22	113.316	
3,767.00	3,678.95	3,627.79	3,627.68	15.49	12.53	-88.18	-968.82	3,072.98	3,083.46	3,055.47	28.00	110.136	
3,862.00	3,771.63	3,719.16	3,719.05	15.93	12.85	-88.77	-968.74	3,072.62	3,082.50	3,053.74	28.76	107.187	
3,956.00	3,863.70	3,800.00	3,799.89	16.35	13.13	-88.74	-969.41	3,072.32	3,081.80	3,052.34	29.46	104.595	
4,000.44	3,907.20	3,837.04	3,836.92	16.56	13.26	-89.44	-969.97	3,072.28	3,081.66	3,051.86	29.80	103.424	CC
4,052.00	3,957.54	3,873.62	3,873.50	16.79	13.39	-90.17	-970.59	3,072.40	3,081.85	3,051.69	30.16	102.186	
4,146.00	4,048.88	3,949.76	3,949.62	17.24	13.66	-90.51	-972.08	3,073.05	3,082.91	3,052.03	30.87	99.861	
4,241.00	4,140.47	4,028.38	4,028.21	17.71	13.93	-88.29	-973.89	3,073.99	3,083.89	3,052.27	31.62	97.531	
4,336.00	4,231.25	4,100.00	4,099.80	18.21	14.18	-85.41	-975.69	3,075.26	3,084.11	3,051.75	32.36	95.298	
4,353.58	4,247.98	4,112.50	4,112.30	18.30	14.23	-85.79	-976.01	3,075.53	3,084.09	3,051.59	32.50	94.896	ES
4,430.00	4,320.59	4,167.43	4,167.19	18.71	14.42	-87.40	-977.51	3,076.92	3,084.71	3,051.61	33.10	93.204	
4,524.00	4,409.51	4,238.75	4,238.44	19.22	14.67	-91.27	-979.61	3,079.17	3,087.56	3,053.70	33.85	91.204	
4,619.00	4,498.98	4,316.06	4,315.66	19.75	14.94	-92.39	-982.17	3,081.98	3,092.36	3,057.71	34.65	89.255	
4,713.00	4,587.83	4,400.00	4,399.48	20.27	15.23	-92.90	-985.06	3,085.27	3,097.77	3,062.31	35.45	87.381	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS **Offset Well Error:** 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,807.00	4,676.97	4,488.56	4,487.91	20.78	15.55	-92.06	-988.10	3,088.85	3,103.11	3,066.84	36.27	85.562	
4,870.00	4,736.65	4,551.32	4,550.59	21.12	15.77	-92.04	-990.27	3,091.37	3,106.52	3,069.70	36.83	84.350	
4,933.00	4,796.58	4,615.40	4,614.58	21.46	15.99	-92.47	-992.50	3,093.88	3,109.88	3,072.49	37.39	83.175	
5,027.00	4,886.13	4,713.19	4,712.24	21.96	16.34	-92.20	-995.96	3,097.55	3,114.72	3,076.49	38.23	81.470	
5,121.00	4,976.11	4,817.02	4,815.95	22.45	16.70	-92.47	-999.65	3,101.10	3,119.13	3,080.05	39.08	79.804	
5,216.00	5,068.11	4,921.93	4,920.74	22.91	17.07	-92.96	-1,003.63	3,104.25	3,123.09	3,083.18	39.92	78.243	
5,341.00	5,190.11	5,052.66	5,051.30	23.49	17.53	-93.85	-1,009.01	3,107.78	3,127.95	3,087.01	40.95	76.391	
5,436.00	5,283.20	5,147.18	5,145.71	23.91	17.86	-94.05	-1,013.02	3,110.20	3,131.56	3,089.86	41.70	75.101	
5,499.00	5,345.03	5,208.59	5,207.05	24.19	18.08	-94.31	-1,015.59	3,111.79	3,133.97	3,091.79	42.19	74.288	
5,561.00	5,405.97	5,272.03	5,270.41	24.45	18.30	-93.50	-1,018.20	3,113.41	3,136.23	3,093.56	42.68	73.490	
5,624.00	5,467.97	5,336.42	5,334.72	24.72	18.53	-94.73	-1,020.83	3,115.01	3,138.48	3,095.31	43.17	72.704	
5,687.00	5,530.05	5,400.76	5,398.99	24.99	18.75	-93.98	-1,023.51	3,116.58	3,140.70	3,097.04	43.66	71.941	
5,750.00	5,592.20	5,463.90	5,462.06	25.25	18.97	-93.89	-1,026.15	3,118.09	3,142.77	3,098.63	44.14	71.204	
5,813.00	5,654.42	5,527.85	5,525.94	25.51	19.20	-93.02	-1,028.79	3,119.60	3,144.70	3,100.08	44.62	70.481	
5,876.00	5,716.68	5,592.85	5,590.86	25.76	19.43	-92.95	-1,031.48	3,121.10	3,146.49	3,101.39	45.10	69.768	
5,939.00	5,778.99	5,656.14	5,654.08	26.01	19.65	-93.29	-1,034.09	3,122.52	3,148.24	3,102.67	45.57	69.082	
6,065.00	5,903.86	5,781.06	5,778.87	26.51	20.09	-93.65	-1,039.17	3,125.31	3,151.72	3,105.22	46.50	67.782	
6,128.00	5,966.41	5,841.96	5,839.70	26.74	20.30	-95.20	-1,041.60	3,126.69	3,153.53	3,106.59	46.95	67.173	
6,191.00	6,029.04	5,902.58	5,900.26	26.97	20.51	-94.66	-1,043.95	3,128.10	3,155.41	3,108.02	47.39	66.585	
6,254.00	6,091.75	5,969.68	5,967.29	27.20	20.75	-93.87	-1,046.52	3,129.64	3,157.12	3,109.27	47.85	65.980	
6,348.00	6,185.46	6,067.12	6,064.64	27.52	21.09	-91.16	-1,050.33	3,131.75	3,159.20	3,110.69	48.51	65.119	
6,390.00	6,227.36	6,109.34	6,106.82	27.61	21.24	-91.18	-1,051.98	3,132.64	3,160.01	3,111.27	48.74	64.830	
6,400.00	6,237.33	6,118.78	6,116.25	27.61	21.27	-91.19	-1,052.35	3,132.84	3,160.21	3,111.43	48.78	64.784	
6,490.00	6,327.12	6,200.00	6,197.39	27.66	21.56	-91.23	-1,055.40	3,134.63	3,162.04	3,112.93	49.11	64.388	
6,500.00	6,337.09	6,212.69	6,210.06	27.66	21.60	-103.64	-1,055.86	3,134.91	3,162.33	3,113.17	49.16	64.327	
6,550.00	6,386.85	6,258.08	6,255.42	27.70	21.76	-140.21	-1,057.43	3,135.98	3,166.21	3,116.86	49.35	64.160	
6,600.00	6,436.20	6,303.12	6,300.42	27.74	21.92	-152.98	-1,058.88	3,137.10	3,174.09	3,124.55	49.54	64.070	
6,650.00	6,484.82	6,348.81	6,346.08	27.79	22.08	-158.72	-1,060.26	3,138.27	3,185.91	3,136.17	49.74	64.050 SF	
6,700.00	6,532.40	6,393.42	6,390.65	27.85	22.23	-161.85	-1,061.52	3,139.45	3,201.58	3,151.64	49.94	64.106	
6,750.00	6,578.63	6,439.70	6,436.90	27.92	22.39	-163.74	-1,062.73	3,140.68	3,220.98	3,170.82	50.15	64.222	
6,800.00	6,623.24	6,484.76	6,481.93	28.00	22.55	-164.94	-1,063.76	3,141.86	3,243.95	3,193.58	50.37	64.408	
6,850.00	6,665.93	6,532.70	6,529.85	28.09	22.72	-165.70	-1,064.68	3,143.05	3,270.34	3,219.74	50.59	64.641	
6,900.00	6,706.42	6,580.73	6,577.86	28.19	22.89	-166.15	-1,065.36	3,144.12	3,299.91	3,249.09	50.82	64.930	
6,950.00	6,744.48	6,627.35	6,624.47	28.30	23.05	-166.36	-1,065.80	3,145.02	3,332.48	3,281.43	51.05	65.279	
7,000.00	6,779.84	6,671.78	6,668.89	28.43	23.20	-166.33	-1,066.05	3,145.72	3,367.86	3,316.59	51.27	65.689	
7,050.00	6,812.30	6,712.65	6,709.76	28.57	23.34	-166.08	-1,066.13	3,146.25	3,405.83	3,354.35	51.48	66.161	
7,100.00	6,841.63	6,747.62	6,744.73	28.73	23.47	-165.55	-1,066.14	3,146.62	3,446.18	3,394.52	51.66	66.705	
7,150.00	6,867.66	6,779.20	6,776.30	28.90	23.58	-164.68	-1,066.11	3,146.89	3,488.69	3,436.86	51.84	67.303	
7,200.00	6,890.22	6,806.63	6,803.73	29.08	23.67	-163.33	-1,066.04	3,147.08	3,533.10	3,481.11	51.99	67.956	
7,250.00	6,909.17	6,827.97	6,825.08	29.28	23.74	-161.20	-1,065.98	3,147.21	3,579.15	3,527.03	52.12	68.670	
7,300.00	6,924.38	6,845.41	6,842.52	29.49	23.80	-157.75	-1,065.91	3,147.29	3,626.56	3,574.32	52.23	69.429	
7,350.00	6,935.77	6,858.44	6,855.54	29.72	23.85	-151.61	-1,065.85	3,147.35	3,675.02	3,622.70	52.33	70.234	
7,400.00	6,943.25	6,866.93	6,864.04	29.97	23.88	-138.86	-1,065.81	3,147.38	3,724.25	3,671.86	52.40	71.078	
7,450.00	6,946.78	6,870.82	6,867.93	30.22	23.89	-107.43	-1,065.79	3,147.39	3,773.93	3,721.49	52.45	71.960	
7,471.54	6,947.08	6,871.06	6,868.17	30.34	23.89	-85.01	-1,065.79	3,147.39	3,795.39	3,742.93	52.46	72.349	
7,500.00	6,946.98	6,870.81	6,867.92	30.49	23.89	-84.28	-1,065.79	3,147.39	3,823.76	3,771.29	52.47	72.870	
7,600.00	6,946.65	6,869.92	6,867.03	31.07	23.89	-78.58	-1,065.80	3,147.39	3,923.61	3,871.10	52.51	74.719	
7,700.00	6,946.32	6,869.05	6,866.15	31.69	23.89	-5.62	-1,065.80	3,147.39	4,023.59	3,971.06	52.53	76.599	
7,800.00	6,945.99	6,868.18	6,865.29	32.35	23.88	77.75	-1,065.80	3,147.38	4,123.56	4,071.04	52.52	78.508	
7,900.00	6,945.67	6,867.33	6,864.44	33.05	23.88	83.79	-1,065.81	3,147.38	4,223.43	4,170.93	52.50	80.442	
8,000.00	6,945.34	6,866.50	6,863.60	33.79	23.88	85.82	-1,065.81	3,147.38	4,323.07	4,270.60	52.46	82.400	
8,034.58	6,945.23	6,866.21	6,863.32	34.05	23.88	86.24	-1,065.81	3,147.38	4,357.45	4,305.01	52.45	83.083	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,100.00	6,945.02	6,865.67	6,862.78	34.57	23.87	86.18	-1,065.82	3,147.37	4,422.47	4,370.06	52.41	84.375	
8,200.00	6,944.69	6,864.84	6,861.94	35.41	23.87	86.08	-1,065.82	3,147.37	4,521.88	4,469.51	52.37	86.348	
8,300.00	6,944.37	6,863.99	6,861.10	36.30	23.87	85.98	-1,065.83	3,147.37	4,621.31	4,568.98	52.33	88.319	
8,400.00	6,944.05	6,863.14	6,860.25	37.25	23.87	85.88	-1,065.83	3,147.36	4,720.76	4,668.48	52.29	90.288	
8,500.00	6,943.73	6,862.28	6,859.39	38.25	23.86	85.78	-1,065.83	3,147.36	4,820.24	4,767.99	52.25	92.255	
8,600.00	6,943.40	6,861.41	6,858.52	39.29	23.86	85.68	-1,065.84	3,147.36	4,919.74	4,867.52	52.22	94.219	
8,700.00	6,943.08	6,860.53	6,857.64	40.37	23.86	85.57	-1,065.84	3,147.35	5,019.26	4,967.07	52.19	96.181	
8,800.00	6,942.76	6,859.64	6,856.75	41.49	23.85	85.47	-1,065.85	3,147.35	5,118.80	5,066.64	52.16	98.141	
8,900.00	6,942.43	6,858.74	6,855.85	42.64	23.85	85.36	-1,065.85	3,147.35	5,218.35	5,166.22	52.13	100.098	
9,000.00	6,942.11	6,857.83	6,854.94	43.82	23.85	85.26	-1,065.85	3,147.34	5,317.92	5,265.81	52.11	102.052	
9,100.00	6,941.79	6,856.91	6,854.02	45.03	23.84	85.15	-1,065.86	3,147.34	5,417.51	5,365.42	52.09	104.003	
9,200.00	6,941.46	6,855.98	6,853.09	46.27	23.84	85.04	-1,065.86	3,147.34	5,517.11	5,465.04	52.07	105.952	
9,300.00	6,941.14	6,855.04	6,852.15	47.53	23.84	84.93	-1,065.87	3,147.33	5,616.73	5,564.67	52.06	107.898	
9,400.00	6,940.82	6,854.09	6,851.19	48.81	23.83	84.82	-1,065.87	3,147.33	5,716.36	5,664.32	52.04	109.840	
9,500.00	6,940.50	6,853.13	6,850.23	50.11	23.83	84.71	-1,065.88	3,147.33	5,816.00	5,763.97	52.03	111.779	
9,600.00	6,940.17	6,852.15	6,849.26	51.43	23.83	84.59	-1,065.88	3,147.32	5,915.65	5,863.63	52.02	113.715	
9,700.00	6,939.85	6,851.17	6,848.27	52.76	23.82	84.48	-1,065.88	3,147.32	6,015.32	5,963.31	52.01	115.648	
9,800.00	6,939.53	6,850.17	6,847.28	54.11	23.82	84.36	-1,065.89	3,147.31	6,115.00	6,062.99	52.01	117.577	
9,900.00	6,939.20	6,849.16	6,846.27	55.48	23.82	84.24	-1,065.89	3,147.31	6,214.68	6,162.68	52.00	119.503	
10,000.00	6,938.88	6,848.14	6,845.25	56.86	23.81	84.12	-1,065.90	3,147.30	6,314.38	6,262.38	52.00	121.425	
10,100.00	6,938.56	6,847.11	6,844.22	58.25	23.81	84.00	-1,065.90	3,147.30	6,414.08	6,362.08	52.00	123.343	
10,200.00	6,938.23	6,846.07	6,843.17	59.65	23.81	83.88	-1,065.91	3,147.29	6,513.80	6,461.80	52.00	125.258	
10,300.00	6,937.91	6,845.01	6,842.12	61.06	23.80	83.76	-1,065.91	3,147.29	6,613.52	6,561.52	52.01	127.169	
10,400.00	6,937.59	6,843.94	6,841.05	62.48	23.80	83.63	-1,065.91	3,147.28	6,713.25	6,661.24	52.01	129.075	
10,500.00	6,937.27	6,842.86	6,839.96	63.91	23.80	83.51	-1,065.92	3,147.28	6,812.99	6,760.98	52.02	130.978	
10,600.00	6,936.94	6,841.76	6,838.87	65.34	23.79	83.38	-1,065.92	3,147.27	6,912.74	6,860.71	52.02	132.877	
10,700.00	6,936.62	6,840.65	6,837.76	66.79	23.79	83.25	-1,065.93	3,147.27	7,012.49	6,960.46	52.03	134.771	
10,800.00	6,936.30	6,839.53	6,836.63	68.24	23.78	83.12	-1,065.93	3,147.26	7,112.25	7,060.21	52.04	136.662	
10,900.00	6,935.97	6,838.39	6,835.50	69.70	23.78	82.99	-1,065.94	3,147.26	7,212.02	7,159.96	52.05	138.548	
11,000.00	6,935.65	6,837.24	6,834.35	71.17	23.78	82.85	-1,065.94	3,147.25	7,311.79	7,259.72	52.07	140.430	
11,100.00	6,935.33	6,836.07	6,833.18	72.64	23.77	82.72	-1,065.95	3,147.25	7,411.57	7,359.49	52.08	142.307	
11,200.00	6,935.00	6,834.89	6,832.00	74.11	23.77	82.58	-1,065.95	3,147.24	7,511.36	7,459.26	52.10	144.180	
11,300.00	6,934.68	6,833.70	6,830.80	75.60	23.76	82.44	-1,065.95	3,147.24	7,611.15	7,559.03	52.11	146.048	
11,400.00	6,934.36	6,832.49	6,829.59	77.08	23.76	82.30	-1,065.96	3,147.23	7,710.94	7,658.81	52.13	147.911	
11,500.00	6,934.03	6,831.26	6,828.36	78.57	23.76	82.16	-1,065.96	3,147.22	7,810.74	7,758.59	52.15	149.770	
11,600.00	6,933.71	6,830.02	6,827.12	80.07	23.75	82.01	-1,065.97	3,147.22	7,910.55	7,858.37	52.17	151.624	
11,700.00	6,933.39	6,828.76	6,825.86	81.57	23.75	81.87	-1,065.97	3,147.21	8,010.36	7,958.16	52.19	153.474	
11,800.00	6,933.07	6,827.48	6,824.59	83.07	23.74	81.72	-1,065.98	3,147.20	8,110.17	8,057.96	52.22	155.318	
11,900.00	6,932.74	6,826.19	6,823.29	84.58	23.74	81.57	-1,065.98	3,147.20	8,209.99	8,157.75	52.24	157.157	
12,000.00	6,932.42	6,824.88	6,821.98	86.09	23.73	81.42	-1,065.99	3,147.19	8,309.81	8,257.55	52.27	158.992	
12,100.00	6,932.10	6,823.55	6,820.65	87.60	23.73	81.27	-1,065.99	3,147.18	8,409.64	8,357.35	52.29	160.822	
12,200.00	6,931.77	6,822.20	6,819.31	89.12	23.72	81.11	-1,066.00	3,147.18	8,509.47	8,457.15	52.32	162.646	
12,300.00	6,931.45	6,820.84	6,817.94	90.64	23.72	80.95	-1,066.00	3,147.17	8,609.31	8,556.96	52.35	164.465	
12,400.00	6,931.13	6,819.45	6,816.56	92.16	23.71	80.79	-1,066.00	3,147.16	8,709.15	8,656.77	52.38	166.279	
12,500.00	6,930.80	6,818.05	6,815.16	93.69	23.71	80.63	-1,066.01	3,147.15	8,808.99	8,756.58	52.41	168.088	
12,600.00	6,930.48	6,785.42	6,782.53	95.22	23.60	76.93	-1,066.07	3,146.90	8,908.83	8,856.50	52.33	170.245	
12,700.00	6,930.16	6,819.17	6,816.27	96.75	23.71	80.76	-1,066.00	3,147.16	9,008.68	8,956.20	52.48	171.645	
12,800.00	6,929.84	6,817.40	6,814.51	98.28	23.71	80.56	-1,066.01	3,147.15	9,108.53	9,056.02	52.52	173.441	
12,900.00	6,929.51	6,815.60	6,812.71	99.82	23.70	80.35	-1,066.02	3,147.14	9,208.39	9,155.84	52.55	175.232	
13,000.00	6,929.19	6,813.75	6,810.86	101.35	23.69	80.14	-1,066.02	3,147.13	9,308.25	9,255.66	52.58	177.018	
13,100.00	6,928.87	6,811.86	6,808.96	102.89	23.69	79.92	-1,066.03	3,147.11	9,408.11	9,355.49	52.62	178.799	
13,200.00	6,928.54	6,809.92	6,807.02	104.43	23.68	79.70	-1,066.03	3,147.10	9,507.97	9,455.32	52.65	180.574	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-A020Ga_GYRO-NS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,300.00	6,928.22	6,807.93	6,805.03	105.97	23.67	79.47	-1,066.04	3,147.09	9,607.84	9,555.15	52.69	182.345	
13,400.00	6,927.90	6,805.88	6,802.99	107.52	23.67	79.24	-1,066.05	3,147.08	9,707.71	9,654.98	52.73	184.110	
13,500.00	6,927.57	6,803.79	6,800.89	109.06	23.66	79.00	-1,066.05	3,147.07	9,807.58	9,754.82	52.77	185.870	
13,600.00	6,927.25	6,801.64	6,798.74	110.61	23.65	78.76	-1,066.06	3,147.05	9,907.46	9,854.65	52.80	187.625	
13,700.00	6,926.93	6,799.43	6,796.53	112.16	23.65	78.50	-1,066.06	3,147.04	10,007.33	9,954.49	52.84	189.375	
13,800.00	6,926.61	6,797.16	6,794.27	113.71	23.64	78.25	-1,066.07	3,147.02	10,107.21	10,054.33	52.88	191.120	
13,900.00	6,926.28	6,794.83	6,791.94	115.26	23.63	77.98	-1,066.07	3,147.01	10,207.09	10,154.17	52.92	192.860	
14,000.00	6,925.96	6,792.43	6,789.54	116.82	23.62	77.71	-1,066.08	3,146.99	10,306.97	10,254.01	52.97	194.594	
14,100.00	6,925.64	6,789.97	6,787.08	118.37	23.61	77.44	-1,066.08	3,146.97	10,406.86	10,353.85	53.01	196.323	
14,200.00	6,925.31	6,787.43	6,784.54	119.93	23.60	77.15	-1,066.09	3,146.96	10,506.75	10,453.69	53.05	198.048	
14,300.00	6,924.99	6,784.82	6,781.93	121.48	23.59	76.86	-1,066.10	3,146.94	10,606.63	10,553.54	53.10	199.767	
14,400.00	6,924.67	6,782.14	6,779.25	123.04	23.59	76.56	-1,066.10	3,146.92	10,706.53	10,653.39	53.14	201.481	
14,500.00	6,924.34	6,779.37	6,776.48	124.60	23.58	76.25	-1,066.11	3,146.90	10,806.42	10,753.23	53.18	203.190	
14,600.00	6,924.02	6,776.52	6,773.63	126.16	23.57	75.93	-1,066.11	3,146.87	10,906.31	10,853.08	53.23	204.895	
14,700.00	6,923.70	6,773.58	6,770.69	127.72	23.56	75.61	-1,066.11	3,146.85	11,006.21	10,952.93	53.27	206.594	
14,800.00	6,923.38	6,770.55	6,767.66	129.28	23.55	75.27	-1,066.12	3,146.83	11,106.10	11,052.78	53.32	208.288	
14,900.00	6,923.05	6,767.42	6,764.53	130.85	23.53	74.92	-1,066.12	3,146.80	11,206.00	11,152.64	53.37	209.978	
15,000.00	6,922.73	6,764.19	6,761.30	132.41	23.52	74.57	-1,066.13	3,146.77	11,305.90	11,252.49	53.41	211.663	
15,100.00	6,922.41	6,760.86	6,757.96	133.97	23.51	74.20	-1,066.13	3,146.74	11,405.80	11,352.34	53.46	213.343	
15,200.00	6,922.08	6,757.41	6,754.52	135.54	23.50	73.83	-1,066.13	3,146.71	11,505.71	11,452.20	53.51	215.018	
15,300.00	6,921.76	6,753.84	6,750.95	137.11	23.49	73.44	-1,066.14	3,146.68	11,605.61	11,552.05	53.56	216.689	
15,400.00	6,921.44	6,750.15	6,747.26	138.67	23.47	73.04	-1,066.14	3,146.65	11,705.52	11,651.91	53.61	218.356	
15,500.00	6,921.11	6,746.33	6,743.44	140.24	23.46	72.63	-1,066.14	3,146.61	11,805.42	11,751.77	53.66	220.018	
15,600.00	6,920.79	6,672.48	6,669.59	141.81	23.21	65.07	-1,065.97	3,145.66	11,905.32	11,851.85	53.47	222.657	
15,700.00	6,920.47	6,670.56	6,667.68	143.38	23.20	64.88	-1,065.96	3,145.63	12,005.22	11,951.70	53.53	224.285	
15,800.00	6,920.14	6,668.64	6,665.76	144.95	23.19	64.70	-1,065.95	3,145.60	12,105.12	12,051.54	53.58	225.906	
15,900.00	6,919.82	6,666.72	6,663.84	146.52	23.19	64.51	-1,065.94	3,145.57	12,205.03	12,151.38	53.64	227.521	
16,000.00	6,919.50	6,664.80	6,661.92	148.09	23.18	64.33	-1,065.93	3,145.54	12,304.93	12,251.23	53.70	229.130	
16,100.00	6,919.18	6,662.88	6,660.00	149.66	23.17	64.15	-1,065.92	3,145.51	12,404.84	12,351.07	53.76	230.731	
16,200.00	6,918.85	6,660.96	6,658.08	151.24	23.17	63.96	-1,065.90	3,145.48	12,504.74	12,450.92	53.82	232.326	
16,300.00	6,918.53	6,659.05	6,656.16	152.81	23.16	63.78	-1,065.89	3,145.45	12,604.65	12,550.76	53.89	233.915	
16,400.00	6,918.21	6,711.31	6,708.42	154.38	23.34	68.94	-1,066.13	3,146.24	12,704.63	12,650.50	54.13	234.705	
16,500.00	6,917.88	6,697.79	6,694.91	155.96	23.29	67.57	-1,066.12	3,146.07	12,804.55	12,750.39	54.15	236.447	
16,600.00	6,917.56	6,682.34	6,679.46	157.53	23.24	66.03	-1,066.08	3,145.87	12,904.46	12,850.29	54.17	238.212	
16,700.00	6,917.24	6,664.51	6,661.63	159.11	23.18	64.30	-1,066.02	3,145.62	13,004.38	12,950.19	54.18	240.007	
16,800.00	6,916.91	6,643.70	6,640.82	160.68	23.11	62.34	-1,065.91	3,145.29	13,104.29	13,050.10	54.19	241.842	
16,900.00	6,916.59	6,619.10	6,616.23	162.26	23.02	60.12	-1,065.74	3,144.87	13,204.20	13,150.02	54.18	243.729	
17,000.00	6,916.27	6,596.80	6,593.92	163.84	22.94	58.19	-1,065.54	3,144.44	13,304.11	13,249.93	54.17	245.578	
17,100.00	6,915.95	6,586.79	6,583.92	165.41	22.91	57.35	-1,065.43	3,144.24	13,404.02	13,349.80	54.22	247.237	
17,200.00	6,915.62	6,576.24	6,573.37	166.99	22.87	56.49	-1,065.31	3,144.03	13,503.92	13,449.67	54.25	248.899	
17,300.00	6,915.30	6,565.09	6,562.23	168.57	22.83	55.59	-1,065.17	3,143.79	13,603.83	13,549.54	54.29	250.564	
17,400.00	6,914.98	6,553.30	6,550.44	170.15	22.79	54.66	-1,065.00	3,143.53	13,703.74	13,649.41	54.33	252.234	
17,500.00	6,914.65	6,540.81	6,537.95	171.73	22.75	53.71	-1,064.81	3,143.24	13,803.64	13,749.28	54.36	253.908	
17,600.00	6,914.33	6,527.55	6,524.70	173.31	22.70	52.72	-1,064.59	3,142.93	13,903.54	13,849.15	54.40	255.588	
17,700.00	6,914.01	6,513.44	6,510.60	174.89	22.65	51.70	-1,064.34	3,142.59	14,003.45	13,949.02	54.43	257.276	
17,800.00	6,913.68	6,499.66	6,496.82	176.47	22.60	50.73	-1,064.07	3,142.24	14,103.35	14,048.89	54.46	258.953	
17,900.00	6,913.36	6,496.27	6,493.44	178.05	22.59	50.49	-1,064.00	3,142.15	14,203.25	14,148.72	54.53	260.465	
18,000.00	6,913.04	6,492.88	6,490.05	179.63	22.58	50.26	-1,063.93	3,142.07	14,303.15	14,248.55	54.60	261.969	
18,100.00	6,912.72	6,489.48	6,486.65	181.21	22.57	50.03	-1,063.86	3,141.98	14,403.05	14,348.38	54.67	263.467	
18,111.83	6,912.68	6,489.08	6,486.25	181.40	22.57	50.00	-1,063.85	3,141.97	14,414.87	14,360.20	54.68	263.644	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080A - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
0.00	0.00	0.00	0.00	0.00	0.00	70.53	1,014.39	2,869.95	3,044.24				
54.25	54.25	12.25	12.25	0.02	0.37	8.98	1,014.39	2,869.95	3,043.84	3,043.45	0.38	7,945.832	
130.42	130.42	88.42	88.42	0.11	2.65	-18.18	1,014.39	2,869.95	3,043.49	3,040.73	2.76	1,101.357	
219.69	219.69	177.69	177.69	0.23	5.32	7.89	1,014.39	2,869.95	3,043.02	3,037.47	5.55	547.978	
308.67	308.67	266.67	266.67	0.35	7.99	-1.02	1,014.39	2,869.95	3,042.49	3,034.16	8.34	364.985	
364.83	364.82	322.82	322.82	0.41	9.67	-90.00	1,014.39	2,869.95	3,042.32	3,032.24	10.08	301.731 CC	
454.00	453.99	411.99	411.99	0.51	12.35	-135.61	1,014.39	2,869.95	3,042.76	3,029.91	12.86	236.653	
544.00	543.93	502.04	501.93	0.74	15.04	-135.31	1,014.39	2,869.95	3,044.95	3,029.17	15.78	192.962 ES	
667.00	666.63	624.73	624.63	1.13	18.72	-148.41	1,014.39	2,869.95	3,051.77	3,031.92	19.85	153.713	
756.00	755.27	713.37	713.27	1.44	21.38	-133.59	1,014.39	2,869.95	3,057.97	3,035.15	22.82	134.017	
850.00	848.62	811.23	811.08	1.79	24.31	-132.07	1,016.44	2,869.95	3,066.12	3,040.04	26.09	117.527	
942.00	939.50	909.50	909.32	2.14	27.25	-125.71	1,015.68	2,869.95	3,074.85	3,045.47	29.38	104.652	
1,033.00	1,028.89	1,006.44	1,006.24	2.52	30.16	-116.60	1,014.27	2,869.95	3,083.22	3,050.58	32.64	94.454	
1,123.00	1,117.00	1,075.40	1,075.00	2.90	32.22	-110.66	1,014.39	2,869.95	3,090.66	3,055.58	35.07	88.118	
1,214.00	1,206.00	1,164.41	1,164.00	3.29	34.89	-111.66	1,014.39	2,869.95	3,097.63	3,059.51	38.12	81.262	
1,309.00	1,298.75	1,257.79	1,257.34	3.71	37.69	-109.05	1,016.56	2,869.95	3,105.69	3,064.37	41.32	75.159	
1,403.00	1,390.39	1,357.53	1,357.07	4.13	40.68	-106.47	1,016.16	2,869.95	3,112.09	3,067.37	44.72	69.595	
1,498.00	1,482.88	1,458.56	1,458.06	4.56	43.70	-110.04	1,015.05	2,869.95	3,118.67	3,070.51	48.16	64.754	
1,592.00	1,573.82	1,532.54	1,531.82	5.00	45.92	-110.60	1,014.39	2,869.95	3,126.85	3,076.04	50.81	61.544	
1,687.00	1,665.32	1,624.03	1,623.32	5.46	48.66	-108.11	1,014.39	2,869.95	3,135.61	3,081.62	53.99	58.076	
1,876.00	1,847.35	1,811.59	1,810.83	6.38	54.28	-106.46	1,016.43	2,869.95	3,152.05	3,091.55	60.50	52.097	
1,970.00	1,937.87	1,911.35	1,910.57	6.84	57.27	-106.73	1,015.66	2,869.95	3,159.23	3,095.29	63.94	49.410	
2,064.00	2,028.42	2,011.55	2,010.73	7.30	60.28	-106.67	1,014.18	2,869.95	3,166.14	3,098.75	67.39	46.984	
2,159.00	2,119.97	2,078.98	2,077.97	7.77	62.30	-105.76	1,014.39	2,869.95	3,173.44	3,103.59	69.86	45.427	
2,348.00	2,302.44	2,262.72	2,261.67	8.69	67.80	-111.35	1,016.56	2,869.95	3,190.48	3,114.22	76.26	41.839	
2,443.00	2,394.41	2,364.92	2,363.85	9.15	70.86	-112.42	1,016.10	2,869.95	3,199.42	3,119.66	79.76	40.114	
2,537.00	2,485.45	2,466.50	2,465.40	9.61	73.91	-113.04	1,014.93	2,869.95	3,208.20	3,124.97	83.24	38.544	
2,632.00	2,577.48	2,536.80	2,535.48	10.07	76.01	-113.04	1,014.39	2,869.95	3,217.35	3,131.58	85.78	37.508	
2,727.00	2,669.50	2,628.82	2,627.50	10.53	78.77	-113.36	1,014.39	2,869.95	3,226.89	3,137.92	88.97	36.269	
2,821.00	2,760.56	2,719.88	2,718.56	10.98	81.50	-113.97	1,014.39	2,869.95	3,236.52	3,144.39	92.13	35.130	
2,916.00	2,852.68	2,819.52	2,818.15	11.44	84.49	-114.52	1,016.40	2,869.95	3,247.25	3,151.70	95.55	33.986	
3,011.00	2,945.03	2,923.39	2,922.00	11.89	87.60	-114.85	1,015.52	2,869.95	3,256.37	3,157.29	99.09	32.864	
3,105.00	3,036.57	3,026.71	3,025.28	12.33	90.69	-120.84	1,013.89	2,869.95	3,265.84	3,163.24	102.60	31.832	
3,200.00	3,128.81	3,088.43	3,086.81	12.78	92.54	-124.19	1,014.39	2,869.95	3,278.42	3,173.55	104.86	31.264	
3,294.00	3,219.76	3,179.39	3,177.76	13.24	95.27	-124.88	1,014.39	2,869.95	3,292.17	3,184.16	108.01	30.481	
3,389.00	3,311.82	3,274.27	3,272.60	13.69	98.11	-124.32	1,016.55	2,869.95	3,306.86	3,195.59	111.27	29.719	
3,483.00	3,403.03	3,377.69	3,376.00	14.14	101.21	-124.31	1,016.00	2,869.95	3,319.67	3,204.88	114.78	28.921	
3,578.00	3,495.31	3,482.72	3,481.00	14.60	104.36	-124.17	1,014.67	2,869.95	3,332.01	3,213.66	118.35	28.155	
3,672.00	3,586.65	3,546.58	3,544.65	15.04	106.27	-123.23	1,014.39	2,869.95	3,344.30	3,223.63	120.67	27.715	
3,767.00	3,678.95	3,638.88	3,636.95	15.49	109.04	-123.08	1,014.39	2,869.95	3,356.83	3,232.99	123.85	27.105	
3,862.00	3,771.63	3,731.56	3,729.63	15.93	111.81	-123.78	1,014.39	2,869.95	3,368.52	3,241.49	127.03	26.518	
3,956.00	3,863.70	3,834.17	3,832.19	16.35	114.89	-123.82	1,016.32	2,869.95	3,380.25	3,249.76	130.49	25.904	
4,052.00	3,957.54	3,941.76	3,939.75	16.79	118.11	-125.15	1,015.28	2,869.95	3,391.39	3,257.27	134.12	25.286	
4,146.00	4,048.88	4,009.11	4,006.88	17.24	120.13	-125.25	1,014.39	2,869.95	3,403.86	3,267.32	136.54	24.929	
4,241.00	4,140.47	4,100.70	4,098.47	17.71	122.88	-122.72	1,014.39	2,869.95	3,418.28	3,278.56	139.71	24.466	
4,336.00	4,231.25	4,191.49	4,189.25	18.21	125.60	-119.59	1,014.39	2,869.95	3,433.20	3,290.32	142.88	24.029	
4,430.00	4,320.59	4,285.61	4,283.33	18.71	128.42	-121.65	1,016.52	2,869.95	3,449.83	3,303.68	146.15	23.605	
4,524.00	4,409.51	4,388.61	4,386.31	19.22	131.50	-125.58	1,015.89	2,869.95	3,467.05	3,317.36	149.69	23.162	
4,619.00	4,498.98	4,492.81	4,490.48	19.75	134.62	-126.70	1,014.51	2,869.95	3,485.90	3,332.63	153.27	22.743	
4,713.00	4,587.83	4,548.37	4,545.83	20.27	136.29	-127.15	1,014.39	2,869.95	3,504.74	3,349.37	155.37	22.557	
4,807.00	4,676.97	4,637.50	4,634.97	20.78	138.96	-126.13	1,014.39	2,869.95	3,523.16	3,364.67	158.48	22.231	
4,870.00	4,736.65	4,697.19	4,694.65	21.12	140.75	-126.03	1,014.39	2,869.95	3,535.45	3,374.89	160.57	22.019	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080A - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
4,933.00	4,796.58	4,758.35	4,755.78	21.46	142.58	-126.55	1,016.56	2,869.95	3,548.58	3,385.89	162.69	21.812	
5,027.00	4,886.13	4,863.36	4,860.77	21.96	145.73	-126.10	1,016.12	2,869.95	3,565.81	3,399.53	166.27	21.445	
5,121.00	4,976.11	4,969.38	4,966.75	22.45	148.91	-126.50	1,014.89	2,869.95	3,581.71	3,411.83	169.88	21.084	
5,216.00	5,068.11	5,028.95	5,026.11	22.91	150.69	-126.94	1,014.39	2,869.95	3,595.69	3,423.63	172.06	20.898	
5,341.00	5,190.11	5,150.96	5,148.11	23.49	154.35	-127.86	1,014.39	2,869.95	3,612.44	3,436.21	176.23	20.498	
5,436.00	5,283.20	5,244.05	5,241.20	23.91	157.14	-128.06	1,014.39	2,869.95	3,624.25	3,444.84	179.40	20.202	
5,499.00	5,345.03	5,316.12	5,313.23	24.19	159.30	-128.37	1,016.41	2,869.95	3,633.06	3,451.24	181.82	19.982	
5,561.00	5,405.97	5,388.35	5,385.44	24.45	161.46	-127.57	1,015.90	2,869.95	3,639.90	3,455.67	184.23	19.757	
5,624.00	5,467.97	5,461.99	5,459.06	24.72	163.67	-128.82	1,015.00	2,869.95	3,646.39	3,459.70	186.68	19.532	
5,687.00	5,530.05	5,535.86	5,532.90	24.99	165.88	-128.07	1,013.71	2,869.95	3,652.46	3,463.32	189.14	19.311	
5,750.00	5,592.20	5,553.35	5,550.20	25.25	166.40	-127.89	1,014.39	2,869.95	3,658.99	3,469.10	189.89	19.269	
5,813.00	5,654.42	5,615.56	5,612.42	25.51	168.27	-127.02	1,014.39	2,869.95	3,665.05	3,473.06	191.99	19.089	
5,876.00	5,716.68	5,677.83	5,674.68	25.76	170.13	-126.95	1,014.39	2,869.95	3,670.87	3,476.78	194.10	18.913	
5,939.00	5,778.99	5,740.14	5,736.99	26.01	172.00	-127.30	1,014.39	2,869.95	3,676.53	3,480.33	196.20	18.739	
6,065.00	5,903.86	5,887.09	5,883.88	26.51	176.40	-127.76	1,015.91	2,869.95	3,687.86	3,486.78	201.07	18.341	
6,128.00	5,966.41	5,961.81	5,958.57	26.74	178.64	-129.34	1,015.00	2,869.95	3,692.03	3,488.49	203.54	18.139	
6,191.00	6,029.04	6,036.69	6,033.43	26.97	180.89	-128.81	1,013.70	2,869.95	3,695.68	3,489.67	206.01	17.939 SF	
6,254.00	6,091.75	6,011.00	6,007.54	27.20	180.12	-127.95	1,014.39	2,869.95	3,699.81	3,494.41	205.40	18.013	
6,348.00	6,185.46	6,011.00	6,007.54	27.52	180.12	-125.20	1,014.39	2,869.95	3,706.50	3,500.97	205.53	18.034	
6,390.00	6,227.36	6,011.00	6,007.54	27.61	180.12	-125.20	1,014.39	2,869.95	3,709.96	3,504.49	205.47	18.056	
6,400.00	6,237.33	6,011.00	6,007.54	27.61	180.12	-125.20	1,014.39	2,869.95	3,710.86	3,505.42	205.44	18.063	
6,490.00	6,327.12	6,011.00	6,007.54	27.66	180.12	-125.20	1,014.39	2,869.95	3,720.10	3,515.00	205.10	18.138	
6,500.00	6,337.09	6,011.00	6,007.54	27.66	180.12	-137.66	1,014.39	2,869.95	3,721.34	3,516.28	205.06	18.148	
6,550.00	6,386.85	6,011.00	6,007.54	27.70	180.12	-174.60	1,014.39	2,869.95	3,729.97	3,525.16	204.82	18.211	
6,600.00	6,436.20	6,011.00	6,007.54	27.74	180.12	172.02	1,014.39	2,869.95	3,742.68	3,538.14	204.54	18.298	
6,650.00	6,484.82	6,011.00	6,007.54	27.79	180.12	165.42	1,014.39	2,869.95	3,759.34	3,555.10	204.24	18.406	
6,700.00	6,532.40	6,011.00	6,007.54	27.85	180.12	161.16	1,014.39	2,869.95	3,779.80	3,575.88	203.92	18.536	
6,750.00	6,578.63	6,011.00	6,007.54	27.92	180.12	157.82	1,014.39	2,869.95	3,803.86	3,600.28	203.58	18.685	
6,800.00	6,623.24	6,011.00	6,007.54	28.00	180.12	154.82	1,014.39	2,869.95	3,831.30	3,628.07	203.23	18.852	
6,850.00	6,665.93	6,011.00	6,007.54	28.09	180.12	151.82	1,014.39	2,869.95	3,861.89	3,659.00	202.88	19.035	
6,900.00	6,706.42	6,011.00	6,007.54	28.19	180.12	148.63	1,014.39	2,869.95	3,895.35	3,692.80	202.54	19.232	
6,950.00	6,744.48	6,011.00	6,007.54	28.30	180.12	145.04	1,014.39	2,869.95	3,931.40	3,729.18	202.21	19.442	
7,000.00	6,779.84	6,011.00	6,007.54	28.43	180.12	140.89	1,014.39	2,869.95	3,969.74	3,767.83	201.91	19.661	
7,050.00	6,812.30	6,011.00	6,007.54	28.57	180.12	135.99	1,014.39	2,869.95	4,010.08	3,808.45	201.62	19.889	
7,100.00	6,841.63	6,011.00	6,007.54	28.73	180.12	130.14	1,014.39	2,869.95	4,052.09	3,850.72	201.37	20.122	
7,150.00	6,867.66	6,011.00	6,007.54	28.90	180.12	123.16	1,014.39	2,869.95	4,095.46	3,894.31	201.15	20.360	
7,200.00	6,890.22	6,011.00	6,007.54	29.08	180.12	114.95	1,014.39	2,869.95	4,139.89	3,938.92	200.97	20.600	
7,250.00	6,909.17	6,011.00	6,007.54	29.28	180.12	105.57	1,014.39	2,869.95	4,185.05	3,984.23	200.82	20.839	
7,300.00	6,924.38	6,011.00	6,007.54	29.49	180.12	95.38	1,014.39	2,869.95	4,230.65	4,029.94	200.72	21.078	
7,350.00	6,935.77	6,011.00	6,007.54	29.72	180.12	85.01	1,014.39	2,869.95	4,276.38	4,075.73	200.65	21.313	
7,400.00	6,943.25	6,011.00	6,007.54	29.97	180.12	75.15	1,014.39	2,869.95	4,321.96	4,121.34	200.62	21.543	
7,450.00	6,946.78	6,011.00	6,007.54	30.22	180.12	66.33	1,014.39	2,869.95	4,367.09	4,166.47	200.62	21.767	
7,471.54	6,947.08	6,011.00	6,007.54	30.34	180.12	62.92	1,014.39	2,869.95	4,386.34	4,185.70	200.64	21.862	
7,500.00	6,946.98	6,011.00	6,007.54	30.49	180.12	63.42	1,014.39	2,869.95	4,411.63	4,210.97	200.66	21.985	
7,600.00	6,946.65	6,011.00	6,007.54	31.07	180.12	65.06	1,014.39	2,869.95	4,499.87	4,299.13	200.74	22.416	
7,700.00	6,946.32	6,011.00	6,007.54	31.69	180.12	66.53	1,014.39	2,869.95	4,587.11	4,386.29	200.82	22.842	
7,800.00	6,945.99	6,011.00	6,007.54	32.35	180.12	67.85	1,014.39	2,869.95	4,673.30	4,472.40	200.90	23.262	
7,900.00	6,945.67	6,011.00	6,007.54	33.05	180.12	69.05	1,014.39	2,869.95	4,758.38	4,557.41	200.97	23.677	
8,000.00	6,945.34	6,011.00	6,007.54	33.79	180.12	70.14	1,014.39	2,869.95	4,842.33	4,641.27	201.05	24.085	
8,034.58	6,945.23	6,011.00	6,007.54	34.05	180.12	70.49	1,014.39	2,869.95	4,871.08	4,670.00	201.08	24.225	
8,100.00	6,945.02	6,011.00	6,007.54	34.57	180.12	70.49	1,014.39	2,869.95	4,925.48	4,724.34	201.14	24.488	
8,200.00	6,944.69	6,011.00	6,007.54	35.41	180.12	70.49	1,014.39	2,869.95	5,009.15	4,807.91	201.24	24.892	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080A - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,011.00	6,007.54	36.30	180.12	70.49	1,014.39	2,869.95	5,093.40	4,892.05	201.35	25.296	
8,400.00	6,944.05	6,011.00	6,007.54	37.25	180.12	70.49	1,014.39	2,869.95	5,178.21	4,976.75	201.47	25.703	
8,500.00	6,943.73	6,011.00	6,007.54	38.25	180.12	70.49	1,014.39	2,869.95	5,263.56	5,061.97	201.59	26.110	
8,600.00	6,943.40	6,011.00	6,007.54	39.29	180.12	70.49	1,014.39	2,869.95	5,349.42	5,147.69	201.72	26.518	
8,700.00	6,943.08	6,011.00	6,007.54	40.37	180.12	70.49	1,014.39	2,869.95	5,435.76	5,233.89	201.86	26.928	
8,800.00	6,942.76	6,011.00	6,007.54	41.49	180.12	70.49	1,014.39	2,869.95	5,522.56	5,320.55	202.01	27.338	
8,900.00	6,942.43	6,011.00	6,007.54	42.64	180.12	70.49	1,014.39	2,869.95	5,609.80	5,407.64	202.15	27.750	
9,000.00	6,942.11	6,011.00	6,007.54	43.82	180.12	70.49	1,014.39	2,869.95	5,697.45	5,495.15	202.31	28.162	
9,100.00	6,941.79	6,011.00	6,007.54	45.03	180.12	70.49	1,014.39	2,869.95	5,785.51	5,583.05	202.46	28.576	
9,200.00	6,941.46	6,011.00	6,007.54	46.27	180.12	70.49	1,014.39	2,869.95	5,873.96	5,671.34	202.62	28.990	
9,300.00	6,941.14	6,011.00	6,007.54	47.53	180.12	70.49	1,014.39	2,869.95	5,962.76	5,759.98	202.78	29.405	
9,400.00	6,940.82	6,011.00	6,007.54	48.81	180.12	70.49	1,014.39	2,869.95	6,051.92	5,848.98	202.94	29.821	
9,500.00	6,940.50	6,011.00	6,007.54	50.11	180.12	70.49	1,014.39	2,869.95	6,141.41	5,938.30	203.10	30.238	
9,600.00	6,940.17	6,011.00	6,007.54	51.43	180.12	70.49	1,014.39	2,869.95	6,231.22	6,027.95	203.27	30.655	
9,700.00	6,939.85	6,011.00	6,007.54	52.76	180.12	70.49	1,014.39	2,869.95	6,321.33	6,117.90	203.43	31.073	
9,800.00	6,939.53	6,011.00	6,007.54	54.11	180.12	70.49	1,014.39	2,869.95	6,411.74	6,208.14	203.60	31.492	
9,900.00	6,939.20	6,011.00	6,007.54	55.48	180.12	70.49	1,014.39	2,869.95	6,502.43	6,298.66	203.77	31.911	
10,000.00	6,938.88	6,011.00	6,007.54	56.86	180.12	70.49	1,014.39	2,869.95	6,593.39	6,389.46	203.93	32.331	
10,100.00	6,938.56	6,011.00	6,007.54	58.25	180.12	70.49	1,014.39	2,869.95	6,684.61	6,480.51	204.10	32.752	
10,200.00	6,938.23	6,011.00	6,007.54	59.65	180.12	70.49	1,014.39	2,869.95	6,776.07	6,571.81	204.26	33.173	
10,300.00	6,937.91	6,011.00	6,007.54	61.06	180.12	70.49	1,014.39	2,869.95	6,867.78	6,663.34	204.43	33.595	
10,400.00	6,937.59	6,011.00	6,007.54	62.48	180.12	70.49	1,014.39	2,869.95	6,959.71	6,755.11	204.60	34.017	
10,500.00	6,937.27	6,011.00	6,007.54	63.91	180.12	70.49	1,014.39	2,869.95	7,051.86	6,847.10	204.76	34.440	
10,600.00	6,936.94	6,011.00	6,007.54	65.34	180.12	70.49	1,014.39	2,869.95	7,144.22	6,939.30	204.92	34.863	
10,700.00	6,936.62	6,011.00	6,007.54	66.79	180.12	70.49	1,014.39	2,869.95	7,236.79	7,031.70	205.09	35.287	
10,800.00	6,936.30	6,011.00	6,007.54	68.24	180.12	70.49	1,014.39	2,869.95	7,329.55	7,124.30	205.25	35.711	
10,900.00	6,935.97	6,011.00	6,007.54	69.70	180.12	70.49	1,014.39	2,869.95	7,422.49	7,217.09	205.41	36.135	
11,000.00	6,935.65	6,011.00	6,007.54	71.17	180.12	70.49	1,014.39	2,869.95	7,515.62	7,310.05	205.57	36.560	
11,100.00	6,935.33	6,011.00	6,007.54	72.64	180.12	70.49	1,014.39	2,869.95	7,608.93	7,403.20	205.73	36.985	
11,200.00	6,935.00	6,011.00	6,007.54	74.11	180.12	70.49	1,014.39	2,869.95	7,702.40	7,496.51	205.89	37.411	
11,300.00	6,934.68	6,011.00	6,007.54	75.60	180.12	70.49	1,014.39	2,869.95	7,796.03	7,589.99	206.04	37.837	
11,400.00	6,934.36	6,011.00	6,007.54	77.08	180.12	70.49	1,014.39	2,869.95	7,889.82	7,683.63	206.20	38.263	
11,500.00	6,934.03	6,011.00	6,007.54	78.57	180.12	70.49	1,014.39	2,869.95	7,983.77	7,777.41	206.35	38.690	
11,600.00	6,933.71	6,011.00	6,007.54	80.07	180.12	70.49	1,014.39	2,869.95	8,077.85	7,871.34	206.51	39.117	
11,700.00	6,933.39	6,011.00	6,007.54	81.57	180.12	70.49	1,014.39	2,869.95	8,172.08	7,965.42	206.66	39.544	
11,800.00	6,933.07	6,011.00	6,007.54	83.07	180.12	70.49	1,014.39	2,869.95	8,266.44	8,059.63	206.81	39.971	
11,900.00	6,932.74	6,011.00	6,007.54	84.58	180.12	70.49	1,014.39	2,869.95	8,360.93	8,153.97	206.96	40.399	
12,000.00	6,932.42	6,011.00	6,007.54	86.09	180.12	70.49	1,014.39	2,869.95	8,455.55	8,248.44	207.11	40.826	
12,100.00	6,932.10	6,011.00	6,007.54	87.60	180.12	70.49	1,014.39	2,869.95	8,550.30	8,343.04	207.26	41.254	
12,200.00	6,931.77	6,011.00	6,007.54	89.12	180.12	70.49	1,014.39	2,869.95	8,645.16	8,437.75	207.41	41.682	
12,300.00	6,931.45	6,011.00	6,007.54	90.64	180.12	70.49	1,014.39	2,869.95	8,740.13	8,532.58	207.55	42.111	
12,400.00	6,931.13	6,011.00	6,007.54	92.16	180.12	70.49	1,014.39	2,869.95	8,835.22	8,627.53	207.70	42.539	
12,500.00	6,930.80	6,011.00	6,007.54	93.69	180.12	70.49	1,014.39	2,869.95	8,930.42	8,722.58	207.84	42.968	
12,600.00	6,930.48	6,011.00	6,007.54	95.22	180.12	70.49	1,014.39	2,869.95	9,025.71	8,817.73	207.98	43.397	
12,700.00	6,930.16	6,011.00	6,007.54	96.75	180.12	70.49	1,014.39	2,869.95	9,121.11	8,912.99	208.12	43.825	
12,800.00	6,929.84	6,011.00	6,007.54	98.28	180.12	70.49	1,014.39	2,869.95	9,216.61	9,008.34	208.26	44.254	
12,900.00	6,929.51	6,011.00	6,007.54	99.82	180.12	70.49	1,014.39	2,869.95	9,312.20	9,103.79	208.40	44.683	
13,000.00	6,929.19	6,011.00	6,007.54	101.35	180.12	70.49	1,014.39	2,869.95	9,407.88	9,199.34	208.54	45.112	
13,100.00	6,928.87	6,011.00	6,007.54	102.89	180.12	70.49	1,014.39	2,869.95	9,503.65	9,294.97	208.68	45.542	
13,200.00	6,928.54	6,011.00	6,007.54	104.43	180.12	70.49	1,014.39	2,869.95	9,599.51	9,390.69	208.82	45.971	
13,300.00	6,928.22	6,011.00	6,007.54	105.97	180.12	70.49	1,014.39	2,869.95	9,695.45	9,486.50	208.95	46.400	
13,400.00	6,927.90	6,011.00	6,007.54	107.52	180.12	70.49	1,014.39	2,869.95	9,791.47	9,582.38	209.09	46.829	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080A - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,011.00	6,007.54	109.06	180.12	70.49	1,014.39	2,869.95	9,887.57	9,678.35	209.22	47.258	
13,600.00	6,927.25	6,011.00	6,007.54	110.61	180.12	70.49	1,014.39	2,869.95	9,983.75	9,774.40	209.36	47.688	
13,700.00	6,926.93	6,011.00	6,007.54	112.16	180.12	70.49	1,014.39	2,869.95	10,080.00	9,870.51	209.49	48.117	
13,800.00	6,926.61	6,011.00	6,007.54	113.71	180.12	70.49	1,014.39	2,869.95	10,176.33	9,966.71	209.62	48.546	
13,900.00	6,926.28	6,011.00	6,007.54	115.26	180.12	70.49	1,014.39	2,869.95	10,272.72	10,062.97	209.75	48.975	
14,000.00	6,925.96	6,011.00	6,007.54	116.82	180.12	70.49	1,014.39	2,869.95	10,369.19	10,159.30	209.88	49.405	
14,100.00	6,925.64	6,011.00	6,007.54	118.37	180.12	70.49	1,014.39	2,869.95	10,465.72	10,255.70	210.01	49.834	
14,200.00	6,925.31	6,011.00	6,007.54	119.93	180.12	70.49	1,014.39	2,869.95	10,562.31	10,352.17	210.14	50.263	
14,300.00	6,924.99	6,011.00	6,007.54	121.48	180.12	70.49	1,014.39	2,869.95	10,658.97	10,448.70	210.27	50.692	
14,400.00	6,924.67	6,011.00	6,007.54	123.04	180.12	70.49	1,014.39	2,869.95	10,755.68	10,545.29	210.40	51.121	
14,500.00	6,924.34	6,011.00	6,007.54	124.60	180.12	70.49	1,014.39	2,869.95	10,852.46	10,641.94	210.52	51.550	
14,600.00	6,924.02	6,011.00	6,007.54	126.16	180.12	70.49	1,014.39	2,869.95	10,949.30	10,738.65	210.65	51.978	
14,700.00	6,923.70	6,011.00	6,007.54	127.72	180.12	70.49	1,014.39	2,869.95	11,046.19	10,835.41	210.78	52.407	
14,800.00	6,923.38	6,011.00	6,007.54	129.28	180.12	70.49	1,014.39	2,869.95	11,143.14	10,932.23	210.90	52.836	
14,900.00	6,923.05	6,011.00	6,007.54	130.85	180.12	70.49	1,014.39	2,869.95	11,240.14	11,029.11	211.03	53.264	
15,000.00	6,922.73	6,011.00	6,007.54	132.41	180.12	70.49	1,014.39	2,869.95	11,337.19	11,126.04	211.15	53.692	
15,100.00	6,922.41	6,011.00	6,007.54	133.97	180.12	70.49	1,014.39	2,869.95	11,434.29	11,223.02	211.27	54.121	
15,200.00	6,922.08	6,011.00	6,007.54	135.54	180.12	70.49	1,014.39	2,869.95	11,531.44	11,320.05	211.40	54.549	
15,300.00	6,921.76	6,011.00	6,007.54	137.11	180.12	70.49	1,014.39	2,869.95	11,628.64	11,417.12	211.52	54.977	
15,400.00	6,921.44	6,011.00	6,007.54	138.67	180.12	70.49	1,014.39	2,869.95	11,725.89	11,514.25	211.64	55.404	
15,500.00	6,921.11	6,011.00	6,007.54	140.24	180.12	70.49	1,014.39	2,869.95	11,823.19	11,611.42	211.76	55.832	
15,600.00	6,920.79	6,011.00	6,007.54	141.81	180.12	70.49	1,014.39	2,869.95	11,920.53	11,708.64	211.88	56.259	
15,700.00	6,920.47	6,011.00	6,007.54	143.38	180.12	70.49	1,014.39	2,869.95	12,017.91	11,805.90	212.01	56.687	
15,800.00	6,920.14	6,011.00	6,007.54	144.95	180.12	70.49	1,014.39	2,869.95	12,115.33	11,903.21	212.13	57.114	
15,900.00	6,919.82	6,011.00	6,007.54	146.52	180.12	70.49	1,014.39	2,869.95	12,212.80	12,000.55	212.25	57.541	
16,000.00	6,919.50	6,011.00	6,007.54	148.09	180.12	70.49	1,014.39	2,869.95	12,310.31	12,097.94	212.37	57.968	
16,100.00	6,919.18	6,011.00	6,007.54	149.66	180.12	70.49	1,014.39	2,869.95	12,407.85	12,195.37	212.48	58.394	
16,200.00	6,918.85	6,011.00	6,007.54	151.24	180.12	70.49	1,014.39	2,869.95	12,505.44	12,292.84	212.60	58.820	
16,300.00	6,918.53	6,011.00	6,007.54	152.81	180.12	70.49	1,014.39	2,869.95	12,603.06	12,390.34	212.72	59.247	
16,400.00	6,918.21	6,011.00	6,007.54	154.38	180.12	70.49	1,014.39	2,869.95	12,700.72	12,487.88	212.84	59.673	
16,500.00	6,917.88	6,011.00	6,007.54	155.96	180.12	70.49	1,014.39	2,869.95	12,798.42	12,585.46	212.96	60.098	
16,600.00	6,917.56	6,011.00	6,007.54	157.53	180.12	70.49	1,014.39	2,869.95	12,896.15	12,683.08	213.08	60.524	
16,700.00	6,917.24	6,011.00	6,007.54	159.11	180.12	70.49	1,014.39	2,869.95	12,993.92	12,780.72	213.19	60.949	
16,800.00	6,916.91	6,011.00	6,007.54	160.68	180.12	70.49	1,014.39	2,869.95	13,091.72	12,878.41	213.31	61.374	
16,900.00	6,916.59	6,011.00	6,007.54	162.26	180.12	70.49	1,014.39	2,869.95	13,189.55	12,976.12	213.43	61.799	
17,000.00	6,916.27	6,011.00	6,007.54	163.84	180.12	70.49	1,014.39	2,869.95	13,287.42	13,073.87	213.54	62.223	
17,100.00	6,915.95	6,011.00	6,007.54	165.41	180.12	70.49	1,014.39	2,869.95	13,385.31	13,171.65	213.66	62.648	
17,200.00	6,915.62	6,011.00	6,007.54	166.99	180.12	70.49	1,014.39	2,869.95	13,483.24	13,269.47	213.78	63.072	
17,300.00	6,915.30	6,011.00	6,007.54	168.57	180.12	70.49	1,014.39	2,869.95	13,581.20	13,367.31	213.89	63.496	
17,400.00	6,914.98	6,011.00	6,007.54	170.15	180.12	70.49	1,014.39	2,869.95	13,679.19	13,465.18	214.01	63.919	
17,500.00	6,914.65	6,011.00	6,007.54	171.73	180.12	70.49	1,014.39	2,869.95	13,777.20	13,563.08	214.12	64.343	
17,600.00	6,914.33	6,011.00	6,007.54	173.31	180.12	70.49	1,014.39	2,869.95	13,875.25	13,661.01	214.24	64.766	
17,700.00	6,914.01	6,011.00	6,007.54	174.89	180.12	70.49	1,014.39	2,869.95	13,973.32	13,758.97	214.35	65.188	
17,800.00	6,913.68	6,011.00	6,007.54	176.47	180.12	70.49	1,014.39	2,869.95	14,071.42	13,856.95	214.47	65.611	
17,900.00	6,913.36	6,011.00	6,007.54	178.05	180.12	70.49	1,014.39	2,869.95	14,169.55	13,954.96	214.58	66.033	
18,000.00	6,913.04	6,011.00	6,007.54	179.63	180.12	70.49	1,014.39	2,869.95	14,267.70	14,053.00	214.70	66.455	
18,100.00	6,912.72	6,011.00	6,007.54	181.21	180.12	70.49	1,014.39	2,869.95	14,365.88	14,151.07	214.81	66.877	
18,111.83	6,912.68	6,011.00	6,007.54	181.40	180.12	70.49	1,014.39	2,869.95	14,377.50	14,162.67	214.82	66.927	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	63.18	1,089.66	2,154.86	2,414.85				
54.25	54.25	27.25	27.25	0.02	0.82	1.63	1,089.66	2,154.86	2,414.58	2,413.75	0.83	2,899.807	
130.42	130.42	103.42	103.42	0.11	3.10	-25.54	1,089.66	2,154.86	2,414.25	2,411.03	3.21	751.699	
219.69	219.69	192.69	192.69	0.23	5.77	0.53	1,089.66	2,154.86	2,413.79	2,407.79	6.00	402.304	
308.67	308.67	281.67	281.67	0.35	8.44	-8.38	1,089.66	2,154.86	2,413.26	2,404.48	8.78	274.778	
360.70	360.69	333.69	333.69	0.40	10.00	-89.99	1,089.66	2,154.86	2,413.10	2,402.70	10.40	232.008	CC
454.00	453.99	426.99	426.99	0.51	12.79	-142.97	1,089.66	2,154.86	2,413.62	2,400.31	13.30	181.422	
544.00	543.93	517.04	516.93	0.74	15.49	-142.68	1,089.66	2,154.86	2,416.06	2,399.83	16.23	148.883	ES
667.00	666.63	639.73	639.63	1.13	19.17	-155.80	1,089.66	2,154.86	2,423.48	2,403.18	20.30	119.373	
756.00	755.27	728.37	728.27	1.44	21.83	-140.97	1,089.66	2,154.86	2,430.28	2,407.01	23.27	104.461	
850.00	848.62	827.86	827.71	1.79	24.81	-139.47	1,091.62	2,154.86	2,439.61	2,413.03	26.58	91.774	
942.00	939.50	926.71	926.54	2.14	27.77	-133.12	1,090.75	2,154.86	2,449.57	2,419.68	29.89	81.953	
1,033.00	1,028.89	1,002.29	1,001.89	2.52	30.03	-123.92	1,089.66	2,154.86	2,459.65	2,427.14	32.51	75.665	
1,123.00	1,117.00	1,090.40	1,090.00	2.90	32.67	-118.06	1,089.66	2,154.86	2,469.22	2,433.72	35.50	69.547	
1,214.00	1,206.00	1,179.41	1,179.00	3.29	35.34	-119.12	1,089.66	2,154.86	2,478.45	2,439.91	38.54	64.306	
1,309.00	1,298.75	1,274.22	1,273.78	3.71	38.18	-116.56	1,091.82	2,154.86	2,489.24	2,447.46	41.78	59.581	
1,403.00	1,390.39	1,374.57	1,374.11	4.13	41.19	-114.04	1,091.29	2,154.86	2,498.13	2,452.95	45.18	55.288	
1,498.00	1,482.88	1,476.21	1,475.71	4.56	44.23	-117.67	1,090.05	2,154.86	2,507.24	2,458.60	48.64	51.548	
1,592.00	1,573.82	1,547.54	1,546.82	5.00	46.37	-118.24	1,089.66	2,154.86	2,518.37	2,467.18	51.20	49.192	
1,687.00	1,665.32	1,639.03	1,638.32	5.46	49.11	-115.80	1,089.66	2,154.86	2,530.34	2,475.97	54.37	46.541	
1,876.00	1,847.35	1,828.52	1,827.76	6.38	54.79	-114.31	1,091.62	2,154.86	2,553.55	2,492.64	60.91	41.920	
1,970.00	1,937.87	1,928.90	1,928.11	6.84	57.80	-114.65	1,090.72	2,154.86	2,563.92	2,499.57	64.36	39.840	
2,064.00	2,028.42	2,002.44	2,001.42	7.30	60.00	-114.53	1,089.66	2,154.86	2,574.10	2,507.11	66.99	38.424	
2,159.00	2,119.97	2,093.98	2,092.97	7.77	62.75	-113.80	1,089.66	2,154.86	2,584.82	2,514.64	70.17	36.835	
2,348.00	2,302.44	2,279.53	2,278.47	8.69	68.30	-119.59	1,091.81	2,154.86	2,608.68	2,532.09	76.60	34.057	
2,443.00	2,394.41	2,382.37	2,381.29	9.15	71.39	-120.73	1,091.22	2,154.86	2,620.63	2,540.53	80.11	32.714	
2,537.00	2,485.45	2,484.58	2,483.47	9.61	74.45	-121.41	1,089.91	2,154.86	2,632.28	2,548.69	83.59	31.490	
2,632.00	2,577.48	2,551.80	2,550.48	10.07	76.46	-121.44	1,089.66	2,154.86	2,644.58	2,558.56	86.03	30.742	
2,727.00	2,669.50	2,643.82	2,642.50	10.53	79.22	-121.81	1,089.66	2,154.86	2,657.23	2,568.03	89.20	29.788	
2,821.00	2,760.56	2,734.88	2,733.56	10.98	81.95	-122.46	1,089.66	2,154.86	2,669.94	2,577.59	92.35	28.911	
2,916.00	2,852.68	2,836.86	2,835.48	11.44	85.01	-123.08	1,091.57	2,154.86	2,683.93	2,588.11	95.82	28.009	
3,011.00	2,945.03	2,941.38	2,939.98	11.89	88.14	-123.47	1,090.56	2,154.86	2,695.83	2,596.46	99.37	27.129	
3,105.00	3,036.57	3,011.19	3,009.57	12.33	90.23	-129.42	1,089.66	2,154.86	2,708.08	2,606.22	101.86	26.587	
3,200.00	3,128.81	3,103.43	3,101.81	12.78	92.99	-132.90	1,089.66	2,154.86	2,723.31	2,618.28	105.03	25.929	
3,294.00	3,219.76	3,194.39	3,192.76	13.24	95.72	-133.62	1,089.66	2,154.86	2,739.85	2,631.70	108.16	25.332	
3,389.00	3,311.82	3,291.48	3,289.82	13.69	98.63	-133.09	1,091.78	2,154.86	2,757.56	2,646.09	111.47	24.738	
3,483.00	3,403.03	3,395.56	3,393.87	14.14	101.75	-133.10	1,091.10	2,154.86	2,772.93	2,657.95	114.99	24.115	
3,578.00	3,495.31	3,501.26	3,499.53	14.60	104.91	-132.97	1,089.63	2,154.86	2,787.74	2,669.18	118.56	23.514	
3,672.00	3,586.65	3,561.58	3,559.65	15.04	106.72	-132.03	1,089.66	2,154.86	2,802.81	2,682.05	120.75	23.211	
3,767.00	3,678.95	3,653.88	3,651.95	15.49	109.49	-131.90	1,089.66	2,154.86	2,818.06	2,694.15	123.92	22.741	
3,862.00	3,771.63	3,746.56	3,744.63	15.93	112.26	-132.63	1,089.66	2,154.86	2,832.28	2,705.19	127.08	22.287	
3,956.00	3,863.70	3,851.93	3,849.94	16.35	115.42	-132.69	1,091.47	2,154.86	2,846.48	2,715.86	130.62	21.791	
4,052.00	3,957.54	3,960.20	3,958.19	16.79	118.67	-134.04	1,090.29	2,154.86	2,859.87	2,725.60	134.26	21.301	
4,146.00	4,048.88	4,024.11	4,021.88	17.24	120.58	-134.13	1,089.66	2,154.86	2,874.97	2,738.41	136.56	21.053	
4,241.00	4,140.47	4,115.70	4,113.47	17.71	123.33	-131.57	1,089.66	2,154.86	2,892.43	2,752.71	139.71	20.702	
4,336.00	4,231.25	4,206.49	4,204.25	18.21	126.05	-128.40	1,089.66	2,154.86	2,910.85	2,767.99	142.86	20.376	
4,430.00	4,320.59	4,303.25	4,300.97	18.71	128.94	-130.52	1,091.74	2,154.86	2,931.39	2,785.21	146.19	20.052	
4,524.00	4,409.51	4,406.93	4,404.62	19.22	132.05	-134.52	1,090.98	2,154.86	2,952.15	2,802.42	149.73	19.717	
4,619.00	4,498.98	4,511.82	4,509.48	19.75	135.19	-135.67	1,089.44	2,154.86	2,974.49	2,821.19	153.31	19.402	
4,713.00	4,587.83	4,563.37	4,560.83	20.27	136.74	-136.12	1,089.66	2,154.86	2,997.00	2,841.74	155.26	19.303	
4,807.00	4,676.97	4,652.50	4,649.97	20.78	139.41	-135.09	1,089.66	2,154.86	3,018.87	2,860.52	158.35	19.065	
4,870.00	4,736.65	4,712.19	4,709.65	21.12	141.20	-134.99	1,089.66	2,154.86	3,033.52	2,873.10	160.41	18.911	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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
4,933.00	4,796.58	4,776.06	4,773.48	21.46	143.11	-135.53	1,091.81	2,154.86	3,049.16	2,886.55	162.60	18.752	
5,027.00	4,886.13	4,881.77	4,879.17	21.96	146.28	-135.08	1,091.23	2,154.86	3,069.59	2,903.40	166.19	18.470	
5,121.00	4,976.11	4,988.49	4,985.86	22.45	149.48	-135.50	1,089.85	2,154.86	3,088.46	2,918.66	169.80	18.189	
5,216.00	5,068.11	5,043.95	5,041.11	22.91	151.14	-135.94	1,089.66	2,154.86	3,105.30	2,933.46	171.84	18.071	
5,341.00	5,190.11	5,165.96	5,163.11	23.49	154.80	-136.87	1,089.66	2,154.86	3,125.20	2,949.21	175.99	17.758	
5,436.00	5,283.20	5,260.78	5,257.90	23.91	157.64	-137.10	1,091.83	2,154.86	3,140.76	2,961.56	179.20	17.526	
5,499.00	5,345.03	5,334.39	5,331.50	24.19	159.84	-137.39	1,091.59	2,154.86	3,149.57	2,967.91	181.66	17.338	
5,561.00	5,405.97	5,407.10	5,404.18	24.45	162.02	-136.58	1,090.97	2,154.86	3,157.62	2,973.54	184.08	17.153	
5,624.00	5,467.97	5,481.22	5,478.28	24.72	164.24	-137.84	1,089.97	2,154.86	3,165.24	2,978.69	186.55	16.967	
5,687.00	5,530.05	5,506.20	5,503.05	24.99	164.99	-136.99	1,089.66	2,154.86	3,172.75	2,985.24	187.51	16.920	
5,750.00	5,592.20	5,568.35	5,565.20	25.25	166.85	-136.91	1,089.66	2,154.86	3,180.34	2,990.72	189.61	16.773	
5,813.00	5,654.42	5,630.56	5,627.42	25.51	168.72	-136.03	1,089.66	2,154.86	3,187.55	2,995.84	191.71	16.627	
5,876.00	5,716.68	5,692.83	5,689.68	25.76	170.58	-135.96	1,089.66	2,154.86	3,194.50	3,000.69	193.81	16.483	
5,939.00	5,778.99	5,756.18	5,753.00	26.01	172.48	-136.34	1,091.84	2,154.86	3,202.84	3,006.91	195.94	16.346	
6,065.00	5,903.86	5,905.95	5,902.74	26.51	176.97	-136.78	1,090.99	2,154.86	3,214.60	3,013.71	200.90	16.001	
6,128.00	5,966.41	5,981.16	5,977.91	26.74	179.22	-138.36	1,089.97	2,154.86	3,219.48	3,016.10	203.38	15.830	
6,191.00	6,029.04	6,005.49	6,002.04	26.97	179.95	-137.77	1,089.66	2,154.86	3,224.12	3,019.82	204.31	15.781	
6,254.00	6,091.75	6,068.20	6,064.75	27.20	181.83	-137.01	1,089.66	2,154.86	3,228.57	3,022.17	206.40	15.642	
6,348.00	6,185.46	6,161.91	6,158.46	27.52	184.64	-134.33	1,089.66	2,154.86	3,233.87	3,024.34	209.53	15.434	
6,390.00	6,227.36	6,203.81	6,200.36	27.61	185.89	-134.37	1,089.66	2,154.86	3,235.91	3,025.07	210.84	15.347	
6,400.00	6,237.33	6,213.79	6,210.33	27.61	186.19	-134.38	1,089.66	2,154.86	3,236.40	3,025.26	211.14	15.328	
6,490.00	6,327.12	6,314.47	6,310.97	27.66	189.21	-134.49	1,091.69	2,154.86	3,242.32	3,028.13	214.19	15.138	
6,500.00	6,337.09	6,326.48	6,322.98	27.66	189.57	-146.93	1,091.63	2,154.86	3,242.83	3,028.28	214.55	15.114	
6,550.00	6,386.85	6,386.41	6,382.89	27.70	191.37	176.24	1,091.19	2,154.86	3,247.22	3,030.86	216.36	15.008	
6,600.00	6,436.20	6,445.90	6,442.36	27.74	193.15	163.06	1,090.50	2,154.86	3,254.61	3,036.45	218.15	14.919	
6,650.00	6,484.82	6,504.58	6,501.02	27.79	194.91	156.75	1,089.57	2,154.86	3,264.96	3,045.05	219.91	14.847	SF
6,700.00	6,532.40	6,509.15	6,505.40	27.85	195.04	152.71	1,089.66	2,154.86	3,278.69	3,058.68	220.01	14.902	
6,750.00	6,578.63	6,555.39	6,551.63	27.92	196.43	149.79	1,089.66	2,154.86	3,295.61	3,074.23	221.38	14.886	
6,800.00	6,623.24	6,600.00	6,596.24	28.00	197.77	147.32	1,089.66	2,154.86	3,315.42	3,092.72	222.70	14.887	
6,850.00	6,665.93	6,642.68	6,638.93	28.09	199.04	145.03	1,089.66	2,154.86	3,337.99	3,114.04	223.95	14.905	
6,900.00	6,706.42	6,683.18	6,679.42	28.19	200.26	142.75	1,089.66	2,154.86	3,363.22	3,138.08	225.14	14.939	
6,950.00	6,744.48	6,721.23	6,717.48	28.30	201.40	140.35	1,089.66	2,154.86	3,390.96	3,164.72	226.24	14.988	
7,000.00	6,779.84	6,758.02	6,754.22	28.43	202.50	137.73	1,091.83	2,154.86	3,422.65	3,195.34	227.31	15.057	
7,050.00	6,812.30	6,797.32	6,793.52	28.57	203.68	134.91	1,091.76	2,154.86	3,454.92	3,226.46	228.46	15.123	
7,100.00	6,841.63	6,832.92	6,829.11	28.73	204.75	131.75	1,091.60	2,154.86	3,489.15	3,259.66	229.49	15.204	
7,150.00	6,867.66	6,864.57	6,860.75	28.90	205.69	128.13	1,091.38	2,154.86	3,525.19	3,294.79	230.40	15.300	
7,200.00	6,890.22	6,892.06	6,888.24	29.08	206.52	123.99	1,091.13	2,154.86	3,562.83	3,331.64	231.19	15.411	
7,250.00	6,909.17	6,915.22	6,911.39	29.28	207.21	119.25	1,090.88	2,154.86	3,601.88	3,370.03	231.84	15.536	
7,300.00	6,924.38	6,933.87	6,930.04	29.49	207.77	113.85	1,090.66	2,154.86	3,642.10	3,409.74	232.36	15.674	
7,350.00	6,935.77	6,947.89	6,944.05	29.72	208.19	107.78	1,090.47	2,154.86	3,683.28	3,450.54	232.75	15.825	
7,400.00	6,943.25	6,957.18	6,953.33	29.97	208.47	101.10	1,090.34	2,154.86	3,725.16	3,492.18	232.98	15.989	
7,450.00	6,946.78	6,961.66	6,957.81	30.22	208.60	93.95	1,090.27	2,154.86	3,767.49	3,534.42	233.08	16.164	
7,471.54	6,947.08	6,962.09	6,958.25	30.34	208.62	90.79	1,090.26	2,154.86	3,785.80	3,552.73	233.08	16.243	
7,500.00	6,946.98	6,962.07	6,958.23	30.49	208.62	90.78	1,090.27	2,154.86	3,809.96	3,576.91	233.05	16.348	
7,600.00	6,946.65	6,961.97	6,958.12	31.07	208.61	90.74	1,090.27	2,154.86	3,894.13	3,661.15	232.98	16.714	
7,700.00	6,946.32	6,961.80	6,957.95	31.69	208.61	90.71	1,090.27	2,154.86	3,977.15	3,744.23	232.92	17.075	
7,800.00	6,945.99	6,961.56	6,957.72	32.35	208.60	90.68	1,090.27	2,154.86	4,059.00	3,826.13	232.87	17.430	
7,900.00	6,945.67	6,961.27	6,957.43	33.05	208.59	90.65	1,090.28	2,154.86	4,139.66	3,906.81	232.84	17.779	
8,000.00	6,945.34	6,960.92	6,957.07	33.79	208.58	90.62	1,090.28	2,154.86	4,219.09	3,986.26	232.83	18.121	
8,034.58	6,945.23	6,960.78	6,956.94	34.05	208.58	90.61	1,090.28	2,154.86	4,246.27	4,013.44	232.82	18.238	
8,100.00	6,945.02	6,960.52	6,956.67	34.57	208.57	90.60	1,090.29	2,154.86	4,297.73	4,064.90	232.83	18.459	
8,200.00	6,944.69	6,960.11	6,956.27	35.41	208.56	90.59	1,090.29	2,154.86	4,377.12	4,144.27	232.85	18.798	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,959.71	6,955.87	36.30	208.54	90.58	1,090.30	2,154.86	4,457.34	4,224.46	232.89	19.140	
8,400.00	6,944.05	6,959.30	6,955.46	37.25	208.53	90.58	1,090.31	2,154.86	4,538.35	4,305.41	232.94	19.483	
8,500.00	6,943.73	6,958.90	6,955.06	38.25	208.52	90.57	1,090.31	2,154.86	4,620.10	4,387.10	233.00	19.829	
8,600.00	6,943.40	6,958.50	6,954.65	39.29	208.51	90.56	1,090.32	2,154.86	4,702.55	4,469.48	233.07	20.177	
8,700.00	6,943.08	6,958.09	6,954.25	40.37	208.50	90.55	1,090.32	2,154.86	4,785.68	4,552.52	233.15	20.526	
8,800.00	6,942.76	6,957.69	6,953.85	41.49	208.48	90.54	1,090.33	2,154.86	4,869.43	4,636.19	233.24	20.877	
8,900.00	6,942.43	6,957.28	6,953.44	42.64	208.47	90.53	1,090.34	2,154.86	4,953.79	4,720.46	233.34	21.230	
9,000.00	6,942.11	6,956.88	6,953.04	43.82	208.46	90.52	1,090.34	2,154.86	5,038.73	4,805.29	233.44	21.585	
9,100.00	6,941.79	6,956.48	6,952.63	45.03	208.45	90.51	1,090.35	2,154.86	5,124.20	4,890.66	233.55	21.941	
9,200.00	6,941.46	6,956.07	6,952.23	46.27	208.44	90.51	1,090.35	2,154.86	5,210.20	4,976.54	233.66	22.298	
9,300.00	6,941.14	6,955.67	6,951.83	47.53	208.42	90.50	1,090.36	2,154.86	5,296.68	5,062.91	233.78	22.657	
9,400.00	6,940.82	6,955.26	6,951.42	48.81	208.41	90.49	1,090.36	2,154.86	5,383.64	5,149.74	233.90	23.017	
9,500.00	6,940.50	6,954.86	6,951.02	50.11	208.40	90.48	1,090.37	2,154.86	5,471.04	5,237.02	234.02	23.379	
9,600.00	6,940.17	6,954.46	6,950.61	51.43	208.39	90.47	1,090.38	2,154.86	5,558.86	5,324.72	234.14	23.741	
9,700.00	6,939.85	6,954.05	6,950.21	52.76	208.37	90.46	1,090.38	2,154.86	5,647.09	5,412.82	234.27	24.105	
9,800.00	6,939.53	6,953.65	6,949.81	54.11	208.36	90.45	1,090.39	2,154.86	5,735.71	5,501.31	234.39	24.470	
9,900.00	6,939.20	6,953.25	6,949.40	55.48	208.35	90.44	1,090.39	2,154.86	5,824.69	5,590.17	234.52	24.836	
10,000.00	6,938.88	6,952.84	6,949.00	56.86	208.34	90.43	1,090.40	2,154.86	5,914.03	5,679.37	234.65	25.203	
10,100.00	6,938.56	6,952.44	6,948.60	58.25	208.33	90.43	1,090.40	2,154.86	6,003.70	5,768.92	234.78	25.571	
10,200.00	6,938.23	6,952.03	6,948.19	59.65	208.31	90.42	1,090.41	2,154.86	6,093.69	5,858.78	234.91	25.940	
10,300.00	6,937.91	6,951.63	6,947.79	61.06	208.30	90.41	1,090.42	2,154.86	6,184.00	5,948.95	235.04	26.310	
10,400.00	6,937.59	6,951.23	6,947.39	62.48	208.29	90.40	1,090.42	2,154.86	6,274.59	6,039.42	235.17	26.681	
10,500.00	6,937.27	6,950.82	6,946.98	63.91	208.28	90.39	1,090.43	2,154.86	6,365.47	6,130.17	235.30	27.052	
10,600.00	6,936.94	6,950.42	6,946.58	65.34	208.27	90.38	1,090.43	2,154.86	6,456.61	6,221.18	235.43	27.425	
10,700.00	6,936.62	6,950.02	6,946.18	66.79	208.25	90.37	1,090.44	2,154.86	6,548.02	6,312.46	235.56	27.798	
10,800.00	6,936.30	6,949.61	6,945.77	68.24	208.24	90.36	1,090.44	2,154.86	6,639.67	6,403.98	235.69	28.171	
10,900.00	6,935.97	6,949.21	6,945.37	69.70	208.23	90.36	1,090.45	2,154.86	6,731.56	6,495.75	235.82	28.546	
11,000.00	6,935.65	6,948.81	6,944.97	71.17	208.22	90.35	1,090.46	2,154.86	6,823.68	6,587.74	235.95	28.921	
11,100.00	6,935.33	6,948.40	6,944.56	72.64	208.21	90.34	1,090.46	2,154.86	6,916.02	6,679.95	236.07	29.296	
11,200.00	6,935.00	6,948.00	6,944.16	74.11	208.19	90.33	1,090.47	2,154.86	7,008.57	6,772.37	236.20	29.672	
11,300.00	6,934.68	6,947.60	6,943.76	75.60	208.18	90.32	1,090.47	2,154.86	7,101.32	6,864.99	236.32	30.049	
11,400.00	6,934.36	6,947.19	6,943.35	77.08	208.17	90.31	1,090.48	2,154.86	7,194.26	6,957.81	236.45	30.426	
11,500.00	6,934.03	6,946.79	6,942.95	78.57	208.16	90.30	1,090.48	2,154.86	7,287.39	7,050.82	236.57	30.804	
11,600.00	6,933.71	6,946.39	6,942.55	80.07	208.15	90.29	1,090.49	2,154.86	7,380.70	7,144.01	236.69	31.183	
11,700.00	6,933.39	6,945.98	6,942.15	81.57	208.13	90.29	1,090.49	2,154.86	7,474.19	7,237.37	236.82	31.561	
11,800.00	6,933.07	6,945.58	6,941.74	83.07	208.12	90.28	1,090.50	2,154.86	7,567.84	7,330.90	236.94	31.940	
11,900.00	6,932.74	6,945.18	6,941.34	84.58	208.11	90.27	1,090.51	2,154.86	7,661.65	7,424.59	237.06	32.320	
12,000.00	6,932.42	6,944.77	6,940.94	86.09	208.10	90.26	1,090.51	2,154.86	7,755.61	7,518.44	237.17	32.700	
12,100.00	6,932.10	6,944.37	6,940.53	87.60	208.08	90.25	1,090.52	2,154.86	7,849.73	7,612.43	237.29	33.080	
12,200.00	6,931.77	6,943.97	6,940.13	89.12	208.07	90.24	1,090.52	2,154.86	7,943.99	7,706.58	237.41	33.461	
12,300.00	6,931.45	6,943.57	6,939.73	90.64	208.06	90.23	1,090.53	2,154.86	8,038.38	7,800.86	237.53	33.842	
12,400.00	6,931.13	6,943.16	6,939.33	92.16	208.05	90.22	1,090.53	2,154.86	8,132.91	7,895.27	237.64	34.223	
12,500.00	6,930.80	6,942.76	6,938.92	93.69	208.04	90.22	1,090.54	2,154.86	8,227.57	7,989.82	237.76	34.605	
12,600.00	6,930.48	6,942.36	6,938.52	95.22	208.02	90.21	1,090.54	2,154.86	8,322.36	8,084.49	237.87	34.987	
12,700.00	6,930.16	6,941.95	6,938.12	96.75	208.01	90.20	1,090.55	2,154.86	8,417.26	8,179.28	237.98	35.369	
12,800.00	6,929.84	6,941.55	6,937.71	98.28	208.00	90.19	1,090.55	2,154.86	8,512.29	8,274.19	238.09	35.752	
12,900.00	6,929.51	6,941.15	6,937.31	99.82	207.99	90.18	1,090.56	2,154.86	8,607.42	8,369.22	238.21	36.134	
13,000.00	6,929.19	6,940.75	6,936.91	101.35	207.98	90.17	1,090.57	2,154.86	8,702.67	8,464.35	238.32	36.517	
13,100.00	6,928.87	6,940.34	6,936.51	102.89	207.96	90.16	1,090.57	2,154.86	8,798.02	8,559.59	238.43	36.900	
13,200.00	6,928.54	6,939.94	6,936.10	104.43	207.95	90.15	1,090.58	2,154.86	8,893.47	8,654.93	238.54	37.284	
13,300.00	6,928.22	6,939.54	6,935.70	105.97	207.94	90.15	1,090.58	2,154.86	8,989.02	8,750.37	238.64	37.667	
13,400.00	6,927.90	6,939.14	6,935.30	107.52	207.93	90.14	1,090.59	2,154.86	9,084.66	8,845.91	238.75	38.051	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080B - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,938.73	6,934.90	109.06	207.92	90.13	1,090.59	2,154.86	9,180.40	8,941.55	238.86	38.434	
13,600.00	6,927.25	6,938.33	6,934.49	110.61	207.90	90.12	1,090.60	2,154.86	9,276.23	9,037.27	238.96	38.818	
13,700.00	6,926.93	6,937.93	6,934.09	112.16	207.89	90.11	1,090.60	2,154.86	9,372.15	9,133.08	239.07	39.202	
13,800.00	6,926.61	6,937.53	6,933.69	113.71	207.88	90.10	1,090.61	2,154.86	9,468.15	9,228.97	239.18	39.587	
13,900.00	6,926.28	6,937.12	6,933.29	115.26	207.87	90.09	1,090.61	2,154.86	9,564.23	9,324.95	239.28	39.971	
14,000.00	6,925.96	6,936.72	6,932.89	116.82	207.86	90.08	1,090.62	2,154.86	9,660.39	9,421.01	239.38	40.355	
14,100.00	6,925.64	6,936.32	6,932.48	118.37	207.84	90.08	1,090.62	2,154.86	9,756.63	9,517.15	239.49	40.740	
14,200.00	6,925.31	6,935.92	6,932.08	119.93	207.83	90.07	1,090.63	2,154.86	9,852.95	9,613.36	239.59	41.124	
14,300.00	6,924.99	6,935.51	6,931.68	121.48	207.82	90.06	1,090.63	2,154.86	9,949.34	9,709.64	239.69	41.509	
14,400.00	6,924.67	6,935.11	6,931.28	123.04	207.81	90.05	1,090.64	2,154.86	10,045.79	9,806.00	239.79	41.893	
14,500.00	6,924.34	6,934.71	6,930.87	124.60	207.80	90.04	1,090.64	2,154.86	10,142.32	9,902.42	239.90	42.278	
14,600.00	6,924.02	6,934.31	6,930.47	126.16	207.78	90.03	1,090.65	2,154.86	10,238.91	9,998.92	240.00	42.663	
14,700.00	6,923.70	6,933.91	6,930.07	127.72	207.77	90.02	1,090.65	2,154.86	10,335.57	10,095.47	240.10	43.048	
14,800.00	6,923.38	6,933.50	6,929.67	129.28	207.76	90.01	1,090.66	2,154.86	10,432.29	10,192.09	240.20	43.432	
14,900.00	6,923.05	6,933.10	6,929.27	130.85	207.75	90.01	1,090.66	2,154.86	10,529.07	10,288.78	240.30	43.817	
15,000.00	6,922.73	6,932.70	6,928.86	132.41	207.74	90.00	1,090.67	2,154.86	10,625.91	10,385.52	240.39	44.202	
15,100.00	6,922.41	6,932.30	6,928.46	133.97	207.72	89.99	1,090.68	2,154.86	10,722.81	10,482.32	240.49	44.587	
15,200.00	6,922.08	6,931.89	6,928.06	135.54	207.71	89.98	1,090.68	2,154.86	10,819.77	10,579.18	240.59	44.971	
15,300.00	6,921.76	6,931.49	6,927.66	137.11	207.70	89.97	1,090.69	2,154.86	10,916.78	10,676.09	240.69	45.356	
15,400.00	6,921.44	6,931.09	6,927.26	138.67	207.69	89.96	1,090.69	2,154.86	11,013.84	10,773.06	240.79	45.741	
15,500.00	6,921.11	6,930.69	6,926.86	140.24	207.67	89.95	1,090.70	2,154.86	11,110.96	10,870.07	240.89	46.126	
15,600.00	6,920.79	6,930.29	6,926.45	141.81	207.66	89.95	1,090.70	2,154.86	11,208.13	10,967.14	240.98	46.510	
15,700.00	6,920.47	6,929.89	6,926.05	143.38	207.65	89.94	1,090.71	2,154.86	11,305.34	11,064.26	241.08	46.895	
15,800.00	6,920.14	6,929.48	6,925.65	144.95	207.64	89.93	1,090.71	2,154.86	11,402.61	11,161.43	241.18	47.279	
15,900.00	6,919.82	6,929.08	6,925.25	146.52	207.63	89.92	1,090.72	2,154.86	11,499.92	11,258.65	241.27	47.664	
16,000.00	6,919.50	6,928.68	6,924.85	148.09	207.61	89.91	1,090.72	2,154.86	11,597.28	11,355.91	241.37	48.048	
16,100.00	6,919.18	6,928.28	6,924.45	149.66	207.60	89.90	1,090.73	2,154.86	11,694.68	11,453.21	241.46	48.433	
16,200.00	6,918.85	6,927.88	6,924.04	151.24	207.59	89.89	1,090.73	2,154.86	11,792.12	11,550.56	241.56	48.817	
16,300.00	6,918.53	6,927.47	6,923.64	152.81	207.58	89.88	1,090.74	2,154.86	11,889.61	11,647.96	241.65	49.201	
16,400.00	6,918.21	6,927.07	6,923.24	154.38	207.57	89.88	1,090.74	2,154.86	11,987.14	11,745.39	241.75	49.585	
16,500.00	6,917.88	6,926.67	6,922.84	155.96	207.55	89.87	1,090.75	2,154.86	12,084.71	11,842.87	241.84	49.969	
16,600.00	6,917.56	6,926.27	6,922.44	157.53	207.54	89.86	1,090.75	2,154.86	12,182.32	11,940.38	241.94	50.353	
16,700.00	6,917.24	6,925.87	6,922.04	159.11	207.53	89.85	1,090.76	2,154.86	12,279.97	12,037.93	242.03	50.737	
16,800.00	6,916.91	6,925.47	6,921.64	160.68	207.52	89.84	1,090.76	2,154.86	12,377.65	12,135.52	242.13	51.120	
16,900.00	6,916.59	6,925.07	6,921.23	162.26	207.51	89.83	1,090.77	2,154.86	12,475.37	12,233.15	242.22	51.504	
17,000.00	6,916.27	6,924.66	6,920.83	163.84	207.49	89.82	1,090.77	2,154.86	12,573.13	12,330.81	242.32	51.887	
17,100.00	6,915.95	6,924.26	6,920.43	165.41	207.48	89.81	1,090.78	2,154.86	12,670.92	12,428.51	242.41	52.271	
17,200.00	6,915.62	6,923.86	6,920.03	166.99	207.47	89.81	1,090.78	2,154.86	12,768.75	12,526.24	242.50	52.654	
17,300.00	6,915.30	6,923.46	6,919.63	168.57	207.46	89.80	1,090.78	2,154.86	12,866.61	12,624.01	242.60	53.037	
17,400.00	6,914.98	6,923.06	6,919.23	170.15	207.45	89.79	1,090.79	2,154.86	12,964.50	12,721.81	242.69	53.420	
17,500.00	6,914.65	6,922.66	6,918.83	171.73	207.43	89.78	1,090.79	2,154.86	13,062.43	12,819.64	242.78	53.803	
17,600.00	6,914.33	6,922.26	6,918.43	173.31	207.42	89.77	1,090.80	2,154.86	13,160.38	12,917.50	242.88	54.185	
17,700.00	6,914.01	6,921.86	6,918.02	174.89	207.41	89.76	1,090.80	2,154.86	13,258.37	13,015.40	242.97	54.568	
17,800.00	6,913.68	6,921.45	6,917.62	176.47	207.40	89.75	1,090.81	2,154.86	13,356.38	13,113.32	243.06	54.950	
17,900.00	6,913.36	6,921.05	6,917.22	178.05	207.39	89.74	1,090.81	2,154.86	13,454.43	13,211.27	243.16	55.332	
18,000.00	6,913.04	6,920.65	6,916.82	179.63	207.37	89.74	1,090.82	2,154.86	13,552.50	13,309.25	243.25	55.714	
18,100.00	6,912.72	6,920.25	6,916.42	181.21	207.36	89.73	1,090.82	2,154.86	13,650.60	13,407.26	243.34	56.096	
18,111.83	6,912.68	6,920.20	6,916.37	181.40	207.36	89.73	1,090.82	2,154.86	13,662.21	13,418.86	243.36	56.141	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #095 - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	481.00	481.00	0.00	14.41	81.86	1,534.48	10,731.88	10,841.03				
54.25	54.25	535.35	535.25	0.02	16.04	20.31	1,534.48	10,731.88	10,840.92	10,824.86	16.06	675.161	
130.42	130.42	611.52	611.42	0.11	18.32	-6.85	1,534.48	10,731.88	10,840.57	10,822.14	18.44	587.982	
219.69	219.69	700.79	700.69	0.23	21.00	19.22	1,534.48	10,731.88	10,840.11	10,818.88	21.23	510.686	
308.67	308.67	794.58	794.43	0.35	23.81	10.30	1,536.59	10,731.88	10,839.90	10,815.74	24.15	448.841	
386.04	386.04	881.29	881.13	0.43	26.41	-102.99	1,536.06	10,731.88	10,839.64	10,812.80	26.84	403.893 CC	
454.00	453.99	957.48	957.29	0.51	28.69	-124.27	1,535.15	10,731.88	10,839.84	10,810.64	29.20	371.244	
544.00	543.93	1,025.34	1,024.93	0.74	30.72	-123.94	1,534.48	10,731.88	10,841.44	10,809.98	31.46	344.643	
667.00	666.63	1,148.04	1,147.63	1.13	34.40	-136.97	1,534.48	10,731.88	10,847.13	10,811.59	35.53	305.276	
756.00	755.27	1,236.68	1,236.27	1.44	37.06	-122.11	1,534.48	10,731.88	10,852.19	10,813.69	38.50	281.885	
850.00	848.62	1,339.89	1,339.43	1.79	40.15	-120.48	1,536.38	10,731.88	10,858.16	10,816.23	41.93	258.936	
942.00	939.50	1,442.18	1,441.69	2.14	43.21	-114.04	1,535.37	10,731.88	10,864.55	10,819.20	45.35	239.558	
1,033.00	1,028.89	1,510.60	1,509.89	2.52	45.26	-104.80	1,534.48	10,731.88	10,870.05	10,822.28	47.77	227.560	
1,123.00	1,117.00	1,598.71	1,598.00	2.90	47.90	-98.75	1,534.48	10,731.88	10,873.85	10,823.07	50.78	214.128	
1,214.00	1,206.00	1,687.71	1,687.00	3.29	50.57	-99.52	1,534.48	10,731.88	10,876.93	10,823.09	53.84	202.035	
1,309.00	1,298.75	1,784.46	1,783.71	3.71	53.47	-96.70	1,536.62	10,731.88	10,880.20	10,823.05	57.15	190.379	
1,403.00	1,390.39	1,888.33	1,887.56	4.13	56.58	-93.86	1,535.99	10,731.88	10,882.09	10,821.41	60.68	179.338	
1,498.00	1,482.88	1,993.55	1,992.74	4.56	59.74	-97.18	1,534.59	10,731.88	10,884.05	10,819.79	64.26	169.375	
1,592.00	1,573.82	2,055.84	2,054.82	5.00	61.60	-97.61	1,534.48	10,731.88	10,887.16	10,820.59	66.57	163.552	
1,687.00	1,665.32	2,147.33	2,146.32	5.46	64.34	-94.85	1,534.48	10,731.88	10,890.03	10,820.27	69.77	156.094	
1,876.00	1,847.35	2,340.79	2,339.72	6.38	70.14	-92.59	1,536.37	10,731.88	10,893.76	10,817.28	76.48	142.431	
1,970.00	1,937.87	2,444.74	2,443.64	6.84	73.26	-92.54	1,535.33	10,731.88	10,894.78	10,814.72	80.06	136.084	
2,064.00	2,028.42	2,510.74	2,509.42	7.30	75.23	-92.12	1,534.48	10,731.88	10,895.66	10,813.17	82.50	132.072	
2,159.00	2,119.97	2,602.29	2,600.97	7.77	77.98	-91.04	1,534.48	10,731.88	10,896.39	10,810.68	85.71	127.135	
2,348.00	2,302.44	2,790.18	2,788.81	8.69	83.61	-95.95	1,536.60	10,731.88	10,899.79	10,807.53	92.26	118.140	
2,443.00	2,394.41	2,896.70	2,895.32	9.15	86.80	-96.71	1,535.91	10,731.88	10,902.39	10,806.48	95.91	113.672	
2,537.00	2,485.45	3,002.59	3,001.17	9.61	89.97	-97.06	1,534.43	10,731.88	10,905.04	10,805.51	99.54	109.559	
2,632.00	2,577.48	3,060.10	3,058.48	10.07	91.69	-96.86	1,534.48	10,731.88	10,907.94	10,806.22	101.72	107.240	
2,727.00	2,669.50	3,152.13	3,150.50	10.53	94.45	-96.93	1,534.48	10,731.88	10,910.86	10,805.93	104.93	103.983	
2,821.00	2,760.56	3,243.18	3,241.56	10.98	97.18	-97.28	1,534.48	10,731.88	10,913.83	10,805.72	108.11	100.952	
2,916.00	2,852.68	3,349.69	3,348.01	11.44	100.37	-97.51	1,536.31	10,731.88	10,917.26	10,805.51	111.75	97.689	
3,011.00	2,945.03	3,458.01	3,456.30	11.89	103.62	-97.55	1,535.15	10,731.88	10,920.07	10,804.62	115.45	94.589 ES	
3,105.00	3,036.57	3,519.50	3,517.57	12.33	105.46	-103.22	1,534.48	10,731.88	10,923.84	10,806.11	117.73	92.791	
3,200.00	3,128.81	3,611.73	3,609.81	12.78	108.22	-106.47	1,534.48	10,731.88	10,929.86	10,808.92	120.94	90.377	
3,294.00	3,219.76	3,702.69	3,700.76	13.24	110.95	-106.94	1,534.48	10,731.88	10,936.89	10,812.78	124.11	88.122	
3,389.00	3,311.82	3,802.79	3,800.81	13.69	113.95	-106.13	1,536.56	10,731.88	10,944.18	10,816.62	127.56	85.796	
3,483.00	3,403.03	3,910.68	3,908.68	14.14	117.18	-105.91	1,535.76	10,731.88	10,950.48	10,819.25	131.24	83.441	
3,578.00	3,495.31	4,020.26	4,018.22	14.60	120.47	-105.53	1,534.11	10,731.88	10,956.47	10,821.50	134.96	81.181	
3,672.00	3,586.65	4,069.88	4,067.65	15.04	121.95	-104.47	1,534.48	10,731.88	10,962.36	10,825.47	136.89	80.082	
3,767.00	3,678.95	4,162.19	4,159.95	15.49	124.72	-104.11	1,534.48	10,731.88	10,968.05	10,827.95	140.10	78.287	
3,862.00	3,771.63	4,255.82	4,253.55	15.93	127.52	-104.54	1,536.66	10,731.88	10,973.78	10,830.44	143.34	76.559	
3,956.00	3,863.70	4,365.58	4,363.28	16.35	130.81	-104.35	1,536.19	10,731.88	10,978.53	10,831.48	147.04	74.663	
4,052.00	3,957.54	4,477.86	4,475.53	16.79	134.18	-105.55	1,534.84	10,731.88	10,983.62	10,832.79	150.84	72.818	
4,146.00	4,048.88	4,532.42	4,529.88	17.24	135.81	-105.58	1,534.48	10,731.88	10,989.59	10,836.68	152.91	71.870	
4,241.00	4,140.47	4,624.01	4,621.47	17.71	138.56	-103.00	1,534.48	10,731.88	10,995.99	10,839.88	156.12	70.434	
4,336.00	4,231.25	4,714.79	4,712.25	18.21	141.28	-99.81	1,534.48	10,731.88	11,001.74	10,842.41	159.33	69.051	
4,430.00	4,320.59	4,815.23	4,812.64	18.71	144.29	-101.59	1,536.51	10,731.88	11,007.88	10,845.05	162.83	67.603	
4,524.00	4,409.51	4,922.80	4,920.19	19.22	147.51	-105.21	1,535.61	10,731.88	11,015.17	10,848.61	166.56	66.134	
4,619.00	4,498.98	5,031.65	5,029.00	19.75	150.77	-106.06	1,533.89	10,731.88	11,023.92	10,853.58	170.34	64.719	
4,713.00	4,587.83	5,071.67	5,068.83	20.27	151.97	-106.23	1,534.48	10,731.88	11,032.90	10,860.87	172.04	64.132	
4,807.00	4,676.97	5,160.81	5,157.97	20.78	154.64	-105.05	1,534.48	10,731.88	11,041.35	10,866.15	175.20	63.021	
4,870.00	4,736.65	5,220.49	5,217.65	21.12	156.43	-104.78	1,534.48	10,731.88	11,046.81	10,869.48	177.33	62.297	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #095 - OH - OH-TD — **Offset Site Error:** 0.00 usft

Survey Program: 500-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
4,933.00	4,796.58	5,287.19	5,284.30	21.46	158.43	-105.04	1,536.61	10,731.88	11,052.54	10,872.89	179.65	61.522	
5,027.00	4,886.13	5,396.91	5,394.00	21.96	161.72	-104.42	1,535.90	10,731.88	11,059.99	10,876.56	183.43	60.296	
5,121.00	4,976.11	5,507.70	5,504.75	22.45	165.04	-104.42	1,534.34	10,731.88	11,066.72	10,879.49	187.23	59.109	
5,216.00	5,068.11	5,552.25	5,549.11	22.91	166.37	-104.60	1,534.48	10,731.88	11,072.75	10,883.74	189.01	58.582	
5,341.00	5,190.11	5,674.26	5,671.11	23.49	170.03	-105.23	1,534.48	10,731.88	11,079.90	10,886.66	193.23	57.340	
5,436.00	5,283.20	5,771.45	5,768.26	23.91	172.94	-105.27	1,536.64	10,731.88	11,085.50	10,888.95	196.56	56.398	
5,499.00	5,345.03	5,847.87	5,844.67	24.19	175.23	-105.44	1,536.32	10,731.88	11,088.70	10,889.58	199.12	55.688	
5,561.00	5,405.97	5,923.36	5,920.14	24.45	177.49	-104.53	1,535.61	10,731.88	11,091.56	10,889.91	201.65	55.005	
5,624.00	5,467.97	6,000.33	5,997.08	24.72	179.80	-105.67	1,534.47	10,731.88	11,094.27	10,890.06	204.22	54.326	
5,687.00	5,530.05	6,014.50	6,011.05	24.99	180.22	-104.79	1,534.48	10,731.88	11,097.03	10,892.13	204.90	54.158	
5,750.00	5,592.20	6,076.65	6,073.20	25.25	182.08	-104.61	1,534.48	10,731.88	11,099.68	10,892.66	207.02	53.616	
5,813.00	5,654.42	6,138.87	6,135.42	25.51	183.95	-103.66	1,534.48	10,731.88	11,102.13	10,892.99	209.14	53.085	
5,876.00	5,716.68	6,201.13	6,197.68	25.76	185.81	-103.51	1,534.48	10,731.88	11,104.41	10,893.15	211.26	52.564	
5,939.00	5,778.99	6,263.44	6,259.99	26.01	187.68	-103.77	1,534.48	10,731.88	11,106.62	10,893.25	213.37	52.053	
6,065.00	5,903.86	6,300.00	6,296.37	26.51	188.78	-103.96	1,534.48	10,731.88	11,111.06	10,896.12	214.94	51.694	
6,128.00	5,966.41	6,300.00	6,296.37	26.74	188.78	-105.43	1,534.48	10,731.88	11,113.63	10,898.48	215.16	51.654	
6,191.00	6,029.04	6,300.00	6,296.37	26.97	188.78	-104.82	1,534.48	10,731.88	11,116.47	10,901.11	215.36	51.618	
6,254.00	6,091.75	6,300.00	6,296.37	27.20	188.78	-103.99	1,534.48	10,731.88	11,119.37	10,903.82	215.55	51.585	
6,348.00	6,185.46	6,300.00	6,296.37	27.52	188.78	-101.23	1,534.48	10,731.88	11,123.75	10,907.93	215.82	51.543	
6,390.00	6,227.36	6,300.00	6,296.37	27.61	188.78	-101.23	1,534.48	10,731.88	11,125.80	10,909.94	215.86	51.541 SF	
6,400.00	6,237.33	6,300.00	6,296.37	27.61	188.78	-101.23	1,534.48	10,731.88	11,126.31	10,910.45	215.86	51.544	
6,490.00	6,327.12	6,300.00	6,296.37	27.66	188.78	-101.23	1,534.48	10,731.88	11,131.32	10,915.49	215.82	51.576	
6,500.00	6,337.09	6,300.00	6,296.37	27.66	188.78	-113.64	1,534.48	10,731.88	11,132.00	10,916.18	215.82	51.580	
6,550.00	6,386.85	6,300.00	6,296.37	27.70	188.78	-150.25	1,534.48	10,731.88	11,137.90	10,922.11	215.80	51.613	
6,600.00	6,436.20	6,300.00	6,296.37	27.74	188.78	-163.11	1,534.48	10,731.88	11,147.96	10,932.19	215.77	51.665	
6,650.00	6,484.82	6,300.00	6,296.37	27.79	188.78	-169.02	1,534.48	10,731.88	11,162.08	10,946.33	215.74	51.737	
6,700.00	6,532.40	6,300.00	6,296.37	27.85	188.78	-172.38	1,534.48	10,731.88	11,180.16	10,964.44	215.72	51.828	
6,750.00	6,578.63	6,300.00	6,296.37	27.92	188.78	-174.58	1,534.48	10,731.88	11,202.07	10,986.38	215.69	51.937	
6,800.00	6,623.24	6,300.00	6,296.37	28.00	188.78	-176.17	1,534.48	10,731.88	11,227.65	11,011.99	215.66	52.063	
6,850.00	6,665.93	6,300.00	6,296.37	28.09	188.78	-177.42	1,534.48	10,731.88	11,256.71	11,041.09	215.63	52.205	
6,900.00	6,706.42	6,300.00	6,296.37	28.19	188.78	-178.49	1,534.48	10,731.88	11,289.04	11,073.45	215.60	52.362	
6,950.00	6,744.48	6,300.00	6,296.37	28.30	188.78	-179.46	1,534.48	10,731.88	11,324.41	11,108.84	215.57	52.533	
7,000.00	6,779.84	6,300.00	6,296.37	28.43	188.78	179.56	1,534.48	10,731.88	11,362.57	11,147.02	215.54	52.716	
7,050.00	6,812.30	6,300.00	6,296.37	28.57	188.78	178.52	1,534.48	10,731.88	11,403.24	11,187.72	215.52	52.911	
7,100.00	6,841.63	6,300.00	6,296.37	28.73	188.78	177.31	1,534.48	10,731.88	11,446.14	11,230.65	215.49	53.116	
7,150.00	6,867.66	6,300.00	6,296.37	28.90	188.78	175.78	1,534.48	10,731.88	11,490.99	11,275.51	215.47	53.329	
7,200.00	6,890.22	6,300.00	6,296.37	29.08	188.78	173.65	1,534.48	10,731.88	11,537.46	11,322.01	215.45	53.549	
7,250.00	6,909.17	6,300.00	6,296.37	29.28	188.78	170.34	1,534.48	10,731.88	11,585.25	11,369.82	215.44	53.776	
7,300.00	6,924.38	6,300.00	6,296.37	29.49	188.78	164.28	1,534.48	10,731.88	11,634.05	11,418.63	215.42	54.006	
7,350.00	6,935.77	6,300.00	6,296.37	29.72	188.78	149.91	1,534.48	10,731.88	11,683.52	11,468.11	215.41	54.239	
7,400.00	6,943.25	6,300.00	6,296.37	29.97	188.78	103.23	1,534.48	10,731.88	11,733.35	11,517.96	215.39	54.474	
7,450.00	6,946.78	6,300.00	6,296.37	30.22	188.78	44.79	1,534.48	10,731.88	11,783.23	11,567.85	215.38	54.708	
7,471.54	6,947.08	6,300.00	6,296.37	30.34	188.78	34.05	1,534.48	10,731.88	11,804.65	11,589.27	215.38	54.809	
7,500.00	6,946.98	6,300.00	6,296.37	30.49	188.78	37.79	1,534.48	10,731.88	11,832.89	11,617.52	215.37	54.941	
7,600.00	6,946.65	6,300.00	6,296.37	31.07	188.78	48.41	1,534.48	10,731.88	11,931.96	11,716.62	215.34	55.410	
7,700.00	6,946.32	6,300.00	6,296.37	31.69	188.78	55.95	1,534.48	10,731.88	12,030.66	11,815.37	215.29	55.882	
7,800.00	6,945.99	6,300.00	6,296.37	32.35	188.78	61.41	1,534.48	10,731.88	12,128.88	11,913.67	215.22	56.356	
7,900.00	6,945.67	6,300.00	6,296.37	33.05	188.78	65.46	1,534.48	10,731.88	12,226.52	12,011.39	215.13	56.833	
8,000.00	6,945.34	6,300.00	6,296.37	33.79	188.78	68.57	1,534.48	10,731.88	12,323.48	12,108.44	215.03	57.310	
8,034.58	6,945.23	6,300.00	6,296.37	34.05	188.78	69.47	1,534.48	10,731.88	12,356.82	12,141.83	214.99	57.475	
8,100.00	6,945.02	6,300.00	6,296.37	34.57	188.78	69.47	1,534.48	10,731.88	12,419.83	12,204.91	214.92	57.787	
8,200.00	6,944.69	6,300.00	6,296.37	35.41	188.78	69.47	1,534.48	10,731.88	12,516.20	12,301.38	214.82	58.263	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #095 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,300.00	6,296.37	36.30	188.78	69.47	1,534.48	10,731.88	12,612.62	12,397.89	214.73	58.738	
8,400.00	6,944.05	6,300.00	6,296.37	37.25	188.78	69.47	1,534.48	10,731.88	12,709.09	12,494.45	214.64	59.212	
8,500.00	6,943.73	6,300.00	6,296.37	38.25	188.78	69.47	1,534.48	10,731.88	12,805.62	12,591.07	214.56	59.684	
8,600.00	6,943.40	6,300.00	6,296.37	39.29	188.78	69.47	1,534.48	10,731.88	12,902.20	12,687.72	214.48	60.156	
8,700.00	6,943.08	6,300.00	6,296.37	40.37	188.78	69.47	1,534.48	10,731.88	12,998.84	12,784.43	214.41	60.626	
8,800.00	6,942.76	6,300.00	6,296.37	41.49	188.78	69.47	1,534.48	10,731.88	13,095.52	12,881.18	214.35	61.095	
8,900.00	6,942.43	6,300.00	6,296.37	42.64	188.78	69.47	1,534.48	10,731.88	13,192.26	12,977.97	214.29	61.563	
9,000.00	6,942.11	6,300.00	6,296.37	43.82	188.78	69.47	1,534.48	10,731.88	13,289.04	13,074.80	214.24	62.030	
9,100.00	6,941.79	6,300.00	6,296.37	45.03	188.78	69.47	1,534.48	10,731.88	13,385.87	13,171.68	214.19	62.495	
9,200.00	6,941.46	6,300.00	6,296.37	46.27	188.78	69.47	1,534.48	10,731.88	13,482.74	13,268.59	214.15	62.960	
9,300.00	6,941.14	6,300.00	6,296.37	47.53	188.78	69.47	1,534.48	10,731.88	13,579.66	13,365.55	214.11	63.423	
9,400.00	6,940.82	6,300.00	6,296.37	48.81	188.78	69.47	1,534.48	10,731.88	13,676.63	13,462.55	214.08	63.885	
9,500.00	6,940.50	6,300.00	6,296.37	50.11	188.78	69.47	1,534.48	10,731.88	13,773.64	13,559.58	214.05	64.346	
9,600.00	6,940.17	6,300.00	6,296.37	51.43	188.78	69.47	1,534.48	10,731.88	13,870.69	13,656.66	214.03	64.806	
9,700.00	6,939.85	6,300.00	6,296.37	52.76	188.78	69.47	1,534.48	10,731.88	13,967.78	13,753.77	214.02	65.265	
9,800.00	6,939.53	6,300.00	6,296.37	54.11	188.78	69.47	1,534.48	10,731.88	14,064.92	13,850.91	214.00	65.723	
9,900.00	6,939.20	6,300.00	6,296.37	55.48	188.78	69.47	1,534.48	10,731.88	14,162.09	13,948.09	214.00	66.179	
10,000.00	6,938.88	6,300.00	6,296.37	56.86	188.78	69.47	1,534.48	10,731.88	14,259.30	14,045.31	213.99	66.634	
10,100.00	6,938.56	6,300.00	6,296.37	58.25	188.78	69.47	1,534.48	10,731.88	14,356.55	14,142.56	213.99	67.089	
10,200.00	6,938.23	6,300.00	6,296.37	59.65	188.78	69.47	1,534.48	10,731.88	14,453.84	14,239.84	214.00	67.542	
10,300.00	6,937.91	6,300.00	6,296.37	61.06	188.78	69.47	1,534.48	10,731.88	14,551.17	14,337.16	214.01	67.994	
10,400.00	6,937.59	6,300.00	6,296.37	62.48	188.78	69.47	1,534.48	10,731.88	14,648.53	14,434.51	214.02	68.445	
10,500.00	6,937.27	6,300.00	6,296.37	63.91	188.78	69.47	1,534.48	10,731.88	14,745.92	14,531.89	214.04	68.895	
10,600.00	6,936.94	6,300.00	6,296.37	65.34	188.78	69.47	1,534.48	10,731.88	14,843.35	14,629.30	214.06	69.343	
10,700.00	6,936.62	6,300.00	6,296.37	66.79	188.78	69.47	1,534.48	10,731.88	14,940.82	14,726.74	214.08	69.791	
10,800.00	6,936.30	6,300.00	6,296.37	68.24	188.78	69.47	1,534.48	10,731.88	15,038.32	14,824.21	214.11	70.238	
10,900.00	6,935.97	6,300.00	6,296.37	69.70	188.78	69.47	1,534.48	10,731.88	15,135.85	14,921.71	214.14	70.683	
11,000.00	6,935.65	6,300.00	6,296.37	71.17	188.78	69.47	1,534.48	10,731.88	15,233.41	15,019.24	214.17	71.128	
11,100.00	6,935.33	6,300.00	6,296.37	72.64	188.78	69.47	1,534.48	10,731.88	15,331.01	15,116.80	214.21	71.571	
11,200.00	6,935.00	6,300.00	6,296.37	74.11	188.78	69.47	1,534.48	10,731.88	15,428.63	15,214.39	214.25	72.014	
11,300.00	6,934.68	6,300.00	6,296.37	75.60	188.78	69.47	1,534.48	10,731.88	15,526.29	15,312.00	214.29	72.455	
11,400.00	6,934.36	6,300.00	6,296.37	77.08	188.78	69.47	1,534.48	10,731.88	15,623.97	15,409.64	214.33	72.896	
11,500.00	6,934.03	6,300.00	6,296.37	78.57	188.78	69.47	1,534.48	10,731.88	15,721.69	15,507.31	214.38	73.335	
11,600.00	6,933.71	6,300.00	6,296.37	80.07	188.78	69.47	1,534.48	10,731.88	15,819.43	15,605.00	214.43	73.774	
11,700.00	6,933.39	6,300.00	6,296.37	81.57	188.78	69.47	1,534.48	10,731.88	15,917.20	15,702.72	214.48	74.211	
11,800.00	6,933.07	6,300.00	6,296.37	83.07	188.78	69.47	1,534.48	10,731.88	16,015.00	15,800.46	214.54	74.648	
11,900.00	6,932.74	6,300.00	6,296.37	84.58	188.78	69.47	1,534.48	10,731.88	16,112.82	15,898.23	214.60	75.083	
12,000.00	6,932.42	6,300.00	6,296.37	86.09	188.78	69.47	1,534.48	10,731.88	16,210.68	15,996.02	214.66	75.518	
12,100.00	6,932.10	6,300.00	6,296.37	87.60	188.78	69.47	1,534.48	10,731.88	16,308.55	16,093.83	214.72	75.952	
12,200.00	6,931.77	6,300.00	6,296.37	89.12	188.78	69.47	1,534.48	10,731.88	16,406.46	16,191.67	214.79	76.385	
12,300.00	6,931.45	6,300.00	6,296.37	90.64	188.78	69.47	1,534.48	10,731.88	16,504.39	16,289.53	214.85	76.817	
12,400.00	6,931.13	6,300.00	6,296.37	92.16	188.78	69.47	1,534.48	10,731.88	16,602.34	16,387.42	214.92	77.248	
12,500.00	6,930.80	6,300.00	6,296.37	93.69	188.78	69.47	1,534.48	10,731.88	16,700.32	16,485.32	214.99	77.678	
12,600.00	6,930.48	6,300.00	6,296.37	95.22	188.78	69.47	1,534.48	10,731.88	16,798.32	16,583.25	215.07	78.107	
12,700.00	6,930.16	6,300.00	6,296.37	96.75	188.78	69.47	1,534.48	10,731.88	16,896.34	16,681.20	215.14	78.536	
12,800.00	6,929.84	6,300.00	6,296.37	98.28	188.78	69.47	1,534.48	10,731.88	16,994.39	16,779.17	215.22	78.963	
12,900.00	6,929.51	6,300.00	6,296.37	99.82	188.78	69.47	1,534.48	10,731.88	17,092.46	16,877.16	215.30	79.390	
13,000.00	6,929.19	6,300.00	6,296.37	101.35	188.78	69.47	1,534.48	10,731.88	17,190.55	16,975.18	215.38	79.816	
13,100.00	6,928.87	6,300.00	6,296.37	102.89	188.78	69.47	1,534.48	10,731.88	17,288.67	17,073.21	215.46	80.241	
13,200.00	6,928.54	6,300.00	6,296.37	104.43	188.78	69.47	1,534.48	10,731.88	17,386.81	17,171.26	215.54	80.665	
13,300.00	6,928.22	6,300.00	6,296.37	105.97	188.78	69.47	1,534.48	10,731.88	17,484.96	17,269.34	215.63	81.089	
13,400.00	6,927.90	6,300.00	6,296.37	107.52	188.78	69.47	1,534.48	10,731.88	17,583.14	17,367.43	215.71	81.512	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #095 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,300.00	6,296.37	109.06	188.78	69.47	1,534.48	10,731.88	17,681.34	17,465.54	215.80	81.933	
13,600.00	6,927.25	6,300.00	6,296.37	110.61	188.78	69.47	1,534.48	10,731.88	17,779.56	17,563.67	215.89	82.355	
13,700.00	6,926.93	6,300.00	6,296.37	112.16	188.78	69.47	1,534.48	10,731.88	17,877.80	17,661.81	215.98	82.775	
13,800.00	6,926.61	6,300.00	6,296.37	113.71	188.78	69.47	1,534.48	10,731.88	17,976.05	17,759.98	216.07	83.194	
13,900.00	6,926.28	6,300.00	6,296.37	115.26	188.78	69.47	1,534.48	10,731.88	18,074.33	17,858.16	216.17	83.613	
14,000.00	6,925.96	6,300.00	6,296.37	116.82	188.78	69.47	1,534.48	10,731.88	18,172.63	17,956.37	216.26	84.031	
14,100.00	6,925.64	6,300.00	6,296.37	118.37	188.78	69.47	1,534.48	10,731.88	18,270.94	18,054.58	216.36	84.449	
14,200.00	6,925.31	6,300.00	6,296.37	119.93	188.78	69.47	1,534.48	10,731.88	18,369.27	18,152.82	216.45	84.865	
14,300.00	6,924.99	6,300.00	6,296.37	121.48	188.78	69.47	1,534.48	10,731.88	18,467.62	18,251.07	216.55	85.281	
14,400.00	6,924.67	6,300.00	6,296.37	123.04	188.78	69.47	1,534.48	10,731.88	18,565.99	18,349.34	216.65	85.696	
14,500.00	6,924.34	6,300.00	6,296.37	124.60	188.78	69.47	1,534.48	10,731.88	18,664.38	18,447.63	216.75	86.111	
14,600.00	6,924.02	6,300.00	6,296.37	126.16	188.78	69.47	1,534.48	10,731.88	18,762.78	18,545.93	216.85	86.524	
14,700.00	6,923.70	6,300.00	6,296.37	127.72	188.78	69.47	1,534.48	10,731.88	18,861.20	18,644.25	216.95	86.937	
14,800.00	6,923.38	6,300.00	6,296.37	129.28	188.78	69.47	1,534.48	10,731.88	18,959.63	18,742.58	217.05	87.350	
14,900.00	6,923.05	6,300.00	6,296.37	130.85	188.78	69.47	1,534.48	10,731.88	19,058.08	18,840.93	217.16	87.761	
15,000.00	6,922.73	6,300.00	6,296.37	132.41	188.78	69.47	1,534.48	10,731.88	19,156.55	18,939.29	217.26	88.172	
15,100.00	6,922.41	6,300.00	6,296.37	133.97	188.78	69.47	1,534.48	10,731.88	19,255.04	19,037.67	217.37	88.583	
15,200.00	6,922.08	6,300.00	6,296.37	135.54	188.78	69.47	1,534.48	10,731.88	19,353.54	19,136.06	217.47	88.992	
15,300.00	6,921.76	6,300.00	6,296.37	137.11	188.78	69.47	1,534.48	10,731.88	19,452.05	19,234.47	217.58	89.401	
15,400.00	6,921.44	6,300.00	6,296.37	138.67	188.78	69.47	1,534.48	10,731.88	19,550.58	19,332.89	217.69	89.810	
15,500.00	6,921.11	6,300.00	6,296.37	140.24	188.78	69.47	1,534.48	10,731.88	19,649.12	19,431.33	217.80	90.217	
15,600.00	6,920.79	6,300.00	6,296.37	141.81	188.78	69.47	1,534.48	10,731.88	19,747.68	19,529.78	217.91	90.625	
15,700.00	6,920.47	6,300.00	6,296.37	143.38	188.78	69.47	1,534.48	10,731.88	19,846.26	19,628.24	218.02	91.031	
15,800.00	6,920.14	6,300.00	6,296.37	144.95	188.78	69.47	1,534.48	10,731.88	19,944.84	19,726.72	218.13	91.437	
15,900.00	6,919.82	6,300.00	6,296.37	146.52	188.78	69.47	1,534.48	10,731.88	20,043.45	19,825.21	218.24	91.842	
16,000.00	6,919.50	6,300.00	6,296.37	148.09	188.78	69.47	1,534.48	10,731.88	20,142.06	19,923.71	218.35	92.247	
16,100.00	6,919.18	6,300.00	6,296.37	149.66	188.78	69.47	1,534.48	10,731.88	20,240.69	20,022.23	218.46	92.651	
16,200.00	6,918.85	6,300.00	6,296.37	151.24	188.78	69.47	1,534.48	10,731.88	20,339.33	20,120.76	218.58	93.054	
16,300.00	6,918.53	6,300.00	6,296.37	152.81	188.78	69.47	1,534.48	10,731.88	20,437.99	20,219.30	218.69	93.457	
16,400.00	6,918.21	6,300.00	6,296.37	154.38	188.78	69.47	1,534.48	10,731.88	20,536.66	20,317.85	218.80	93.859	
16,500.00	6,917.88	6,300.00	6,296.37	155.96	188.78	69.47	1,534.48	10,731.88	20,635.34	20,416.42	218.92	94.260	
16,600.00	6,917.56	6,300.00	6,296.37	157.53	188.78	69.47	1,534.48	10,731.88	20,734.03	20,515.00	219.03	94.661	
16,700.00	6,917.24	6,300.00	6,296.37	159.11	188.78	69.47	1,534.48	10,731.88	20,832.74	20,613.59	219.15	95.062	
16,800.00	6,916.91	6,300.00	6,296.37	160.68	188.78	69.47	1,534.48	10,731.88	20,931.46	20,712.19	219.27	95.462	
16,900.00	6,916.59	6,300.00	6,296.37	162.26	188.78	69.47	1,534.48	10,731.88	21,030.19	20,810.81	219.38	95.861	
17,000.00	6,916.27	6,300.00	6,296.37	163.84	188.78	69.47	1,534.48	10,731.88	21,128.93	20,909.43	219.50	96.259	
17,100.00	6,915.95	6,300.00	6,296.37	165.41	188.78	69.47	1,534.48	10,731.88	21,227.69	21,008.07	219.62	96.658	
17,200.00	6,915.62	6,300.00	6,296.37	166.99	188.78	69.47	1,534.48	10,731.88	21,326.45	21,106.72	219.74	97.055	
17,300.00	6,915.30	6,300.00	6,296.37	168.57	188.78	69.47	1,534.48	10,731.88	21,425.23	21,205.38	219.85	97.452	
17,400.00	6,914.98	6,300.00	6,296.37	170.15	188.78	69.47	1,534.48	10,731.88	21,524.02	21,304.05	219.97	97.849	
17,500.00	6,914.65	6,300.00	6,296.37	171.73	188.78	69.47	1,534.48	10,731.88	21,622.82	21,402.73	220.09	98.244	
17,600.00	6,914.33	6,300.00	6,296.37	173.31	188.78	69.47	1,534.48	10,731.88	21,721.63	21,501.42	220.21	98.640	
17,700.00	6,914.01	6,300.00	6,296.37	174.89	188.78	69.47	1,534.48	10,731.88	21,820.45	21,600.12	220.33	99.034	
17,800.00	6,913.68	6,300.00	6,296.37	176.47	188.78	69.47	1,534.48	10,731.88	21,919.29	21,698.84	220.45	99.429	
17,900.00	6,913.36	6,300.00	6,296.37	178.05	188.78	69.47	1,534.48	10,731.88	22,018.13	21,797.56	220.57	99.822	
18,000.00	6,913.04	6,300.00	6,296.37	179.63	188.78	69.47	1,534.48	10,731.88	22,116.98	21,896.29	220.69	100.216	
18,100.00	6,912.72	6,300.00	6,296.37	181.21	188.78	69.47	1,534.48	10,731.88	22,215.85	21,995.03	220.82	100.608	
18,111.83	6,912.68	6,300.00	6,296.37	181.40	188.78	69.47	1,534.48	10,731.88	22,227.55	22,006.72	220.83	100.655	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #108 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 107-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	-24.16	815.88	-366.00	895.61				
54.25	54.25	4.25	4.25	0.02	0.08	-85.72	815.88	-366.00	894.21	894.12	0.09	9,672.540	
64.38	64.38	14.38	14.38	0.03	0.28	-90.00	815.88	-366.00	894.21	893.91	0.30	2,988.098	CC
130.42	130.42	80.42	80.42	0.11	1.58	-112.90	815.88	-366.00	894.27	892.63	1.65	542.902	
219.69	219.69	170.06	170.05	0.23	3.27	-86.85	816.08	-366.00	894.53	891.13	3.39	263.500	
274.33	274.32	230.14	230.13	0.30	4.37	-92.60	815.85	-366.00	894.34	889.80	4.54	197.112	
308.67	308.67	258.67	258.67	0.35	4.90	-95.80	815.88	-366.00	894.37	889.28	5.09	175.778	
454.00	453.99	405.78	405.77	0.51	7.61	129.64	815.88	-366.00	895.06	887.09	7.97	112.315	
544.00	543.93	493.95	493.93	0.74	9.35	130.05	815.88	-366.00	897.03	887.05	9.98	89.857	ES
667.00	666.63	616.65	616.63	1.13	11.76	117.40	815.88	-366.00	901.58	888.76	12.83	70.295	
756.00	755.27	706.34	706.31	1.44	13.52	132.67	816.68	-366.00	906.98	892.07	14.91	60.818	
850.00	848.62	801.80	801.78	1.79	15.40	134.62	816.44	-366.00	914.37	897.23	17.14	53.341	
942.00	939.50	894.81	894.78	2.14	17.22	141.47	815.98	-366.00	924.71	905.38	19.33	47.848	
1,033.00	1,028.89	978.95	978.89	2.52	18.84	151.28	815.88	-366.00	938.89	917.59	21.30	44.088	
1,123.00	1,117.00	1,067.05	1,067.00	2.90	20.51	158.04	815.88	-366.00	955.54	932.22	23.32	40.976	
1,214.00	1,206.00	1,157.31	1,157.25	3.29	22.23	157.78	816.52	-366.00	973.75	948.37	25.38	38.365	
1,309.00	1,298.75	1,252.95	1,252.89	3.71	24.05	161.17	816.25	-366.00	992.80	965.23	27.56	36.021	
1,403.00	1,390.39	1,340.48	1,340.39	4.13	25.69	164.61	815.88	-366.00	1,012.49	982.93	29.56	34.254	
1,498.00	1,482.88	1,432.96	1,432.88	4.56	27.34	161.53	815.88	-366.00	1,033.30	1,001.73	31.57	32.734	
1,592.00	1,573.82	1,525.31	1,525.23	5.00	28.99	161.37	816.19	-366.00	1,056.17	1,022.59	33.58	31.452	
1,687.00	1,665.32	1,619.54	1,619.46	5.46	30.67	164.86	815.93	-366.00	1,080.48	1,044.85	35.63	30.324	
1,876.00	1,847.35	1,797.44	1,797.35	6.38	33.94	168.19	815.88	-366.00	1,129.95	1,090.32	39.63	28.510	
1,970.00	1,937.87	1,888.38	1,888.29	6.84	35.62	168.64	816.12	-366.00	1,155.03	1,113.36	41.67	27.716	
2,064.00	2,028.42	1,979.96	1,979.87	7.30	37.31	169.45	816.04	-366.00	1,179.76	1,136.03	43.73	26.981	
2,159.00	2,119.97	2,070.08	2,069.97	7.77	38.97	170.94	815.88	-366.00	1,204.65	1,158.90	45.75	26.329	
2,348.00	2,302.44	2,256.36	2,256.25	8.69	42.74	166.50	816.20	-366.00	1,253.29	1,203.04	50.25	24.942	
2,443.00	2,394.41	2,344.55	2,344.41	9.15	44.54	166.10	815.88	-366.00	1,276.17	1,223.76	52.41	24.350	
2,537.00	2,485.45	2,435.59	2,435.45	9.61	46.44	166.11	815.88	-366.00	1,298.91	1,244.24	54.68	23.756	
2,632.00	2,577.48	2,529.92	2,529.77	10.07	48.41	166.67	816.61	-366.00	1,322.58	1,265.56	57.02	23.196	
2,727.00	2,669.50	2,628.43	2,628.28	10.53	50.47	166.96	816.18	-366.00	1,345.19	1,285.74	59.45	22.627	
2,821.00	2,760.56	2,710.75	2,710.56	10.98	52.14	166.91	815.88	-366.00	1,367.66	1,306.18	61.47	22.248	
2,916.00	2,852.68	2,802.87	2,802.68	11.44	53.95	167.07	815.88	-366.00	1,390.31	1,326.66	63.65	21.841	
3,011.00	2,945.03	2,895.22	2,895.03	11.89	55.77	167.42	815.88	-366.00	1,412.06	1,346.22	65.84	21.448	
3,105.00	3,036.57	2,986.76	2,986.57	12.33	57.57	161.79	815.88	-366.00	1,432.70	1,364.70	68.00	21.069	
3,200.00	3,128.81	3,082.18	3,081.97	12.78	59.45	158.61	817.23	-366.00	1,455.44	1,385.18	70.25	20.718	
3,294.00	3,219.76	3,176.78	3,176.57	13.24	61.31	158.57	816.90	-366.00	1,477.31	1,404.82	72.49	20.380	
3,389.00	3,311.82	3,272.65	3,272.43	13.69	63.19	160.00	816.32	-366.00	1,498.80	1,424.05	74.75	20.051	
3,483.00	3,403.03	3,353.28	3,353.03	14.14	64.78	160.61	815.88	-366.00	1,519.79	1,443.10	76.69	19.817	
3,578.00	3,495.31	3,445.56	3,445.31	14.60	66.60	161.49	815.88	-366.00	1,541.20	1,462.32	78.88	19.540	
3,672.00	3,586.65	3,536.90	3,536.65	15.04	68.40	162.86	815.88	-366.00	1,562.41	1,481.37	81.04	19.280	
3,767.00	3,678.95	3,629.20	3,628.95	15.49	70.21	163.64	815.88	-366.00	1,583.97	1,500.74	83.22	19.033	
3,862.00	3,771.63	3,721.88	3,721.63	15.93	72.04	163.71	815.88	-366.00	1,604.02	1,518.61	85.41	18.780	
3,956.00	3,863.70	3,813.95	3,813.70	16.35	73.85	164.25	815.88	-366.00	1,622.28	1,534.70	87.58	18.523	
4,052.00	3,957.54	3,908.19	3,907.93	16.79	75.71	163.16	817.08	-366.00	1,642.89	1,553.09	89.80	18.294	
4,146.00	4,048.88	4,000.73	4,000.47	17.24	77.53	163.24	817.02	-366.00	1,664.14	1,572.15	91.99	18.090	
4,241.00	4,140.47	4,093.56	4,093.30	17.71	79.36	166.06	816.90	-366.00	1,688.40	1,594.20	94.20	17.924	
4,336.00	4,231.25	4,185.62	4,185.37	18.21	81.17	169.69	816.71	-366.00	1,715.62	1,619.23	96.39	17.798	
4,430.00	4,320.59	4,276.27	4,276.01	18.71	82.95	168.04	816.45	-366.00	1,744.10	1,645.54	98.55	17.697	
4,524.00	4,409.51	4,366.54	4,366.28	19.22	84.73	164.30	816.13	-366.00	1,773.46	1,672.75	100.71	17.609	
4,619.00	4,498.98	4,449.33	4,448.98	19.75	86.36	163.75	815.88	-366.00	1,804.04	1,701.33	102.72	17.564	
4,713.00	4,587.83	4,538.18	4,537.83	20.27	88.11	164.19	815.88	-366.00	1,833.65	1,728.81	104.84	17.490	
4,807.00	4,676.97	4,627.61	4,627.25	20.78	89.87	165.80	816.74	-366.00	1,863.43	1,756.45	106.98	17.418	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #108 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 107-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
4,870.00	4,736.65	4,692.63	4,692.28	21.12	91.15	166.39	816.64	-366.00	1,882.97	1,774.44	108.52	17.351	
4,933.00	4,796.58	4,758.06	4,757.69	21.46	92.44	166.58	816.35	-366.00	1,901.63	1,791.56	110.07	17.276	
5,027.00	4,886.13	4,836.51	4,836.13	21.96	93.97	167.48	815.88	-366.00	1,929.06	1,817.10	111.96	17.230	
5,121.00	4,976.11	4,926.49	4,926.11	22.45	95.69	168.17	815.88	-366.00	1,955.67	1,841.63	114.04	17.148	
5,216.00	5,068.11	5,018.49	5,018.11	22.91	97.44	168.43	815.88	-366.00	1,978.88	1,862.72	116.16	17.036	
5,341.00	5,190.11	5,140.50	5,140.11	23.49	99.76	168.23	815.88	-366.00	2,005.52	1,886.56	118.96	16.859	
5,436.00	5,283.20	5,233.58	5,233.20	23.91	101.53	168.45	815.88	-366.00	2,024.10	1,903.01	121.09	16.716	
5,499.00	5,345.03	5,295.41	5,295.03	24.19	102.71	168.45	815.88	-366.00	2,035.96	1,913.46	122.50	16.620	
5,561.00	5,405.97	5,356.35	5,355.97	24.45	103.86	169.56	815.88	-366.00	2,047.20	1,923.31	123.89	16.524	
5,624.00	5,467.97	5,418.75	5,418.37	24.72	105.05	168.55	817.13	-366.00	2,059.38	1,934.06	125.31	16.434	
5,687.00	5,530.05	5,481.82	5,481.43	24.99	106.25	169.55	817.10	-366.00	2,069.90	1,943.15	126.75	16.331	
5,750.00	5,592.20	5,544.96	5,544.57	25.25	107.45	169.87	817.04	-366.00	2,080.00	1,951.81	128.18	16.227	
5,813.00	5,654.42	5,608.19	5,607.80	25.51	108.66	170.95	816.96	-366.00	2,089.67	1,960.05	129.62	16.121	
5,876.00	5,716.68	5,671.47	5,671.08	25.76	109.86	171.21	816.84	-366.00	2,099.04	1,967.98	131.06	16.016	
5,939.00	5,778.99	5,734.81	5,734.42	26.01	111.07	171.05	816.69	-366.00	2,108.09	1,975.60	132.49	15.911	
6,065.00	5,903.86	5,861.76	5,861.36	26.51	113.48	171.02	816.29	-366.00	2,124.36	1,988.99	135.37	15.693	
6,128.00	5,966.41	5,925.37	5,924.97	26.74	114.69	169.60	816.05	-366.00	2,131.45	1,994.65	136.80	15.581	
6,191.00	6,029.04	5,979.49	5,979.04	26.97	115.73	170.28	815.88	-366.00	2,138.02	1,999.97	138.05	15.487	
6,254.00	6,091.75	6,042.20	6,041.75	27.20	116.97	171.20	815.88	-366.00	2,143.96	2,004.46	139.50	15.369	
6,348.00	6,185.46	6,135.91	6,135.46	27.52	118.81	174.06	815.88	-366.00	2,151.28	2,009.60	141.67	15.185	
6,390.00	6,227.36	6,177.81	6,177.36	27.61	119.64	174.06	815.88	-366.00	2,154.18	2,011.64	142.55	15.112	
6,400.00	6,237.33	6,187.79	6,187.33	27.61	119.83	174.07	815.88	-366.00	2,154.88	2,012.13	142.75	15.096	
6,490.00	6,327.12	6,277.57	6,277.12	27.66	121.60	174.08	815.88	-366.00	2,161.10	2,016.59	144.52	14.954	
6,500.00	6,337.09	6,287.54	6,287.09	27.66	121.80	161.62	815.88	-366.00	2,161.80	2,017.08	144.72	14.938	
6,550.00	6,386.85	6,337.30	6,336.85	27.70	122.78	124.81	815.88	-366.00	2,165.34	2,019.63	145.70	14.861	
6,600.00	6,436.20	6,386.65	6,386.20	27.74	123.75	111.85	815.88	-366.00	2,168.98	2,022.30	146.68	14.787	
6,650.00	6,484.82	6,435.27	6,434.82	27.79	124.70	105.97	815.88	-366.00	2,172.75	2,025.09	147.66	14.715	
6,700.00	6,532.40	6,482.85	6,482.40	27.85	125.64	102.75	815.88	-366.00	2,176.68	2,028.06	148.61	14.647	
6,750.00	6,578.63	6,529.09	6,528.63	27.92	126.55	100.78	815.88	-366.00	2,180.81	2,031.27	149.55	14.583	
6,800.00	6,623.24	6,573.69	6,573.24	28.00	127.43	99.51	815.88	-366.00	2,185.23	2,034.77	150.45	14.524	
6,850.00	6,665.93	6,616.38	6,615.93	28.09	128.27	98.65	815.88	-366.00	2,190.00	2,038.67	151.33	14.472	
6,900.00	6,706.42	6,656.88	6,656.42	28.19	129.07	98.04	815.88	-366.00	2,195.21	2,043.04	152.17	14.426	
6,950.00	6,744.48	6,694.93	6,694.48	28.30	129.82	97.58	815.88	-366.00	2,200.95	2,047.99	152.96	14.389	
7,000.00	6,779.84	6,730.29	6,729.84	28.43	130.51	97.20	815.88	-366.00	2,207.32	2,053.61	153.71	14.360	
7,050.00	6,812.30	6,762.75	6,762.30	28.57	131.15	96.83	815.88	-366.00	2,214.41	2,060.00	154.41	14.341	
7,100.00	6,841.63	6,792.08	6,791.63	28.73	131.73	96.44	815.88	-366.00	2,222.29	2,067.23	155.06	14.332	SF
7,150.00	6,867.66	6,818.11	6,817.66	28.90	132.24	95.98	815.88	-366.00	2,231.03	2,075.38	155.65	14.333	
7,200.00	6,890.22	6,840.67	6,840.22	29.08	132.69	95.42	815.88	-366.00	2,240.69	2,084.50	156.19	14.346	
7,250.00	6,909.17	6,859.62	6,859.17	29.28	133.06	94.75	815.88	-366.00	2,251.29	2,094.63	156.66	14.371	
7,300.00	6,924.38	6,874.83	6,874.38	29.49	133.36	93.93	815.88	-366.00	2,262.86	2,105.79	157.07	14.407	
7,350.00	6,935.77	6,886.22	6,885.77	29.72	133.58	92.96	815.88	-366.00	2,275.37	2,117.96	157.41	14.455	
7,400.00	6,943.25	6,893.74	6,893.27	29.97	133.73	91.83	818.92	-366.00	2,291.82	2,134.14	157.68	14.535	
7,450.00	6,946.78	6,897.33	6,896.86	30.22	133.80	90.55	818.92	-366.00	2,306.09	2,148.21	157.88	14.607	
7,471.54	6,947.08	6,897.63	6,897.16	30.34	133.81	89.94	818.92	-366.00	2,312.48	2,154.53	157.94	14.641	
7,500.00	6,946.98	6,897.53	6,897.06	30.49	133.81	89.94	818.92	-366.00	2,321.03	2,163.01	158.02	14.689	
7,600.00	6,946.65	6,897.20	6,896.73	31.07	133.80	89.94	818.92	-366.00	2,351.46	2,193.16	158.30	14.854	
7,700.00	6,946.32	6,896.86	6,896.39	31.69	133.79	89.94	818.92	-366.00	2,382.41	2,223.80	158.61	15.021	
7,800.00	6,945.99	6,896.53	6,896.06	32.35	133.79	89.94	818.92	-366.00	2,413.84	2,254.91	158.94	15.187	
7,900.00	6,945.67	6,896.20	6,895.73	33.05	133.78	89.94	818.92	-366.00	2,445.69	2,286.41	159.28	15.355	
8,000.00	6,945.34	6,895.87	6,895.39	33.79	133.77	89.94	818.92	-366.00	2,477.90	2,318.26	159.64	15.522	
8,034.58	6,945.23	6,895.75	6,895.28	34.05	133.77	89.94	818.92	-366.00	2,489.11	2,329.35	159.76	15.580	
8,100.00	6,945.02	6,895.54	6,895.07	34.57	133.77	89.93	818.92	-366.00	2,511.12	2,351.12	160.00	15.694	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #108 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 107-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,200.00	6,944.69	6,895.21	6,894.74	35.41	133.76	89.92	818.92	-366.00	2,547.64	2,387.27	160.37	15.886	
8,300.00	6,944.37	6,894.88	6,894.41	36.30	133.75	89.92	818.92	-366.00	2,587.51	2,426.77	160.74	16.098	
8,400.00	6,944.05	6,894.55	6,894.08	37.25	133.75	89.91	818.92	-366.00	2,630.58	2,469.48	161.10	16.329	
8,500.00	6,943.73	6,894.22	6,893.75	38.25	133.74	89.90	818.92	-366.00	2,676.70	2,515.25	161.45	16.579	
8,600.00	6,943.40	6,893.89	6,893.42	39.29	133.74	89.89	818.92	-366.00	2,725.71	2,563.91	161.80	16.846	
8,700.00	6,943.08	6,893.57	6,893.10	40.37	133.73	89.88	818.92	-366.00	2,777.45	2,615.32	162.13	17.131	
8,800.00	6,942.76	6,893.24	6,892.77	41.49	133.72	89.88	818.92	-366.00	2,831.78	2,669.33	162.45	17.432	
8,900.00	6,942.43	6,892.91	6,892.44	42.64	133.72	89.87	818.92	-366.00	2,888.55	2,725.80	162.75	17.748	
9,000.00	6,942.11	6,892.58	6,892.11	43.82	133.71	89.86	818.92	-366.00	2,947.63	2,784.58	163.05	18.078	
9,100.00	6,941.79	6,892.25	6,891.78	45.03	133.70	89.85	818.92	-366.00	3,008.86	2,845.54	163.32	18.423	
9,200.00	6,941.46	6,891.92	6,891.45	46.27	133.70	89.84	818.92	-366.00	3,072.13	2,908.55	163.59	18.780	
9,300.00	6,941.14	6,891.59	6,891.12	47.53	133.69	89.84	818.92	-366.00	3,137.32	2,973.48	163.84	19.149	
9,400.00	6,940.82	6,891.27	6,890.82	48.81	133.68	89.83	815.88	-366.00	3,202.08	3,038.02	164.06	19.517	
9,500.00	6,940.50	6,890.95	6,890.50	50.11	133.68	89.82	815.88	-366.00	3,270.79	3,106.50	164.29	19.909	
9,600.00	6,940.17	6,890.62	6,890.17	51.43	133.67	89.81	815.88	-366.00	3,341.08	3,176.58	164.50	20.311	
9,700.00	6,939.85	6,890.30	6,889.85	52.76	133.66	89.81	815.88	-366.00	3,412.85	3,248.16	164.70	20.722	
9,800.00	6,939.53	6,889.98	6,889.53	54.11	133.66	89.80	815.88	-366.00	3,486.02	3,321.13	164.89	21.142	
9,900.00	6,939.20	6,889.65	6,889.20	55.48	133.65	89.79	815.88	-366.00	3,560.49	3,395.42	165.07	21.570	
10,000.00	6,938.88	6,889.33	6,888.88	56.86	133.65	89.78	815.88	-366.00	3,636.18	3,470.95	165.23	22.006	
10,100.00	6,938.56	6,889.01	6,888.56	58.25	133.64	89.77	815.88	-366.00	3,713.03	3,547.64	165.39	22.450	
10,200.00	6,938.23	6,888.68	6,888.23	59.65	133.63	89.77	815.88	-366.00	3,790.96	3,625.41	165.55	22.900	
10,300.00	6,937.91	6,888.36	6,887.91	61.06	133.63	89.76	815.88	-366.00	3,869.90	3,704.21	165.69	23.356	
10,400.00	6,937.59	6,888.04	6,887.59	62.48	133.62	89.75	815.88	-366.00	3,949.79	3,783.97	165.82	23.819	
10,500.00	6,937.27	6,887.72	6,887.27	63.91	133.61	89.74	815.88	-366.00	4,030.58	3,864.63	165.95	24.287	
10,600.00	6,936.94	6,887.39	6,886.94	65.34	133.61	89.73	815.88	-366.00	4,112.22	3,946.15	166.08	24.761	
10,700.00	6,936.62	6,887.07	6,886.62	66.79	133.60	89.73	815.88	-366.00	4,194.65	4,028.46	166.19	25.240	
10,800.00	6,936.30	6,886.75	6,886.30	68.24	133.59	89.72	815.88	-366.00	4,277.84	4,111.53	166.30	25.723	
10,900.00	6,935.97	6,886.42	6,885.97	69.70	133.59	89.71	815.88	-366.00	4,361.72	4,195.31	166.41	26.211	
11,000.00	6,935.65	6,886.10	6,885.65	71.17	133.58	89.70	815.88	-366.00	4,446.28	4,279.76	166.51	26.702	
11,100.00	6,935.33	6,885.78	6,885.33	72.64	133.58	89.70	815.88	-366.00	4,531.46	4,364.85	166.61	27.198	
11,200.00	6,935.00	6,885.45	6,885.00	74.11	133.57	89.69	815.88	-366.00	4,617.24	4,450.54	166.70	27.697	
11,300.00	6,934.68	6,885.13	6,884.68	75.60	133.56	89.68	815.88	-366.00	4,703.58	4,536.78	166.79	28.200	
11,400.00	6,934.36	6,884.81	6,884.36	77.08	133.56	89.67	815.88	-366.00	4,790.45	4,623.57	166.88	28.706	
11,500.00	6,934.03	6,884.49	6,884.03	78.57	133.55	89.66	815.88	-366.00	4,877.82	4,710.86	166.96	29.215	
11,600.00	6,933.71	6,884.16	6,883.71	80.07	133.54	89.66	815.88	-366.00	4,965.67	4,798.63	167.04	29.727	
11,700.00	6,933.39	6,883.84	6,883.39	81.57	133.54	89.65	815.88	-366.00	5,053.97	4,886.85	167.12	30.242	
11,800.00	6,933.07	6,883.52	6,883.07	83.07	133.53	89.64	815.88	-366.00	5,142.70	4,975.51	167.20	30.759	
11,900.00	6,932.74	6,883.19	6,882.74	84.58	133.52	89.63	815.88	-366.00	5,231.84	5,064.57	167.27	31.278	
12,000.00	6,932.42	6,882.87	6,882.42	86.09	133.52	89.62	815.88	-366.00	5,321.36	5,154.02	167.34	31.800	
12,100.00	6,932.10	6,882.55	6,882.10	87.60	133.51	89.62	815.88	-366.00	5,411.25	5,243.84	167.41	32.324	
12,200.00	6,931.77	6,882.22	6,881.77	89.12	133.51	89.61	815.88	-366.00	5,501.49	5,334.01	167.48	32.849	
12,300.00	6,931.45	6,881.90	6,881.45	90.64	133.50	89.60	815.88	-366.00	5,592.06	5,424.52	167.54	33.377	
12,400.00	6,931.13	6,881.58	6,881.13	92.16	133.49	89.59	815.88	-366.00	5,682.95	5,515.34	167.61	33.906	
12,500.00	6,930.80	6,881.26	6,880.80	93.69	133.49	89.58	815.88	-366.00	5,774.14	5,606.46	167.67	34.437	
12,600.00	6,930.48	6,880.93	6,880.48	95.22	133.48	89.58	815.88	-366.00	5,865.61	5,697.88	167.73	34.970	
12,700.00	6,930.16	6,880.61	6,880.16	96.75	133.47	89.57	815.88	-366.00	5,957.36	5,789.57	167.80	35.504	
12,800.00	6,929.84	6,880.29	6,879.84	98.28	133.47	89.56	815.88	-366.00	6,049.37	5,881.52	167.86	36.039	
12,900.00	6,929.51	6,879.96	6,879.51	99.82	133.46	89.55	815.88	-366.00	6,141.63	5,973.72	167.92	36.576	
13,000.00	6,929.19	6,879.64	6,879.19	101.35	133.45	89.55	815.88	-366.00	6,234.13	6,066.16	167.97	37.114	
13,100.00	6,928.87	6,879.32	6,878.87	102.89	133.45	89.54	815.88	-366.00	6,326.86	6,158.83	168.03	37.653	
13,200.00	6,928.54	6,878.99	6,878.54	104.43	133.44	89.53	815.88	-366.00	6,419.80	6,251.71	168.09	38.193	
13,300.00	6,928.22	6,878.67	6,878.22	105.97	133.44	89.52	815.88	-366.00	6,512.96	6,344.81	168.15	38.734	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #108 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 107-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	6,878.35	6,877.90	107.52	133.43	89.51	815.88	-366.00	6,606.31	6,438.11	168.20	39.276	
13,500.00	6,927.57	6,878.03	6,877.57	109.06	133.42	89.51	815.88	-366.00	6,699.86	6,531.60	168.26	39.819	
13,600.00	6,927.25	6,877.70	6,877.25	110.61	133.42	89.50	815.88	-366.00	6,793.59	6,625.28	168.32	40.362	
13,700.00	6,926.93	6,877.38	6,876.93	112.16	133.41	89.49	815.88	-366.00	6,887.50	6,719.13	168.37	40.907	
13,800.00	6,926.61	6,877.06	6,876.61	113.71	133.40	89.48	815.88	-366.00	6,981.57	6,813.15	168.43	41.452	
13,900.00	6,926.28	6,876.73	6,876.28	115.26	133.40	89.47	815.88	-366.00	7,075.81	6,907.33	168.48	41.998	
14,000.00	6,925.96	6,876.41	6,875.96	116.82	133.39	89.47	815.88	-366.00	7,170.21	7,001.67	168.54	42.544	
14,100.00	6,925.64	6,876.09	6,875.64	118.37	133.38	89.46	815.88	-366.00	7,264.75	7,096.16	168.59	43.091	
14,200.00	6,925.31	6,875.76	6,875.31	119.93	133.38	89.45	815.88	-366.00	7,359.44	7,190.79	168.65	43.638	
14,300.00	6,924.99	6,875.44	6,874.99	121.48	133.37	89.44	815.88	-366.00	7,454.27	7,285.57	168.70	44.186	
14,400.00	6,924.67	6,875.12	6,874.67	123.04	133.37	89.44	815.88	-366.00	7,549.23	7,380.47	168.76	44.735	
14,500.00	6,924.34	6,874.79	6,874.34	124.60	133.36	89.43	815.88	-366.00	7,644.32	7,475.51	168.81	45.283	
14,600.00	6,924.02	6,874.47	6,874.02	126.16	133.35	89.42	815.88	-366.00	7,739.53	7,570.67	168.87	45.833	
14,700.00	6,923.70	6,874.15	6,873.70	127.72	133.35	89.41	815.88	-366.00	7,834.86	7,665.94	168.92	46.382	
14,800.00	6,923.38	6,873.83	6,873.38	129.28	133.34	89.40	815.88	-366.00	7,930.31	7,761.34	168.98	46.932	
14,900.00	6,923.05	6,873.50	6,873.05	130.85	133.33	89.40	815.88	-366.00	8,025.87	7,856.84	169.03	47.482	
15,000.00	6,922.73	6,873.18	6,872.73	132.41	133.33	89.39	815.88	-366.00	8,121.53	7,952.45	169.09	48.032	
15,100.00	6,922.41	6,872.86	6,872.41	133.97	133.32	89.38	815.88	-366.00	8,217.30	8,048.16	169.14	48.582	
15,200.00	6,922.08	6,872.53	6,872.08	135.54	133.31	89.37	815.88	-366.00	8,313.17	8,143.97	169.20	49.133	
15,300.00	6,921.76	6,872.21	6,871.76	137.11	133.31	89.36	815.88	-366.00	8,409.14	8,239.88	169.25	49.684	
15,400.00	6,921.44	6,871.89	6,871.44	138.67	133.30	89.36	815.88	-366.00	8,505.19	8,335.88	169.31	50.235	
15,500.00	6,921.11	6,871.56	6,871.11	140.24	133.30	89.35	815.88	-366.00	8,601.34	8,431.97	169.37	50.786	
15,600.00	6,920.79	6,871.24	6,870.79	141.81	133.29	89.34	815.88	-366.00	8,697.57	8,528.15	169.42	51.337	
15,700.00	6,920.47	6,870.92	6,870.47	143.38	133.28	89.33	815.88	-366.00	8,793.89	8,624.41	169.48	51.888	
15,800.00	6,920.14	6,870.60	6,870.14	144.95	133.28	89.33	815.88	-366.00	8,890.29	8,720.75	169.54	52.439	
15,900.00	6,919.82	6,870.27	6,869.82	146.52	133.27	89.32	815.88	-366.00	8,986.77	8,817.18	169.59	52.990	
16,000.00	6,919.50	6,869.95	6,869.50	148.09	133.26	89.31	815.88	-366.00	9,083.32	8,913.67	169.65	53.541	
16,100.00	6,919.18	6,869.63	6,869.18	149.66	133.26	89.30	815.88	-366.00	9,179.95	9,010.24	169.71	54.092	
16,200.00	6,918.85	6,869.30	6,868.85	151.24	133.25	89.29	815.88	-366.00	9,276.65	9,106.88	169.77	54.643	
16,300.00	6,918.53	6,868.98	6,868.53	152.81	133.24	89.29	815.88	-366.00	9,373.42	9,203.59	169.83	55.194	
16,400.00	6,918.21	6,868.66	6,868.21	154.38	133.24	89.28	815.88	-366.00	9,470.25	9,300.37	169.89	55.745	
16,500.00	6,917.88	6,868.33	6,867.88	155.96	133.23	89.27	815.88	-366.00	9,567.16	9,397.21	169.94	56.296	
16,600.00	6,917.56	6,868.01	6,867.56	157.53	133.23	89.26	815.88	-366.00	9,664.12	9,494.12	170.00	56.846	
16,700.00	6,917.24	6,867.69	6,867.24	159.11	133.22	89.25	815.88	-366.00	9,761.14	9,591.08	170.06	57.397	
16,800.00	6,916.91	6,867.37	6,866.91	160.68	133.21	89.25	815.88	-366.00	9,858.23	9,688.10	170.12	57.947	
16,900.00	6,916.59	6,867.04	6,866.59	162.26	133.21	89.24	815.88	-366.00	9,955.37	9,785.19	170.19	58.497	
17,000.00	6,916.27	6,866.72	6,866.27	163.84	133.20	89.23	815.88	-366.00	10,052.57	9,882.32	170.25	59.047	
17,100.00	6,915.95	6,866.40	6,865.95	165.41	133.19	89.22	815.88	-366.00	10,149.82	9,979.51	170.31	59.597	
17,200.00	6,915.62	6,866.07	6,865.62	166.99	133.19	89.21	815.88	-366.00	10,247.13	10,076.76	170.37	60.146	
17,300.00	6,915.30	6,865.75	6,865.30	168.57	133.18	89.21	815.88	-366.00	10,344.49	10,174.05	170.43	60.696	
17,400.00	6,914.98	6,865.43	6,864.98	170.15	133.17	89.20	815.88	-366.00	10,441.89	10,271.40	170.50	61.245	
17,500.00	6,914.65	6,865.10	6,864.65	171.73	133.17	89.19	815.88	-366.00	10,539.35	10,368.79	170.56	61.793	
17,600.00	6,914.33	6,864.78	6,864.33	173.31	133.16	89.18	815.88	-366.00	10,636.85	10,466.23	170.62	62.342	
17,700.00	6,914.01	6,864.46	6,864.01	174.89	133.16	89.18	815.88	-366.00	10,734.40	10,563.72	170.69	62.890	
17,800.00	6,913.68	6,864.14	6,863.68	176.47	133.15	89.17	815.88	-366.00	10,831.99	10,661.24	170.75	63.438	
17,900.00	6,913.36	6,863.81	6,863.36	178.05	133.14	89.16	815.88	-366.00	10,929.63	10,758.82	170.81	63.986	
18,000.00	6,913.04	6,863.49	6,863.04	179.63	133.14	89.15	815.88	-366.00	11,027.31	10,856.43	170.88	64.533	
18,100.00	6,912.72	6,863.17	6,862.72	181.21	133.13	89.14	815.88	-366.00	11,125.03	10,954.09	170.94	65.080	
18,111.83	6,912.68	6,863.13	6,862.68	181.40	133.13	89.14	815.88	-366.00	11,136.60	10,965.64	170.95	65.145	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #109 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	295.00	295.00	0.00	8.84	100.62	-1,424.14	7,595.41	7,727.77				
54.25	54.25	349.25	349.25	0.02	10.47	39.07	-1,424.14	7,595.41	7,727.68	7,717.20	10.48	737.469	
130.42	130.42	425.42	425.42	0.11	12.75	11.91	-1,424.14	7,595.41	7,727.36	7,714.51	12.85	601.232	
219.69	219.69	514.79	514.69	0.23	15.43	37.98	-1,424.14	7,595.41	7,726.94	7,711.30	15.64	494.107	
308.67	308.67	603.77	603.67	0.35	18.09	29.08	-1,424.14	7,595.41	7,726.50	7,708.09	18.41	419.746	
395.19	395.18	690.29	690.18	0.44	20.68	-90.00	-1,424.14	7,595.41	7,726.26	7,705.16	21.10	366.209	
454.00	453.99	749.09	748.99	0.51	22.45	-105.51	-1,424.14	7,595.41	7,726.37	7,703.44	22.93	337.006	
544.00	543.93	831.03	830.88	0.74	24.90	-105.22	-1,422.19	7,595.41	7,726.82	7,701.21	25.61	301.662	
667.00	666.63	942.84	942.66	1.13	28.25	-118.26	-1,423.26	7,595.41	7,730.39	7,701.02	29.37	263.205	
756.00	755.27	1,050.68	1,050.27	1.44	31.48	-103.47	-1,424.14	7,595.41	7,733.33	7,700.42	32.92	234.933	
850.00	848.62	1,144.03	1,143.62	1.79	34.28	-101.92	-1,424.14	7,595.41	7,735.73	7,699.67	36.06	214.501	
942.00	939.50	1,234.90	1,234.50	2.14	37.00	-95.62	-1,424.14	7,595.41	7,737.84	7,698.69	39.15	197.657	
1,033.00	1,028.89	1,317.85	1,317.39	2.52	39.49	-86.57	-1,422.12	7,595.41	7,737.72	7,695.71	42.01	184.199	
1,123.00	1,117.00	1,398.51	1,398.04	2.90	41.91	-80.59	-1,422.73	7,595.41	7,735.72	7,690.92	44.81	172.646	
1,214.00	1,206.00	1,501.71	1,501.00	3.29	45.00	-81.41	-1,424.14	7,595.41	7,732.93	7,684.64	48.29	160.130	
1,309.00	1,298.75	1,594.46	1,593.75	3.71	47.78	-78.68	-1,424.14	7,595.41	7,729.27	7,677.79	51.49	150.118	
1,403.00	1,390.39	1,686.10	1,685.39	4.13	50.52	-75.85	-1,424.14	7,595.41	7,724.55	7,669.90	54.65	141.340	
1,498.00	1,482.88	1,776.26	1,775.51	4.56	53.22	-79.28	-1,421.99	7,595.41	7,719.42	7,661.64	57.78	133.595	
1,592.00	1,573.82	1,860.05	1,859.28	5.00	55.74	-79.93	-1,422.39	7,595.41	7,715.08	7,654.34	60.73	127.031	
1,687.00	1,665.32	1,944.63	1,943.84	5.46	58.27	-77.20	-1,423.29	7,595.41	7,709.99	7,646.26	63.73	120.985	
1,876.00	1,847.35	2,143.37	2,142.35	6.38	64.22	-75.02	-1,424.14	7,595.41	7,697.47	7,626.87	70.60	109.028	
1,970.00	1,937.87	2,233.89	2,232.87	6.84	66.94	-75.02	-1,424.14	7,595.41	7,690.69	7,616.92	73.77	104.251	
2,064.00	2,028.42	2,319.08	2,318.02	7.30	69.49	-74.66	-1,422.13	7,595.41	7,683.57	7,606.79	76.78	100.070	
2,159.00	2,119.97	2,404.33	2,403.24	7.77	72.04	-73.61	-1,422.79	7,595.41	7,676.49	7,596.70	79.80	96.198	
2,348.00	2,302.44	2,598.76	2,597.44	8.69	77.87	-78.56	-1,424.14	7,595.41	7,664.39	7,577.84	86.54	88.560	
2,443.00	2,394.41	2,690.73	2,689.41	9.15	80.63	-79.34	-1,424.14	7,595.41	7,659.67	7,569.92	89.76	85.337	
2,537.00	2,485.45	2,779.71	2,778.35	9.61	83.29	-79.74	-1,421.99	7,595.41	7,655.01	7,562.14	92.88	82.421	
2,632.00	2,577.48	2,866.00	2,864.62	10.07	85.88	-79.61	-1,422.43	7,595.41	7,650.72	7,554.80	95.92	79.761	
2,727.00	2,669.50	2,952.57	2,951.17	10.53	88.47	-79.71	-1,423.40	7,595.41	7,646.49	7,547.52	98.97	77.259	
2,821.00	2,760.56	3,057.18	3,055.56	10.98	91.61	-80.13	-1,424.14	7,595.41	7,642.36	7,539.80	102.56	74.516	
2,916.00	2,852.68	3,149.30	3,147.68	11.44	94.37	-80.36	-1,424.14	7,595.41	7,638.31	7,532.53	105.78	72.212	
3,011.00	2,945.03	3,241.65	3,240.03	11.89	97.13	-80.38	-1,424.14	7,595.41	7,634.48	7,525.48	108.99	70.046	
3,105.00	3,036.57	3,328.53	3,326.85	12.33	99.74	-86.12	-1,422.18	7,595.41	7,631.68	7,519.64	112.04	68.118	
3,200.00	3,128.81	3,415.87	3,414.18	12.78	102.35	-89.51	-1,422.92	7,595.41	7,630.91	7,515.81	115.11	66.294	
3,228.67	3,156.55	3,442.21	3,440.50	12.92	103.14	-89.67	-1,423.25	7,595.41	7,630.90	7,514.86	116.04	65.763	
3,294.00	3,219.76	3,516.69	3,514.76	13.24	105.38	-90.05	-1,424.14	7,595.41	7,630.95	7,512.36	118.59	64.349	
3,389.00	3,311.82	3,608.74	3,606.82	13.69	108.13	-89.23	-1,424.14	7,595.41	7,630.80	7,509.00	121.81	62.647	
3,483.00	3,403.03	3,699.96	3,698.03	14.14	110.87	-89.05	-1,424.14	7,595.41	7,630.45	7,505.46	124.99	61.048	
3,578.00	3,495.31	3,790.17	3,788.20	14.60	113.57	-88.69	-1,422.02	7,595.41	7,629.79	7,501.64	128.15	59.539	
3,672.00	3,586.65	3,877.25	3,875.26	15.04	116.18	-87.75	-1,422.53	7,595.41	7,629.13	7,497.92	131.21	58.147	
3,767.00	3,678.95	3,965.54	3,963.52	15.49	118.83	-87.40	-1,423.58	7,595.41	7,628.26	7,493.96	134.30	56.799	
3,862.00	3,771.63	4,068.87	4,066.63	15.93	121.92	-87.79	-1,424.14	7,595.41	7,627.41	7,489.57	137.84	55.336	
3,956.00	3,863.70	4,160.93	4,158.70	16.35	124.68	-87.60	-1,424.14	7,595.41	7,626.63	7,485.61	141.02	54.082	
4,052.00	3,957.54	4,254.57	4,252.29	16.79	127.49	-88.94	-1,421.96	7,595.41	7,625.84	7,481.57	144.26	52.861	
4,146.00	4,048.88	4,342.20	4,339.91	17.24	130.11	-89.15	-1,422.26	7,595.41	7,625.48	7,478.14	147.34	51.755	
4,241.00	4,140.47	4,430.39	4,428.08	17.71	132.75	-86.78	-1,423.10	7,595.41	7,624.59	7,474.13	150.45	50.677	
4,336.00	4,231.25	4,528.79	4,526.25	18.21	135.70	-83.79	-1,424.14	7,595.41	7,622.22	7,468.32	153.90	49.527	
4,430.00	4,320.59	4,618.13	4,615.59	18.71	138.38	-85.65	-1,424.14	7,595.41	7,619.40	7,462.32	157.08	48.506	
4,524.00	4,409.51	4,707.05	4,704.51	19.22	141.04	-89.40	-1,424.14	7,595.41	7,618.04	7,457.78	160.26	47.536	
4,583.50	4,465.57	4,762.68	4,760.10	19.56	142.71	-89.99	-1,421.97	7,595.41	7,617.79	7,455.53	162.26	46.948	
4,619.00	4,498.98	4,795.06	4,792.47	19.75	143.68	-90.33	-1,422.03	7,595.41	7,617.83	7,454.40	163.43	46.613	
4,713.00	4,587.83	4,881.41	4,878.81	20.27	146.27	-90.50	-1,422.57	7,595.41	7,618.10	7,451.57	166.53	45.745	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #109 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,807.00	4,676.97	4,968.41	4,965.78	20.78	148.88	-89.43	-1,423.63	7,595.41	7,618.15	7,448.50	169.65	44.905	
4,870.00	4,736.65	5,034.49	5,031.65	21.12	150.86	-89.22	-1,424.14	7,595.41	7,617.93	7,445.95	171.97	44.297	
4,933.00	4,796.58	5,094.43	5,091.58	21.46	152.65	-89.39	-1,424.14	7,595.41	7,617.68	7,443.57	174.11	43.752	
5,027.00	4,886.13	5,183.97	5,181.13	21.96	155.34	-88.88	-1,424.14	7,595.41	7,617.22	7,439.93	177.29	42.964	
5,121.00	4,976.11	5,273.44	5,270.56	22.45	158.02	-88.74	-1,421.98	7,595.41	7,616.55	7,436.08	180.46	42.205	
5,216.00	5,068.11	5,363.70	5,360.80	22.91	160.72	-88.89	-1,422.41	7,595.41	7,616.06	7,432.43	183.63	41.475	
5,341.00	5,190.11	5,483.82	5,480.88	23.49	164.32	-89.48	-1,423.87	7,595.41	7,615.72	7,427.91	187.81	40.551	
5,436.00	5,283.20	5,581.35	5,578.20	23.91	167.24	-89.54	-1,424.14	7,595.41	7,615.56	7,424.41	191.15	39.840	
5,499.00	5,345.03	5,643.18	5,640.03	24.19	169.10	-89.70	-1,424.14	7,595.41	7,615.48	7,422.20	193.28	39.401	
5,561.00	5,405.97	5,704.11	5,700.97	24.45	170.92	-88.79	-1,424.14	7,595.41	7,615.33	7,419.95	195.38	38.978	
5,624.00	5,467.97	5,765.89	5,762.70	24.72	172.77	-89.94	-1,421.97	7,595.41	7,615.14	7,417.64	197.49	38.559	
5,687.00	5,530.05	5,827.16	5,823.96	24.99	174.61	-89.11	-1,422.17	7,595.41	7,615.05	7,415.46	199.60	38.152	
5,750.00	5,592.20	5,888.60	5,885.39	25.25	176.45	-88.94	-1,422.63	7,595.41	7,614.89	7,413.19	201.70	37.754	
5,813.00	5,654.42	5,950.20	5,946.97	25.51	178.29	-88.00	-1,423.36	7,595.41	7,614.64	7,410.84	203.80	37.363	
5,876.00	5,716.68	6,015.13	6,011.68	25.76	180.24	-87.86	-1,424.14	7,595.41	7,614.31	7,408.31	206.00	36.962	
5,939.00	5,778.99	6,077.44	6,073.99	26.01	182.11	-88.13	-1,424.14	7,595.41	7,613.98	7,405.86	208.12	36.584	
6,065.00	5,903.86	6,202.31	6,198.86	26.51	185.85	-88.37	-1,424.14	7,595.41	7,613.46	7,401.10	212.35	35.853	
6,128.00	5,966.41	6,264.73	6,261.24	26.74	187.72	-89.89	-1,421.97	7,595.41	7,613.30	7,398.84	214.46	35.500	
6,191.00	6,029.04	6,326.84	6,323.33	26.97	189.58	-89.30	-1,422.17	7,595.41	7,613.26	7,396.70	216.56	35.156	
6,254.00	6,091.75	6,389.09	6,385.57	27.20	191.45	-88.47	-1,422.64	7,595.41	7,613.15	7,394.51	218.65	34.819	
6,348.00	6,185.46	6,482.21	6,478.66	27.52	194.24	-85.71	-1,423.85	7,595.41	7,612.82	7,391.06	221.76	34.329	
6,390.00	6,227.36	6,526.12	6,522.36	27.61	195.55	-85.73	-1,424.14	7,595.41	7,612.60	7,389.45	223.16	34.113	
6,400.00	6,237.33	6,536.09	6,532.33	27.61	195.85	-85.73	-1,424.14	7,595.41	7,612.55	7,389.09	223.46	34.067	
6,490.00	6,327.12	6,625.87	6,622.12	27.66	198.54	-85.78	-1,424.14	7,595.41	7,612.09	7,385.89	226.20	33.652	
6,493.29	6,330.40	6,629.16	6,625.40	27.66	198.64	-90.00	-1,424.14	7,595.41	7,612.08	7,385.78	226.30	33.637 CC	
6,500.00	6,337.09	6,635.85	6,632.09	27.66	198.84	-98.19	-1,424.14	7,595.41	7,612.11	7,385.61	226.50	33.607 ES	
6,550.00	6,386.85	6,685.61	6,681.85	27.70	200.33	-134.75	-1,424.14	7,595.41	7,614.59	7,386.56	228.03	33.393	
6,600.00	6,436.20	6,734.96	6,731.20	27.74	201.81	-147.47	-1,424.14	7,595.41	7,620.95	7,391.40	229.55	33.200	
6,650.00	6,484.82	6,783.37	6,779.57	27.79	203.26	-153.15	-1,422.00	7,595.41	7,631.13	7,400.08	231.05	33.028	
6,700.00	6,532.40	6,830.71	6,826.91	27.85	204.68	-156.15	-1,422.19	7,595.41	7,645.13	7,412.61	232.52	32.879	
6,750.00	6,578.63	6,876.77	6,872.95	27.92	206.06	-157.87	-1,422.52	7,595.41	7,662.83	7,428.86	233.97	32.752	
6,800.00	6,623.24	6,921.26	6,917.43	28.00	207.39	-158.84	-1,422.99	7,595.41	7,684.11	7,448.74	235.37	32.647	
6,850.00	6,665.93	6,963.89	6,960.05	28.09	208.67	-159.31	-1,423.56	7,595.41	7,708.85	7,472.12	236.73	32.565	
6,900.00	6,706.42	7,005.49	7,001.42	28.19	209.92	-159.38	-1,424.14	7,595.41	7,736.88	7,498.83	238.05	32.501	
6,950.00	6,744.48	7,043.54	7,039.48	28.30	211.06	-159.12	-1,424.14	7,595.41	7,768.03	7,528.75	239.28	32.464	
7,000.00	6,779.84	7,078.90	7,074.84	28.43	212.12	-158.52	-1,424.14	7,595.41	7,802.10	7,561.67	240.43	32.450 SF	
7,050.00	6,812.30	7,111.36	7,107.30	28.57	213.09	-157.54	-1,424.14	7,595.41	7,838.89	7,597.39	241.50	32.459	
7,100.00	6,841.63	7,140.69	7,136.63	28.73	213.97	-156.11	-1,424.14	7,595.41	7,878.15	7,635.68	242.47	32.491	
7,150.00	6,867.66	7,166.72	7,162.66	28.90	214.75	-154.10	-1,424.14	7,595.41	7,919.64	7,676.29	243.35	32.544	
7,200.00	6,890.22	7,189.28	7,185.22	29.08	215.42	-151.30	-1,424.14	7,595.41	7,963.09	7,718.97	244.12	32.619	
7,250.00	6,909.17	7,208.23	7,204.17	29.28	215.99	-147.31	-1,424.14	7,595.41	8,008.24	7,763.45	244.79	32.715	
7,300.00	6,924.38	7,223.44	7,219.38	29.49	216.45	-141.50	-1,424.14	7,595.41	8,054.78	7,809.45	245.33	32.832	
7,350.00	6,935.77	7,234.83	7,230.77	29.72	216.79	-132.73	-1,424.14	7,595.41	8,102.44	7,856.67	245.76	32.969	
7,400.00	6,943.25	7,242.31	7,238.25	29.97	217.01	-119.19	-1,424.14	7,595.41	8,150.89	7,904.82	246.07	33.124	
7,450.00	6,946.78	7,245.84	7,241.78	30.22	217.12	-99.23	-1,424.14	7,595.41	8,199.84	7,953.59	246.25	33.298	
7,471.54	6,947.08	7,246.14	7,242.08	30.34	217.13	-88.99	-1,424.14	7,595.41	8,221.00	7,974.71	246.29	33.379	
7,500.00	6,946.98	7,246.04	7,241.98	30.49	217.12	-88.92	-1,424.14	7,595.41	8,249.00	8,002.67	246.33	33.487	
7,600.00	6,946.65	7,245.71	7,241.65	31.07	217.11	-88.64	-1,424.14	7,595.41	8,347.78	8,101.33	246.44	33.873	
7,700.00	6,946.32	7,245.38	7,241.32	31.69	217.10	-88.15	-1,424.14	7,595.41	8,447.05	8,200.52	246.53	34.263	
7,800.00	6,945.99	7,245.05	7,240.99	32.35	217.09	-87.15	-1,424.14	7,595.41	8,546.70	8,300.11	246.59	34.659	
7,900.00	6,945.67	7,244.73	7,240.67	33.05	217.08	-83.86	-1,424.14	7,595.41	8,646.58	8,399.95	246.63	35.059	
8,000.00	6,945.34	7,244.40	7,240.34	33.79	217.08	55.76	-1,424.14	7,595.41	8,746.56	8,499.93	246.64	35.463	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #109 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,034.58	6,945.23	7,244.29	7,240.23	34.05	217.07	79.11	-1,424.14	7,595.41	8,781.14	8,534.51	246.63	35.604	
8,100.00	6,945.02	7,244.08	7,240.02	34.57	217.07	79.03	-1,424.14	7,595.41	8,846.55	8,599.93	246.63	35.870	
8,200.00	6,944.69	7,243.76	7,239.69	35.41	217.06	78.91	-1,424.14	7,595.41	8,946.54	8,699.92	246.62	36.277	
8,300.00	6,944.37	7,243.43	7,239.37	36.30	217.05	78.79	-1,424.14	7,595.41	9,046.52	8,799.92	246.61	36.684	
8,400.00	6,944.05	7,243.11	7,239.05	37.25	217.04	78.67	-1,424.14	7,595.41	9,146.51	8,899.91	246.60	37.090	
8,500.00	6,943.73	7,242.79	7,238.73	38.25	217.03	78.55	-1,424.14	7,595.41	9,246.50	8,999.90	246.59	37.497	
8,600.00	6,943.40	7,242.46	7,238.40	39.29	217.02	78.43	-1,424.14	7,595.41	9,346.48	9,099.90	246.59	37.903	
8,700.00	6,943.08	7,242.14	7,238.08	40.37	217.01	78.31	-1,424.14	7,595.41	9,446.47	9,199.89	246.58	38.310	
8,800.00	6,942.76	7,241.82	7,237.76	41.49	217.00	78.19	-1,424.14	7,595.41	9,546.46	9,299.88	246.58	38.716	
8,900.00	6,942.43	7,241.49	7,237.43	42.64	216.99	78.07	-1,424.14	7,595.41	9,646.45	9,399.87	246.58	39.122	
9,000.00	6,942.11	7,241.17	7,237.11	43.82	216.98	77.94	-1,424.14	7,595.41	9,746.43	9,499.86	246.57	39.528	
9,100.00	6,941.79	7,240.85	7,236.79	45.03	216.97	77.82	-1,424.14	7,595.41	9,846.42	9,599.85	246.57	39.933	
9,200.00	6,941.46	7,240.53	7,236.46	46.27	216.96	77.71	-1,424.14	7,595.41	9,946.41	9,699.84	246.57	40.339	
9,300.00	6,941.14	7,240.20	7,236.14	47.53	216.95	77.59	-1,424.14	7,595.41	10,046.40	9,799.83	246.57	40.744	
9,400.00	6,940.82	7,239.88	7,235.82	48.81	216.94	77.47	-1,424.14	7,595.41	10,146.39	9,899.81	246.58	41.149	
9,500.00	6,940.50	7,239.56	7,235.50	50.11	216.93	77.35	-1,424.14	7,595.41	10,246.38	9,999.80	246.58	41.554	
9,600.00	6,940.17	7,239.23	7,235.17	51.43	216.92	77.23	-1,424.14	7,595.41	10,346.37	10,099.78	246.58	41.959	
9,700.00	6,939.85	7,238.91	7,234.85	52.76	216.91	77.11	-1,424.14	7,595.41	10,446.36	10,199.77	246.59	42.364	
9,800.00	6,939.53	7,238.59	7,234.53	54.11	216.90	76.99	-1,424.14	7,595.41	10,546.35	10,299.75	246.59	42.768	
9,900.00	6,939.20	7,238.26	7,234.20	55.48	216.89	76.87	-1,424.14	7,595.41	10,646.34	10,399.74	246.60	43.172	
10,000.00	6,938.88	7,237.94	7,233.88	56.86	216.88	76.75	-1,424.14	7,595.41	10,746.33	10,499.72	246.61	43.577	
10,100.00	6,938.56	7,237.62	7,233.56	58.25	216.87	76.63	-1,424.14	7,595.41	10,846.32	10,599.70	246.62	43.980	
10,200.00	6,938.23	7,237.30	7,233.23	59.65	216.86	76.51	-1,424.14	7,595.41	10,946.31	10,699.68	246.63	44.384	
10,300.00	6,937.91	7,236.97	7,232.91	61.06	216.85	76.39	-1,424.14	7,595.41	11,046.30	10,799.66	246.64	44.788	
10,400.00	6,937.59	7,236.65	7,232.59	62.48	216.84	76.27	-1,424.14	7,595.41	11,146.29	10,899.64	246.65	45.191	
10,500.00	6,937.27	7,236.33	7,232.27	63.91	216.83	76.16	-1,424.14	7,595.41	11,246.28	10,999.62	246.66	45.594	
10,600.00	6,936.94	7,236.00	7,231.94	65.34	216.82	76.04	-1,424.14	7,595.41	11,346.27	11,099.59	246.67	45.997	
10,700.00	6,936.62	7,235.68	7,231.62	66.79	216.81	75.92	-1,424.14	7,595.41	11,446.26	11,199.57	246.69	46.400	
10,800.00	6,936.30	7,235.36	7,231.30	68.24	216.80	75.80	-1,424.14	7,595.41	11,546.25	11,299.55	246.70	46.802	
10,900.00	6,935.97	7,235.03	7,230.97	69.70	216.79	75.68	-1,424.14	7,595.41	11,646.24	11,399.52	246.72	47.204	
11,000.00	6,935.65	7,234.71	7,230.65	71.17	216.78	75.57	-1,424.14	7,595.41	11,746.23	11,499.50	246.74	47.606	
11,100.00	6,935.33	7,234.39	7,230.33	72.64	216.77	75.45	-1,424.14	7,595.41	11,846.23	11,599.47	246.75	48.008	
11,200.00	6,935.00	7,234.07	7,230.00	74.11	216.77	75.33	-1,424.14	7,595.41	11,946.22	11,699.44	246.77	48.410	
11,300.00	6,934.68	7,233.74	7,229.68	75.60	216.76	75.21	-1,424.14	7,595.41	12,046.21	11,799.42	246.79	48.811	
11,400.00	6,934.36	7,233.42	7,229.36	77.08	216.75	75.10	-1,424.14	7,595.41	12,146.20	11,899.39	246.81	49.212	
11,500.00	6,934.03	7,233.10	7,229.03	78.57	216.74	74.98	-1,424.14	7,595.41	12,246.19	11,999.36	246.83	49.613	
11,600.00	6,933.71	7,232.77	7,228.71	80.07	216.73	74.86	-1,424.14	7,595.41	12,346.19	12,099.33	246.86	50.014	
11,700.00	6,933.39	7,232.45	7,228.39	81.57	216.72	74.74	-1,424.14	7,595.41	12,446.18	12,199.30	246.88	50.414	
11,800.00	6,933.07	7,232.13	7,228.07	83.07	216.71	74.63	-1,424.14	7,595.41	12,546.17	12,299.27	246.90	50.814	
11,900.00	6,932.74	7,231.80	7,227.74	84.58	216.70	74.51	-1,424.14	7,595.41	12,646.16	12,399.24	246.93	51.214	
12,000.00	6,932.42	7,231.48	7,227.42	86.09	216.69	74.39	-1,424.14	7,595.41	12,746.16	12,499.20	246.95	51.614	
12,100.00	6,932.10	7,231.16	7,227.10	87.60	216.68	74.28	-1,424.14	7,595.41	12,846.15	12,599.17	246.98	52.013	
12,200.00	6,931.77	7,230.83	7,226.77	89.12	216.67	74.16	-1,424.14	7,595.41	12,946.14	12,699.14	247.01	52.412	
12,300.00	6,931.45	7,230.51	7,226.45	90.64	216.66	74.05	-1,424.14	7,595.41	13,046.14	12,799.10	247.03	52.811	
12,400.00	6,931.13	7,230.19	7,226.13	92.16	216.65	73.93	-1,424.14	7,595.41	13,146.13	12,899.07	247.06	53.210	
12,500.00	6,930.80	7,229.87	7,225.80	93.69	216.64	73.81	-1,424.14	7,595.41	13,246.12	12,999.03	247.09	53.608	
12,600.00	6,930.48	7,229.54	7,225.48	95.22	216.63	73.70	-1,424.14	7,595.41	13,346.12	13,098.99	247.12	54.006	
12,700.00	6,930.16	7,229.22	7,225.16	96.75	216.62	73.58	-1,424.14	7,595.41	13,446.11	13,198.95	247.15	54.404	
12,800.00	6,929.84	7,228.90	7,224.84	98.28	216.61	73.47	-1,424.14	7,595.41	13,546.10	13,298.92	247.19	54.801	
12,900.00	6,929.51	7,228.57	7,224.51	99.82	216.60	73.35	-1,424.14	7,595.41	13,646.10	13,398.88	247.22	55.199	
13,000.00	6,929.19	7,228.25	7,224.19	101.35	216.59	73.24	-1,424.14	7,595.41	13,746.09	13,498.84	247.25	55.595	
13,100.00	6,928.87	7,227.93	7,223.87	102.89	216.58	73.12	-1,424.14	7,595.41	13,846.08	13,598.80	247.29	55.992	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #109 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,200.00	6,928.54	7,227.60	7,223.54	104.43	216.57	73.01	-1,424.14	7,595.41	13,946.08	13,698.76	247.32	56.389	
13,300.00	6,928.22	7,227.28	7,223.22	105.97	216.56	72.89	-1,424.14	7,595.41	14,046.07	13,798.71	247.36	56.785	
13,400.00	6,927.90	7,226.96	7,222.90	107.52	216.55	72.78	-1,424.14	7,595.41	14,146.06	13,898.67	247.39	57.180	
13,500.00	6,927.57	7,226.64	7,222.57	109.06	216.54	72.66	-1,424.14	7,595.41	14,246.06	13,998.63	247.43	57.576	
13,600.00	6,927.25	7,226.31	7,222.25	110.61	216.53	72.55	-1,424.14	7,595.41	14,346.05	14,098.58	247.47	57.971	
13,700.00	6,926.93	7,225.99	7,221.93	112.16	216.52	72.43	-1,424.14	7,595.41	14,446.05	14,198.54	247.51	58.366	
13,800.00	6,926.61	7,225.67	7,221.61	113.71	216.51	72.32	-1,424.14	7,595.41	14,546.04	14,298.50	247.55	58.761	
13,900.00	6,926.28	7,225.34	7,221.28	115.26	216.50	72.21	-1,424.14	7,595.41	14,646.04	14,398.45	247.59	59.155	
14,000.00	6,925.96	7,225.02	7,220.96	116.82	216.49	72.09	-1,424.14	7,595.41	14,746.03	14,498.40	247.63	59.549	
14,100.00	6,925.64	7,224.70	7,220.64	118.37	216.48	71.98	-1,424.14	7,595.41	14,846.03	14,598.36	247.67	59.943	
14,200.00	6,925.31	7,224.37	7,220.31	119.93	216.47	71.87	-1,424.14	7,595.41	14,946.02	14,698.31	247.71	60.336	
14,300.00	6,924.99	7,224.05	7,219.99	121.48	216.47	71.75	-1,424.14	7,595.41	15,046.01	14,798.26	247.75	60.729	
14,400.00	6,924.67	7,223.73	7,219.67	123.04	216.46	71.64	-1,424.14	7,595.41	15,146.01	14,898.21	247.80	61.122	
14,500.00	6,924.34	7,223.41	7,219.34	124.60	216.45	71.53	-1,424.14	7,595.41	15,246.00	14,998.16	247.84	61.515	
14,600.00	6,924.02	7,223.08	7,219.02	126.16	216.44	71.41	-1,424.14	7,595.41	15,346.00	15,098.11	247.89	61.907	
14,700.00	6,923.70	7,222.76	7,218.70	127.72	216.43	71.30	-1,424.14	7,595.41	15,445.99	15,198.06	247.93	62.299	
14,800.00	6,923.38	7,222.44	7,218.38	129.28	216.42	71.19	-1,424.14	7,595.41	15,545.99	15,298.01	247.98	62.690	
14,900.00	6,923.05	7,222.11	7,218.05	130.85	216.41	71.08	-1,424.14	7,595.41	15,645.98	15,397.96	248.03	63.081	
15,000.00	6,922.73	7,221.79	7,217.73	132.41	216.40	70.96	-1,424.14	7,595.41	15,745.98	15,497.90	248.08	63.472	
15,100.00	6,922.41	7,221.47	7,217.41	133.97	216.39	70.85	-1,424.14	7,595.41	15,845.97	15,597.85	248.12	63.863	
15,200.00	6,922.08	7,221.14	7,217.08	135.54	216.38	70.74	-1,424.14	7,595.41	15,945.97	15,697.79	248.17	64.253	
15,300.00	6,921.76	7,220.82	7,216.76	137.11	216.37	70.63	-1,424.14	7,595.41	16,045.96	15,797.74	248.22	64.643	
15,400.00	6,921.44	7,220.50	7,216.44	138.67	216.36	70.52	-1,424.14	7,595.41	16,145.96	15,897.68	248.27	65.033	
15,500.00	6,921.11	7,220.18	7,216.11	140.24	216.35	70.40	-1,424.14	7,595.41	16,245.95	15,997.63	248.33	65.422	
15,600.00	6,920.79	7,219.85	7,215.79	141.81	216.34	70.29	-1,424.14	7,595.41	16,345.95	16,097.57	248.38	65.811	
15,700.00	6,920.47	7,219.53	7,215.47	143.38	216.33	70.18	-1,424.14	7,595.41	16,445.95	16,197.51	248.43	66.199	
15,800.00	6,920.14	7,219.21	7,215.14	144.95	216.32	70.07	-1,424.14	7,595.41	16,545.94	16,297.46	248.48	66.588	
15,900.00	6,919.82	7,218.88	7,214.82	146.52	216.31	69.96	-1,424.14	7,595.41	16,645.94	16,397.40	248.54	66.975	
16,000.00	6,919.50	7,218.56	7,214.50	148.09	216.30	69.85	-1,424.14	7,595.41	16,745.93	16,497.34	248.59	67.363	
16,100.00	6,919.18	7,218.24	7,214.18	149.66	216.29	69.74	-1,424.14	7,595.41	16,845.93	16,597.28	248.65	67.750	
16,200.00	6,918.85	7,217.91	7,213.85	151.24	216.28	69.63	-1,424.14	7,595.41	16,945.92	16,697.22	248.70	68.137	
16,300.00	6,918.53	7,217.59	7,213.53	152.81	216.27	69.52	-1,424.14	7,595.41	17,045.92	16,797.16	248.76	68.524	
16,400.00	6,918.21	7,217.27	7,213.21	154.38	216.26	69.41	-1,424.14	7,595.41	17,145.92	16,897.10	248.82	68.910	
16,500.00	6,917.88	7,216.94	7,212.88	155.96	216.25	69.30	-1,424.14	7,595.41	17,245.91	16,997.04	248.87	69.296	
16,600.00	6,917.56	7,216.62	7,212.56	157.53	216.24	69.19	-1,424.14	7,595.41	17,345.91	17,096.97	248.93	69.681	
16,700.00	6,917.24	7,216.30	7,212.24	159.11	216.23	69.08	-1,424.14	7,595.41	17,445.90	17,196.91	248.99	70.066	
16,800.00	6,916.91	7,215.98	7,211.91	160.68	216.22	68.97	-1,424.14	7,595.41	17,545.90	17,296.85	249.05	70.451	
16,900.00	6,916.59	7,215.65	7,211.59	162.26	216.21	68.86	-1,424.14	7,595.41	17,645.89	17,396.78	249.11	70.835	
17,000.00	6,916.27	7,215.33	7,211.27	163.84	216.20	68.75	-1,424.14	7,595.41	17,745.89	17,496.72	249.17	71.220	
17,100.00	6,915.95	7,215.01	7,210.95	165.41	216.19	68.64	-1,424.14	7,595.41	17,845.89	17,596.65	249.23	71.603	
17,200.00	6,915.62	7,214.68	7,210.62	166.99	216.18	68.53	-1,424.14	7,595.41	17,945.88	17,696.59	249.29	71.987	
17,300.00	6,915.30	7,214.36	7,210.30	168.57	216.17	68.42	-1,424.14	7,595.41	18,045.88	17,796.52	249.36	72.370	
17,400.00	6,914.98	7,214.04	7,209.98	170.15	216.17	68.32	-1,424.14	7,595.41	18,145.87	17,896.45	249.42	72.752	
17,500.00	6,914.65	7,213.71	7,209.65	171.73	216.16	68.21	-1,424.14	7,595.41	18,245.87	17,996.39	249.48	73.135	
17,600.00	6,914.33	7,213.39	7,209.33	173.31	216.15	68.10	-1,424.14	7,595.41	18,345.87	18,096.32	249.55	73.516	
17,700.00	6,914.01	7,213.07	7,209.01	174.89	216.14	67.99	-1,424.14	7,595.41	18,445.86	18,196.25	249.61	73.898	
17,800.00	6,913.68	7,212.75	7,208.68	176.47	216.13	67.88	-1,424.14	7,595.41	18,545.86	18,296.18	249.68	74.279	
17,900.00	6,913.36	7,212.42	7,208.36	178.05	216.12	67.78	-1,424.14	7,595.41	18,645.86	18,396.11	249.74	74.660	
18,000.00	6,913.04	7,212.10	7,208.04	179.63	216.11	67.67	-1,424.14	7,595.41	18,745.85	18,496.04	249.81	75.041	
18,100.00	6,912.72	7,211.78	7,207.72	181.21	216.10	67.56	-1,424.14	7,595.41	18,845.85	18,595.97	249.88	75.421	
18,111.83	6,912.68	7,211.74	7,207.68	181.40	216.10	67.55	-1,424.14	7,595.41	18,857.68	18,607.80	249.88	75.466	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 117-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-70.74	1,160.19	-3,321.01	3,518.05				
54.25	54.25	15.25	15.25	0.02	0.30	-132.29	1,160.19	-3,321.01	3,517.92	3,517.60	0.31	N/A	
130.42	130.42	91.42	91.42	0.11	1.80	-159.46	1,160.19	-3,321.01	3,518.21	3,516.31	1.90	1,851.729	
219.69	219.69	180.69	180.69	0.23	3.90	-133.39	1,160.19	-3,321.01	3,518.60	3,514.50	4.10	858.470	
308.67	308.67	269.67	269.67	0.35	6.12	-142.31	1,160.19	-3,321.01	3,518.99	3,512.57	6.42	548.135	
454.00	453.99	419.31	419.30	0.51	9.87	83.13	1,160.62	-3,321.01	3,519.37	3,509.05	10.33	340.850	
544.00	543.93	505.08	504.93	0.74	12.02	83.48	1,160.19	-3,321.01	3,518.88	3,506.16	12.72	276.626	
667.00	666.63	628.81	628.64	1.13	15.82	70.63	1,161.37	-3,321.01	3,517.15	3,500.22	16.93	207.749	
756.00	755.27	738.65	738.45	1.44	19.19	85.61	1,160.29	-3,321.01	3,515.27	3,494.65	20.62	170.472	
850.00	848.62	809.93	809.62	1.79	21.10	87.34	1,160.19	-3,321.01	3,514.51	3,491.63	22.88	153.628	
881.28	879.58	840.89	840.58	1.91	21.91	89.94	1,160.19	-3,321.01	3,514.41	3,490.59	23.82	147.568	
942.00	939.50	907.26	906.92	2.14	23.67	93.94	1,161.18	-3,321.01	3,515.11	3,489.30	25.81	136.203	
1,033.00	1,028.89	1,015.20	1,014.83	2.52	26.51	103.39	1,159.79	-3,321.01	3,517.40	3,488.37	29.03	121.158	
1,123.00	1,117.00	1,078.41	1,078.00	2.90	27.90	109.70	1,160.19	-3,321.01	3,522.79	3,491.99	30.80	114.374	
1,214.00	1,206.00	1,167.42	1,167.00	3.29	29.95	109.31	1,160.19	-3,321.01	3,529.24	3,496.00	33.24	106.173	
1,309.00	1,298.75	1,261.26	1,260.82	3.71	32.11	112.49	1,161.54	-3,321.01	3,537.22	3,501.41	35.81	98.764	
1,403.00	1,390.39	1,358.49	1,358.05	4.13	34.35	115.81	1,161.25	-3,321.01	3,545.86	3,507.40	38.47	92.181	
1,498.00	1,482.88	1,456.83	1,456.38	4.56	36.62	112.81	1,160.53	-3,321.01	3,554.72	3,513.57	41.15	86.380	
1,592.00	1,573.82	1,535.36	1,534.82	5.00	38.38	112.51	1,160.19	-3,321.01	3,563.97	3,520.62	43.35	82.219	
1,687.00	1,665.32	1,626.85	1,626.32	5.46	40.40	115.80	1,160.19	-3,321.01	3,574.77	3,528.96	45.81	78.037	
1,876.00	1,847.35	1,813.54	1,812.98	6.38	44.51	119.13	1,161.43	-3,321.01	3,599.38	3,548.57	50.81	70.845	
1,970.00	1,937.87	1,910.29	1,909.73	6.84	46.64	119.65	1,160.91	-3,321.01	3,611.96	3,558.59	53.38	67.670	
2,064.00	2,028.42	1,990.05	1,989.42	7.30	48.40	120.50	1,160.19	-3,321.01	3,624.65	3,569.08	55.57	65.232	
2,159.00	2,119.97	2,081.60	2,080.97	7.77	50.23	122.05	1,160.19	-3,321.01	3,638.19	3,580.35	57.84	62.902	
2,348.00	2,302.44	2,266.83	2,266.19	8.69	53.94	118.12	1,161.16	-3,321.01	3,663.96	3,601.54	62.42	58.698	
2,443.00	2,394.41	2,364.63	2,363.99	9.15	55.90	117.85	1,160.81	-3,321.01	3,675.28	3,610.47	64.81	56.705	
2,537.00	2,485.45	2,461.65	2,460.99	9.61	57.84	117.95	1,160.10	-3,321.01	3,686.20	3,619.01	67.19	54.865	
2,632.00	2,577.48	2,539.16	2,538.48	10.07	59.40	118.51	1,160.19	-3,321.01	3,697.64	3,628.46	69.18	53.448	
2,727.00	2,669.50	2,631.19	2,630.50	10.53	61.26	118.87	1,160.19	-3,321.01	3,709.23	3,637.76	71.47	51.900	
2,821.00	2,760.56	2,723.01	2,722.32	10.98	63.11	118.95	1,161.02	-3,321.01	3,721.17	3,647.42	73.75	50.459	
2,916.00	2,852.68	2,819.33	2,818.64	11.44	65.05	119.24	1,160.86	-3,321.01	3,732.65	3,656.53	76.12	49.038	
3,011.00	2,945.03	2,916.01	2,915.31	11.89	67.00	119.72	1,160.45	-3,321.01	3,743.66	3,665.17	78.49	47.696	
3,105.00	3,036.57	2,998.31	2,997.57	12.33	68.62	114.34	1,160.19	-3,321.01	3,753.44	3,672.92	80.53	46.611	
3,200.00	3,128.81	3,090.55	3,089.81	12.78	70.40	111.27	1,160.19	-3,321.01	3,762.44	3,679.70	82.74	45.475	
3,294.00	3,219.76	3,181.50	3,180.76	13.24	72.15	111.23	1,160.19	-3,321.01	3,771.29	3,686.36	84.93	44.407	
3,389.00	3,311.82	3,275.58	3,274.83	13.69	73.97	112.63	1,161.40	-3,321.01	3,780.85	3,693.68	87.17	43.371	
3,483.00	3,403.03	3,372.32	3,371.56	14.14	75.83	113.30	1,161.14	-3,321.01	3,789.82	3,700.36	89.47	42.360	
3,578.00	3,495.31	3,470.33	3,469.56	14.60	77.72	114.20	1,160.59	-3,321.01	3,798.87	3,707.08	91.79	41.388	
3,672.00	3,586.65	3,548.44	3,547.65	15.04	79.28	115.52	1,160.19	-3,321.01	3,808.21	3,714.45	93.77	40.613	
3,767.00	3,678.95	3,640.96	3,640.16	15.49	81.25	116.36	1,160.45	-3,321.01	3,818.39	3,722.23	96.16	39.710	
3,862.00	3,771.63	3,740.67	3,739.88	15.93	83.36	116.55	1,160.26	-3,321.01	3,827.77	3,729.08	98.69	38.785	
3,956.00	3,863.70	3,825.53	3,824.70	16.35	86.13	117.15	1,160.19	-3,321.01	3,836.44	3,734.59	101.85	37.667	
4,052.00	3,957.54	3,919.37	3,918.54	16.79	89.42	116.11	1,160.19	-3,321.01	3,845.66	3,740.11	105.55	36.433	
4,146.00	4,048.88	4,011.35	4,010.50	17.24	92.64	116.23	1,161.82	-3,321.01	3,856.51	3,747.31	109.20	35.317	
4,241.00	4,140.47	4,113.70	4,112.84	17.71	96.23	118.96	1,161.52	-3,321.01	3,868.41	3,755.18	113.23	34.165	
4,336.00	4,231.25	4,215.51	4,214.63	18.21	99.80	122.45	1,160.66	-3,321.01	3,882.78	3,765.53	117.25	33.115	
4,430.00	4,320.59	4,283.04	4,281.59	18.71	102.54	120.95	1,160.19	-3,321.01	3,898.37	3,777.93	120.44	32.368	
4,524.00	4,409.51	4,382.00	4,380.20	19.22	107.32	117.60	1,160.19	-3,321.01	3,913.88	3,788.20	125.69	31.140	
4,619.00	4,498.98	4,461.86	4,459.98	19.75	111.23	117.19	1,160.19	-3,321.01	3,929.26	3,799.19	130.07	30.209	
4,713.00	4,587.83	4,550.95	4,548.83	20.27	115.46	117.82	1,160.19	-3,321.01	3,944.06	3,809.29	134.77	29.266	
4,807.00	4,676.97	4,640.31	4,637.97	20.78	119.87	119.42	1,160.19	-3,321.01	3,958.95	3,819.32	139.63	28.353	
4,870.00	4,736.65	4,705.00	4,702.35	21.12	123.10	120.09	1,160.19	-3,321.01	3,969.37	3,826.20	143.17	27.726	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 117-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,760.30	4,757.58	21.46	125.88	120.44	1,160.19	-3,321.01	3,979.52	3,833.27	146.25	27.211	
5,027.00	4,886.13	4,850.05	4,847.13	21.96	130.36	121.41	1,160.19	-3,321.01	3,994.74	3,843.56	151.18	26.425	
5,121.00	4,976.11	4,949.00	4,945.70	22.45	135.27	122.45	1,160.19	-3,321.01	4,009.56	3,853.04	156.52	25.617	
5,216.00	5,068.11	5,032.49	5,029.11	22.91	139.53	122.96	1,160.19	-3,321.01	4,022.63	3,861.43	161.20	24.954	
5,341.00	5,190.11	5,154.75	5,151.11	23.49	145.63	123.03	1,160.19	-3,321.01	4,037.69	3,869.86	167.82	24.059	
5,436.00	5,283.20	5,247.84	5,244.20	23.91	150.22	123.38	1,160.19	-3,321.01	4,048.21	3,875.41	172.80	23.427	
5,499.00	5,345.03	5,322.54	5,318.72	24.19	153.90	123.55	1,164.16	-3,321.01	4,057.28	3,880.55	176.74	22.956	
5,561.00	5,405.97	5,424.86	5,420.94	24.45	158.94	124.80	1,162.71	-3,321.01	4,063.27	3,881.24	182.03	22.321	
5,624.00	5,467.97	5,529.77	5,525.69	24.72	164.11	123.94	1,159.40	-3,321.02	4,068.47	3,881.03	187.44	21.705	
5,687.00	5,530.05	5,495.08	5,491.05	24.99	162.40	124.82	1,160.19	-3,321.01	4,073.90	3,887.92	185.98	21.905	
5,750.00	5,592.20	5,557.91	5,553.20	25.25	165.40	125.22	1,160.19	-3,321.01	4,079.87	3,890.64	189.23	21.561	
5,813.00	5,654.42	5,620.13	5,615.42	25.51	168.35	126.38	1,160.19	-3,321.01	4,085.70	3,893.29	192.42	21.234	
5,876.00	5,716.68	5,682.39	5,677.68	25.76	171.30	126.71	1,160.19	-3,321.01	4,091.46	3,895.86	195.60	20.917	
5,939.00	5,778.99	5,744.70	5,739.99	26.01	174.25	126.63	1,160.19	-3,321.01	4,097.06	3,898.27	198.79	20.610	
6,065.00	5,903.86	5,869.56	5,864.86	26.51	180.16	126.78	1,160.19	-3,321.01	4,107.19	3,902.02	205.17	20.019	
6,128.00	5,966.41	5,932.12	5,927.41	26.74	183.13	125.43	1,160.19	-3,321.01	4,111.59	3,903.24	208.35	19.734	
6,191.00	6,029.04	5,949.00	5,943.35	26.97	183.92	126.12	1,160.19	-3,321.01	4,115.88	3,906.54	209.34	19.661	
6,254.00	6,091.75	5,949.00	5,943.35	27.20	183.92	127.06	1,160.19	-3,321.01	4,120.67	3,911.21	209.46	19.673	
6,348.00	6,185.46	5,949.00	5,943.35	27.52	183.92	129.94	1,160.19	-3,321.01	4,128.82	3,919.27	209.55	19.703	
6,390.00	6,227.36	5,949.00	5,943.35	27.61	183.92	129.94	1,160.19	-3,321.01	4,132.97	3,923.50	209.48	19.730	
6,400.00	6,237.33	5,949.00	5,943.35	27.61	183.92	129.94	1,160.19	-3,321.01	4,134.02	3,924.58	209.45	19.738	
6,490.00	6,327.12	5,949.00	5,943.35	27.66	183.92	129.94	1,160.19	-3,321.01	4,144.56	3,935.46	209.11	19.820	
6,500.00	6,337.09	5,949.00	5,943.35	27.66	183.92	117.46	1,160.19	-3,321.01	4,145.80	3,936.74	209.06	19.830	
6,550.00	6,386.85	5,949.00	5,943.35	27.70	183.92	80.55	1,160.19	-3,321.01	4,150.73	3,941.89	208.84	19.875	
6,600.00	6,436.20	5,949.00	5,943.35	27.74	183.92	67.56	1,160.19	-3,321.01	4,153.55	3,944.95	208.60	19.911	
6,650.00	6,484.82	5,949.00	5,943.35	27.79	183.92	61.69	1,160.19	-3,321.01	4,154.26	3,945.89	208.36	19.938	
6,700.00	6,532.40	5,949.00	5,943.35	27.85	183.92	58.55	1,160.19	-3,321.01	4,152.84	3,944.73	208.11	19.955	
6,750.00	6,578.63	5,949.00	5,943.35	27.92	183.92	56.74	1,160.19	-3,321.01	4,149.30	3,941.45	207.86	19.962	
6,800.00	6,623.24	5,949.00	5,943.35	28.00	183.92	55.74	1,160.19	-3,321.01	4,143.67	3,936.07	207.60	19.960	
6,850.00	6,665.93	5,949.00	5,943.35	28.09	183.92	55.26	1,160.19	-3,321.01	4,135.97	3,928.62	207.35	19.947	
6,900.00	6,706.42	5,949.00	5,943.35	28.19	183.92	55.20	1,160.19	-3,321.01	4,126.23	3,919.12	207.11	19.923	
6,950.00	6,744.48	5,949.00	5,943.35	28.30	183.92	55.46	1,160.19	-3,321.01	4,114.51	3,907.63	206.88	19.888	
7,000.00	6,779.84	5,949.00	5,943.35	28.43	183.92	56.01	1,160.19	-3,321.01	4,100.85	3,894.18	206.67	19.842	
7,050.00	6,812.30	5,949.00	5,943.35	28.57	183.92	56.81	1,160.19	-3,321.01	4,085.34	3,878.86	206.48	19.785	
7,100.00	6,841.63	5,949.00	5,943.35	28.73	183.92	57.87	1,160.19	-3,321.01	4,068.05	3,861.72	206.33	19.716	
7,150.00	6,867.66	5,949.00	5,943.35	28.90	183.92	59.16	1,160.19	-3,321.01	4,049.06	3,842.85	206.21	19.636	
7,200.00	6,890.22	5,949.00	5,943.35	29.08	183.92	60.68	1,160.19	-3,321.01	4,028.47	3,822.35	206.12	19.544	
7,250.00	6,909.17	5,949.00	5,943.35	29.28	183.92	62.43	1,160.19	-3,321.01	4,006.39	3,800.31	206.08	19.441	
7,300.00	6,924.38	5,949.00	5,943.35	29.49	183.92	64.41	1,160.19	-3,321.01	3,982.94	3,776.85	206.09	19.326	
7,350.00	6,935.77	5,949.00	5,943.35	29.72	183.92	66.61	1,160.19	-3,321.01	3,958.25	3,752.09	206.16	19.200	
7,400.00	6,943.25	5,949.00	5,943.35	29.97	183.92	69.03	1,160.19	-3,321.01	3,932.43	3,726.16	206.27	19.064	
7,450.00	6,946.78	5,949.00	5,943.35	30.22	183.92	71.66	1,160.19	-3,321.01	3,905.65	3,699.20	206.45	18.918	
7,471.54	6,947.08	5,949.00	5,943.35	30.34	183.92	72.86	1,160.19	-3,321.01	3,893.86	3,687.31	206.54	18.852	
7,500.00	6,946.98	5,949.00	5,943.35	30.49	183.92	72.75	1,160.19	-3,321.01	3,878.13	3,671.46	206.68	18.764	
7,600.00	6,946.65	5,949.00	5,943.35	31.07	183.92	72.35	1,160.19	-3,321.01	3,822.26	3,615.11	207.15	18.452	
7,700.00	6,946.32	5,949.00	5,943.35	31.69	183.92	71.93	1,160.19	-3,321.01	3,765.42	3,557.77	207.65	18.134	
7,800.00	6,945.99	5,949.00	5,943.35	32.35	183.92	71.50	1,160.19	-3,321.01	3,707.64	3,499.49	208.16	17.812	
7,900.00	6,945.67	5,949.00	5,943.35	33.05	183.92	71.04	1,160.19	-3,321.01	3,648.96	3,440.28	208.68	17.486	
8,000.00	6,945.34	5,949.00	5,943.35	33.79	183.92	70.55	1,160.19	-3,321.01	3,589.40	3,380.19	209.21	17.157	
8,034.58	6,945.23	5,949.00	5,943.35	34.05	183.92	70.38	1,160.19	-3,321.01	3,568.60	3,359.21	209.40	17.042	
8,100.00	6,945.02	5,949.00	5,943.35	34.57	183.92	70.38	1,160.19	-3,321.01	3,529.55	3,319.80	209.75	16.827	
8,200.00	6,944.69	5,949.00	5,943.35	35.41	183.92	70.38	1,160.19	-3,321.01	3,471.39	3,261.06	210.33	16.504	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 117-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	5,949.00	5,943.35	36.30	183.92	70.38	1,160.19	-3,321.01	3,415.17	3,204.23	210.95	16.190	
8,400.00	6,944.05	5,949.00	5,943.35	37.25	183.92	70.38	1,160.19	-3,321.01	3,360.99	3,149.39	211.60	15.884	
8,500.00	6,943.73	5,949.00	5,943.35	38.25	183.92	70.38	1,160.19	-3,321.01	3,308.94	3,096.65	212.29	15.587	
8,600.00	6,943.40	5,949.00	5,943.35	39.29	183.92	70.38	1,160.19	-3,321.01	3,259.13	3,046.11	213.01	15.300	
8,700.00	6,943.08	5,949.00	5,943.35	40.37	183.92	70.38	1,160.19	-3,321.01	3,211.66	2,997.88	213.77	15.024	
8,800.00	6,942.76	5,949.00	5,943.35	41.49	183.92	70.38	1,160.19	-3,321.01	3,166.63	2,952.06	214.57	14.758	
8,900.00	6,942.43	5,949.00	5,943.35	42.64	183.92	70.38	1,160.19	-3,321.01	3,124.16	2,908.77	215.39	14.504	
9,000.00	6,942.11	5,949.00	5,943.35	43.82	183.92	70.38	1,160.19	-3,321.01	3,084.35	2,868.10	216.25	14.263	
9,100.00	6,941.79	5,949.00	5,943.35	45.03	183.92	70.38	1,160.19	-3,321.01	3,047.30	2,830.17	217.13	14.034	
9,200.00	6,941.46	5,949.00	5,943.35	46.27	183.92	70.38	1,160.19	-3,321.01	3,013.12	2,795.08	218.03	13.819	
9,300.00	6,941.14	5,949.00	5,943.35	47.53	183.92	70.38	1,160.19	-3,321.01	2,981.90	2,762.94	218.96	13.618	
9,400.00	6,940.82	5,949.00	5,943.35	48.81	183.92	70.38	1,160.19	-3,321.01	2,953.73	2,733.83	219.90	13.432	
9,500.00	6,940.50	5,949.00	5,943.35	50.11	183.92	70.38	1,160.19	-3,321.01	2,928.71	2,707.86	220.86	13.261	
9,600.00	6,940.17	5,949.00	5,943.35	51.43	183.92	70.38	1,160.19	-3,321.01	2,906.92	2,685.10	221.82	13.105	
9,700.00	6,939.85	5,949.00	5,943.35	52.76	183.92	70.38	1,160.19	-3,321.01	2,888.43	2,665.64	222.79	12.965	
9,800.00	6,939.53	5,949.00	5,943.35	54.11	183.92	70.38	1,160.19	-3,321.01	2,873.30	2,649.54	223.76	12.841	
9,900.00	6,939.20	5,949.00	5,943.35	55.48	183.92	70.38	1,160.19	-3,321.01	2,861.59	2,636.86	224.73	12.734	
10,000.00	6,938.88	5,949.00	5,943.35	56.86	183.92	70.38	1,160.19	-3,321.01	2,853.33	2,627.65	225.68	12.643	
10,100.00	6,938.56	5,949.00	5,943.35	58.25	183.92	70.38	1,160.19	-3,321.01	2,848.57	2,621.94	226.63	12.569	
10,185.85	6,938.28	5,949.00	5,943.35	59.45	183.92	70.38	1,160.19	-3,321.01	2,847.28	2,619.85	227.42	12.520	CC
10,200.00	6,938.23	5,949.00	5,943.35	59.65	183.92	70.38	1,160.19	-3,321.01	2,847.31	2,619.76	227.55	12.513	ES
10,300.00	6,937.91	5,949.00	5,943.35	61.06	183.92	70.38	1,160.19	-3,321.01	2,849.56	2,621.11	228.46	12.473	
10,400.00	6,937.59	5,949.00	5,943.35	62.48	183.92	70.38	1,160.19	-3,321.01	2,855.32	2,625.98	229.33	12.450	
10,500.00	6,937.27	5,949.00	5,943.35	63.91	183.92	70.38	1,160.19	-3,321.01	2,864.55	2,634.37	230.18	12.445	SF
10,600.00	6,936.94	5,949.00	5,943.35	65.34	183.92	70.38	1,160.19	-3,321.01	2,877.24	2,646.24	231.00	12.456	
10,700.00	6,936.62	5,949.00	5,943.35	66.79	183.92	70.38	1,160.19	-3,321.01	2,893.32	2,661.55	231.77	12.483	
10,800.00	6,936.30	5,949.00	5,943.35	68.24	183.92	70.38	1,160.19	-3,321.01	2,912.76	2,680.25	232.51	12.527	
10,900.00	6,935.97	5,949.00	5,943.35	69.70	183.92	70.38	1,160.19	-3,321.01	2,935.47	2,702.26	233.21	12.587	
11,000.00	6,935.65	5,949.00	5,943.35	71.17	183.92	70.38	1,160.19	-3,321.01	2,961.39	2,727.52	233.87	12.663	
11,100.00	6,935.33	5,949.00	5,943.35	72.64	183.92	70.38	1,160.19	-3,321.01	2,990.43	2,755.95	234.48	12.753	
11,200.00	6,935.00	5,949.00	5,943.35	74.11	183.92	70.38	1,160.19	-3,321.01	3,022.49	2,787.45	235.05	12.859	
11,300.00	6,934.68	5,949.00	5,943.35	75.60	183.92	70.38	1,160.19	-3,321.01	3,057.50	2,821.93	235.57	12.979	
11,400.00	6,934.36	5,949.00	5,943.35	77.08	183.92	70.38	1,160.19	-3,321.01	3,095.34	2,859.29	236.06	13.113	
11,500.00	6,934.03	5,949.00	5,943.35	78.57	183.92	70.38	1,160.19	-3,321.01	3,135.92	2,899.42	236.50	13.260	
11,600.00	6,933.71	5,949.00	5,943.35	80.07	183.92	70.38	1,160.19	-3,321.01	3,179.12	2,942.23	236.89	13.420	
11,700.00	6,933.39	5,949.00	5,943.35	81.57	183.92	70.38	1,160.19	-3,321.01	3,224.84	2,987.59	237.25	13.593	
11,800.00	6,933.07	5,949.00	5,943.35	83.07	183.92	70.38	1,160.19	-3,321.01	3,272.99	3,035.42	237.57	13.777	
11,900.00	6,932.74	5,949.00	5,943.35	84.58	183.92	70.38	1,160.19	-3,321.01	3,323.44	3,085.59	237.85	13.973	
12,000.00	6,932.42	5,949.00	5,943.35	86.09	183.92	70.38	1,160.19	-3,321.01	3,376.11	3,138.01	238.10	14.179	
12,100.00	6,932.10	5,949.00	5,943.35	87.60	183.92	70.38	1,160.19	-3,321.01	3,430.88	3,192.57	238.31	14.396	
12,200.00	6,931.77	5,949.00	5,943.35	89.12	183.92	70.38	1,160.19	-3,321.01	3,487.66	3,249.16	238.50	14.623	
12,300.00	6,931.45	5,949.00	5,943.35	90.64	183.92	70.38	1,160.19	-3,321.01	3,546.35	3,307.70	238.65	14.860	
12,400.00	6,931.13	5,949.00	5,943.35	92.16	183.92	70.38	1,160.19	-3,321.01	3,606.86	3,368.08	238.78	15.105	
12,500.00	6,930.80	5,949.00	5,943.35	93.69	183.92	70.38	1,160.19	-3,321.01	3,669.10	3,430.21	238.88	15.359	
12,600.00	6,930.48	5,949.00	5,943.35	95.22	183.92	70.38	1,160.19	-3,321.01	3,732.97	3,494.01	238.97	15.621	
12,700.00	6,930.16	5,949.00	5,943.35	96.75	183.92	70.38	1,160.19	-3,321.01	3,798.41	3,559.39	239.02	15.891	
12,800.00	6,929.84	5,949.00	5,943.35	98.28	183.92	70.38	1,160.19	-3,321.01	3,865.33	3,626.26	239.07	16.168	
12,900.00	6,929.51	5,949.00	5,943.35	99.82	183.92	70.38	1,160.19	-3,321.01	3,933.65	3,694.56	239.09	16.453	
13,000.00	6,929.19	5,949.00	5,943.35	101.35	183.92	70.38	1,160.19	-3,321.01	4,003.30	3,764.20	239.10	16.743	
13,100.00	6,928.87	5,949.00	5,943.35	102.89	183.92	70.38	1,160.19	-3,321.01	4,074.22	3,835.13	239.09	17.040	
13,200.00	6,928.54	5,949.00	5,943.35	104.43	183.92	70.38	1,160.19	-3,321.01	4,146.33	3,907.26	239.07	17.343	
13,300.00	6,928.22	5,949.00	5,943.35	105.97	183.92	70.38	1,160.19	-3,321.01	4,219.59	3,980.54	239.04	17.652	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 117-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	5,949.00	5,943.35	107.52	183.92	70.38	1,160.19	-3,321.01	4,293.92	4,054.92	239.00	17.966	
13,500.00	6,927.57	5,949.00	5,943.35	109.06	183.92	70.38	1,160.19	-3,321.01	4,369.27	4,130.32	238.95	18.285	
13,600.00	6,927.25	5,949.00	5,943.35	110.61	183.92	70.38	1,160.19	-3,321.01	4,445.60	4,206.71	238.89	18.609	
13,700.00	6,926.93	5,949.00	5,943.35	112.16	183.92	70.38	1,160.19	-3,321.01	4,522.86	4,284.03	238.83	18.938	
13,800.00	6,926.61	5,949.00	5,943.35	113.71	183.92	70.38	1,160.19	-3,321.01	4,600.98	4,362.22	238.76	19.270	
13,900.00	6,926.28	5,949.00	5,943.35	115.26	183.92	70.38	1,160.19	-3,321.01	4,679.94	4,441.26	238.69	19.607	
14,000.00	6,925.96	5,949.00	5,943.35	116.82	183.92	70.38	1,160.19	-3,321.01	4,759.70	4,521.09	238.61	19.948	
14,100.00	6,925.64	5,949.00	5,943.35	118.37	183.92	70.38	1,160.19	-3,321.01	4,840.20	4,601.68	238.52	20.292	
14,200.00	6,925.31	5,949.00	5,943.35	119.93	183.92	70.38	1,160.19	-3,321.01	4,921.42	4,682.98	238.44	20.640	
14,300.00	6,924.99	5,949.00	5,943.35	121.48	183.92	70.38	1,160.19	-3,321.01	5,003.32	4,764.97	238.35	20.992	
14,400.00	6,924.67	5,949.00	5,943.35	123.04	183.92	70.38	1,160.19	-3,321.01	5,085.87	4,847.61	238.26	21.346	
14,500.00	6,924.34	5,949.00	5,943.35	124.60	183.92	70.38	1,160.19	-3,321.01	5,169.03	4,930.87	238.16	21.704	
14,600.00	6,924.02	5,949.00	5,943.35	126.16	183.92	70.38	1,160.19	-3,321.01	5,252.78	5,014.71	238.07	22.064	
14,700.00	6,923.70	5,949.00	5,943.35	127.72	183.92	70.38	1,160.19	-3,321.01	5,337.09	5,099.11	237.97	22.427	
14,800.00	6,923.38	5,949.00	5,943.35	129.28	183.92	70.38	1,160.19	-3,321.01	5,421.93	5,184.05	237.88	22.793	
14,900.00	6,923.05	5,949.00	5,943.35	130.85	183.92	70.38	1,160.19	-3,321.01	5,507.28	5,269.50	237.78	23.161	
15,000.00	6,922.73	5,949.00	5,943.35	132.41	183.92	70.38	1,160.19	-3,321.01	5,593.12	5,355.43	237.69	23.531	
15,100.00	6,922.41	5,949.00	5,943.35	133.97	183.92	70.38	1,160.19	-3,321.01	5,679.42	5,441.83	237.60	23.904	
15,200.00	6,922.08	5,949.00	5,943.35	135.54	183.92	70.38	1,160.19	-3,321.01	5,766.17	5,528.66	237.50	24.278	
15,300.00	6,921.76	5,949.00	5,943.35	137.11	183.92	70.38	1,160.19	-3,321.01	5,853.33	5,615.92	237.41	24.655	
15,400.00	6,921.44	5,949.00	5,943.35	138.67	183.92	70.38	1,160.19	-3,321.01	5,940.90	5,703.59	237.32	25.034	
15,500.00	6,921.11	5,949.00	5,943.35	140.24	183.92	70.38	1,160.19	-3,321.01	6,028.86	5,791.63	237.23	25.414	
15,600.00	6,920.79	5,949.00	5,943.35	141.81	183.92	70.38	1,160.19	-3,321.01	6,117.19	5,880.05	237.14	25.796	
15,700.00	6,920.47	5,949.00	5,943.35	143.38	183.92	70.38	1,160.19	-3,321.01	6,205.87	5,968.82	237.05	26.180	
15,800.00	6,920.14	5,949.00	5,943.35	144.95	183.92	70.38	1,160.19	-3,321.01	6,294.89	6,057.93	236.96	26.565	
15,900.00	6,919.82	5,949.00	5,943.35	146.52	183.92	70.38	1,160.19	-3,321.01	6,384.24	6,147.36	236.88	26.952	
16,000.00	6,919.50	5,949.00	5,943.35	148.09	183.92	70.38	1,160.19	-3,321.01	6,473.89	6,237.10	236.79	27.340	
16,100.00	6,919.18	5,949.00	5,943.35	149.66	183.92	70.38	1,160.19	-3,321.01	6,563.85	6,327.14	236.71	27.729	
16,200.00	6,918.85	5,949.00	5,943.35	151.24	183.92	70.38	1,160.19	-3,321.01	6,654.09	6,417.46	236.63	28.120	
16,300.00	6,918.53	5,949.00	5,943.35	152.81	183.92	70.38	1,160.19	-3,321.01	6,744.61	6,508.06	236.56	28.512	
16,400.00	6,918.21	5,949.00	5,943.35	154.38	183.92	70.38	1,160.19	-3,321.01	6,835.40	6,598.92	236.48	28.905	
16,500.00	6,917.88	5,949.00	5,943.35	155.96	183.92	70.38	1,160.19	-3,321.01	6,926.43	6,690.03	236.41	29.299	
16,600.00	6,917.56	5,949.00	5,943.35	157.53	183.92	70.38	1,160.19	-3,321.01	7,017.71	6,781.38	236.33	29.694	
16,700.00	6,917.24	5,949.00	5,943.35	159.11	183.92	70.38	1,160.19	-3,321.01	7,109.23	6,872.96	236.26	30.090	
16,800.00	6,916.91	5,949.00	5,943.35	160.68	183.92	70.38	1,160.19	-3,321.01	7,200.97	6,964.77	236.20	30.487	
16,900.00	6,916.59	5,949.00	5,943.35	162.26	183.92	70.38	1,160.19	-3,321.01	7,292.93	7,056.80	236.13	30.885	
17,000.00	6,916.27	5,949.00	5,943.35	163.84	183.92	70.38	1,160.19	-3,321.01	7,385.09	7,149.03	236.07	31.284	
17,100.00	6,915.95	5,949.00	5,943.35	165.41	183.92	70.38	1,160.19	-3,321.01	7,477.46	7,241.46	236.01	31.683	
17,200.00	6,915.62	5,949.00	5,943.35	166.99	183.92	70.38	1,160.19	-3,321.01	7,570.02	7,334.08	235.95	32.084	
17,300.00	6,915.30	5,949.00	5,943.35	168.57	183.92	70.38	1,160.19	-3,321.01	7,662.77	7,426.89	235.89	32.485	
17,400.00	6,914.98	5,949.00	5,943.35	170.15	183.92	70.38	1,160.19	-3,321.01	7,755.70	7,519.87	235.83	32.886	
17,500.00	6,914.65	5,949.00	5,943.35	171.73	183.92	70.38	1,160.19	-3,321.01	7,848.81	7,613.03	235.78	33.289	
17,600.00	6,914.33	5,949.00	5,943.35	173.31	183.92	70.38	1,160.19	-3,321.01	7,942.08	7,706.35	235.73	33.692	
17,700.00	6,914.01	5,949.00	5,943.35	174.89	183.92	70.38	1,160.19	-3,321.01	8,035.51	7,799.83	235.68	34.095	
17,800.00	6,913.68	5,949.00	5,943.35	176.47	183.92	70.38	1,160.19	-3,321.01	8,129.10	7,893.47	235.63	34.499	
17,900.00	6,913.36	5,949.00	5,943.35	178.05	183.92	70.38	1,160.19	-3,321.01	8,222.84	7,987.25	235.59	34.904	
18,000.00	6,913.04	5,949.00	5,943.35	179.63	183.92	70.38	1,160.19	-3,321.01	8,316.72	8,081.18	235.54	35.309	
18,100.00	6,912.72	5,949.00	5,943.35	181.21	183.92	70.38	1,160.19	-3,321.01	8,410.75	8,175.25	235.50	35.714	
18,111.83	6,912.68	5,949.00	5,943.35	181.40	183.92	70.38	1,160.19	-3,321.01	8,421.89	8,186.39	235.50	35.762	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 245-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-80.75	779.55	-4,788.06	4,851.28				
54.25	54.25	13.25	13.25	0.02	0.23	-142.30	779.55	-4,788.06	4,851.19	4,850.94	0.25	N/A	
130.42	130.42	89.42	89.42	0.11	1.58	-169.46	779.55	-4,788.06	4,851.52	4,849.83	1.69	2,870.335	
219.69	219.69	178.69	178.69	0.23	3.17	-143.40	779.55	-4,788.06	4,851.95	4,848.56	3.38	1,435.376	
308.67	308.67	267.67	267.67	0.35	4.74	-152.31	779.55	-4,788.06	4,852.39	4,847.33	5.06	958.805	
454.00	453.99	413.71	413.71	0.51	7.33	73.12	779.66	-4,788.06	4,852.52	4,844.71	7.81	621.093	
544.00	543.93	502.94	502.93	0.74	8.92	73.48	779.55	-4,788.06	4,851.62	4,841.99	9.64	503.383	
667.00	666.63	625.64	625.64	1.13	11.17	60.58	779.71	-4,788.06	4,848.12	4,835.83	12.29	394.397	
756.00	755.27	715.37	715.37	1.44	12.82	75.52	779.64	-4,788.06	4,845.17	4,830.92	14.25	339.940	
850.00	848.62	807.64	807.62	1.79	14.53	77.27	779.55	-4,788.06	4,842.59	4,826.27	16.31	296.827	
942.00	939.50	898.51	898.50	2.14	16.25	83.84	779.55	-4,788.06	4,840.31	4,821.92	18.39	263.208	
998.90	995.44	954.45	954.44	2.38	17.30	90.00	779.55	-4,788.06	4,839.77	4,820.09	19.68	245.937	
1,033.00	1,028.89	987.90	987.89	2.52	17.93	93.22	779.55	-4,788.06	4,839.97	4,819.52	20.45	236.669	
1,123.00	1,117.00	1,077.40	1,077.38	2.90	19.62	99.55	780.31	-4,788.06	4,842.20	4,819.68	22.52	215.004	
1,214.00	1,206.00	1,168.55	1,168.53	3.29	21.34	99.09	780.05	-4,788.06	4,845.29	4,820.66	24.63	196.696	
1,309.00	1,298.75	1,263.64	1,263.62	3.71	23.13	102.20	779.55	-4,788.06	4,849.10	4,822.26	26.84	180.637	
1,403.00	1,390.39	1,349.44	1,349.39	4.13	24.76	105.40	779.55	-4,788.06	4,854.20	4,825.31	28.89	168.026	
1,498.00	1,482.88	1,441.92	1,441.88	4.56	26.52	102.36	779.55	-4,788.06	4,859.52	4,828.45	31.07	156.399	
1,592.00	1,573.82	1,533.23	1,533.18	5.00	28.25	102.12	780.09	-4,788.06	4,864.82	4,831.57	33.24	146.340	
1,687.00	1,665.32	1,626.35	1,626.30	5.46	30.01	105.31	779.98	-4,788.06	4,871.08	4,835.61	35.47	137.345	
1,876.00	1,847.35	1,806.43	1,806.35	6.38	33.54	108.41	779.55	-4,788.06	4,886.24	4,846.34	39.90	122.457	
1,970.00	1,937.87	1,896.95	1,896.87	6.84	35.46	108.86	779.55	-4,788.06	4,894.61	4,852.33	42.28	115.760	
2,064.00	2,028.42	1,987.50	1,987.42	7.30	37.39	109.67	779.55	-4,788.06	4,903.22	4,858.55	44.66	109.783	
2,159.00	2,119.97	2,081.12	2,081.04	7.77	39.39	111.16	780.30	-4,788.06	4,912.53	4,865.42	47.11	104.272	
2,348.00	2,302.44	2,261.62	2,261.44	8.69	43.23	107.09	779.55	-4,788.06	4,929.05	4,877.19	51.86	95.042	
2,443.00	2,394.41	2,353.58	2,353.41	9.15	45.22	106.74	779.55	-4,788.06	4,936.19	4,881.89	54.30	90.901	
2,537.00	2,485.45	2,444.63	2,444.45	9.61	47.20	106.77	779.55	-4,788.06	4,943.13	4,886.41	56.72	87.151	
2,632.00	2,577.48	2,538.86	2,538.66	10.07	49.24	107.33	781.13	-4,788.06	4,950.64	4,891.43	59.21	83.614	
2,727.00	2,669.50	2,637.58	2,637.37	10.53	51.37	107.64	780.69	-4,788.06	4,957.83	4,896.03	61.80	80.230	
2,821.00	2,760.56	2,735.54	2,735.31	10.98	53.50	107.67	779.75	-4,788.06	4,964.88	4,900.52	64.36	77.142	
2,916.00	2,852.68	2,811.95	2,811.68	11.44	55.07	107.83	779.55	-4,788.06	4,972.07	4,905.69	66.38	74.900	
3,011.00	2,945.03	2,904.30	2,904.03	11.89	56.96	108.22	779.55	-4,788.06	4,979.14	4,910.43	68.70	72.471	
3,105.00	3,036.57	2,995.84	2,995.57	12.33	58.82	102.86	779.55	-4,788.06	4,985.01	4,914.01	71.00	70.209	
3,200.00	3,128.81	3,091.48	3,091.20	12.78	60.77	99.82	780.24	-4,788.06	4,989.76	4,916.36	73.40	67.983	
3,294.00	3,219.76	3,185.99	3,185.71	13.24	62.70	99.73	779.89	-4,788.06	4,993.82	4,918.04	75.78	65.903	
3,389.00	3,311.82	3,271.15	3,270.82	13.69	64.42	100.98	779.55	-4,788.06	4,998.06	4,920.11	77.94	64.123	
3,483.00	3,403.03	3,362.36	3,362.03	14.14	66.22	101.58	779.55	-4,788.06	5,002.63	4,922.45	80.18	62.390	
3,578.00	3,495.31	3,454.64	3,454.31	14.60	68.04	102.39	779.55	-4,788.06	5,007.45	4,925.00	82.44	60.737	
3,672.00	3,586.65	3,546.42	3,546.08	15.04	69.84	103.71	780.82	-4,788.06	5,012.98	4,928.29	84.69	59.192	
3,767.00	3,678.95	3,643.11	3,642.76	15.49	71.75	104.48	780.65	-4,788.06	5,018.55	4,931.51	87.04	57.661	
3,862.00	3,771.63	3,740.32	3,739.96	15.93	73.66	104.57	780.20	-4,788.06	5,023.77	4,934.38	89.38	56.207	
3,956.00	3,863.70	3,837.00	3,836.63	16.35	75.57	105.12	779.47	-4,788.06	5,028.50	4,936.80	91.70	54.838	
4,052.00	3,957.54	3,916.92	3,916.54	16.79	77.14	104.06	779.55	-4,788.06	5,033.69	4,939.99	93.70	53.723	
4,146.00	4,048.88	4,008.26	4,007.88	17.24	78.94	104.17	779.55	-4,788.06	5,039.25	4,943.32	95.93	52.529	
4,241.00	4,140.47	4,100.97	4,100.59	17.71	80.77	106.87	780.05	-4,788.06	5,046.43	4,948.21	98.22	51.380	
4,336.00	4,231.25	4,194.63	4,194.24	18.21	82.61	110.29	779.90	-4,788.06	5,055.69	4,955.15	100.54	50.286	
4,430.00	4,320.59	4,286.90	4,286.51	18.71	84.43	108.89	779.60	-4,788.06	5,065.83	4,962.99	102.84	49.260	
4,524.00	4,409.51	4,368.94	4,368.51	19.22	86.10	105.53	779.55	-4,788.06	5,075.26	4,970.26	104.99	48.338	
4,619.00	4,498.98	4,458.41	4,457.98	19.75	87.92	105.12	779.55	-4,788.06	5,084.18	4,976.85	107.33	47.371	
4,713.00	4,587.83	4,547.28	4,546.84	20.27	89.74	105.62	780.63	-4,788.06	5,093.12	4,983.48	109.63	46.456	
4,807.00	4,676.97	4,642.43	4,641.99	20.78	91.68	107.19	780.47	-4,788.06	5,101.91	4,989.85	112.06	45.527	
4,870.00	4,736.65	4,706.27	4,705.82	21.12	92.98	107.79	780.19	-4,788.06	5,108.17	4,994.48	113.70	44.929	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 245-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,770.46	4,770.01	21.46	94.29	108.08	779.75	-4,788.06	5,114.27	4,998.94	115.33	44.346	
5,027.00	4,886.13	4,845.61	4,845.13	21.96	95.75	108.97	779.55	-4,788.06	5,123.66	5,006.39	117.26	43.694	
5,121.00	4,976.11	4,935.59	4,935.11	22.45	97.46	109.83	779.55	-4,788.06	5,133.03	5,013.60	119.44	42.977	
5,216.00	5,068.11	5,027.59	5,027.11	22.91	99.21	110.26	779.55	-4,788.06	5,141.38	5,019.75	121.62	42.273	
5,341.00	5,190.11	5,155.28	5,154.79	23.49	101.63	110.26	780.20	-4,788.06	5,151.24	5,026.64	124.60	41.342	
5,436.00	5,283.20	5,253.49	5,252.99	23.91	103.50	110.58	779.79	-4,788.06	5,157.82	5,030.94	126.87	40.654	
5,499.00	5,345.03	5,304.54	5,304.03	24.19	104.48	110.62	779.55	-4,788.06	5,162.04	5,033.92	128.12	40.290	
5,561.00	5,405.97	5,365.48	5,364.97	24.45	105.73	111.77	779.55	-4,788.06	5,166.24	5,036.61	129.62	39.856	
5,624.00	5,467.97	5,427.48	5,426.97	24.72	106.99	110.85	779.55	-4,788.06	5,170.34	5,039.20	131.15	39.424	
5,687.00	5,530.05	5,489.56	5,489.05	24.99	108.26	111.89	779.55	-4,788.06	5,174.31	5,041.64	132.67	39.002	
5,750.00	5,592.20	5,552.14	5,551.63	25.25	109.54	112.27	780.09	-4,788.06	5,178.44	5,044.24	134.20	38.588	
5,813.00	5,654.42	5,616.67	5,616.16	25.51	110.85	113.40	780.04	-4,788.06	5,182.30	5,046.53	135.76	38.172	
5,876.00	5,716.68	5,681.27	5,680.76	25.76	112.17	113.72	779.91	-4,788.06	5,186.12	5,048.80	137.33	37.764	
5,939.00	5,778.99	5,745.94	5,745.42	26.01	113.49	113.63	779.71	-4,788.06	5,189.82	5,050.93	138.89	37.366	
6,065.00	5,903.86	5,863.43	5,862.86	26.51	116.17	113.73	779.55	-4,788.06	5,196.57	5,054.53	142.04	36.585	
6,128.00	5,966.41	5,925.99	5,925.41	26.74	117.67	112.37	779.55	-4,788.06	5,199.50	5,055.72	143.78	36.164	
6,191.00	6,029.04	5,988.62	5,988.04	26.97	119.18	113.10	779.55	-4,788.06	5,202.16	5,056.65	145.51	35.752	
6,254.00	6,091.75	6,000.00	5,999.35	27.20	119.45	114.03	779.55	-4,788.06	5,204.83	5,058.85	145.98	35.654	
6,348.00	6,185.46	6,000.00	5,999.35	27.52	119.45	116.88	779.55	-4,788.06	5,209.77	5,063.54	146.23	35.628	
6,390.00	6,227.36	6,000.00	5,999.35	27.61	119.45	116.88	779.55	-4,788.06	5,212.43	5,066.18	146.25	35.640	
6,400.00	6,237.33	6,000.00	5,999.35	27.61	119.45	116.88	779.55	-4,788.06	5,213.11	5,066.87	146.24	35.647	
6,490.00	6,327.12	6,000.00	5,999.35	27.66	119.45	116.88	779.55	-4,788.06	5,220.13	5,073.98	146.14	35.719	
6,500.00	6,337.09	6,000.00	5,999.35	27.66	119.45	104.44	779.55	-4,788.06	5,220.93	5,074.80	146.13	35.728	
6,550.00	6,386.85	6,000.00	5,999.35	27.70	119.45	67.74	779.55	-4,788.06	5,223.29	5,077.23	146.07	35.759	
6,600.00	6,436.20	6,000.00	5,999.35	27.74	119.45	54.96	779.55	-4,788.06	5,222.84	5,076.83	146.01	35.771	
6,650.00	6,484.82	6,000.00	5,999.35	27.79	119.45	49.31	779.55	-4,788.06	5,219.58	5,073.63	145.95	35.762	
6,700.00	6,532.40	6,000.00	5,999.35	27.85	119.45	46.39	779.55	-4,788.06	5,213.52	5,067.62	145.90	35.733	
6,750.00	6,578.63	6,000.00	5,999.35	27.92	119.45	44.82	779.55	-4,788.06	5,204.70	5,058.84	145.86	35.684	
6,800.00	6,623.24	6,000.00	5,999.35	28.00	119.45	44.06	779.55	-4,788.06	5,193.15	5,047.33	145.82	35.614	
6,850.00	6,665.93	6,000.00	5,999.35	28.09	119.45	43.86	779.55	-4,788.06	5,178.93	5,033.14	145.79	35.523	
6,900.00	6,706.42	6,000.00	5,999.35	28.19	119.45	44.10	779.55	-4,788.06	5,162.11	5,016.34	145.77	35.412	
6,950.00	6,744.48	6,000.00	5,999.35	28.30	119.45	44.72	779.55	-4,788.06	5,142.77	4,997.01	145.77	35.280	
7,000.00	6,779.84	6,000.00	5,999.35	28.43	119.45	45.68	779.55	-4,788.06	5,121.01	4,975.23	145.78	35.128	
7,050.00	6,812.30	6,000.00	5,999.35	28.57	119.45	46.97	779.55	-4,788.06	5,096.94	4,951.13	145.81	34.957	
7,100.00	6,841.63	6,000.00	5,999.35	28.73	119.45	48.61	779.55	-4,788.06	5,070.67	4,924.82	145.85	34.765	
7,150.00	6,867.66	6,000.00	5,999.35	28.90	119.45	50.61	779.55	-4,788.06	5,042.34	4,896.42	145.92	34.555	
7,200.00	6,890.22	6,000.00	5,999.35	29.08	119.45	52.98	779.55	-4,788.06	5,012.10	4,866.09	146.01	34.326	
7,250.00	6,909.17	6,000.00	5,999.35	29.28	119.45	55.76	779.55	-4,788.06	4,980.10	4,833.98	146.13	34.081	
7,300.00	6,924.38	6,000.00	5,999.35	29.49	119.45	58.97	779.55	-4,788.06	4,946.52	4,800.26	146.27	33.819	
7,350.00	6,935.77	6,000.00	5,999.35	29.72	119.45	62.63	779.55	-4,788.06	4,911.54	4,765.11	146.43	33.542	
7,400.00	6,943.25	6,000.00	5,999.35	29.97	119.45	66.76	779.55	-4,788.06	4,875.35	4,728.73	146.62	33.251	
7,450.00	6,946.78	6,000.00	5,999.35	30.22	119.45	71.35	779.55	-4,788.06	4,838.17	4,691.33	146.84	32.949	
7,471.54	6,947.08	6,000.00	5,999.35	30.34	119.45	73.45	779.55	-4,788.06	4,821.89	4,674.95	146.94	32.815	
7,500.00	6,946.98	6,000.00	5,999.35	30.49	119.45	73.27	779.55	-4,788.06	4,800.25	4,653.17	147.08	32.637	
7,600.00	6,946.65	6,000.00	5,999.35	31.07	119.45	72.57	779.55	-4,788.06	4,723.37	4,575.81	147.57	32.008	
7,700.00	6,946.32	6,000.00	5,999.35	31.69	119.45	71.80	779.55	-4,788.06	4,645.24	4,497.17	148.07	31.373	
7,800.00	6,945.99	6,000.00	5,999.35	32.35	119.45	70.98	779.55	-4,788.06	4,565.88	4,417.31	148.57	30.733	
7,900.00	6,945.67	6,000.00	5,999.35	33.05	119.45	70.08	779.55	-4,788.06	4,485.33	4,336.26	149.07	30.089	
8,000.00	6,945.34	6,000.00	5,999.35	33.79	119.45	69.09	779.55	-4,788.06	4,403.62	4,254.05	149.57	29.442	
8,034.58	6,945.23	6,000.00	5,999.35	34.05	119.45	68.73	779.55	-4,788.06	4,375.10	4,225.36	149.74	29.217	
8,100.00	6,945.02	6,000.00	5,999.35	34.57	119.45	68.73	779.55	-4,788.06	4,321.19	4,171.11	150.07	28.794	
8,200.00	6,944.69	6,000.00	5,999.35	35.41	119.45	68.73	779.55	-4,788.06	4,239.39	4,088.79	150.60	28.149	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 245-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,000.00	5,999.35	36.30	119.45	68.73	779.55	-4,788.06	4,158.40	4,007.23	151.17	27.509	
8,400.00	6,944.05	6,000.00	5,999.35	37.25	119.45	68.73	779.55	-4,788.06	4,078.25	3,926.48	151.76	26.873	
8,500.00	6,943.73	6,000.00	5,999.35	38.25	119.45	68.73	779.55	-4,788.06	3,998.99	3,846.60	152.39	26.241	
8,600.00	6,943.40	6,000.00	5,999.35	39.29	119.45	68.73	779.55	-4,788.06	3,920.68	3,767.62	153.06	25.616	
8,700.00	6,943.08	6,000.00	5,999.35	40.37	119.45	68.73	779.55	-4,788.06	3,843.37	3,689.61	153.76	24.996	
8,800.00	6,942.76	6,000.00	5,999.35	41.49	119.45	68.73	779.55	-4,788.06	3,767.14	3,612.64	154.50	24.383	
8,900.00	6,942.43	6,000.00	5,999.35	42.64	119.45	68.73	779.55	-4,788.06	3,692.04	3,536.76	155.27	23.778	
9,000.00	6,942.11	6,000.00	5,999.35	43.82	119.45	68.73	779.55	-4,788.06	3,618.14	3,462.05	156.09	23.180	
9,100.00	6,941.79	6,000.00	5,999.35	45.03	119.45	68.73	779.55	-4,788.06	3,545.53	3,388.58	156.94	22.591	
9,200.00	6,941.46	6,000.00	5,999.35	46.27	119.45	68.73	779.55	-4,788.06	3,474.27	3,316.43	157.84	22.012	
9,300.00	6,941.14	6,000.00	5,999.35	47.53	119.45	68.73	779.55	-4,788.06	3,404.46	3,245.69	158.77	21.442	
9,400.00	6,940.82	6,000.00	5,999.35	48.81	119.45	68.73	779.55	-4,788.06	3,336.19	3,176.45	159.75	20.884	
9,500.00	6,940.50	6,000.00	5,999.35	50.11	119.45	68.73	779.55	-4,788.06	3,269.56	3,108.79	160.76	20.338	
9,600.00	6,940.17	6,000.00	5,999.35	51.43	119.45	68.73	779.55	-4,788.06	3,204.65	3,042.84	161.81	19.804	
9,700.00	6,939.85	6,000.00	5,999.35	52.76	119.45	68.73	779.55	-4,788.06	3,141.59	2,978.69	162.91	19.285	
9,800.00	6,939.53	6,000.00	5,999.35	54.11	119.45	68.73	779.55	-4,788.06	3,080.49	2,916.46	164.03	18.780	
9,900.00	6,939.20	6,000.00	5,999.35	55.48	119.45	68.73	779.55	-4,788.06	3,021.46	2,856.27	165.20	18.290	
10,000.00	6,938.88	6,000.00	5,999.35	56.86	119.45	68.73	779.55	-4,788.06	2,964.63	2,798.24	166.39	17.817	
10,100.00	6,938.56	6,000.00	5,999.35	58.25	119.45	68.73	779.55	-4,788.06	2,910.13	2,742.51	167.62	17.362	
10,200.00	6,938.23	6,000.00	5,999.35	59.65	119.45	68.73	779.55	-4,788.06	2,858.09	2,689.22	168.87	16.925	
10,300.00	6,937.91	6,000.00	5,999.35	61.06	119.45	68.73	779.55	-4,788.06	2,808.64	2,638.50	170.14	16.508	
10,400.00	6,937.59	6,000.00	5,999.35	62.48	119.45	68.73	779.55	-4,788.06	2,761.93	2,590.50	171.43	16.111	
10,500.00	6,937.27	6,000.00	5,999.35	63.91	119.45	68.73	779.55	-4,788.06	2,718.10	2,545.37	172.73	15.736	
10,600.00	6,936.94	6,000.00	5,999.35	65.34	119.45	68.73	779.55	-4,788.06	2,677.29	2,503.25	174.04	15.383	
10,700.00	6,936.62	6,000.00	5,999.35	66.79	119.45	68.73	779.55	-4,788.06	2,639.64	2,464.29	175.35	15.054	
10,800.00	6,936.30	6,000.00	5,999.35	68.24	119.45	68.73	779.55	-4,788.06	2,605.29	2,428.64	176.65	14.749	
10,900.00	6,935.97	6,000.00	5,999.35	69.70	119.45	68.73	779.55	-4,788.06	2,574.36	2,396.43	177.93	14.469	
11,000.00	6,935.65	6,000.00	5,999.35	71.17	119.45	68.73	779.55	-4,788.06	2,546.99	2,367.80	179.19	14.214	
11,100.00	6,935.33	6,000.00	5,999.35	72.64	119.45	68.73	779.55	-4,788.06	2,523.28	2,342.87	180.41	13.986	
11,200.00	6,935.00	6,000.00	5,999.35	74.11	119.45	68.73	779.55	-4,788.06	2,503.35	2,321.75	181.60	13.785	
11,300.00	6,934.68	6,000.00	5,999.35	75.60	119.45	68.73	779.55	-4,788.06	2,487.28	2,304.55	182.73	13.612	
11,400.00	6,934.36	6,000.00	5,999.35	77.08	119.45	68.73	779.55	-4,788.06	2,475.15	2,291.34	183.81	13.466	
11,500.00	6,934.03	6,000.00	5,999.35	78.57	119.45	68.73	779.55	-4,788.06	2,467.02	2,282.20	184.82	13.348	
11,600.00	6,933.71	6,000.00	5,999.35	80.07	119.45	68.73	779.55	-4,788.06	2,462.93	2,277.16	185.77	13.258	
11,650.95	6,933.55	6,000.00	5,999.35	80.83	119.45	68.73	779.55	-4,788.06	2,462.40	2,276.18	186.22	13.223	CC, ES
11,700.00	6,933.39	6,000.00	5,999.35	81.57	119.45	68.73	779.55	-4,788.06	2,462.89	2,276.26	186.63	13.197	
11,800.00	6,933.07	6,000.00	5,999.35	83.07	119.45	68.73	779.55	-4,788.06	2,466.91	2,279.49	187.41	13.163	
11,900.00	6,932.74	6,000.00	5,999.35	84.58	119.45	68.73	779.55	-4,788.06	2,474.96	2,286.85	188.11	13.157	SF
12,000.00	6,932.42	6,000.00	5,999.35	86.09	119.45	68.73	779.55	-4,788.06	2,487.01	2,298.29	188.72	13.178	
12,100.00	6,932.10	6,000.00	5,999.35	87.60	119.45	68.73	779.55	-4,788.06	2,503.01	2,313.76	189.25	13.226	
12,200.00	6,931.77	6,000.00	5,999.35	89.12	119.45	68.73	779.55	-4,788.06	2,522.87	2,333.19	189.68	13.301	
12,300.00	6,931.45	6,000.00	5,999.35	90.64	119.45	68.73	779.55	-4,788.06	2,546.50	2,356.48	190.03	13.401	
12,400.00	6,931.13	6,000.00	5,999.35	92.16	119.45	68.73	779.55	-4,788.06	2,573.81	2,383.52	190.29	13.526	
12,500.00	6,930.80	6,000.00	5,999.35	93.69	119.45	68.73	779.55	-4,788.06	2,604.67	2,414.20	190.47	13.675	
12,600.00	6,930.48	6,000.00	5,999.35	95.22	119.45	68.73	779.55	-4,788.06	2,638.96	2,448.39	190.57	13.848	
12,700.00	6,930.16	6,000.00	5,999.35	96.75	119.45	68.73	779.55	-4,788.06	2,676.55	2,485.95	190.60	14.043	
12,800.00	6,929.84	6,000.00	5,999.35	98.28	119.45	68.73	779.55	-4,788.06	2,717.30	2,526.73	190.57	14.259	
12,900.00	6,929.51	6,000.00	5,999.35	99.82	119.45	68.73	779.55	-4,788.06	2,761.07	2,570.61	190.47	14.496	
13,000.00	6,929.19	6,000.00	5,999.35	101.35	119.45	68.73	779.55	-4,788.06	2,807.73	2,617.42	190.31	14.753	
13,100.00	6,928.87	6,000.00	5,999.35	102.89	119.45	68.73	779.55	-4,788.06	2,857.12	2,667.01	190.11	15.029	
13,200.00	6,928.54	6,000.00	5,999.35	104.43	119.45	68.73	779.55	-4,788.06	2,909.12	2,719.26	189.86	15.322	
13,300.00	6,928.22	6,000.00	5,999.35	105.97	119.45	68.73	779.55	-4,788.06	2,963.57	2,774.00	189.57	15.633	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 245-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	6,000.00	5,999.35	107.52	119.45	68.73	779.55	-4,788.06	3,020.36	2,831.11	189.25	15.960	
13,500.00	6,927.57	6,000.00	5,999.35	109.06	119.45	68.73	779.55	-4,788.06	3,079.35	2,890.45	188.90	16.302	
13,600.00	6,927.25	6,000.00	5,999.35	110.61	119.45	68.73	779.55	-4,788.06	3,140.41	2,951.89	188.52	16.658	
13,700.00	6,926.93	6,000.00	5,999.35	112.16	119.45	68.73	779.55	-4,788.06	3,203.44	3,015.31	188.12	17.028	
13,800.00	6,926.61	6,000.00	5,999.35	113.71	119.45	68.73	779.55	-4,788.06	3,268.31	3,080.60	187.71	17.411	
13,900.00	6,926.28	6,000.00	5,999.35	115.26	119.45	68.73	779.55	-4,788.06	3,334.91	3,147.63	187.28	17.807	
14,000.00	6,925.96	6,000.00	5,999.35	116.82	119.45	68.73	779.55	-4,788.06	3,403.15	3,216.30	186.85	18.214	
14,100.00	6,925.64	6,000.00	5,999.35	118.37	119.45	68.73	779.55	-4,788.06	3,472.93	3,286.53	186.40	18.631	
14,200.00	6,925.31	6,000.00	5,999.35	119.93	119.45	68.73	779.55	-4,788.06	3,544.16	3,358.20	185.96	19.059	
14,300.00	6,924.99	6,000.00	5,999.35	121.48	119.45	68.73	779.55	-4,788.06	3,616.75	3,431.24	185.51	19.497	
14,400.00	6,924.67	6,000.00	5,999.35	123.04	119.45	68.73	779.55	-4,788.06	3,690.62	3,505.56	185.06	19.943	
14,500.00	6,924.34	6,000.00	5,999.35	124.60	119.45	68.73	779.55	-4,788.06	3,765.70	3,581.09	184.61	20.399	
14,600.00	6,924.02	6,000.00	5,999.35	126.16	119.45	68.73	779.55	-4,788.06	3,841.91	3,657.75	184.16	20.862	
14,700.00	6,923.70	6,000.00	5,999.35	127.72	119.45	68.73	779.55	-4,788.06	3,919.20	3,735.48	183.72	21.333	
14,800.00	6,923.38	6,000.00	5,999.35	129.28	119.45	68.73	779.55	-4,788.06	3,997.49	3,814.21	183.28	21.811	
14,900.00	6,923.05	6,000.00	5,999.35	130.85	119.45	68.73	779.55	-4,788.06	4,076.73	3,893.88	182.85	22.296	
15,000.00	6,922.73	6,000.00	5,999.35	132.41	119.45	68.73	779.55	-4,788.06	4,156.87	3,974.44	182.43	22.787	
15,100.00	6,922.41	6,000.00	5,999.35	133.97	119.45	68.73	779.55	-4,788.06	4,237.85	4,055.84	182.01	23.284	
15,200.00	6,922.08	6,000.00	5,999.35	135.54	119.45	68.73	779.55	-4,788.06	4,319.62	4,138.03	181.60	23.787	
15,300.00	6,921.76	6,000.00	5,999.35	137.11	119.45	68.73	779.55	-4,788.06	4,402.15	4,220.96	181.20	24.295	
15,400.00	6,921.44	6,000.00	5,999.35	138.67	119.45	68.73	779.55	-4,788.06	4,485.40	4,304.59	180.81	24.808	
15,500.00	6,921.11	6,000.00	5,999.35	140.24	119.45	68.73	779.55	-4,788.06	4,569.31	4,388.89	180.42	25.326	
15,600.00	6,920.79	6,000.00	5,999.35	141.81	119.45	68.73	779.55	-4,788.06	4,653.86	4,473.81	180.05	25.848	
15,700.00	6,920.47	6,000.00	5,999.35	143.38	119.45	68.73	779.55	-4,788.06	4,739.01	4,559.33	179.68	26.374	
15,800.00	6,920.14	6,000.00	5,999.35	144.95	119.45	68.73	779.55	-4,788.06	4,824.73	4,645.40	179.33	26.905	
15,900.00	6,919.82	6,000.00	5,999.35	146.52	119.45	68.73	779.55	-4,788.06	4,910.99	4,732.01	178.98	27.439	
16,000.00	6,919.50	6,000.00	5,999.35	148.09	119.45	68.73	779.55	-4,788.06	4,997.76	4,819.12	178.64	27.976	
16,100.00	6,919.18	6,000.00	5,999.35	149.66	119.45	68.73	779.55	-4,788.06	5,085.02	4,906.71	178.31	28.517	
16,200.00	6,918.85	6,000.00	5,999.35	151.24	119.45	68.73	779.55	-4,788.06	5,172.74	4,994.75	177.99	29.061	
16,300.00	6,918.53	6,000.00	5,999.35	152.81	119.45	68.73	779.55	-4,788.06	5,260.90	5,083.22	177.68	29.608	
16,400.00	6,918.21	6,000.00	5,999.35	154.38	119.45	68.73	779.55	-4,788.06	5,349.47	5,172.09	177.38	30.158	
16,500.00	6,917.88	6,000.00	5,999.35	155.96	119.45	68.73	779.55	-4,788.06	5,438.45	5,261.36	177.09	30.710	
16,600.00	6,917.56	6,000.00	5,999.35	157.53	119.45	68.73	779.55	-4,788.06	5,527.79	5,350.99	176.80	31.265	
16,700.00	6,917.24	6,000.00	5,999.35	159.11	119.45	68.73	779.55	-4,788.06	5,617.50	5,440.97	176.53	31.822	
16,800.00	6,916.91	6,000.00	5,999.35	160.68	119.45	68.73	779.55	-4,788.06	5,707.55	5,531.29	176.26	32.381	
16,900.00	6,916.59	6,000.00	5,999.35	162.26	119.45	68.73	779.55	-4,788.06	5,797.92	5,621.92	176.00	32.942	
17,000.00	6,916.27	6,000.00	5,999.35	163.84	119.45	68.73	779.55	-4,788.06	5,888.61	5,712.86	175.75	33.505	
17,100.00	6,915.95	6,000.00	5,999.35	165.41	119.45	68.73	779.55	-4,788.06	5,979.59	5,804.09	175.51	34.070	
17,200.00	6,915.62	6,000.00	5,999.35	166.99	119.45	68.73	779.55	-4,788.06	6,070.86	5,895.59	175.27	34.637	
17,300.00	6,915.30	6,000.00	5,999.35	168.57	119.45	68.73	779.55	-4,788.06	6,162.40	5,987.36	175.04	35.205	
17,400.00	6,914.98	6,000.00	5,999.35	170.15	119.45	68.73	779.55	-4,788.06	6,254.20	6,079.38	174.82	35.775	
17,500.00	6,914.65	6,000.00	5,999.35	171.73	119.45	68.73	779.55	-4,788.06	6,346.24	6,171.63	174.61	36.346	
17,600.00	6,914.33	6,000.00	5,999.35	173.31	119.45	68.73	779.55	-4,788.06	6,438.52	6,264.12	174.40	36.918	
17,700.00	6,914.01	6,000.00	5,999.35	174.89	119.45	68.73	779.55	-4,788.06	6,531.03	6,356.83	174.20	37.492	
17,800.00	6,913.68	6,000.00	5,999.35	176.47	119.45	68.73	779.55	-4,788.06	6,623.76	6,449.76	174.01	38.066	
17,900.00	6,913.36	6,000.00	5,999.35	178.05	119.45	68.73	779.55	-4,788.06	6,716.70	6,542.88	173.82	38.642	
18,000.00	6,913.04	6,000.00	5,999.35	179.63	119.45	68.73	779.55	-4,788.06	6,809.83	6,636.20	173.64	39.219	
18,100.00	6,912.72	6,000.00	5,999.35	181.21	119.45	68.73	779.55	-4,788.06	6,903.16	6,729.70	173.46	39.796	
18,111.83	6,912.68	6,000.00	5,999.35	181.40	119.45	68.73	779.55	-4,788.06	6,914.22	6,740.78	173.44	39.865	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149B - OH - OH-SVY — **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	Rule Assigned: Warning
0.00	0.00	189.00	188.99	0.00	0.18	-79.14	1,272.97	-6,638.46	6,760.04				
54.25	54.25	241.28	241.26	0.02	0.25	-140.69	1,273.22	-6,637.68	6,759.39	6,759.15	0.24	N/A	
130.42	130.42	312.12	312.09	0.11	0.34	-167.85	1,273.56	-6,636.67	6,758.71	6,758.29	0.41	N/A	
219.69	219.69	388.07	388.04	0.23	0.44	-141.78	1,273.81	-6,635.71	6,758.09	6,757.48	0.61	N/A	
308.67	308.67	450.48	450.44	0.35	0.51	-150.69	1,273.87	-6,635.13	6,757.74	6,756.94	0.79	8,502.452	
454.00	453.99	566.05	566.00	0.51	0.64	74.74	1,273.70	-6,634.73	6,757.30	6,756.20	1.10	6,122.669	
544.00	543.93	651.98	651.94	0.74	0.73	75.09	1,273.66	-6,634.56	6,756.33	6,754.90	1.43	4,725.272	
667.00	666.63	767.60	767.55	1.13	0.84	62.16	1,274.06	-6,634.32	6,752.85	6,750.92	1.93	3,505.954	
756.00	755.27	853.52	853.48	1.44	0.92	77.08	1,274.54	-6,634.19	6,750.08	6,747.79	2.29	2,949.662	
850.00	848.62	949.12	949.07	1.79	1.01	78.81	1,275.17	-6,634.03	6,747.76	6,745.07	2.69	2,510.622	
942.00	939.50	1,036.95	1,036.90	2.14	1.10	85.32	1,275.85	-6,633.83	6,745.80	6,742.70	3.10	2,179.398	
983.13	979.96	1,072.42	1,072.37	2.31	1.13	89.84	1,276.17	-6,633.77	6,745.49	6,742.21	3.28	2,055.157	
1,033.00	1,028.89	1,112.98	1,112.93	2.52	1.17	94.62	1,276.59	-6,633.73	6,745.94	6,742.44	3.51	1,924.170	
1,123.00	1,117.00	1,178.42	1,178.36	2.90	1.23	100.84	1,277.38	-6,633.80	6,748.80	6,744.89	3.91	1,725.859	
1,214.00	1,206.00	1,247.76	1,247.70	3.29	1.28	100.29	1,278.33	-6,634.08	6,752.97	6,748.65	4.32	1,563.240	
1,309.00	1,298.75	1,324.24	1,324.17	3.71	1.34	103.30	1,279.39	-6,634.59	6,758.19	6,753.44	4.75	1,421.936	
1,403.00	1,390.39	1,406.13	1,406.05	4.13	1.40	106.45	1,280.53	-6,635.28	6,764.76	6,759.58	5.19	1,303.789	
1,498.00	1,482.88	1,491.70	1,491.61	4.56	1.46	103.32	1,281.67	-6,636.12	6,771.66	6,766.02	5.64	1,200.725	
1,592.00	1,573.82	1,573.77	1,573.66	5.00	1.52	102.95	1,282.74	-6,637.02	6,778.53	6,772.42	6.11	1,109.710	
1,687.00	1,665.32	1,651.10	1,650.98	5.46	1.57	106.03	1,283.75	-6,637.99	6,786.64	6,780.05	6.60	1,028.688	
1,876.00	1,847.35	1,800.00	1,799.85	6.38	1.68	108.93	1,285.66	-6,640.46	6,806.12	6,798.54	7.59	897.288	
1,970.00	1,937.87	1,882.10	1,881.92	6.84	1.75	109.29	1,286.86	-6,642.04	6,816.84	6,808.74	8.09	842.512	
2,064.00	2,028.42	1,979.47	1,979.27	7.30	1.83	110.06	1,288.40	-6,643.87	6,827.73	6,819.12	8.61	792.690	
2,159.00	2,119.97	2,123.90	2,123.66	7.77	1.98	111.58	1,290.81	-6,645.89	6,838.76	6,829.58	9.18	744.595	
2,348.00	2,302.44	2,330.51	2,330.24	8.69	2.22	107.45	1,293.79	-6,647.48	6,857.91	6,847.65	10.26	668.429	
2,443.00	2,394.41	2,416.29	2,416.01	9.15	2.31	107.03	1,294.50	-6,648.21	6,866.18	6,855.39	10.79	636.305	
2,537.00	2,485.45	2,500.00	2,499.72	9.61	2.38	106.97	1,294.88	-6,649.16	6,874.37	6,863.05	11.32	607.318	
2,632.00	2,577.48	2,580.91	2,580.62	10.07	2.44	107.42	1,295.11	-6,650.21	6,882.84	6,870.99	11.85	580.713	
2,727.00	2,669.50	2,658.23	2,657.94	10.53	2.50	107.61	1,295.26	-6,651.32	6,891.55	6,879.16	12.38	556.511	
2,821.00	2,760.56	2,736.78	2,736.47	10.98	2.55	107.53	1,295.35	-6,652.66	6,900.42	6,887.50	12.91	534.380	
2,916.00	2,852.68	2,824.59	2,824.26	11.44	2.62	107.67	1,295.52	-6,654.23	6,909.36	6,895.91	13.46	513.455	
3,011.00	2,945.03	2,915.29	2,914.95	11.89	2.70	108.00	1,295.74	-6,655.87	6,918.12	6,904.12	14.00	494.201	
3,105.00	3,036.57	3,005.68	3,005.32	12.33	2.78	102.56	1,295.95	-6,657.53	6,925.66	6,911.12	14.53	476.520	
3,200.00	3,128.81	3,105.51	3,105.14	12.78	2.87	99.43	1,296.27	-6,659.29	6,931.82	6,916.72	15.10	459.129	
3,294.00	3,219.76	3,197.03	3,196.65	13.24	2.96	99.25	1,296.59	-6,660.84	6,937.46	6,921.80	15.66	443.048	
3,389.00	3,311.82	3,295.15	3,294.76	13.69	3.05	100.48	1,296.67	-6,662.52	6,943.24	6,927.01	16.23	427.860	
3,483.00	3,403.03	3,385.32	3,384.91	14.14	3.13	101.00	1,296.57	-6,664.09	6,949.18	6,932.40	16.78	414.183	
3,578.00	3,495.31	3,477.77	3,477.34	14.60	3.22	101.75	1,296.56	-6,665.67	6,955.35	6,938.02	17.33	401.254	
3,672.00	3,586.65	3,574.27	3,573.83	15.04	3.31	102.99	1,296.65	-6,667.26	6,961.80	6,943.91	17.89	389.118	
3,767.00	3,678.95	3,665.41	3,664.96	15.49	3.41	103.69	1,296.85	-6,668.68	6,968.64	6,950.19	18.45	377.770	
3,862.00	3,771.63	3,781.42	3,780.95	15.93	3.53	103.76	1,296.99	-6,670.43	6,975.15	6,956.12	19.02	366.694	
3,956.00	3,863.70	3,979.36	3,978.84	16.35	3.61	104.40	1,293.43	-6,672.23	6,980.04	6,960.44	19.60	356.168	
4,052.00	3,957.54	4,040.39	4,039.84	16.79	3.63	103.24	1,291.43	-6,672.76	6,984.85	6,964.79	20.06	348.140	
4,146.00	4,048.88	4,100.00	4,099.43	17.24	3.65	103.21	1,290.09	-6,673.55	6,990.58	6,970.04	20.54	340.338	
4,241.00	4,140.47	4,162.34	4,161.75	17.71	3.69	105.75	1,289.11	-6,674.53	6,998.09	6,977.04	21.06	332.355	
4,336.00	4,231.25	4,246.93	4,246.33	18.21	3.75	109.05	1,287.96	-6,675.89	7,007.94	6,986.33	21.61	324.242	
4,430.00	4,320.59	4,336.69	4,336.06	18.71	3.81	107.54	1,286.63	-6,677.43	7,018.68	6,996.50	22.18	316.432	
4,524.00	4,409.51	4,435.60	4,434.95	19.22	3.88	104.12	1,285.06	-6,679.06	7,028.46	7,005.69	22.77	308.722	
4,619.00	4,498.98	4,541.26	4,540.59	19.75	3.96	103.66	1,283.63	-6,680.56	7,037.49	7,014.11	23.37	301.103	
4,713.00	4,587.83	4,642.58	4,641.90	20.27	4.03	104.08	1,282.52	-6,681.61	7,045.87	7,021.90	23.96	294.059	
4,807.00	4,676.97	4,726.51	4,725.81	20.78	4.10	105.52	1,281.70	-6,682.44	7,054.50	7,029.97	24.53	287.634	
4,870.00	4,736.65	4,780.37	4,779.68	21.12	4.14	106.04	1,281.20	-6,683.02	7,060.73	7,035.82	24.90	283.513	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149B - OH - OH-SVY

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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,834.04	4,833.34	21.46	4.19	106.25	1,280.71	-6,683.64	7,066.90	7,041.62	25.28	279.561	
5,027.00	4,886.13	4,916.39	4,915.67	21.96	4.26	107.08	1,280.04	-6,684.67	7,076.36	7,050.52	25.84	273.874	
5,121.00	4,976.11	5,012.44	5,011.72	22.45	4.36	107.87	1,279.26	-6,685.86	7,085.72	7,059.32	26.40	268.380	
5,216.00	5,068.11	5,116.80	5,116.07	22.91	4.45	108.25	1,278.31	-6,687.04	7,094.01	7,067.06	26.95	263.277	
5,341.00	5,190.11	5,234.24	5,233.50	23.49	4.56	108.14	1,277.28	-6,688.27	7,103.56	7,075.95	27.61	257.311	
5,436.00	5,283.20	5,319.20	5,318.45	23.91	4.65	108.39	1,276.65	-6,689.24	7,110.39	7,082.30	28.10	253.076	
5,499.00	5,345.03	5,383.00	5,382.24	24.19	4.71	108.42	1,276.20	-6,689.98	7,114.82	7,086.39	28.43	250.290	
5,561.00	5,405.97	5,451.46	5,450.69	24.45	4.78	109.54	1,275.66	-6,690.75	7,119.09	7,090.33	28.75	247.613	
5,624.00	5,467.97	5,500.00	5,499.23	24.72	4.83	108.57	1,275.21	-6,691.26	7,123.23	7,094.18	29.05	245.181	
5,687.00	5,530.05	5,556.46	5,555.68	24.99	4.89	109.57	1,274.58	-6,691.98	7,127.31	7,097.95	29.36	242.763	
5,750.00	5,592.20	5,600.00	5,599.21	25.25	4.93	109.89	1,273.99	-6,692.73	7,131.55	7,101.90	29.65	240.540	
5,813.00	5,654.42	5,647.15	5,646.34	25.51	4.98	110.97	1,273.22	-6,693.70	7,135.90	7,105.96	29.94	238.357	
5,876.00	5,716.68	5,700.00	5,699.17	25.76	5.03	111.24	1,272.16	-6,694.99	7,140.38	7,110.15	30.23	236.187	
5,939.00	5,778.99	5,776.95	5,776.07	26.01	5.11	111.12	1,270.52	-6,696.87	7,144.75	7,114.21	30.55	233.886	
6,065.00	5,903.86	5,979.23	5,978.31	26.51	5.29	111.24	1,267.19	-6,699.53	7,151.56	7,120.37	31.19	229.282	
6,128.00	5,966.41	6,048.56	6,047.62	26.74	5.35	109.86	1,265.85	-6,700.24	7,154.37	7,122.90	31.47	227.353	
6,191.00	6,029.04	6,119.02	6,118.06	26.97	5.41	110.56	1,264.39	-6,700.90	7,156.83	7,125.09	31.74	225.478	
6,254.00	6,091.75	6,180.74	6,179.77	27.20	5.46	111.50	1,263.19	-6,701.43	7,159.06	7,127.05	32.00	223.687	
6,348.00	6,185.46	6,263.94	6,262.96	27.52	5.53	114.38	1,261.81	-6,702.11	7,162.09	7,129.71	32.37	221.228	
6,390.00	6,227.36	6,300.08	6,299.09	27.61	5.56	114.39	1,261.29	-6,702.43	7,163.42	7,130.95	32.47	220.604	
6,400.00	6,237.33	6,311.29	6,310.30	27.61	5.57	114.39	1,261.14	-6,702.53	7,163.74	7,131.26	32.48	220.529	
6,490.00	6,327.12	6,410.89	6,409.89	27.66	5.67	114.43	1,260.13	-6,703.18	7,166.56	7,133.96	32.60	219.856	
6,500.00	6,337.09	6,420.90	6,419.90	27.66	5.68	102.02	1,260.06	-6,703.22	7,166.80	7,134.19	32.61	219.778	
6,550.00	6,386.85	6,470.84	6,469.84	27.70	5.73	65.52	1,259.76	-6,703.44	7,165.96	7,133.28	32.68	219.274	
6,600.00	6,436.20	6,518.60	6,517.60	27.74	5.78	52.97	1,259.57	-6,703.61	7,161.77	7,129.00	32.77	218.568	
6,650.00	6,484.82	6,563.19	6,562.19	27.79	5.83	47.59	1,259.42	-6,703.78	7,154.26	7,121.39	32.87	217.662	
6,700.00	6,532.40	6,607.51	6,606.50	27.85	5.88	44.98	1,259.27	-6,703.97	7,143.50	7,110.51	32.99	216.563	
6,750.00	6,578.63	6,653.95	6,652.95	27.92	5.93	43.78	1,259.12	-6,704.18	7,129.54	7,096.42	33.12	215.247	
6,800.00	6,623.24	6,698.78	6,697.78	28.00	5.98	43.46	1,258.96	-6,704.39	7,112.48	7,079.21	33.27	213.763	
6,850.00	6,665.93	6,734.59	6,733.58	28.09	6.03	43.74	1,258.86	-6,704.57	7,092.45	7,059.02	33.43	212.138	
6,900.00	6,706.42	6,768.38	6,767.37	28.19	6.07	44.54	1,258.82	-6,704.74	7,069.62	7,036.01	33.61	210.366	
6,950.00	6,744.48	6,800.19	6,799.18	28.30	6.10	45.81	1,258.84	-6,704.92	7,044.13	7,010.34	33.79	208.457	
7,000.00	6,779.84	6,838.41	6,837.41	28.43	6.15	47.59	1,258.87	-6,705.14	7,016.13	6,982.13	34.00	206.327	
7,050.00	6,812.30	6,873.53	6,872.53	28.57	6.19	49.84	1,258.88	-6,705.34	6,985.80	6,951.57	34.23	204.097	
7,100.00	6,841.63	6,904.81	6,903.81	28.73	6.23	52.59	1,258.87	-6,705.51	6,953.33	6,918.87	34.46	201.788	
7,150.00	6,867.66	6,930.37	6,929.37	28.90	6.26	55.86	1,258.84	-6,705.66	6,918.96	6,884.26	34.69	199.435	
7,200.00	6,890.22	6,952.59	6,951.59	29.08	6.29	59.69	1,258.81	-6,705.79	6,882.92	6,847.98	34.93	197.023	
7,250.00	6,909.17	6,971.33	6,970.32	29.28	6.31	64.11	1,258.79	-6,705.91	6,845.45	6,810.27	35.18	194.569	
7,300.00	6,924.38	6,986.46	6,985.45	29.49	6.33	69.11	1,258.76	-6,706.00	6,806.80	6,771.36	35.44	192.089	
7,350.00	6,935.77	6,997.87	6,996.86	29.72	6.35	74.66	1,258.74	-6,706.07	6,767.21	6,731.52	35.69	189.599	
7,400.00	6,943.25	7,006.93	7,005.93	29.97	6.36	80.69	1,258.72	-6,706.13	6,726.95	6,691.00	35.95	187.109	
7,450.00	6,946.78	7,011.68	7,010.67	30.22	6.36	87.02	1,258.71	-6,706.16	6,686.28	6,650.06	36.21	184.643	
7,471.54	6,947.08	7,012.22	7,011.21	30.34	6.36	89.79	1,258.71	-6,706.17	6,668.69	6,632.37	36.32	183.590	
7,500.00	6,946.98	7,012.34	7,011.33	30.49	6.36	89.80	1,258.71	-6,706.17	6,645.38	6,608.91	36.47	182.209	
7,600.00	6,946.65	7,012.73	7,011.72	31.07	6.37	89.80	1,258.71	-6,706.17	6,562.53	6,525.54	36.99	177.396	
7,700.00	6,946.32	7,013.11	7,012.11	31.69	6.37	89.80	1,258.71	-6,706.17	6,478.23	6,440.71	37.52	172.664	
7,800.00	6,945.99	7,013.49	7,012.48	32.35	6.37	89.80	1,258.71	-6,706.17	6,392.51	6,354.47	38.04	168.029	
7,900.00	6,945.67	7,013.87	7,012.86	33.05	6.37	89.80	1,258.71	-6,706.18	6,305.44	6,266.87	38.57	163.501	
8,000.00	6,945.34	7,014.23	7,013.22	33.79	6.37	89.79	1,258.70	-6,706.18	6,217.05	6,177.97	39.08	159.087	
8,034.58	6,945.23	7,014.35	7,013.35	34.05	6.37	89.79	1,258.70	-6,706.18	6,186.19	6,146.94	39.26	157.586	
8,100.00	6,945.02	7,014.59	7,013.58	34.57	6.37	89.80	1,258.70	-6,706.18	6,127.74	6,088.15	39.59	154.775	
8,200.00	6,944.69	7,014.94	7,013.93	35.41	6.37	89.80	1,258.70	-6,706.18	6,038.67	5,998.54	40.12	150.500	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149B - OH - OH-SVY

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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,015.30	7,014.29	36.30	6.37	89.81	1,258.70	-6,706.19	5,949.94	5,909.26	40.68	146.253	
8,400.00	6,944.05	7,015.65	7,014.64	37.25	6.37	89.82	1,258.70	-6,706.19	5,861.58	5,820.32	41.27	142.038	
8,500.00	6,943.73	7,016.00	7,014.99	38.25	6.37	89.83	1,258.70	-6,706.19	5,773.60	5,731.72	41.88	137.860	
8,600.00	6,943.40	7,016.34	7,015.34	39.29	6.37	89.83	1,258.70	-6,706.19	5,686.02	5,643.50	42.52	133.723	
8,700.00	6,943.08	7,016.69	7,015.68	40.37	6.37	89.84	1,258.70	-6,706.19	5,598.85	5,555.66	43.19	129.631	
8,800.00	6,942.76	7,017.03	7,016.03	41.49	6.37	89.85	1,258.70	-6,706.20	5,512.12	5,468.23	43.89	125.586	
8,900.00	6,942.43	7,017.38	7,016.37	42.64	6.37	89.86	1,258.70	-6,706.20	5,425.84	5,381.22	44.62	121.595	
9,000.00	6,942.11	7,017.72	7,016.71	43.82	6.37	89.86	1,258.70	-6,706.20	5,340.05	5,294.66	45.39	117.659	
9,100.00	6,941.79	7,018.06	7,017.05	45.03	6.37	89.87	1,258.70	-6,706.20	5,254.75	5,208.57	46.18	113.782	
9,200.00	6,941.46	7,018.39	7,017.38	46.27	6.37	89.88	1,258.69	-6,706.20	5,169.98	5,122.97	47.01	109.968	
9,300.00	6,941.14	7,018.73	7,017.72	47.53	6.37	89.88	1,258.69	-6,706.21	5,085.77	5,037.89	47.88	106.220	
9,400.00	6,940.82	7,019.06	7,018.05	48.81	6.37	89.89	1,258.69	-6,706.21	5,002.14	4,953.35	48.78	102.541	
9,500.00	6,940.50	7,019.39	7,018.38	50.11	6.37	89.90	1,258.69	-6,706.21	4,919.11	4,869.39	49.72	98.933	
9,600.00	6,940.17	7,019.72	7,018.71	51.43	6.37	89.90	1,258.69	-6,706.21	4,836.73	4,786.04	50.70	95.400	
9,700.00	6,939.85	7,020.05	7,019.04	52.76	6.37	89.91	1,258.69	-6,706.21	4,755.03	4,703.31	51.72	91.943	
9,800.00	6,939.53	7,020.38	7,019.37	54.11	6.37	89.92	1,258.69	-6,706.22	4,674.04	4,621.26	52.78	88.565	
9,900.00	6,939.20	7,020.70	7,019.69	55.48	6.37	89.92	1,258.69	-6,706.22	4,593.80	4,539.92	53.87	85.268	
10,000.00	6,938.88	7,021.02	7,020.02	56.86	6.38	89.93	1,258.69	-6,706.22	4,514.34	4,459.32	55.02	82.054	
10,100.00	6,938.56	7,021.35	7,020.34	58.25	6.38	89.94	1,258.69	-6,706.22	4,435.72	4,379.52	56.20	78.924	
10,200.00	6,938.23	7,021.67	7,020.66	59.65	6.38	89.94	1,258.69	-6,706.22	4,357.97	4,300.54	57.43	75.879	
10,300.00	6,937.91	7,021.98	7,020.98	61.06	6.38	89.95	1,258.69	-6,706.23	4,281.15	4,222.44	58.71	72.923	
10,400.00	6,937.59	7,022.30	7,021.29	62.48	6.38	89.96	1,258.69	-6,706.23	4,205.30	4,145.27	60.03	70.054	
10,500.00	6,937.27	7,022.62	7,021.61	63.91	6.38	89.96	1,258.68	-6,706.23	4,130.48	4,069.08	61.40	67.275	
10,600.00	6,936.94	7,022.93	7,021.92	65.34	6.38	89.97	1,258.68	-6,706.23	4,056.75	3,993.93	62.81	64.585	
10,700.00	6,936.62	7,023.24	7,022.23	66.79	6.38	89.98	1,258.68	-6,706.23	3,984.16	3,919.88	64.27	61.986	
10,800.00	6,936.30	7,023.55	7,022.54	68.24	6.38	89.98	1,258.68	-6,706.24	3,912.78	3,846.99	65.79	59.478	
10,900.00	6,935.97	7,023.86	7,022.85	69.70	6.38	89.99	1,258.68	-6,706.24	3,842.67	3,775.33	67.34	57.061	
11,000.00	6,935.65	7,024.17	7,023.16	71.17	6.38	90.00	1,258.68	-6,706.24	3,773.92	3,704.97	68.95	54.736	
11,100.00	6,935.33	7,024.47	7,023.46	72.64	6.38	90.00	1,258.68	-6,706.24	3,706.58	3,635.99	70.60	52.502	
11,200.00	6,935.00	7,024.78	7,023.77	74.11	6.38	90.01	1,258.68	-6,706.24	3,640.75	3,568.46	72.30	50.359	
11,300.00	6,934.68	7,025.08	7,024.07	75.60	6.38	90.01	1,258.68	-6,706.24	3,576.51	3,502.47	74.04	48.307	
11,400.00	6,934.36	7,025.38	7,024.37	77.08	6.38	90.02	1,258.68	-6,706.25	3,513.93	3,438.11	75.82	46.346	
11,500.00	6,934.03	7,025.68	7,024.67	78.57	6.38	90.03	1,258.68	-6,706.25	3,453.12	3,375.48	77.64	44.474	
11,600.00	6,933.71	7,025.98	7,024.97	80.07	6.38	90.03	1,258.68	-6,706.25	3,394.16	3,314.66	79.50	42.692	
11,700.00	6,933.39	7,026.27	7,025.26	81.57	6.38	90.04	1,258.68	-6,706.25	3,337.16	3,255.77	81.40	40.999	
11,800.00	6,933.07	7,026.57	7,025.56	83.07	6.38	90.05	1,258.68	-6,706.25	3,282.22	3,198.90	83.32	39.393	
11,900.00	6,932.74	7,026.86	7,025.85	84.58	6.38	90.05	1,258.67	-6,706.26	3,229.44	3,144.17	85.27	37.875	
12,000.00	6,932.42	7,027.15	7,026.15	86.09	6.38	90.06	1,258.67	-6,706.26	3,178.93	3,091.70	87.23	36.442	
12,100.00	6,932.10	7,027.45	7,026.44	87.60	6.38	90.06	1,258.67	-6,706.26	3,130.80	3,041.59	89.21	35.095	
12,200.00	6,931.77	7,027.74	7,026.73	89.12	6.38	90.07	1,258.67	-6,706.26	3,085.16	2,993.97	91.19	33.831	
12,300.00	6,931.45	7,028.02	7,027.01	90.64	6.38	90.08	1,258.67	-6,706.26	3,042.13	2,948.95	93.17	32.650	
12,400.00	6,931.13	7,028.31	7,027.30	92.16	6.38	90.08	1,258.67	-6,706.26	3,001.81	2,906.67	95.14	31.550	
12,500.00	6,930.80	7,028.59	7,027.59	93.69	6.38	90.09	1,258.67	-6,706.27	2,964.32	2,867.23	97.09	30.531	
12,600.00	6,930.48	7,028.88	7,027.87	95.22	6.38	90.09	1,258.67	-6,706.27	2,929.76	2,830.75	99.01	29.591	
12,700.00	6,930.16	7,029.16	7,028.15	96.75	6.38	90.10	1,258.67	-6,706.27	2,898.24	2,797.36	100.89	28.728	
12,800.00	6,929.84	7,029.44	7,028.43	98.28	6.39	90.11	1,258.67	-6,706.27	2,869.86	2,767.15	102.71	27.941	
12,900.00	6,929.51	7,029.72	7,028.71	99.82	6.39	90.11	1,258.67	-6,706.27	2,844.72	2,740.25	104.47	27.229	
13,000.00	6,929.19	7,030.00	7,028.99	101.35	6.39	90.12	1,258.67	-6,706.27	2,822.90	2,716.73	106.16	26.590	
13,100.00	6,928.87	7,030.28	7,029.27	102.89	6.39	90.12	1,258.67	-6,706.28	2,804.47	2,696.70	107.77	26.023	
13,200.00	6,928.54	7,030.55	7,029.54	104.43	6.39	90.13	1,258.67	-6,706.28	2,789.51	2,680.23	109.28	25.527	
13,300.00	6,928.22	7,030.83	7,029.82	105.97	6.39	90.13	1,258.66	-6,706.28	2,778.07	2,667.39	110.69	25.099	
13,400.00	6,927.90	7,031.10	7,030.09	107.52	6.39	90.14	1,258.66	-6,706.28	2,770.20	2,658.22	111.98	24.738	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149B - OH - OH-SVY

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
13,500.00	6,927.57	7,031.37	7,030.36	109.06	6.39	90.15	1,258.66	-6,706.28	2,765.92	2,652.76	113.16	24.443	
13,568.44	6,927.35	7,031.56	7,030.55	110.12	6.39	90.15	1,258.66	-6,706.28	2,765.07	2,651.18	113.89	24.278	CC
13,600.00	6,927.25	7,031.64	7,030.63	110.61	6.39	90.15	1,258.66	-6,706.28	2,765.25	2,651.04	114.21	24.212	ES
13,700.00	6,926.93	7,031.91	7,030.90	112.16	6.39	90.16	1,258.66	-6,706.28	2,768.20	2,653.07	115.13	24.044	
13,800.00	6,926.61	7,032.18	7,031.17	113.71	6.39	90.16	1,258.66	-6,706.29	2,774.75	2,658.83	115.92	23.937	
13,900.00	6,926.28	7,032.45	7,031.44	115.26	6.39	90.17	1,258.66	-6,706.29	2,784.88	2,668.31	116.57	23.890	SF
14,000.00	6,925.96	7,032.71	7,031.70	116.82	6.39	90.17	1,258.66	-6,706.29	2,798.55	2,681.46	117.09	23.901	
14,100.00	6,925.64	7,032.98	7,031.97	118.37	6.39	90.18	1,258.66	-6,706.29	2,815.70	2,698.23	117.48	23.968	
14,200.00	6,925.31	7,033.24	7,032.23	119.93	6.39	90.18	1,258.66	-6,706.29	2,836.28	2,718.55	117.73	24.090	
14,300.00	6,924.99	7,033.50	7,032.49	121.48	6.39	90.19	1,258.66	-6,706.29	2,860.21	2,742.34	117.87	24.266	
14,400.00	6,924.67	7,033.76	7,032.75	123.04	6.39	90.19	1,258.66	-6,706.30	2,887.41	2,769.53	117.88	24.494	
14,500.00	6,924.34	7,034.02	7,033.01	124.60	6.39	90.20	1,258.66	-6,706.30	2,917.78	2,800.00	117.78	24.773	
14,600.00	6,924.02	7,034.28	7,033.27	126.16	6.39	90.21	1,258.66	-6,706.30	2,951.23	2,833.65	117.58	25.100	
14,700.00	6,923.70	7,034.54	7,033.53	127.72	6.39	90.21	1,258.65	-6,706.30	2,987.65	2,870.38	117.27	25.476	
14,800.00	6,923.38	7,034.79	7,033.78	129.28	6.39	90.22	1,258.65	-6,706.30	3,026.94	2,910.06	116.88	25.898	
14,900.00	6,923.05	7,035.05	7,034.04	130.85	6.39	90.22	1,258.65	-6,706.30	3,068.99	2,952.58	116.41	26.364	
15,000.00	6,922.73	7,035.30	7,034.29	132.41	6.39	90.23	1,258.65	-6,706.30	3,113.68	2,997.82	115.86	26.875	
15,100.00	6,922.41	7,035.55	7,034.55	133.97	6.39	90.23	1,258.65	-6,706.31	3,160.90	3,045.65	115.25	27.427	
15,200.00	6,922.08	7,035.81	7,034.80	135.54	6.39	90.24	1,258.65	-6,706.31	3,210.55	3,095.97	114.58	28.021	
15,300.00	6,921.76	7,036.06	7,035.05	137.11	6.39	90.24	1,258.65	-6,706.31	3,262.50	3,148.64	113.86	28.654	
15,400.00	6,921.44	7,036.31	7,035.30	138.67	6.39	90.25	1,258.65	-6,706.31	3,316.66	3,203.56	113.10	29.326	
15,500.00	6,921.11	7,036.55	7,035.54	140.24	6.39	90.25	1,258.65	-6,706.31	3,372.91	3,260.61	112.30	30.035	
15,600.00	6,920.79	7,036.80	7,035.79	141.81	6.39	90.26	1,258.65	-6,706.31	3,431.16	3,319.68	111.47	30.780	
15,700.00	6,920.47	7,037.05	7,036.04	143.38	6.39	90.26	1,258.65	-6,706.31	3,491.30	3,380.67	110.62	31.560	
15,800.00	6,920.14	7,037.29	7,036.28	144.95	6.39	90.27	1,258.65	-6,706.32	3,553.23	3,443.48	109.76	32.374	
15,900.00	6,919.82	7,037.53	7,036.52	146.52	6.39	90.27	1,258.65	-6,706.32	3,616.87	3,508.00	108.87	33.221	
16,000.00	6,919.50	7,037.78	7,036.77	148.09	6.39	90.28	1,258.65	-6,706.32	3,682.13	3,574.15	107.98	34.099	
16,100.00	6,919.18	7,038.02	7,037.01	149.66	6.40	90.28	1,258.65	-6,706.32	3,748.92	3,641.83	107.09	35.008	
16,200.00	6,918.85	7,038.26	7,037.25	151.24	6.40	90.29	1,258.64	-6,706.32	3,817.16	3,710.97	106.19	35.947	
16,300.00	6,918.53	7,038.50	7,037.49	152.81	6.40	90.29	1,258.64	-6,706.32	3,886.77	3,781.48	105.29	36.914	
16,400.00	6,918.21	7,038.74	7,037.73	154.38	6.40	90.30	1,258.64	-6,706.32	3,957.69	3,853.29	104.40	37.909	
16,500.00	6,917.88	7,038.97	7,037.96	155.96	6.40	90.30	1,258.64	-6,706.33	4,029.84	3,926.33	103.51	38.930	
16,600.00	6,917.56	7,039.21	7,038.20	157.53	6.40	90.31	1,258.64	-6,706.33	4,103.16	4,000.53	102.64	39.978	
16,700.00	6,917.24	7,039.44	7,038.43	159.11	6.40	90.31	1,258.64	-6,706.33	4,177.59	4,075.82	101.77	41.050	
16,800.00	6,916.91	7,039.68	7,038.67	160.68	6.40	90.32	1,258.64	-6,706.33	4,253.06	4,152.15	100.91	42.147	
16,900.00	6,916.59	7,039.91	7,038.90	162.26	6.40	90.32	1,258.64	-6,706.33	4,329.53	4,229.47	100.07	43.267	
17,000.00	6,916.27	7,040.14	7,039.13	163.84	6.40	90.33	1,258.64	-6,706.33	4,406.95	4,307.71	99.23	44.409	
17,100.00	6,915.95	7,040.37	7,039.36	165.41	6.40	90.33	1,258.64	-6,706.33	4,485.25	4,386.83	98.42	45.574	
17,200.00	6,915.62	7,040.60	7,039.59	166.99	6.40	90.34	1,258.64	-6,706.33	4,564.40	4,466.79	97.62	46.759	
17,300.00	6,915.30	7,040.83	7,039.82	168.57	6.40	90.34	1,258.64	-6,706.34	4,644.36	4,547.53	96.83	47.964	
17,400.00	6,914.98	7,041.06	7,040.05	170.15	6.40	90.35	1,258.64	-6,706.34	4,725.08	4,629.02	96.06	49.189	
17,500.00	6,914.65	7,041.29	7,040.28	171.73	6.40	90.35	1,258.64	-6,706.34	4,806.53	4,711.22	95.31	50.433	
17,600.00	6,914.33	7,041.51	7,040.50	173.31	6.40	90.36	1,258.64	-6,706.34	4,888.66	4,794.09	94.57	51.694	
17,700.00	6,914.01	7,041.74	7,040.73	174.89	6.40	90.36	1,258.64	-6,706.34	4,971.45	4,877.60	93.85	52.974	
17,800.00	6,913.68	7,041.96	7,040.95	176.47	6.40	90.36	1,258.63	-6,706.34	5,054.86	4,961.72	93.14	54.270	
17,900.00	6,913.36	7,042.19	7,041.18	178.05	6.40	90.37	1,258.63	-6,706.34	5,138.87	5,046.41	92.46	55.582	
18,000.00	6,913.04	7,042.41	7,041.40	179.63	6.40	90.37	1,258.63	-6,706.34	5,223.43	5,131.65	91.78	56.910	
18,100.00	6,912.72	7,042.63	7,041.62	181.21	6.40	90.38	1,258.63	-6,706.35	5,308.54	5,217.41	91.13	58.253	
18,111.83	6,912.68	7,042.65	7,041.65	181.40	6.40	90.38	1,258.63	-6,706.35	5,318.64	5,227.59	91.05	58.413	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 327-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	-80.55	791.17	-4,751.30	4,816.78				
54.25	54.25	33.91	33.91	0.02	0.04	-142.10	791.20	-4,751.28	4,816.80	4,816.75	0.05	N/A	
130.42	130.42	1,410.12	1,355.38	0.11	5.95	-166.38	994.01	-4,537.54	4,810.51	4,805.25	5.26	915.397	
219.69	219.69	1,463.08	1,403.33	0.23	6.37	-140.11	1,009.30	-4,521.06	4,787.97	4,782.24	5.73	835.839	
308.67	308.67	1,499.42	1,436.53	0.35	6.64	-148.87	1,019.29	-4,510.16	4,766.42	4,760.35	6.07	785.062	
454.00	453.99	1,698.00	1,617.57	0.51	8.17	77.65	1,074.80	-4,450.36	4,731.18	4,723.36	7.82	604.955	
544.00	543.93	1,761.00	1,674.89	0.74	8.65	78.84	1,092.34	-4,430.99	4,708.26	4,699.85	8.42	559.336	
667.00	666.63	1,823.00	1,731.51	1.13	9.12	66.51	1,109.61	-4,412.53	4,676.37	4,667.18	9.19	509.035	
756.00	755.27	1,972.91	1,868.01	1.44	10.29	82.42	1,151.38	-4,366.75	4,652.83	4,642.33	10.50	443.215	
850.00	848.62	2,031.98	1,921.58	1.79	10.76	84.95	1,168.24	-4,348.45	4,628.95	4,617.70	11.25	411.471	
942.00	939.50	2,096.58	1,980.10	2.14	11.28	92.27	1,186.98	-4,328.51	4,606.85	4,594.78	12.07	381.664	
1,033.00	1,028.89	2,153.11	2,031.58	2.52	11.72	102.08	1,202.91	-4,311.45	4,588.06	4,575.22	12.84	357.243	
1,123.00	1,117.00	2,243.91	2,114.41	2.90	12.41	108.83	1,228.03	-4,284.00	4,572.37	4,558.51	13.86	329.984	
1,214.00	1,206.00	2,307.25	2,171.97	3.29	12.91	108.60	1,246.12	-4,264.73	4,557.98	4,543.26	14.72	309.546	
1,309.00	1,298.75	2,474.83	2,324.68	3.71	14.20	112.76	1,291.35	-4,212.64	4,543.15	4,526.85	16.30	278.694	
1,403.00	1,390.39	2,517.00	2,363.18	4.13	14.53	115.95	1,302.43	-4,199.47	4,530.17	4,513.11	17.06	265.584	
1,498.00	1,482.88	2,581.00	2,421.54	4.56	15.02	113.31	1,319.73	-4,179.72	4,518.25	4,500.27	17.98	251.282	
1,592.00	1,573.82	2,628.46	2,464.67	5.00	15.41	113.47	1,333.15	-4,165.14	4,507.73	4,488.90	18.82	239.469	
1,687.00	1,665.32	2,660.47	2,493.75	5.46	15.66	116.57	1,342.39	-4,155.47	4,499.52	4,479.95	19.57	229.878	
1,876.00	1,847.35	2,707.00	2,536.45	6.38	16.00	119.44	1,355.42	-4,142.36	4,490.05	4,469.13	20.93	214.546	
1,970.00	1,937.87	2,738.00	2,565.17	6.84	16.22	119.84	1,363.89	-4,134.35	4,488.30	4,466.66	21.64	207.409	
2,018.94	1,985.00	2,738.00	2,565.17	7.08	16.22	120.11	1,363.89	-4,134.35	4,488.04	4,466.13	21.90	204.896	
2,064.00	2,028.42	2,738.00	2,565.17	7.30	16.22	120.36	1,363.89	-4,134.35	4,488.26	4,466.12	22.15	202.672	
2,159.00	2,119.97	2,800.00	2,623.28	7.77	16.62	122.00	1,380.08	-4,120.05	4,489.96	4,466.93	23.03	194.957	
2,348.00	2,302.44	2,988.00	2,802.59	8.69	17.68	118.54	1,419.78	-4,079.99	4,492.75	4,467.74	25.02	179.580	
2,443.00	2,394.41	3,038.63	2,851.33	9.15	17.94	118.22	1,429.04	-4,069.88	4,493.50	4,467.75	25.75	174.484	
2,537.00	2,485.45	3,112.13	2,922.41	9.61	18.30	118.41	1,441.40	-4,055.88	4,494.66	4,468.09	26.57	169.163	
2,632.00	2,577.48	3,174.28	2,982.64	10.07	18.59	119.04	1,451.75	-4,044.55	4,496.73	4,469.40	27.33	164.507	
2,727.00	2,669.50	3,237.00	3,043.73	10.53	18.87	119.42	1,461.10	-4,033.87	4,499.60	4,471.53	28.07	160.276	
2,821.00	2,760.56	3,300.80	3,106.16	10.98	19.13	119.51	1,469.59	-4,023.88	4,503.22	4,474.43	28.79	156.419	
2,916.00	2,852.68	3,333.00	3,137.76	11.44	19.25	119.61	1,473.71	-4,019.23	4,507.67	4,478.29	29.38	153.431	
3,011.00	2,945.03	3,394.00	3,197.72	11.89	19.48	120.03	1,481.48	-4,011.11	4,512.81	4,482.75	30.06	150.138	
3,105.00	3,036.57	3,458.00	3,260.86	12.33	19.69	114.71	1,488.51	-4,003.43	4,517.29	4,486.57	30.71	147.083	
3,200.00	3,128.81	3,500.64	3,303.12	12.78	19.81	111.60	1,492.20	-3,999.15	4,521.58	4,490.29	31.29	144.504	
3,294.00	3,219.76	3,536.46	3,338.71	13.24	19.90	111.39	1,494.95	-3,996.18	4,526.88	4,495.04	31.84	142.171	
3,389.00	3,311.82	3,571.62	3,373.69	13.69	19.98	112.57	1,497.56	-3,993.80	4,533.44	4,501.06	32.38	140.013	
3,483.00	3,403.03	3,626.69	3,428.58	14.14	20.09	113.13	1,501.07	-3,991.07	4,541.13	4,508.20	32.94	137.880	
3,578.00	3,495.31	3,718.49	3,520.34	14.60	20.19	113.99	1,502.50	-3,989.11	4,549.27	4,515.78	33.49	135.825	
3,672.00	3,586.65	3,769.00	3,570.84	15.04	20.23	115.19	1,502.09	-3,988.89	4,558.07	4,524.11	33.96	134.207	
3,767.00	3,678.95	3,835.42	3,637.26	15.49	20.27	115.90	1,501.98	-3,989.19	4,568.22	4,533.77	34.45	132.603	
3,862.00	3,771.63	3,927.25	3,729.09	15.93	20.36	116.03	1,501.89	-3,989.66	4,577.92	4,542.94	34.98	130.880	
3,956.00	3,863.70	4,018.43	3,820.27	16.35	20.45	116.61	1,501.80	-3,990.14	4,586.86	4,551.37	35.49	129.247	
4,052.00	3,957.54	4,111.37	3,913.21	16.79	20.54	115.51	1,501.70	-3,990.66	4,596.32	4,560.31	36.02	127.615	
4,146.00	4,048.88	4,201.84	4,003.68	17.24	20.63	115.56	1,501.60	-3,991.19	4,606.55	4,570.00	36.55	126.029	
4,241.00	4,140.47	4,292.56	4,094.39	17.71	20.72	118.18	1,501.49	-3,991.75	4,618.77	4,581.66	37.11	124.467	
4,336.00	4,231.25	4,382.49	4,184.32	18.21	20.81	121.58	1,501.38	-3,992.32	4,633.68	4,596.01	37.68	122.980	
4,430.00	4,320.59	4,470.98	4,272.81	18.71	20.90	120.11	1,501.27	-3,992.91	4,649.71	4,611.46	38.25	121.564	
4,524.00	4,409.51	4,559.08	4,360.90	19.22	20.99	116.65	1,501.15	-3,993.51	4,665.30	4,626.47	38.83	120.146	
4,619.00	4,498.98	4,647.72	4,449.54	19.75	21.07	116.21	1,501.03	-3,994.14	4,680.73	4,641.31	39.43	118.719	
4,713.00	4,587.83	4,735.76	4,537.58	20.27	21.16	116.78	1,500.91	-3,994.79	4,695.58	4,655.57	40.01	117.358	
4,807.00	4,676.97	4,824.08	4,625.90	20.78	21.25	118.32	1,500.78	-3,995.46	4,710.52	4,669.93	40.59	116.060	
4,870.00	4,736.65	4,883.22	4,685.03	21.12	21.31	118.92	1,500.69	-3,995.92	4,720.96	4,679.99	40.97	115.222	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 327-APC_ISCWSA REV 2 MWD **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,942.60	4,744.42	21.46	21.37	119.26	1,500.60	-3,996.40	4,731.14	4,689.79	41.35	114.410	
5,027.00	4,886.13	5,031.33	4,833.14	21.96	21.46	120.16	1,500.46	-3,997.12	4,746.42	4,704.50	41.92	113.238	
5,121.00	4,976.11	5,120.48	4,922.29	22.45	21.55	121.12	1,500.31	-3,997.88	4,761.31	4,718.84	42.47	112.117	
5,216.00	5,068.11	5,211.63	5,013.43	22.91	21.65	121.62	1,500.16	-3,998.67	4,774.53	4,731.53	43.00	111.038	
5,341.00	5,190.11	5,332.51	5,134.30	23.49	21.77	121.63	1,499.95	-3,999.76	4,789.86	4,746.19	43.67	109.678	
5,436.00	5,283.20	5,424.73	5,226.52	23.91	21.86	121.95	1,499.79	-4,000.61	4,800.64	4,756.47	44.17	108.680	
5,499.00	5,345.03	5,485.98	5,287.78	24.19	21.93	122.02	1,499.68	-4,001.19	4,807.57	4,763.07	44.50	108.034	
5,561.00	5,405.97	5,546.35	5,348.14	24.45	21.99	123.18	1,499.57	-4,001.78	4,814.24	4,769.42	44.82	107.412	
5,624.00	5,467.97	5,607.78	5,409.57	24.72	22.05	122.26	1,499.45	-4,002.38	4,820.79	4,775.64	45.14	106.792	
5,687.00	5,530.05	5,669.28	5,471.06	24.99	22.12	123.30	1,499.33	-4,003.00	4,827.12	4,781.66	45.46	106.182	
5,750.00	5,592.20	5,730.85	5,532.63	25.25	22.18	123.68	1,499.21	-4,003.63	4,833.32	4,787.55	45.78	105.585	
5,813.00	5,654.42	5,792.49	5,594.26	25.51	22.24	124.81	1,499.09	-4,004.26	4,839.41	4,793.32	46.09	105.000	
5,876.00	5,716.68	5,854.17	5,655.94	25.76	22.31	125.13	1,498.96	-4,004.91	4,845.43	4,799.03	46.40	104.427	
5,939.00	5,778.99	5,915.89	5,717.66	26.01	22.37	125.02	1,498.84	-4,005.58	4,851.30	4,804.59	46.71	103.863	
6,065.00	5,903.86	6,039.58	5,841.34	26.51	22.50	125.14	1,498.58	-4,006.93	4,862.03	4,814.71	47.31	102.759	
6,128.00	5,966.41	6,101.55	5,903.31	26.74	22.56	123.78	1,498.44	-4,007.63	4,866.76	4,819.15	47.61	102.217	
6,191.00	6,029.04	6,163.59	5,965.34	26.97	22.63	124.51	1,498.31	-4,008.33	4,871.13	4,823.23	47.91	101.681	
6,254.00	6,091.75	6,225.71	6,027.45	27.20	22.69	125.49	1,498.17	-4,009.05	4,875.11	4,826.92	48.19	101.156	
6,348.00	6,185.46	6,318.52	6,120.26	27.52	22.79	128.41	1,497.96	-4,010.15	4,880.33	4,831.71	48.61	100.390	
6,390.00	6,227.36	6,360.02	6,161.76	27.61	22.83	128.43	1,497.86	-4,010.65	4,882.50	4,833.77	48.73	100.199	
6,400.00	6,237.33	6,369.90	6,171.64	27.61	22.85	128.43	1,497.84	-4,010.76	4,883.02	4,834.28	48.74	100.181	
6,490.00	6,327.12	6,458.82	6,260.55	27.66	22.94	128.48	1,497.63	-4,011.85	4,887.70	4,838.83	48.87	100.013	
6,500.00	6,337.09	6,468.70	6,270.43	27.66	22.95	116.05	1,497.61	-4,011.97	4,888.16	4,839.28	48.89	99.992	
6,550.00	6,386.85	6,518.02	6,319.75	27.70	23.00	79.49	1,497.49	-4,012.58	4,888.84	4,839.87	48.97	99.832	
6,600.00	6,436.20	6,566.98	6,368.71	27.74	23.05	66.90	1,497.37	-4,013.20	4,886.76	4,837.68	49.07	99.580	
6,650.00	6,484.82	6,615.27	6,416.99	27.79	23.10	61.51	1,497.25	-4,013.81	4,881.95	4,832.75	49.19	99.237	
6,700.00	6,532.40	6,662.59	6,464.30	27.85	23.15	58.93	1,497.14	-4,014.42	4,874.46	4,825.12	49.33	98.807	
6,750.00	6,578.63	6,708.63	6,510.34	27.92	23.20	57.76	1,497.02	-4,015.01	4,864.36	4,814.87	49.49	98.292	
6,800.00	6,623.24	6,753.11	6,554.81	28.00	23.25	57.47	1,496.91	-4,015.60	4,851.73	4,802.07	49.66	97.696	
6,850.00	6,665.93	6,795.73	6,597.43	28.09	23.29	57.80	1,496.80	-4,016.16	4,836.69	4,786.84	49.85	97.023	
6,900.00	6,706.42	6,836.24	6,637.94	28.19	23.34	58.62	1,496.70	-4,016.70	4,819.36	4,769.30	50.06	96.279	
6,950.00	6,744.48	6,874.38	6,676.07	28.30	23.38	59.87	1,496.60	-4,017.21	4,799.89	4,749.61	50.28	95.467	
7,000.00	6,779.84	6,909.90	6,711.59	28.43	23.42	61.48	1,496.51	-4,017.69	4,778.43	4,727.91	50.52	94.593	
7,050.00	6,812.30	6,942.58	6,744.27	28.57	23.45	63.45	1,496.42	-4,018.14	4,755.15	4,704.38	50.77	93.664	
7,100.00	6,841.63	6,972.21	6,773.90	28.73	23.48	65.73	1,496.35	-4,018.54	4,730.24	4,679.21	51.04	92.686	
7,150.00	6,867.66	6,998.60	6,800.29	28.90	23.51	68.30	1,496.28	-4,018.91	4,703.90	4,652.58	51.32	91.665	
7,200.00	6,890.22	7,021.59	6,823.27	29.08	23.54	71.15	1,496.22	-4,019.22	4,676.31	4,624.70	51.61	90.608	
7,250.00	6,909.17	7,041.03	6,842.70	29.28	23.56	74.23	1,496.16	-4,019.50	4,647.70	4,595.79	51.92	89.522	
7,300.00	6,924.38	7,056.78	6,858.46	29.49	23.57	77.50	1,496.12	-4,019.72	4,618.27	4,566.04	52.23	88.415	
7,350.00	6,935.77	7,068.76	6,870.43	29.72	23.59	80.92	1,496.09	-4,019.88	4,588.23	4,535.67	52.56	87.295	
7,400.00	6,943.25	7,076.88	6,878.55	29.97	23.59	84.43	1,496.07	-4,020.00	4,557.80	4,504.90	52.89	86.169	
7,450.00	6,946.78	7,081.09	6,882.76	30.22	23.60	87.98	1,496.06	-4,020.06	4,527.17	4,473.94	53.23	85.044	
7,471.54	6,947.08	7,081.69	6,883.37	30.34	23.60	89.51	1,496.05	-4,020.06	4,513.98	4,460.59	53.38	84.561	
7,500.00	6,946.98	7,082.00	6,883.68	30.49	23.60	89.51	1,496.05	-4,020.07	4,496.49	4,442.91	53.58	83.925	
7,600.00	6,946.65	7,083.09	6,884.77	31.07	23.60	89.52	1,496.05	-4,020.08	4,434.17	4,379.88	54.29	81.680	
7,700.00	6,946.32	7,084.19	6,885.86	31.69	23.60	89.53	1,496.05	-4,020.10	4,370.50	4,315.48	55.02	79.434	
7,800.00	6,945.99	7,085.28	6,886.95	32.35	23.60	89.55	1,496.04	-4,020.12	4,305.49	4,249.72	55.77	77.194	
7,900.00	6,945.67	7,086.36	6,888.04	33.05	23.60	89.56	1,496.04	-4,020.13	4,239.18	4,182.63	56.55	74.966	
8,000.00	6,945.34	7,087.44	6,889.12	33.79	23.61	89.57	1,496.04	-4,020.15	4,171.57	4,114.23	57.34	72.755	
8,034.58	6,945.23	7,087.82	6,889.49	34.05	23.61	89.57	1,496.04	-4,020.15	4,147.90	4,090.28	57.61	71.994	
8,100.00	6,945.02	7,088.52	6,890.20	34.57	23.61	89.59	1,496.04	-4,020.16	4,103.24	4,045.09	58.14	70.569	
8,200.00	6,944.69	7,089.60	6,891.27	35.41	23.61	89.61	1,496.03	-4,020.18	4,036.07	3,977.08	58.99	68.421	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 327-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,090.68	6,892.35	36.30	23.61	89.63	1,496.03	-4,020.19	3,970.29	3,910.41	59.87	66.313	
8,400.00	6,944.05	7,091.76	6,893.43	37.25	23.61	89.65	1,496.03	-4,020.21	3,905.95	3,845.16	60.79	64.249	
8,500.00	6,943.73	7,092.84	6,894.51	38.25	23.61	89.67	1,496.02	-4,020.22	3,843.14	3,781.39	61.75	62.234	
8,600.00	6,943.40	7,093.92	6,895.59	39.29	23.61	89.69	1,496.02	-4,020.24	3,781.94	3,719.19	62.75	60.272	
8,700.00	6,943.08	7,095.00	6,896.67	40.37	23.61	89.71	1,496.02	-4,020.25	3,722.41	3,658.63	63.78	58.365	
8,800.00	6,942.76	7,096.08	6,897.75	41.49	23.61	89.73	1,496.01	-4,020.27	3,664.64	3,599.80	64.84	56.517	
8,900.00	6,942.43	7,097.16	6,898.83	42.64	23.62	89.75	1,496.01	-4,020.28	3,608.72	3,542.79	65.94	54.730	
9,000.00	6,942.11	7,098.24	6,899.92	43.82	23.62	89.77	1,496.01	-4,020.30	3,554.74	3,487.68	67.06	53.009	
9,100.00	6,941.79	7,099.33	6,901.00	45.03	23.62	89.79	1,496.01	-4,020.31	3,502.78	3,434.57	68.21	51.354	
9,200.00	6,941.46	7,100.41	6,902.08	46.27	23.62	89.81	1,496.00	-4,020.33	3,452.93	3,383.55	69.38	49.768	
9,300.00	6,941.14	7,101.50	6,903.17	47.53	23.62	89.83	1,496.00	-4,020.34	3,405.29	3,334.72	70.57	48.254	
9,400.00	6,940.82	7,102.58	6,904.25	48.81	23.62	89.85	1,496.00	-4,020.36	3,359.95	3,288.17	71.78	46.812	
9,500.00	6,940.50	7,103.67	6,905.34	50.11	23.62	89.87	1,495.99	-4,020.37	3,317.01	3,244.01	72.99	45.443	
9,600.00	6,940.17	7,104.75	6,906.42	51.43	23.62	89.89	1,495.99	-4,020.39	3,276.55	3,202.34	74.21	44.150	
9,700.00	6,939.85	7,105.84	6,907.51	52.76	23.62	89.91	1,495.99	-4,020.41	3,238.68	3,163.25	75.44	42.933	
9,800.00	6,939.53	7,106.93	6,908.60	54.11	23.63	89.93	1,495.99	-4,020.42	3,203.48	3,126.83	76.65	41.792	
9,900.00	6,939.20	7,108.01	6,909.69	55.48	23.63	89.96	1,495.98	-4,020.44	3,171.05	3,093.19	77.86	40.728	
10,000.00	6,938.88	7,109.10	6,910.77	56.86	23.63	89.98	1,495.98	-4,020.45	3,141.47	3,062.42	79.05	39.740	
10,100.00	6,938.56	7,110.19	6,911.86	58.25	23.63	90.00	1,495.98	-4,020.47	3,114.82	3,034.60	80.22	38.829	
10,200.00	6,938.23	7,111.28	6,912.95	59.65	23.63	90.02	1,495.97	-4,020.48	3,091.17	3,009.81	81.36	37.995	
10,300.00	6,937.91	7,112.37	6,914.04	61.06	23.63	90.04	1,495.97	-4,020.50	3,070.60	2,988.14	82.46	37.236	
10,400.00	6,937.59	7,113.46	6,915.13	62.48	23.63	90.06	1,495.97	-4,020.51	3,053.17	2,969.64	83.53	36.553	
10,500.00	6,937.27	7,114.56	6,916.23	63.91	23.63	90.08	1,495.96	-4,020.53	3,038.93	2,954.38	84.55	35.943	
10,600.00	6,936.94	7,115.65	6,917.32	65.34	23.64	90.10	1,495.96	-4,020.54	3,027.92	2,942.41	85.52	35.407	
10,700.00	6,936.62	7,116.74	6,918.41	66.79	23.64	90.12	1,495.96	-4,020.56	3,020.19	2,933.76	86.43	34.943	
10,800.00	6,936.30	7,117.83	6,919.50	68.24	23.64	90.14	1,495.96	-4,020.58	3,015.76	2,928.47	87.29	34.550	
10,883.83	6,936.03	7,118.75	6,920.42	69.46	23.64	90.16	1,495.95	-4,020.59	3,014.59	2,926.64	87.95	34.274 CC	
10,900.00	6,935.97	7,118.93	6,920.60	69.70	23.64	90.16	1,495.95	-4,020.59	3,014.63	2,926.56	88.08	34.227 ES	
11,000.00	6,935.65	7,120.02	6,921.69	71.17	23.64	90.18	1,495.95	-4,020.61	3,016.83	2,928.02	88.81	33.971	
11,100.00	6,935.33	7,121.12	6,922.79	72.64	23.64	90.20	1,495.95	-4,020.62	3,022.33	2,932.86	89.47	33.782	
11,200.00	6,935.00	7,122.21	6,923.88	74.11	23.64	90.23	1,495.94	-4,020.64	3,031.12	2,941.06	90.06	33.657	
11,300.00	6,934.68	7,123.31	6,924.98	75.60	23.64	90.25	1,495.94	-4,020.65	3,043.18	2,952.60	90.58	33.596	
11,400.00	6,934.36	7,124.41	6,926.08	77.08	23.64	90.27	1,495.94	-4,020.67	3,058.46	2,967.42	91.04	33.595 SF	
11,500.00	6,934.03	7,125.51	6,927.18	78.57	23.65	90.29	1,495.93	-4,020.68	3,076.91	2,985.48	91.43	33.654	
11,600.00	6,933.71	7,126.61	6,928.27	80.07	23.65	90.31	1,495.93	-4,020.70	3,098.48	3,006.73	91.75	33.770	
11,700.00	6,933.39	7,127.70	6,929.37	81.57	23.65	90.33	1,495.93	-4,020.72	3,123.11	3,031.09	92.01	33.941	
11,800.00	6,933.07	7,128.80	6,930.47	83.07	23.65	90.35	1,495.93	-4,020.73	3,150.72	3,058.50	92.22	34.166	
11,900.00	6,932.74	7,129.90	6,931.57	84.58	23.65	90.37	1,495.92	-4,020.75	3,181.23	3,088.87	92.36	34.443	
12,000.00	6,932.42	7,131.01	6,932.67	86.09	23.65	90.39	1,495.92	-4,020.76	3,214.57	3,122.11	92.45	34.769	
12,100.00	6,932.10	7,132.11	6,933.78	87.60	23.65	90.41	1,495.92	-4,020.78	3,250.64	3,158.14	92.50	35.143	
12,200.00	6,931.77	7,133.21	6,934.88	89.12	23.65	90.43	1,495.91	-4,020.79	3,289.35	3,196.86	92.49	35.563	
12,300.00	6,931.45	7,134.31	6,935.98	90.64	23.66	90.46	1,495.91	-4,020.81	3,330.62	3,238.17	92.45	36.027	
12,400.00	6,931.13	7,135.42	6,937.08	92.16	23.66	90.48	1,495.91	-4,020.82	3,374.35	3,281.99	92.36	36.533	
12,500.00	6,930.80	7,136.52	6,938.19	93.69	23.66	90.50	1,495.90	-4,020.84	3,420.44	3,328.20	92.25	37.079	
12,600.00	6,930.48	7,137.62	6,939.29	95.22	23.66	90.52	1,495.90	-4,020.86	3,468.81	3,376.71	92.10	37.664	
12,700.00	6,930.16	7,138.73	6,940.40	96.75	23.66	90.54	1,495.90	-4,020.87	3,519.35	3,427.43	91.92	38.286	
12,800.00	6,929.84	7,139.84	6,941.50	98.28	23.66	90.56	1,495.90	-4,020.89	3,571.98	3,480.25	91.72	38.943	
12,900.00	6,929.51	7,140.94	6,942.61	99.82	23.66	90.58	1,495.89	-4,020.90	3,626.60	3,535.09	91.50	39.634	
13,000.00	6,929.19	7,142.05	6,943.72	101.35	23.66	90.60	1,495.89	-4,020.92	3,683.12	3,591.86	91.26	40.357	
13,100.00	6,928.87	7,143.16	6,944.82	102.89	23.66	90.62	1,495.89	-4,020.93	3,741.47	3,650.46	91.01	41.111	
13,200.00	6,928.54	7,144.27	6,945.93	104.43	23.67	90.64	1,495.88	-4,020.95	3,801.54	3,710.80	90.74	41.894	
13,300.00	6,928.22	7,145.37	6,947.04	105.97	23.67	90.67	1,495.88	-4,020.97	3,863.28	3,772.81	90.46	42.705	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 327-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	7,146.48	6,948.15	107.52	23.67	90.69	1,495.88	-4,020.98	3,926.59	3,836.41	90.18	43.543	
13,500.00	6,927.57	7,147.59	6,949.26	109.06	23.67	90.71	1,495.87	-4,021.00	3,991.40	3,901.51	89.88	44.406	
13,600.00	6,927.25	7,148.71	6,950.37	110.61	23.67	90.73	1,495.87	-4,021.01	4,057.64	3,968.05	89.59	45.294	
13,700.00	6,926.93	7,149.82	6,951.48	112.16	23.67	90.75	1,495.87	-4,021.03	4,125.24	4,035.96	89.28	46.204	
13,800.00	6,926.61	7,150.93	6,952.60	113.71	23.67	90.77	1,495.87	-4,021.05	4,194.13	4,105.16	88.98	47.137	
13,900.00	6,926.28	7,152.04	6,953.71	115.26	23.67	90.79	1,495.86	-4,021.06	4,264.26	4,175.59	88.67	48.090	
14,000.00	6,925.96	7,153.16	6,954.82	116.82	23.68	90.81	1,495.86	-4,021.08	4,335.56	4,247.19	88.37	49.064	
14,100.00	6,925.64	7,154.27	6,955.94	118.37	23.68	90.83	1,495.86	-4,021.09	4,407.97	4,319.91	88.06	50.056	
14,200.00	6,925.31	7,155.38	6,957.05	119.93	23.68	90.86	1,495.85	-4,021.11	4,481.45	4,393.69	87.76	51.067	
14,300.00	6,924.99	7,156.50	6,958.17	121.48	23.68	90.88	1,495.85	-4,021.12	4,555.93	4,468.48	87.45	52.095	
14,400.00	6,924.67	7,157.62	6,959.28	123.04	23.68	90.90	1,495.85	-4,021.14	4,631.38	4,544.23	87.15	53.140	
14,500.00	6,924.34	7,158.73	6,960.40	124.60	23.68	90.92	1,495.84	-4,021.16	4,707.74	4,620.88	86.86	54.200	
14,600.00	6,924.02	7,159.85	6,961.52	126.16	23.68	90.94	1,495.84	-4,021.17	4,784.97	4,698.41	86.57	55.275	
14,700.00	6,923.70	7,160.97	6,962.63	127.72	23.68	90.96	1,495.84	-4,021.19	4,863.04	4,776.76	86.28	56.365	
14,800.00	6,923.38	7,162.09	6,963.75	129.28	23.69	90.98	1,495.83	-4,021.20	4,941.89	4,855.89	85.99	57.468	
14,900.00	6,923.05	7,163.21	6,964.87	130.85	23.69	91.00	1,495.83	-4,021.22	5,021.49	4,935.78	85.71	58.584	
15,000.00	6,922.73	7,164.32	6,965.99	132.41	23.69	91.03	1,495.83	-4,021.24	5,101.82	5,016.38	85.44	59.712	
15,100.00	6,922.41	7,165.45	6,967.11	133.97	23.69	91.05	1,495.83	-4,021.25	5,182.82	5,097.65	85.17	60.852	
15,200.00	6,922.08	7,166.57	6,968.23	135.54	23.69	91.07	1,495.82	-4,021.27	5,264.48	5,179.58	84.91	62.003	
15,300.00	6,921.76	7,167.69	6,969.35	137.11	23.69	91.09	1,495.82	-4,021.28	5,346.77	5,262.12	84.65	63.165	
15,400.00	6,921.44	7,168.81	6,970.48	138.67	23.69	91.11	1,495.82	-4,021.30	5,429.65	5,345.25	84.39	64.337	
15,500.00	6,921.11	7,169.93	6,971.60	140.24	23.69	91.13	1,495.81	-4,021.32	5,513.09	5,428.94	84.15	65.518	
15,600.00	6,920.79	7,171.06	6,972.72	141.81	23.69	91.15	1,495.81	-4,021.33	5,597.08	5,513.18	83.90	66.709	
15,700.00	6,920.47	7,172.18	6,973.85	143.38	23.70	91.17	1,495.81	-4,021.35	5,681.58	5,597.92	83.67	67.908	
15,800.00	6,920.14	7,173.31	6,974.97	144.95	23.70	91.20	1,495.80	-4,021.37	5,766.59	5,683.15	83.43	69.115	
15,900.00	6,919.82	7,174.43	6,976.10	146.52	23.70	91.22	1,495.80	-4,021.38	5,852.06	5,768.85	83.21	70.330	
16,000.00	6,919.50	7,175.56	6,977.22	148.09	23.70	91.24	1,495.80	-4,021.40	5,937.99	5,855.00	82.99	71.553	
16,100.00	6,919.18	7,176.68	6,978.35	149.66	23.70	91.26	1,495.79	-4,021.41	6,024.35	5,941.58	82.77	72.783	
16,200.00	6,918.85	7,177.81	6,979.48	151.24	23.70	91.28	1,495.79	-4,021.43	6,111.13	6,028.57	82.56	74.019	
16,300.00	6,918.53	7,178.94	6,980.60	152.81	23.70	91.30	1,495.79	-4,021.45	6,198.31	6,115.95	82.36	75.262	
16,400.00	6,918.21	7,180.07	6,981.73	154.38	23.70	91.32	1,495.79	-4,021.46	6,285.87	6,203.71	82.16	76.510	
16,500.00	6,917.88	7,181.20	6,982.86	155.96	23.71	91.35	1,495.78	-4,021.48	6,373.79	6,291.83	81.96	77.764	
16,600.00	6,917.56	7,182.33	6,983.99	157.53	23.71	91.37	1,495.78	-4,021.49	6,462.07	6,380.30	81.77	79.024	
16,700.00	6,917.24	7,183.46	6,985.12	159.11	23.71	91.39	1,495.78	-4,021.51	6,550.68	6,469.09	81.59	80.288	
16,800.00	6,916.91	7,184.59	6,986.25	160.68	23.71	91.41	1,495.77	-4,021.53	6,639.62	6,558.21	81.41	81.557	
16,900.00	6,916.59	7,185.72	6,987.39	162.26	23.71	91.43	1,495.77	-4,021.54	6,728.86	6,647.63	81.24	82.831	
17,000.00	6,916.27	7,186.86	6,988.52	163.84	23.71	91.45	1,495.77	-4,021.56	6,818.41	6,737.34	81.07	84.109	
17,100.00	6,915.95	7,187.99	6,989.65	165.41	23.71	91.48	1,495.76	-4,021.58	6,908.24	6,827.34	80.90	85.391	
17,200.00	6,915.62	7,189.12	6,990.79	166.99	23.71	91.50	1,495.76	-4,021.59	6,998.35	6,917.61	80.74	86.676	
17,300.00	6,915.30	7,190.26	6,991.92	168.57	23.72	91.52	1,495.76	-4,021.61	7,088.72	7,008.13	80.59	87.965	
17,400.00	6,914.98	7,191.39	6,993.05	170.15	23.72	91.54	1,495.75	-4,021.62	7,179.35	7,098.91	80.43	89.257	
17,500.00	6,914.65	7,192.53	6,994.19	171.73	23.72	91.56	1,495.75	-4,021.64	7,270.22	7,189.93	80.29	90.552	
17,600.00	6,914.33	7,193.66	6,995.33	173.31	23.72	91.58	1,495.75	-4,021.66	7,361.33	7,281.18	80.15	91.850	
17,700.00	6,914.01	7,194.80	6,996.46	174.89	23.72	91.60	1,495.74	-4,021.67	7,452.67	7,372.66	80.01	93.150	
17,800.00	6,913.68	7,195.94	6,997.60	176.47	23.72	91.63	1,495.74	-4,021.69	7,544.22	7,464.35	79.87	94.453	
17,900.00	6,913.36	7,197.08	6,998.74	178.05	23.72	91.65	1,495.74	-4,021.71	7,635.99	7,556.25	79.74	95.758	
18,000.00	6,913.04	7,198.22	6,999.88	179.63	23.72	91.67	1,495.74	-4,021.72	7,727.96	7,648.35	79.62	97.065	
18,100.00	6,912.72	7,199.36	7,001.02	181.21	23.72	91.69	1,495.73	-4,021.74	7,820.13	7,740.64	79.49	98.373	
18,111.83	6,912.68	7,199.49	7,001.15	181.40	23.73	91.69	1,495.73	-4,021.74	7,831.05	7,751.57	79.48	98.528	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
0.00	0.00	156.00	156.00	0.00	4.67	-141.67	-1,766.69	-1,396.69	2,252.10				
54.25	54.25	210.25	210.25	0.02	6.30	156.78	-1,766.69	-1,396.69	2,252.20	2,245.89	6.32	356.632	
130.42	130.42	286.42	286.42	0.11	8.58	129.62	-1,766.69	-1,396.69	2,252.48	2,243.79	8.68	259.431	
219.69	219.69	375.69	375.69	0.23	11.26	155.70	-1,766.69	-1,396.69	2,252.85	2,241.40	11.46	196.647	
308.67	308.67	464.67	464.67	0.35	13.92	146.80	-1,766.69	-1,396.69	2,253.31	2,239.08	14.23	158.360	
454.00	453.99	610.09	609.99	0.51	18.28	12.23	-1,766.69	-1,396.69	2,252.70	2,233.95	18.75	120.141	
544.00	543.93	700.04	699.93	0.74	20.98	12.57	-1,766.69	-1,396.69	2,249.71	2,228.02	21.69	103.741	
667.00	666.63	814.81	814.66	1.13	24.42	-0.46	-1,764.66	-1,396.69	2,239.65	2,214.12	25.53	87.730	
756.00	755.27	893.90	893.73	1.44	26.79	14.49	-1,765.24	-1,396.69	2,232.21	2,204.00	28.21	79.141	
850.00	848.62	1,005.03	1,004.62	1.79	30.12	16.21	-1,766.69	-1,396.69	2,222.72	2,190.84	31.87	69.734	
942.00	939.50	1,095.90	1,095.50	2.14	32.84	22.93	-1,766.69	-1,396.69	2,209.26	2,174.32	34.94	63.234	
1,033.00	1,028.89	1,185.29	1,184.89	2.52	35.52	32.69	-1,766.69	-1,396.69	2,194.20	2,156.25	37.95	57.811	
1,123.00	1,117.00	1,270.93	1,270.48	2.90	38.08	39.32	-1,764.53	-1,396.69	2,177.58	2,136.73	40.86	53.296	
1,214.00	1,206.00	1,350.71	1,350.25	3.29	40.47	38.91	-1,764.87	-1,396.69	2,163.05	2,119.45	43.60	49.615	
1,309.00	1,298.75	1,434.09	1,433.60	3.71	42.97	42.29	-1,765.70	-1,396.69	2,148.04	2,101.57	46.47	46.226	
1,403.00	1,390.39	1,547.10	1,546.39	4.13	46.36	45.77	-1,766.69	-1,396.69	2,133.47	2,083.24	50.23	42.472	
1,498.00	1,482.88	1,639.59	1,638.88	4.56	49.13	42.96	-1,766.69	-1,396.69	2,117.74	2,064.35	53.39	39.663	
1,592.00	1,573.82	1,730.54	1,729.82	5.00	51.85	43.23	-1,766.69	-1,396.69	2,100.13	2,043.62	56.52	37.160	
1,687.00	1,665.32	1,814.98	1,814.22	5.46	54.39	46.72	-1,764.66	-1,396.69	2,080.19	2,020.73	59.46	34.986	
1,876.00	1,847.35	2,004.37	2,003.35	6.38	60.06	50.38	-1,766.69	-1,396.69	2,047.35	1,981.38	65.97	31.036	
1,970.00	1,937.87	2,094.89	2,093.87	6.84	62.77	51.13	-1,766.69	-1,396.69	2,030.96	1,961.86	69.10	29.390	
2,064.00	2,028.42	2,185.44	2,184.42	7.30	65.49	52.17	-1,766.69	-1,396.69	2,014.95	1,942.70	72.24	27.891	
2,159.00	2,119.97	2,274.53	2,273.47	7.77	68.16	54.02	-1,764.54	-1,396.69	1,997.79	1,922.44	75.35	26.513	
2,348.00	2,302.44	2,441.14	2,440.05	8.69	73.15	50.14	-1,765.79	-1,396.69	1,967.95	1,886.74	81.22	24.231	
2,443.00	2,394.41	2,551.73	2,550.41	9.15	76.46	50.08	-1,766.69	-1,396.69	1,952.94	1,867.98	84.96	22.987	
2,537.00	2,485.45	2,642.77	2,641.45	9.61	79.19	50.37	-1,766.69	-1,396.69	1,937.70	1,849.58	88.12	21.990	
2,632.00	2,577.48	2,734.80	2,733.48	10.07	81.95	51.18	-1,766.69	-1,396.69	1,922.50	1,831.19	91.31	21.055	
2,727.00	2,669.50	2,820.51	2,819.14	10.53	84.52	51.79	-1,764.69	-1,396.69	1,906.18	1,811.86	94.32	20.210	
2,821.00	2,760.56	2,904.34	2,902.95	10.98	87.03	52.03	-1,765.35	-1,396.69	1,891.99	1,794.72	97.27	19.451	
2,916.00	2,852.68	3,010.30	3,008.68	11.44	90.20	52.49	-1,766.69	-1,396.69	1,878.37	1,777.49	100.88	18.620	
3,011.00	2,945.03	3,102.65	3,101.03	11.89	92.97	53.05	-1,766.69	-1,396.69	1,864.66	1,760.58	104.08	17.915	
3,105.00	3,036.57	3,194.19	3,192.57	12.33	95.71	47.84	-1,766.69	-1,396.69	1,850.84	1,743.59	107.25	17.257	
3,200.00	3,128.81	3,283.67	3,282.00	12.78	98.39	45.24	-1,764.55	-1,396.69	1,833.57	1,723.21	110.37	16.614	
3,294.00	3,219.76	3,367.96	3,366.28	13.24	100.92	45.36	-1,765.00	-1,396.69	1,816.93	1,703.60	113.33	16.033	
3,389.00	3,311.82	3,453.55	3,451.84	13.69	103.48	46.75	-1,765.96	-1,396.69	1,801.04	1,684.72	116.33	15.483	
3,483.00	3,403.03	3,560.96	3,559.03	14.14	106.70	47.72	-1,766.69	-1,396.69	1,785.77	1,665.81	119.97	14.885	
3,578.00	3,495.31	3,653.24	3,651.31	14.60	109.47	48.73	-1,766.69	-1,396.69	1,770.50	1,647.33	123.17	14.374	
3,672.00	3,586.65	3,744.58	3,742.65	15.04	112.20	50.44	-1,766.69	-1,396.69	1,755.86	1,629.51	126.34	13.898	
3,767.00	3,678.95	3,831.04	3,829.06	15.49	114.80	51.47	-1,764.74	-1,396.69	1,740.30	1,610.92	129.38	13.451	
3,862.00	3,771.63	3,917.75	3,915.75	15.93	117.39	51.55	-1,765.50	-1,396.69	1,727.62	1,595.21	132.41	13.047	
3,956.00	3,863.70	4,021.93	4,019.70	16.35	120.52	52.35	-1,766.69	-1,396.69	1,716.45	1,580.50	135.95	12.626	
4,052.00	3,957.54	4,115.77	4,113.54	16.79	123.33	51.85	-1,766.69	-1,396.69	1,703.84	1,564.64	139.19	12.241	
4,146.00	4,048.88	4,207.11	4,204.88	17.24	126.06	52.56	-1,766.69	-1,396.69	1,689.99	1,547.61	142.37	11.870	
4,241.00	4,140.47	4,295.74	4,293.46	17.71	128.72	56.15	-1,764.59	-1,396.69	1,673.79	1,528.29	145.51	11.503	
4,336.00	4,231.25	4,381.28	4,378.99	18.21	131.28	60.40	-1,765.12	-1,396.69	1,658.96	1,510.39	148.57	11.166	
4,430.00	4,320.59	4,465.82	4,463.50	18.71	133.82	59.56	-1,766.14	-1,396.69	1,644.40	1,492.78	151.62	10.846	
4,524.00	4,409.51	4,568.05	4,565.51	19.22	136.88	57.09	-1,766.69	-1,396.69	1,627.99	1,472.80	155.20	10.490	
4,619.00	4,498.98	4,657.52	4,654.98	19.75	139.56	57.33	-1,766.69	-1,396.69	1,609.96	1,451.54	158.42	10.163	
4,713.00	4,587.83	4,746.37	4,743.83	20.27	142.22	58.02	-1,766.69	-1,396.69	1,592.89	1,431.28	161.60	9.857	
4,807.00	4,676.97	4,831.28	4,828.69	20.78	144.77	60.31	-1,764.75	-1,396.69	1,576.06	1,411.38	164.68	9.571	
4,870.00	4,736.65	4,888.22	4,885.62	21.12	146.47	61.24	-1,765.18	-1,396.69	1,566.04	1,399.30	166.74	9.392	
4,933.00	4,796.58	4,945.55	4,942.93	21.46	148.19	61.58	-1,765.85	-1,396.69	1,556.73	1,387.92	168.81	9.222	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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
5,027.00	4,886.13	5,044.97	5,042.13	21.96	151.17	63.39	-1,766.69	-1,396.69	1,543.40	1,371.09	172.31	8.957	
5,121.00	4,976.11	5,134.95	5,132.11	22.45	153.87	64.30	-1,766.69	-1,396.69	1,530.98	1,355.46	175.52	8.722	
5,216.00	5,068.11	5,226.95	5,224.11	22.91	156.62	64.87	-1,766.69	-1,396.69	1,520.55	1,341.78	178.77	8.506	
5,341.00	5,190.11	5,344.99	5,342.09	23.49	160.16	65.27	-1,764.83	-1,396.69	1,508.12	1,325.20	182.92	8.245	
5,436.00	5,283.20	5,434.62	5,431.70	23.91	162.85	65.92	-1,765.71	-1,396.69	1,500.53	1,314.47	186.06	8.065	
5,499.00	5,345.03	5,504.18	5,501.03	24.19	164.93	66.24	-1,766.69	-1,396.69	1,495.92	1,307.49	188.43	7.939	
5,561.00	5,405.97	5,565.11	5,561.97	24.45	166.76	67.61	-1,766.69	-1,396.69	1,491.37	1,300.83	190.54	7.827	
5,624.00	5,467.97	5,627.12	5,623.97	24.72	168.61	66.91	-1,766.69	-1,396.69	1,487.00	1,294.32	192.68	7.717	
5,687.00	5,530.05	5,689.20	5,686.05	24.99	170.47	68.18	-1,766.69	-1,396.69	1,482.84	1,288.02	194.82	7.611	
5,750.00	5,592.20	5,751.29	5,748.11	25.25	172.33	68.85	-1,764.51	-1,396.69	1,478.23	1,281.27	196.96	7.505	
5,813.00	5,654.42	5,811.36	5,808.17	25.51	174.13	70.18	-1,764.65	-1,396.69	1,474.78	1,275.74	199.04	7.410	
5,876.00	5,716.68	5,871.56	5,868.36	25.76	175.94	70.70	-1,765.03	-1,396.69	1,471.67	1,270.56	201.11	7.318	
5,939.00	5,778.99	5,931.89	5,928.67	26.01	177.75	70.78	-1,765.67	-1,396.69	1,468.81	1,265.62	203.19	7.229	
6,065.00	5,903.86	6,063.31	6,059.86	26.51	181.68	71.22	-1,766.69	-1,396.69	1,463.62	1,255.98	207.64	7.049	
6,128.00	5,966.41	6,125.87	6,122.41	26.74	183.56	70.03	-1,766.69	-1,396.69	1,461.14	1,251.37	209.77	6.966	
6,191.00	6,029.04	6,188.49	6,185.04	26.97	185.44	70.90	-1,766.69	-1,396.69	1,458.83	1,246.95	211.89	6.885	
6,254.00	6,091.75	6,251.20	6,247.75	27.20	187.31	71.97	-1,766.69	-1,396.69	1,456.90	1,242.90	214.00	6.808	
6,348.00	6,185.46	6,341.00	6,337.34	27.52	190.01	75.02	-1,766.69	-1,396.69	1,454.79	1,237.75	217.03	6.703	
6,370.10	6,207.51	6,341.00	6,337.34	27.57	190.01	75.02	-1,766.69	-1,396.69	1,454.62	1,237.56	217.06	6.701	
6,390.00	6,227.36	6,341.00	6,337.34	27.61	190.01	75.02	-1,766.69	-1,396.69	1,454.75	1,237.71	217.05	6.702	
6,400.00	6,237.33	6,341.00	6,337.34	27.61	190.01	75.02	-1,766.69	-1,396.69	1,454.93	1,237.91	217.01	6.704	
6,490.00	6,327.12	6,341.00	6,337.34	27.66	190.01	75.02	-1,766.69	-1,396.69	1,459.55	1,243.30	216.25	6.749	
6,500.00	6,337.09	6,341.00	6,337.34	27.66	190.01	62.62	-1,766.69	-1,396.69	1,460.33	1,244.21	216.12	6.757	
6,550.00	6,386.85	6,341.00	6,337.34	27.70	190.01	26.08	-1,766.69	-1,396.69	1,462.87	1,247.57	215.30	6.795	
6,600.00	6,436.20	6,341.00	6,337.34	27.74	190.01	13.28	-1,766.69	-1,396.69	1,463.16	1,248.92	214.24	6.830	
6,650.00	6,484.82	6,341.00	6,337.34	27.79	190.01	7.43	-1,766.69	-1,396.69	1,461.21	1,248.28	212.93	6.862	
6,700.00	6,532.40	6,341.00	6,337.34	27.85	190.01	4.15	-1,766.69	-1,396.69	1,457.03	1,245.65	211.38	6.893	
6,750.00	6,578.63	6,341.00	6,337.34	27.92	190.01	2.03	-1,766.69	-1,396.69	1,450.60	1,241.01	209.59	6.921	
6,800.00	6,623.24	6,341.00	6,337.34	28.00	190.01	0.53	-1,766.69	-1,396.69	1,441.96	1,234.39	207.57	6.947	
6,850.00	6,665.93	6,341.00	6,337.34	28.09	190.01	-0.60	-1,766.69	-1,396.69	1,431.11	1,225.79	205.31	6.970	
6,900.00	6,706.42	6,341.00	6,337.34	28.19	190.01	-1.52	-1,766.69	-1,396.69	1,418.07	1,215.23	202.84	6.991	
6,950.00	6,744.48	6,341.00	6,337.34	28.30	190.01	-2.29	-1,766.69	-1,396.69	1,402.87	1,202.72	200.15	7.009	
7,000.00	6,779.84	6,341.00	6,337.34	28.43	190.01	-2.98	-1,766.69	-1,396.69	1,385.53	1,188.27	197.26	7.024	
7,050.00	6,812.30	6,341.00	6,337.34	28.57	190.01	-3.62	-1,766.69	-1,396.69	1,366.08	1,171.92	194.17	7.036	
7,100.00	6,841.63	6,341.00	6,337.34	28.73	190.01	-4.24	-1,766.69	-1,396.69	1,344.56	1,153.67	190.89	7.044	
7,150.00	6,867.66	6,341.00	6,337.34	28.90	190.01	-4.85	-1,766.69	-1,396.69	1,321.01	1,133.57	187.44	7.048	
7,200.00	6,890.22	6,341.00	6,337.34	29.08	190.01	-5.49	-1,766.69	-1,396.69	1,295.47	1,111.64	183.83	7.047	
7,250.00	6,909.17	6,341.00	6,337.34	29.28	190.01	-6.15	-1,766.69	-1,396.69	1,267.99	1,087.91	180.08	7.041	
7,300.00	6,924.38	6,341.00	6,337.34	29.49	190.01	-6.87	-1,766.69	-1,396.69	1,238.62	1,062.42	176.20	7.030	
7,350.00	6,935.77	6,341.00	6,337.34	29.72	190.01	-7.66	-1,766.69	-1,396.69	1,207.41	1,035.21	172.21	7.011	
7,400.00	6,943.25	6,341.00	6,337.34	29.97	190.01	-8.55	-1,766.69	-1,396.69	1,174.43	1,006.30	168.13	6.985	
7,450.00	6,946.78	6,341.00	6,337.34	30.22	190.01	-9.57	-1,766.69	-1,396.69	1,139.74	975.75	163.99	6.950	
7,471.54	6,947.08	6,341.00	6,337.34	30.34	190.01	-10.05	-1,766.69	-1,396.69	1,124.28	962.08	162.20	6.932	
7,500.00	6,946.98	6,341.00	6,337.34	30.49	190.01	-10.63	-1,766.69	-1,396.69	1,103.85	944.10	159.76	6.910	
7,600.00	6,946.65	6,341.00	6,337.34	31.07	190.01	-12.46	-1,766.69	-1,396.69	1,035.42	885.27	150.14	6.896	
7,700.00	6,946.32	6,341.00	6,337.34	31.69	190.01	-14.01	-1,766.69	-1,396.69	973.06	834.23	138.84	7.009	
7,800.00	6,945.99	6,341.00	6,337.34	32.35	190.01	-15.28	-1,766.69	-1,396.69	918.12	792.25	125.88	7.294	
7,900.00	6,945.67	6,341.00	6,337.34	33.05	190.01	-16.27	-1,766.69	-1,396.69	872.07	760.36	111.71	7.806	
8,000.00	6,945.34	6,341.00	6,337.34	33.79	190.01	-17.00	-1,766.69	-1,396.69	836.43	738.90	97.53	8.576	
8,034.58	6,945.23	6,341.00	6,337.34	34.05	190.01	-17.19	-1,766.69	-1,396.69	826.79	733.78	93.01	8.889	
8,100.00	6,945.02	6,341.00	6,337.34	34.57	190.01	-17.19	-1,766.69	-1,396.69	812.40	726.82	85.58	9.493	
8,200.00	6,944.69	6,341.00	6,337.34	35.41	190.01	-17.19	-1,766.69	-1,396.69	800.30	721.39	78.92	10.141	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-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	Rule Assigned: Warning
8,247.59	6,944.54	6,341.00	6,337.34	35.83	190.01	-17.19	-1,766.69	-1,396.69	798.89	720.31	78.58	10.167	CC
8,300.00	6,944.37	6,341.00	6,337.34	36.30	190.01	-17.19	-1,766.69	-1,396.69	800.60	720.06	80.54	9.940	ES
8,400.00	6,944.05	6,341.00	6,337.34	37.25	190.01	-17.19	-1,766.69	-1,396.69	813.29	723.22	90.08	9.029	
8,500.00	6,943.73	6,341.00	6,337.34	38.25	190.01	-17.19	-1,766.69	-1,396.69	837.81	733.76	104.06	8.052	
8,600.00	6,943.40	6,341.00	6,337.34	39.29	190.01	-17.19	-1,766.69	-1,396.69	873.16	753.94	119.22	7.324	
8,700.00	6,943.08	6,341.00	6,337.34	40.37	190.01	-17.19	-1,766.69	-1,396.69	918.09	784.41	133.69	6.867	
8,800.00	6,942.76	6,341.00	6,337.34	41.49	190.01	-17.19	-1,766.69	-1,396.69	971.28	824.65	146.62	6.624	
8,900.00	6,942.43	6,341.00	6,337.34	42.64	190.01	-17.19	-1,766.69	-1,396.69	1,031.44	873.65	157.79	6.537	SF
9,000.00	6,942.11	6,341.00	6,337.34	43.82	190.01	-17.19	-1,766.69	-1,396.69	1,097.43	930.20	167.23	6.562	
9,100.00	6,941.79	6,341.00	6,337.34	45.03	190.01	-17.19	-1,766.69	-1,396.69	1,168.26	993.12	175.14	6.670	
9,200.00	6,941.46	6,341.00	6,337.34	46.27	190.01	-17.19	-1,766.69	-1,396.69	1,243.11	1,061.37	181.74	6.840	
9,300.00	6,941.14	6,341.00	6,337.34	47.53	190.01	-17.19	-1,766.69	-1,396.69	1,321.28	1,134.05	187.24	7.057	
9,400.00	6,940.82	6,341.00	6,337.34	48.81	190.01	-17.19	-1,766.69	-1,396.69	1,402.24	1,210.40	191.84	7.309	
9,500.00	6,940.50	6,341.00	6,337.34	50.11	190.01	-17.19	-1,766.69	-1,396.69	1,485.52	1,289.82	195.70	7.591	
9,600.00	6,940.17	6,341.00	6,337.34	51.43	190.01	-17.19	-1,766.69	-1,396.69	1,570.75	1,371.79	198.96	7.895	
9,700.00	6,939.85	6,341.00	6,337.34	52.76	190.01	-17.19	-1,766.69	-1,396.69	1,657.63	1,455.91	201.72	8.217	
9,800.00	6,939.53	6,341.00	6,337.34	54.11	190.01	-17.19	-1,766.69	-1,396.69	1,745.91	1,541.84	204.07	8.555	
9,900.00	6,939.20	6,341.00	6,337.34	55.48	190.01	-17.19	-1,766.69	-1,396.69	1,835.40	1,629.31	206.09	8.906	
10,000.00	6,938.88	6,341.00	6,337.34	56.86	190.01	-17.19	-1,766.69	-1,396.69	1,925.92	1,718.09	207.83	9.267	
10,100.00	6,938.56	6,341.00	6,337.34	58.25	190.01	-17.19	-1,766.69	-1,396.69	2,017.34	1,807.99	209.34	9.636	
10,200.00	6,938.23	6,341.00	6,337.34	59.65	190.01	-17.19	-1,766.69	-1,396.69	2,109.54	1,898.87	210.66	10.014	
10,300.00	6,937.91	6,341.00	6,337.34	61.06	190.01	-17.19	-1,766.69	-1,396.69	2,202.41	1,990.60	211.81	10.398	
10,400.00	6,937.59	6,341.00	6,337.34	62.48	190.01	-17.19	-1,766.69	-1,396.69	2,295.89	2,083.06	212.83	10.787	
10,500.00	6,937.27	6,341.00	6,337.34	63.91	190.01	-17.19	-1,766.69	-1,396.69	2,389.89	2,176.16	213.73	11.182	
10,600.00	6,936.94	6,341.00	6,337.34	65.34	190.01	-17.19	-1,766.69	-1,396.69	2,484.37	2,269.84	214.53	11.581	
10,700.00	6,936.62	6,341.00	6,337.34	66.79	190.01	-17.19	-1,766.69	-1,396.69	2,579.25	2,364.01	215.24	11.983	
10,800.00	6,936.30	6,341.00	6,337.34	68.24	190.01	-17.19	-1,766.69	-1,396.69	2,674.52	2,458.63	215.88	12.389	
10,900.00	6,935.97	6,341.00	6,337.34	69.70	190.01	-17.19	-1,766.69	-1,396.69	2,770.11	2,553.65	216.46	12.797	
11,000.00	6,935.65	6,341.00	6,337.34	71.17	190.01	-17.19	-1,766.69	-1,396.69	2,866.01	2,649.03	216.98	13.209	
11,100.00	6,935.33	6,341.00	6,337.34	72.64	190.01	-17.19	-1,766.69	-1,396.69	2,962.18	2,744.72	217.45	13.622	
11,200.00	6,935.00	6,341.00	6,337.34	74.11	190.01	-17.19	-1,766.69	-1,396.69	3,058.59	2,840.71	217.88	14.038	
11,300.00	6,934.68	6,341.00	6,337.34	75.60	190.01	-17.19	-1,766.69	-1,396.69	3,155.23	2,936.95	218.28	14.455	
11,400.00	6,934.36	6,341.00	6,337.34	77.08	190.01	-17.19	-1,766.69	-1,396.69	3,252.07	3,033.43	218.64	14.874	
11,500.00	6,934.03	6,341.00	6,337.34	78.57	190.01	-17.19	-1,766.69	-1,396.69	3,349.09	3,130.12	218.97	15.295	
11,600.00	6,933.71	6,341.00	6,337.34	80.07	190.01	-17.19	-1,766.69	-1,396.69	3,446.29	3,227.01	219.28	15.717	
11,700.00	6,933.39	6,341.00	6,337.34	81.57	190.01	-17.19	-1,766.69	-1,396.69	3,543.64	3,324.08	219.56	16.140	
11,800.00	6,933.07	6,341.00	6,337.34	83.07	190.01	-17.19	-1,766.69	-1,396.69	3,641.14	3,421.31	219.82	16.564	
11,900.00	6,932.74	6,341.00	6,337.34	84.58	190.01	-17.19	-1,766.69	-1,396.69	3,738.76	3,518.69	220.07	16.989	
12,000.00	6,932.42	6,341.00	6,337.34	86.09	190.01	-17.19	-1,766.69	-1,396.69	3,836.51	3,616.21	220.30	17.415	
12,100.00	6,932.10	6,341.00	6,337.34	87.60	190.01	-17.19	-1,766.69	-1,396.69	3,934.38	3,713.86	220.52	17.842	
12,200.00	6,931.77	6,341.00	6,337.34	89.12	190.01	-17.19	-1,766.69	-1,396.69	4,032.34	3,811.63	220.72	18.269	
12,300.00	6,931.45	6,341.00	6,337.34	90.64	190.01	-17.19	-1,766.69	-1,396.69	4,130.41	3,909.50	220.91	18.697	
12,400.00	6,931.13	6,341.00	6,337.34	92.16	190.01	-17.19	-1,766.69	-1,396.69	4,228.57	4,007.48	221.09	19.126	
12,500.00	6,930.80	6,341.00	6,337.34	93.69	190.01	-17.19	-1,766.69	-1,396.69	4,326.81	4,105.55	221.26	19.555	
12,600.00	6,930.48	6,341.00	6,337.34	95.22	190.01	-17.19	-1,766.69	-1,396.69	4,425.12	4,203.70	221.42	19.985	
12,700.00	6,930.16	6,341.00	6,337.34	96.75	190.01	-17.19	-1,766.69	-1,396.69	4,523.52	4,301.94	221.58	20.415	
12,800.00	6,929.84	6,341.00	6,337.34	98.28	190.01	-17.19	-1,766.69	-1,396.69	4,621.98	4,400.25	221.72	20.846	
12,900.00	6,929.51	6,341.00	6,337.34	99.82	190.01	-17.19	-1,766.69	-1,396.69	4,720.51	4,498.64	221.87	21.276	
13,000.00	6,929.19	6,341.00	6,337.34	101.35	190.01	-17.19	-1,766.69	-1,396.69	4,819.09	4,597.09	222.00	21.707	
13,100.00	6,928.87	6,341.00	6,337.34	102.89	190.01	-17.19	-1,766.69	-1,396.69	4,917.74	4,695.61	222.13	22.139	
13,200.00	6,928.54	6,341.00	6,337.34	104.43	190.01	-17.19	-1,766.69	-1,396.69	5,016.44	4,794.18	222.26	22.570	
13,300.00	6,928.22	6,341.00	6,337.34	105.97	190.01	-17.19	-1,766.69	-1,396.69	5,115.18	4,892.81	222.38	23.002	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154 - OH - OH-TD

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	6,341.00	6,337.34	107.52	190.01	-17.19	-1,766.69	-1,396.69	5,213.98	4,991.49	222.49	23.434	
13,500.00	6,927.57	6,341.00	6,337.34	109.06	190.01	-17.19	-1,766.69	-1,396.69	5,312.82	5,090.21	222.61	23.866	
13,600.00	6,927.25	6,341.00	6,337.34	110.61	190.01	-17.19	-1,766.69	-1,396.69	5,411.71	5,188.99	222.72	24.299	
13,700.00	6,926.93	6,341.00	6,337.34	112.16	190.01	-17.19	-1,766.69	-1,396.69	5,510.63	5,287.81	222.82	24.731	
13,800.00	6,926.61	6,341.00	6,337.34	113.71	190.01	-17.19	-1,766.69	-1,396.69	5,609.59	5,386.66	222.93	25.163	
13,900.00	6,926.28	6,341.00	6,337.34	115.26	190.01	-17.19	-1,766.69	-1,396.69	5,708.59	5,485.56	223.03	25.596	
14,000.00	6,925.96	6,341.00	6,337.34	116.82	190.01	-17.19	-1,766.69	-1,396.69	5,807.62	5,584.49	223.13	26.028	
14,100.00	6,925.64	6,341.00	6,337.34	118.37	190.01	-17.19	-1,766.69	-1,396.69	5,906.69	5,683.46	223.23	26.461	
14,200.00	6,925.31	6,341.00	6,337.34	119.93	190.01	-17.19	-1,766.69	-1,396.69	6,005.79	5,782.46	223.32	26.893	
14,300.00	6,924.99	6,341.00	6,337.34	121.48	190.01	-17.19	-1,766.69	-1,396.69	6,104.91	5,881.50	223.41	27.325	
14,400.00	6,924.67	6,341.00	6,337.34	123.04	190.01	-17.19	-1,766.69	-1,396.69	6,204.06	5,980.56	223.51	27.758	
14,500.00	6,924.34	6,341.00	6,337.34	124.60	190.01	-17.19	-1,766.69	-1,396.69	6,303.25	6,079.65	223.60	28.190	
14,600.00	6,924.02	6,341.00	6,337.34	126.16	190.01	-17.19	-1,766.69	-1,396.69	6,402.45	6,178.77	223.69	28.623	
14,700.00	6,923.70	6,341.00	6,337.34	127.72	190.01	-17.19	-1,766.69	-1,396.69	6,501.68	6,277.91	223.77	29.055	
14,800.00	6,923.38	6,341.00	6,337.34	129.28	190.01	-17.19	-1,766.69	-1,396.69	6,600.94	6,377.08	223.86	29.487	
14,900.00	6,923.05	6,341.00	6,337.34	130.85	190.01	-17.19	-1,766.69	-1,396.69	6,700.21	6,476.27	223.95	29.919	
15,000.00	6,922.73	6,341.00	6,337.34	132.41	190.01	-17.19	-1,766.69	-1,396.69	6,799.51	6,575.48	224.03	30.351	
15,100.00	6,922.41	6,341.00	6,337.34	133.97	190.01	-17.19	-1,766.69	-1,396.69	6,898.83	6,674.71	224.11	30.783	
15,200.00	6,922.08	6,341.00	6,337.34	135.54	190.01	-17.19	-1,766.69	-1,396.69	6,998.16	6,773.97	224.20	31.214	
15,300.00	6,921.76	6,341.00	6,337.34	137.11	190.01	-17.19	-1,766.69	-1,396.69	7,097.52	6,873.24	224.28	31.646	
15,400.00	6,921.44	6,341.00	6,337.34	138.67	190.01	-17.19	-1,766.69	-1,396.69	7,196.89	6,972.53	224.36	32.077	
15,500.00	6,921.11	6,341.00	6,337.34	140.24	190.01	-17.19	-1,766.69	-1,396.69	7,296.28	7,071.84	224.44	32.508	
15,600.00	6,920.79	6,341.00	6,337.34	141.81	190.01	-17.19	-1,766.69	-1,396.69	7,395.69	7,171.17	224.52	32.939	
15,700.00	6,920.47	6,341.00	6,337.34	143.38	190.01	-17.19	-1,766.69	-1,396.69	7,495.11	7,270.51	224.60	33.370	
15,800.00	6,920.14	6,341.00	6,337.34	144.95	190.01	-17.19	-1,766.69	-1,396.69	7,594.55	7,369.87	224.68	33.801	
15,900.00	6,919.82	6,341.00	6,337.34	146.52	190.01	-17.19	-1,766.69	-1,396.69	7,694.00	7,469.24	224.76	34.231	
16,000.00	6,919.50	6,341.00	6,337.34	148.09	190.01	-17.19	-1,766.69	-1,396.69	7,793.47	7,568.62	224.84	34.662	
16,100.00	6,919.18	6,341.00	6,337.34	149.66	190.01	-17.19	-1,766.69	-1,396.69	7,892.95	7,668.03	224.92	35.092	
16,200.00	6,918.85	6,341.00	6,337.34	151.24	190.01	-17.19	-1,766.69	-1,396.69	7,992.44	7,767.44	225.00	35.522	
16,300.00	6,918.53	6,341.00	6,337.34	152.81	190.01	-17.19	-1,766.69	-1,396.69	8,091.95	7,866.87	225.08	35.951	
16,400.00	6,918.21	6,341.00	6,337.34	154.38	190.01	-17.19	-1,766.69	-1,396.69	8,191.46	7,966.30	225.16	36.381	
16,500.00	6,917.88	6,341.00	6,337.34	155.96	190.01	-17.19	-1,766.69	-1,396.69	8,290.99	8,065.75	225.24	36.810	
16,600.00	6,917.56	6,341.00	6,337.34	157.53	190.01	-17.19	-1,766.69	-1,396.69	8,390.53	8,165.22	225.32	37.239	
16,700.00	6,917.24	6,341.00	6,337.34	159.11	190.01	-17.19	-1,766.69	-1,396.69	8,490.08	8,264.69	225.39	37.668	
16,800.00	6,916.91	6,341.00	6,337.34	160.68	190.01	-17.19	-1,766.69	-1,396.69	8,589.65	8,364.17	225.47	38.096	
16,900.00	6,916.59	6,341.00	6,337.34	162.26	190.01	-17.19	-1,766.69	-1,396.69	8,689.22	8,463.67	225.55	38.524	
17,000.00	6,916.27	6,341.00	6,337.34	163.84	190.01	-17.19	-1,766.69	-1,396.69	8,788.80	8,563.17	225.63	38.952	
17,100.00	6,915.95	6,341.00	6,337.34	165.41	190.01	-17.19	-1,766.69	-1,396.69	8,888.39	8,662.68	225.71	39.380	
17,200.00	6,915.62	6,341.00	6,337.34	166.99	190.01	-17.19	-1,766.69	-1,396.69	8,987.99	8,762.20	225.79	39.807	
17,300.00	6,915.30	6,341.00	6,337.34	168.57	190.01	-17.19	-1,766.69	-1,396.69	9,087.60	8,861.73	225.87	40.234	
17,400.00	6,914.98	6,341.00	6,337.34	170.15	190.01	-17.19	-1,766.69	-1,396.69	9,187.21	8,961.27	225.95	40.661	
17,500.00	6,914.65	6,341.00	6,337.34	171.73	190.01	-17.19	-1,766.69	-1,396.69	9,286.84	9,060.82	226.02	41.088	
17,600.00	6,914.33	6,341.00	6,337.34	173.31	190.01	-17.19	-1,766.69	-1,396.69	9,386.47	9,160.37	226.10	41.514	
17,700.00	6,914.01	6,341.00	6,337.34	174.89	190.01	-17.19	-1,766.69	-1,396.69	9,486.11	9,259.93	226.18	41.940	
17,800.00	6,913.68	6,341.00	6,337.34	176.47	190.01	-17.19	-1,766.69	-1,396.69	9,585.76	9,359.50	226.26	42.366	
17,900.00	6,913.36	6,341.00	6,337.34	178.05	190.01	-17.19	-1,766.69	-1,396.69	9,685.42	9,459.08	226.34	42.791	
18,000.00	6,913.04	6,341.00	6,337.34	179.63	190.01	-17.19	-1,766.69	-1,396.69	9,785.08	9,558.66	226.42	43.216	
18,100.00	6,912.72	6,341.00	6,337.34	181.21	190.01	-17.19	-1,766.69	-1,396.69	9,884.75	9,658.25	226.50	43.641	
18,111.83	6,912.68	6,341.00	6,337.34	181.40	190.01	-17.19	-1,766.69	-1,396.69	9,896.54	9,670.03	226.51	43.691	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 95-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	28.77	28.77	0.00	0.02	165.92	-1,667.43	418.08	1,719.04				
54.25	54.25	84.51	84.51	0.02	0.06	104.37	-1,667.36	418.17	1,719.02	1,718.98	0.05	N/A	
130.42	130.42	158.25	158.25	0.11	0.14	77.22	-1,667.25	418.40	1,718.97	1,718.82	0.15	N/A	
154.34	154.34	181.48	181.48	0.14	0.17	84.46	-1,667.22	418.53	1,718.96	1,718.78	0.18	9,617.630	
219.69	219.69	245.41	245.41	0.23	0.25	103.28	-1,667.17	419.01	1,719.05	1,718.78	0.27	6,461.351	
308.67	308.67	333.81	333.80	0.35	0.37	94.36	-1,667.06	419.96	1,719.25	1,718.87	0.39	4,429.017	
454.00	453.99	477.72	477.70	0.51	0.55	-40.29	-1,666.94	421.90	1,718.87	1,718.21	0.65	2,625.567	
544.00	543.93	567.96	567.93	0.74	0.67	-40.14	-1,666.84	423.13	1,716.73	1,715.73	1.00	1,714.910	
667.00	666.63	689.66	689.62	1.13	0.83	-53.51	-1,666.72	424.85	1,711.38	1,709.86	1.52	1,126.023	
756.00	755.27	777.38	777.33	1.44	0.94	-38.90	-1,666.66	426.21	1,706.05	1,704.15	1.91	894.393	
850.00	848.62	867.45	867.39	1.79	1.06	-37.71	-1,666.66	427.66	1,697.81	1,695.48	2.33	729.776	
942.00	939.50	955.79	955.71	2.14	1.17	-31.73	-1,666.89	429.04	1,686.56	1,683.81	2.75	613.292	
1,033.00	1,028.89	1,045.75	1,045.66	2.52	1.29	-22.72	-1,667.13	430.47	1,671.96	1,668.78	3.18	526.215	
1,123.00	1,117.00	1,133.72	1,133.63	2.90	1.40	-16.67	-1,667.38	431.77	1,655.24	1,651.64	3.59	460.506	
1,214.00	1,206.00	1,222.60	1,222.49	3.29	1.51	-17.60	-1,667.69	432.92	1,637.72	1,633.70	4.01	408.134	
1,309.00	1,298.75	1,317.72	1,317.60	3.71	1.63	-14.86	-1,668.01	434.03	1,618.55	1,614.09	4.46	363.220	
1,403.00	1,390.39	1,415.81	1,415.69	4.13	1.76	-11.96	-1,668.07	435.04	1,598.49	1,593.60	4.89	326.849	
1,498.00	1,482.88	1,509.44	1,509.32	4.56	1.88	-15.62	-1,667.94	435.88	1,577.49	1,572.17	5.32	296.556	
1,592.00	1,573.82	1,602.68	1,602.56	5.00	2.00	-16.46	-1,667.73	436.63	1,554.64	1,548.89	5.75	270.283	
1,687.00	1,665.32	1,696.17	1,696.04	5.46	2.11	-13.63	-1,667.50	437.03	1,529.78	1,523.60	6.18	247.579	
1,876.00	1,847.35	1,885.17	1,885.04	6.38	2.07	-11.30	-1,666.87	436.16	1,479.22	1,472.23	6.99	211.474	
1,970.00	1,937.87	1,979.50	1,979.37	6.84	2.10	-11.31	-1,666.20	435.92	1,453.67	1,446.26	7.41	196.262	
2,064.00	2,028.42	2,072.79	2,072.65	7.30	2.14	-10.94	-1,665.24	435.68	1,427.92	1,420.10	7.83	182.444	
2,159.00	2,119.97	2,164.50	2,164.36	7.77	2.19	-9.83	-1,664.22	435.39	1,401.86	1,393.60	8.26	169.765	
2,348.00	2,302.44	2,343.24	2,343.08	8.69	2.26	-15.16	-1,662.49	434.57	1,351.78	1,342.65	9.14	147.939	
2,443.00	2,394.41	2,435.42	2,435.26	9.15	2.30	-16.06	-1,661.77	434.02	1,327.92	1,318.33	9.59	138.489	
2,537.00	2,485.45	2,529.41	2,529.24	9.61	2.34	-16.58	-1,660.96	433.30	1,304.46	1,294.42	10.04	129.916	
2,632.00	2,577.48	2,621.66	2,621.48	10.07	2.36	-16.54	-1,660.15	432.17	1,280.65	1,270.15	10.50	121.981	
2,727.00	2,669.50	2,713.75	2,713.56	10.53	2.39	-16.74	-1,659.40	430.70	1,256.80	1,245.84	10.96	114.708	
2,821.00	2,760.56	2,802.25	2,802.04	10.98	2.41	-17.24	-1,658.84	429.31	1,233.37	1,221.96	11.41	108.085	
2,916.00	2,852.68	2,892.30	2,892.09	11.44	2.44	-17.56	-1,658.21	428.02	1,210.10	1,198.22	11.87	101.922	
3,011.00	2,945.03	2,978.14	2,977.92	11.89	2.47	-17.65	-1,657.89	426.98	1,188.12	1,175.79	12.33	96.344	
3,105.00	3,036.57	3,063.12	3,062.89	12.33	2.48	-23.80	-1,658.01	426.25	1,167.91	1,155.13	12.78	91.397	
3,200.00	3,128.81	3,148.97	3,148.75	12.78	2.49	-27.74	-1,658.67	425.93	1,147.88	1,134.66	13.22	86.841	
3,294.00	3,219.76	3,240.25	3,240.02	13.24	2.50	-28.66	-1,659.52	425.64	1,127.51	1,113.85	13.66	82.566	
3,389.00	3,311.82	3,333.26	3,333.03	13.69	2.51	-28.09	-1,660.36	425.30	1,107.37	1,093.27	14.10	78.524	
3,483.00	3,403.03	3,427.50	3,427.26	14.14	2.53	-28.26	-1,661.10	424.70	1,087.67	1,073.12	14.55	74.760	
3,578.00	3,495.31	3,521.86	3,521.62	14.60	2.56	-28.18	-1,661.72	424.12	1,068.00	1,052.99	15.00	71.178	
3,672.00	3,586.65	3,618.79	3,618.54	15.04	2.62	-27.66	-1,661.61	423.72	1,047.99	1,032.52	15.47	67.743	
3,767.00	3,678.95	3,709.39	3,709.14	15.49	2.69	-27.66	-1,661.42	423.57	1,027.73	1,011.77	15.96	64.405	
3,862.00	3,771.63	3,798.33	3,798.08	15.93	2.74	-28.27	-1,661.40	423.46	1,009.14	992.71	16.43	61.415	
3,956.00	3,863.70	3,882.00	3,881.75	16.35	2.77	-28.34	-1,662.04	423.27	992.92	976.04	16.88	58.807	
4,052.00	3,957.54	3,970.45	3,970.18	16.79	2.81	-30.15	-1,663.58	422.93	976.50	959.15	17.35	56.282	
4,146.00	4,048.88	4,064.33	4,064.05	17.24	2.85	-30.95	-1,665.35	422.48	958.62	940.81	17.81	53.820	
4,241.00	4,140.47	4,154.45	4,154.15	17.71	2.90	-29.15	-1,667.09	421.96	937.95	919.65	18.30	51.249	
4,336.00	4,231.25	4,243.77	4,243.44	18.21	2.95	-26.55	-1,669.09	421.12	914.40	895.60	18.80	48.631	
4,430.00	4,320.59	4,333.60	4,333.23	18.71	3.00	-29.09	-1,671.45	419.94	889.83	870.53	19.30	46.096	
4,524.00	4,409.51	4,425.52	4,425.11	19.22	3.06	-33.95	-1,673.85	418.71	865.00	845.18	19.82	43.642	
4,619.00	4,498.98	4,519.51	4,519.08	19.75	3.12	-35.89	-1,675.73	417.70	839.42	819.05	20.36	41.223	
4,713.00	4,587.83	4,610.09	4,609.65	20.27	3.19	-36.76	-1,677.12	416.87	815.00	794.09	20.91	38.971	
4,807.00	4,676.97	4,700.45	4,699.99	20.78	3.25	-36.65	-1,678.30	416.08	791.22	769.75	21.47	36.853	
4,870.00	4,736.65	4,759.98	4,759.52	21.12	3.30	-37.03	-1,679.05	415.62	775.16	753.31	21.85	35.475	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 95-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
4,933.00	4,796.58	4,819.95	4,819.48	21.46	3.35	-37.68	-1,679.82	415.22	759.89	737.65	22.23	34.182	
5,027.00	4,886.13	4,909.50	4,909.03	21.96	3.42	-38.30	-1,680.84	414.87	737.60	714.80	22.81	32.341	
5,121.00	4,976.11	4,999.40	4,998.92	22.45	3.50	-38.81	-1,681.87	414.49	716.63	693.25	23.38	30.649	
5,216.00	5,068.11	5,090.65	5,090.16	22.91	3.57	-39.66	-1,682.93	414.21	698.76	674.82	23.94	29.184	
5,341.00	5,190.11	5,214.75	5,214.25	23.49	3.68	-41.30	-1,684.23	414.00	678.76	654.11	24.65	27.531	
5,436.00	5,283.20	5,306.10	5,305.60	23.91	3.77	-42.16	-1,685.13	414.02	665.22	640.02	25.20	26.397	
5,499.00	5,345.03	5,367.26	5,366.75	24.19	3.82	-42.87	-1,685.77	414.10	656.78	631.22	25.56	25.695	
5,561.00	5,405.97	5,428.88	5,428.38	24.45	3.88	-42.47	-1,686.38	414.18	648.81	622.91	25.91	25.043	
5,624.00	5,467.97	5,491.49	5,490.98	24.72	3.94	-44.16	-1,686.98	414.25	641.14	614.88	26.26	24.417	
5,687.00	5,530.05	5,552.94	5,552.43	24.99	4.00	-43.82	-1,687.75	414.22	633.92	607.31	26.61	23.824	
5,750.00	5,592.20	5,613.99	5,613.46	25.25	4.06	-44.10	-1,688.65	414.07	627.02	600.06	26.95	23.262	
5,813.00	5,654.42	5,678.45	5,677.92	25.51	4.12	-43.61	-1,689.75	413.64	620.33	593.04	27.28	22.739	
5,876.00	5,716.68	5,742.47	5,741.92	25.76	4.18	-43.89	-1,690.91	412.98	613.72	586.12	27.60	22.234	
5,939.00	5,778.99	5,804.47	5,803.92	26.01	4.25	-44.58	-1,691.97	412.40	607.37	579.44	27.93	21.746	
6,065.00	5,903.86	5,930.43	5,929.85	26.51	4.37	-45.50	-1,694.18	410.86	595.86	567.30	28.56	20.864	
6,128.00	5,966.41	5,993.11	5,992.51	26.74	4.44	-47.32	-1,695.28	410.09	590.92	562.05	28.87	20.471	
6,191.00	6,029.04	6,055.84	6,055.23	26.97	4.50	-47.01	-1,696.38	409.31	586.45	557.28	29.17	20.107	
6,254.00	6,091.75	6,118.64	6,118.01	27.20	4.57	-46.38	-1,697.48	408.54	582.50	553.05	29.46	19.775	
6,291.51	6,129.13	6,125.00	6,124.37	27.33	4.57	-45.43	-1,697.59	408.46	581.25	551.52	29.73	19.550	CC, ES
6,348.00	6,185.46	6,125.00	6,124.37	27.52	4.57	-43.62	-1,697.59	408.46	584.16	554.04	30.12	19.395	SF
6,390.00	6,227.36	6,125.00	6,124.37	27.61	4.57	-43.62	-1,697.59	408.46	589.95	559.64	30.31	19.463	
6,400.00	6,237.33	6,125.00	6,124.37	27.61	4.57	-43.62	-1,697.59	408.46	591.76	561.44	30.33	19.512	
6,490.00	6,327.12	6,125.00	6,124.37	27.66	4.57	-43.62	-1,697.59	408.46	615.17	584.84	30.34	20.279	
6,500.00	6,337.09	6,125.00	6,124.37	27.66	4.57	-55.76	-1,697.59	408.46	618.57	588.25	30.32	20.401	
6,550.00	6,386.85	6,125.00	6,124.37	27.70	4.57	-90.66	-1,697.59	408.46	638.90	608.68	30.22	21.142	
6,600.00	6,436.20	6,125.00	6,124.37	27.74	4.57	-101.21	-1,697.59	408.46	664.30	634.21	30.09	22.078	
6,650.00	6,484.82	6,125.00	6,124.37	27.79	4.57	-104.10	-1,697.59	408.46	694.06	664.11	29.94	23.178	
6,700.00	6,532.40	6,125.00	6,124.37	27.85	4.57	-103.68	-1,697.59	408.46	727.46	697.66	29.80	24.409	
6,750.00	6,578.63	6,125.00	6,124.37	27.92	4.57	-101.26	-1,697.59	408.46	763.84	734.16	29.68	25.736	
6,800.00	6,623.24	6,125.00	6,124.37	28.00	4.57	-97.33	-1,697.59	408.46	802.57	772.98	29.59	27.126	
6,850.00	6,665.93	6,125.00	6,124.37	28.09	4.57	-92.15	-1,697.59	408.46	843.10	813.57	29.53	28.549	
6,900.00	6,706.42	6,125.00	6,124.37	28.19	4.57	-85.95	-1,697.59	408.46	884.95	855.43	29.52	29.980	
6,950.00	6,744.48	6,125.00	6,124.37	28.30	4.57	-79.00	-1,697.59	408.46	927.69	898.14	29.55	31.397	
7,000.00	6,779.84	6,125.00	6,124.37	28.43	4.57	-71.68	-1,697.59	408.46	970.94	941.33	29.62	32.785	
7,050.00	6,812.30	6,125.00	6,124.37	28.57	4.57	-64.36	-1,697.59	408.46	1,014.39	984.67	29.72	34.128	
7,100.00	6,841.63	6,125.00	6,124.37	28.73	4.57	-57.39	-1,697.59	408.46	1,057.76	1,027.89	29.87	35.418	
7,150.00	6,867.66	6,125.00	6,124.37	28.90	4.57	-51.02	-1,697.59	408.46	1,100.78	1,070.74	30.04	36.646	
7,200.00	6,890.22	6,125.00	6,124.37	29.08	4.57	-45.36	-1,697.59	408.46	1,143.25	1,113.01	30.24	37.810	
7,250.00	6,909.17	6,125.00	6,124.37	29.28	4.57	-40.43	-1,697.59	408.46	1,184.97	1,154.51	30.46	38.905	
7,300.00	6,924.38	6,125.00	6,124.37	29.49	4.57	-36.19	-1,697.59	408.46	1,225.76	1,195.06	30.70	39.931	
7,350.00	6,935.77	6,125.00	6,124.37	29.72	4.57	-32.56	-1,697.59	408.46	1,265.46	1,234.51	30.95	40.887	
7,400.00	6,943.25	6,125.00	6,124.37	29.97	4.57	-29.45	-1,697.59	408.46	1,303.94	1,272.73	31.21	41.776	
7,450.00	6,946.78	6,125.00	6,124.37	30.22	4.57	-26.78	-1,697.59	408.46	1,341.07	1,309.58	31.48	42.598	
7,471.54	6,947.08	6,125.00	6,124.37	30.34	4.57	-25.75	-1,697.59	408.46	1,356.61	1,325.01	31.60	42.934	
7,500.00	6,946.98	6,125.00	6,124.37	30.49	4.57	-25.21	-1,697.59	408.46	1,377.15	1,345.40	31.75	43.372	
7,600.00	6,946.65	6,125.00	6,124.37	31.07	4.57	-23.14	-1,697.59	408.46	1,452.06	1,419.81	32.25	45.020	
7,700.00	6,946.32	6,125.00	6,124.37	31.69	4.57	-20.77	-1,697.59	408.46	1,530.67	1,497.99	32.69	46.831	
7,800.00	6,945.99	6,125.00	6,124.37	32.35	4.57	-18.09	-1,697.59	408.46	1,612.36	1,579.30	33.05	48.780	
7,900.00	6,945.67	6,125.00	6,124.37	33.05	4.57	-15.09	-1,697.59	408.46	1,696.58	1,663.21	33.37	50.845	
8,000.00	6,945.34	6,125.00	6,124.37	33.79	4.57	-11.76	-1,697.59	408.46	1,782.89	1,749.25	33.63	53.008	
8,034.58	6,945.23	6,125.00	6,124.37	34.05	4.57	-10.53	-1,697.59	408.46	1,813.14	1,779.43	33.72	53.775	
8,100.00	6,945.02	6,125.00	6,124.37	34.57	4.57	-10.53	-1,697.59	408.46	1,870.83	1,836.97	33.86	55.249	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 95-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	Rule Assigned: Warning
8,200.00	6,944.69	6,125.00	6,124.37	35.41	4.57	-10.53	-1,697.59	408.46	1,959.95	1,925.89	34.06	57.544	
8,300.00	6,944.37	6,125.00	6,124.37	36.30	4.57	-10.53	-1,697.59	408.46	2,050.07	2,015.83	34.23	59.883	
8,400.00	6,944.05	6,125.00	6,124.37	37.25	4.57	-10.53	-1,697.59	408.46	2,141.07	2,106.68	34.39	62.260	
8,500.00	6,943.73	6,125.00	6,124.37	38.25	4.57	-10.53	-1,697.59	408.46	2,232.84	2,198.31	34.53	64.668	
8,600.00	6,943.40	6,125.00	6,124.37	39.29	4.57	-10.53	-1,697.59	408.46	2,325.28	2,290.63	34.65	67.104	
8,700.00	6,943.08	6,125.00	6,124.37	40.37	4.57	-10.53	-1,697.59	408.46	2,418.33	2,383.57	34.76	69.563	
8,800.00	6,942.76	6,125.00	6,124.37	41.49	4.57	-10.53	-1,697.59	408.46	2,511.92	2,477.05	34.87	72.042	
8,900.00	6,942.43	6,125.00	6,124.37	42.64	4.57	-10.53	-1,697.59	408.46	2,605.98	2,571.01	34.96	74.538	
9,000.00	6,942.11	6,125.00	6,124.37	43.82	4.57	-10.53	-1,697.59	408.46	2,700.46	2,665.41	35.05	77.049	
9,100.00	6,941.79	6,125.00	6,124.37	45.03	4.57	-10.53	-1,697.59	408.46	2,795.33	2,760.20	35.13	79.572	
9,200.00	6,941.46	6,125.00	6,124.37	46.27	4.57	-10.53	-1,697.59	408.46	2,890.55	2,855.34	35.21	82.105	
9,300.00	6,941.14	6,125.00	6,124.37	47.53	4.57	-10.53	-1,697.59	408.46	2,986.08	2,950.80	35.28	84.647	
9,400.00	6,940.82	6,125.00	6,124.37	48.81	4.57	-10.53	-1,697.59	408.46	3,081.89	3,046.55	35.34	87.197	
9,500.00	6,940.50	6,125.00	6,124.37	50.11	4.57	-10.53	-1,697.59	408.46	3,177.96	3,142.55	35.41	89.753	
9,600.00	6,940.17	6,125.00	6,124.37	51.43	4.57	-10.53	-1,697.59	408.46	3,274.27	3,238.80	35.47	92.313	
9,700.00	6,939.85	6,125.00	6,124.37	52.76	4.57	-10.53	-1,697.59	408.46	3,370.79	3,335.26	35.53	94.878	
9,800.00	6,939.53	6,125.00	6,124.37	54.11	4.57	-10.53	-1,697.59	408.46	3,467.51	3,431.92	35.58	97.446	
9,900.00	6,939.20	6,125.00	6,124.37	55.48	4.57	-10.53	-1,697.59	408.46	3,564.41	3,528.77	35.64	100.016	
10,000.00	6,938.88	6,125.00	6,124.37	56.86	4.57	-10.53	-1,697.59	408.46	3,661.47	3,625.78	35.69	102.587	
10,100.00	6,938.56	6,125.00	6,124.37	58.25	4.57	-10.53	-1,697.59	408.46	3,758.69	3,722.95	35.74	105.159	
10,200.00	6,938.23	6,125.00	6,124.37	59.65	4.57	-10.53	-1,697.59	408.46	3,856.06	3,820.26	35.79	107.731	
10,300.00	6,937.91	6,125.00	6,124.37	61.06	4.57	-10.53	-1,697.59	408.46	3,953.55	3,917.71	35.84	110.302	
10,400.00	6,937.59	6,125.00	6,124.37	62.48	4.57	-10.53	-1,697.59	408.46	4,051.17	4,015.27	35.89	112.873	
10,500.00	6,937.27	6,125.00	6,124.37	63.91	4.57	-10.53	-1,697.59	408.46	4,148.90	4,112.96	35.94	115.442	
10,600.00	6,936.94	6,125.00	6,124.37	65.34	4.57	-10.53	-1,697.59	408.46	4,246.73	4,210.74	35.99	118.008	
10,700.00	6,936.62	6,125.00	6,124.37	66.79	4.57	-10.53	-1,697.59	408.46	4,344.67	4,308.63	36.03	120.573	
10,800.00	6,936.30	6,125.00	6,124.37	68.24	4.57	-10.53	-1,697.59	408.46	4,442.69	4,406.61	36.08	123.134	
10,900.00	6,935.97	6,125.00	6,124.37	69.70	4.57	-10.53	-1,697.59	408.46	4,540.80	4,504.68	36.13	125.693	
11,000.00	6,935.65	6,125.00	6,124.37	71.17	4.57	-10.53	-1,697.59	408.46	4,639.00	4,602.82	36.17	128.248	
11,100.00	6,935.33	6,125.00	6,124.37	72.64	4.57	-10.53	-1,697.59	408.46	4,737.26	4,701.05	36.22	130.799	
11,200.00	6,935.00	6,125.00	6,124.37	74.11	4.57	-10.53	-1,697.59	408.46	4,835.60	4,799.34	36.26	133.346	
11,300.00	6,934.68	6,125.00	6,124.37	75.60	4.57	-10.53	-1,697.59	408.46	4,934.01	4,897.70	36.31	135.888	
11,400.00	6,934.36	6,125.00	6,124.37	77.08	4.57	-10.53	-1,697.59	408.46	5,032.48	4,996.12	36.36	138.425	
11,500.00	6,934.03	6,125.00	6,124.37	78.57	4.57	-10.53	-1,697.59	408.46	5,131.01	5,094.61	36.40	140.958	
11,600.00	6,933.71	6,125.00	6,124.37	80.07	4.57	-10.53	-1,697.59	408.46	5,229.59	5,193.14	36.45	143.485	
11,700.00	6,933.39	6,125.00	6,124.37	81.57	4.57	-10.53	-1,697.59	408.46	5,328.23	5,291.73	36.49	146.007	
11,800.00	6,933.07	6,125.00	6,124.37	83.07	4.57	-10.53	-1,697.59	408.46	5,426.91	5,390.37	36.54	148.523	
11,900.00	6,932.74	6,125.00	6,124.37	84.58	4.57	-10.53	-1,697.59	408.46	5,525.65	5,489.06	36.59	151.033	
12,000.00	6,932.42	6,125.00	6,124.37	86.09	4.57	-10.53	-1,697.59	408.46	5,624.43	5,587.79	36.63	153.537	
12,100.00	6,932.10	6,125.00	6,124.37	87.60	4.57	-10.53	-1,697.59	408.46	5,723.25	5,686.57	36.68	156.034	
12,200.00	6,931.77	6,125.00	6,124.37	89.12	4.57	-10.53	-1,697.59	408.46	5,822.11	5,785.38	36.73	158.525	
12,300.00	6,931.45	6,125.00	6,124.37	90.64	4.57	-10.53	-1,697.59	408.46	5,921.01	5,884.23	36.77	161.009	
12,400.00	6,931.13	6,125.00	6,124.37	92.16	4.57	-10.53	-1,697.59	408.46	6,019.94	5,983.12	36.82	163.487	
12,500.00	6,930.80	6,125.00	6,124.37	93.69	4.57	-10.53	-1,697.59	408.46	6,118.91	6,082.04	36.87	165.957	
12,600.00	6,930.48	6,125.00	6,124.37	95.22	4.57	-10.53	-1,697.59	408.46	6,217.92	6,181.00	36.92	168.420	
12,700.00	6,930.16	6,125.00	6,124.37	96.75	4.57	-10.53	-1,697.59	408.46	6,316.95	6,279.99	36.97	170.876	
12,800.00	6,929.84	6,125.00	6,124.37	98.28	4.57	-10.53	-1,697.59	408.46	6,416.02	6,379.00	37.02	173.324	
12,900.00	6,929.51	6,125.00	6,124.37	99.82	4.57	-10.53	-1,697.59	408.46	6,515.11	6,478.04	37.07	175.764	
13,000.00	6,929.19	6,125.00	6,124.37	101.35	4.57	-10.53	-1,697.59	408.46	6,614.23	6,577.11	37.12	178.197	
13,100.00	6,928.87	6,125.00	6,124.37	102.89	4.57	-10.53	-1,697.59	408.46	6,713.38	6,676.21	37.17	180.622	
13,200.00	6,928.54	6,125.00	6,124.37	104.43	4.57	-10.53	-1,697.59	408.46	6,812.55	6,775.33	37.22	183.038	
13,300.00	6,928.22	6,125.00	6,124.37	105.97	4.57	-10.53	-1,697.59	408.46	6,911.75	6,874.48	37.27	185.447	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 95-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
13,400.00	6,927.90	6,125.00	6,124.37	107.52	4.57	-10.53	-1,697.59	408.46	7,010.96	6,973.64	37.32	187.847	
13,500.00	6,927.57	6,125.00	6,124.37	109.06	4.57	-10.53	-1,697.59	408.46	7,110.20	7,072.83	37.38	190.239	
13,600.00	6,927.25	6,125.00	6,124.37	110.61	4.57	-10.53	-1,697.59	408.46	7,209.47	7,172.04	37.43	192.622	
13,700.00	6,926.93	6,125.00	6,124.37	112.16	4.57	-10.53	-1,697.59	408.46	7,308.75	7,271.27	37.48	194.997	
13,800.00	6,926.61	6,125.00	6,124.37	113.71	4.57	-10.53	-1,697.59	408.46	7,408.05	7,370.51	37.54	197.362	
13,900.00	6,926.28	6,125.00	6,124.37	115.26	4.57	-10.53	-1,697.59	408.46	7,507.37	7,469.78	37.59	199.719	
14,000.00	6,925.96	6,125.00	6,124.37	116.82	4.57	-10.53	-1,697.59	408.46	7,606.70	7,569.06	37.64	202.068	
14,100.00	6,925.64	6,125.00	6,124.37	118.37	4.57	-10.53	-1,697.59	408.46	7,706.06	7,668.36	37.70	204.407	
14,200.00	6,925.31	6,125.00	6,124.37	119.93	4.57	-10.53	-1,697.59	408.46	7,805.43	7,767.67	37.76	206.737	
14,300.00	6,924.99	6,125.00	6,124.37	121.48	4.57	-10.53	-1,697.59	408.46	7,904.82	7,867.00	37.81	209.058	
14,400.00	6,924.67	6,125.00	6,124.37	123.04	4.57	-10.53	-1,697.59	408.46	8,004.22	7,966.35	37.87	211.369	
14,500.00	6,924.34	6,125.00	6,124.37	124.60	4.57	-10.53	-1,697.59	408.46	8,103.64	8,065.71	37.93	213.672	
14,600.00	6,924.02	6,125.00	6,124.37	126.16	4.57	-10.53	-1,697.59	408.46	8,203.07	8,165.08	37.98	215.965	
14,700.00	6,923.70	6,125.00	6,124.37	127.72	4.57	-10.53	-1,697.59	408.46	8,302.51	8,264.47	38.04	218.248	
14,800.00	6,923.38	6,125.00	6,124.37	129.28	4.57	-10.53	-1,697.59	408.46	8,401.97	8,363.87	38.10	220.522	
14,900.00	6,923.05	6,125.00	6,124.37	130.85	4.57	-10.53	-1,697.59	408.46	8,501.44	8,463.28	38.16	222.786	
15,000.00	6,922.73	6,125.00	6,124.37	132.41	4.57	-10.53	-1,697.59	408.46	8,600.92	8,562.70	38.22	225.041	
15,100.00	6,922.41	6,125.00	6,124.37	133.97	4.57	-10.53	-1,697.59	408.46	8,700.42	8,662.14	38.28	227.286	
15,200.00	6,922.08	6,125.00	6,124.37	135.54	4.57	-10.53	-1,697.59	408.46	8,799.92	8,761.58	38.34	229.521	
15,300.00	6,921.76	6,125.00	6,124.37	137.11	4.57	-10.53	-1,697.59	408.46	8,899.44	8,861.04	38.40	231.746	
15,400.00	6,921.44	6,125.00	6,124.37	138.67	4.57	-10.53	-1,697.59	408.46	8,998.97	8,960.50	38.46	233.962	
15,500.00	6,921.11	6,125.00	6,124.37	140.24	4.57	-10.53	-1,697.59	408.46	9,098.51	9,059.98	38.53	236.167	
15,600.00	6,920.79	6,125.00	6,124.37	141.81	4.57	-10.53	-1,697.59	408.46	9,198.05	9,159.46	38.59	238.363	
15,700.00	6,920.47	6,125.00	6,124.37	143.38	4.57	-10.53	-1,697.59	408.46	9,297.61	9,258.96	38.65	240.548	
15,800.00	6,920.14	6,125.00	6,124.37	144.95	4.57	-10.53	-1,697.59	408.46	9,397.18	9,358.46	38.72	242.724	
15,900.00	6,919.82	6,125.00	6,124.37	146.52	4.57	-10.53	-1,697.59	408.46	9,496.75	9,457.97	38.78	244.889	
16,000.00	6,919.50	6,125.00	6,124.37	148.09	4.57	-10.53	-1,697.59	408.46	9,596.34	9,557.50	38.84	247.044	
16,100.00	6,919.18	6,125.00	6,124.37	149.66	4.57	-10.53	-1,697.59	408.46	9,695.93	9,657.02	38.91	249.189	
16,200.00	6,918.85	6,125.00	6,124.37	151.24	4.57	-10.53	-1,697.59	408.46	9,795.54	9,756.56	38.98	251.324	
16,300.00	6,918.53	6,125.00	6,124.37	152.81	4.57	-10.53	-1,697.59	408.46	9,895.15	9,856.10	39.04	253.449	
16,400.00	6,918.21	6,125.00	6,124.37	154.38	4.57	-10.53	-1,697.59	408.46	9,994.76	9,955.65	39.11	255.563	
16,500.00	6,917.88	6,125.00	6,124.37	155.96	4.57	-10.53	-1,697.59	408.46	10,094.39	10,055.21	39.18	257.667	
16,600.00	6,917.56	6,125.00	6,124.37	157.53	4.57	-10.53	-1,697.59	408.46	10,194.02	10,154.78	39.24	259.761	
16,700.00	6,917.24	6,125.00	6,124.37	159.11	4.57	-10.53	-1,697.59	408.46	10,293.66	10,254.35	39.31	261.845	
16,800.00	6,916.91	6,125.00	6,124.37	160.68	4.57	-10.53	-1,697.59	408.46	10,393.31	10,353.93	39.38	263.918	
16,900.00	6,916.59	6,125.00	6,124.37	162.26	4.57	-10.53	-1,697.59	408.46	10,492.96	10,453.51	39.45	265.980	
17,000.00	6,916.27	6,125.00	6,124.37	163.84	4.57	-10.53	-1,697.59	408.46	10,592.62	10,553.10	39.52	268.033	
17,100.00	6,915.95	6,125.00	6,124.37	165.41	4.57	-10.53	-1,697.59	408.46	10,692.29	10,652.70	39.59	270.075	
17,200.00	6,915.62	6,125.00	6,124.37	166.99	4.57	-10.53	-1,697.59	408.46	10,791.96	10,752.30	39.66	272.106	
17,300.00	6,915.30	6,125.00	6,124.37	168.57	4.57	-10.53	-1,697.59	408.46	10,891.64	10,851.91	39.73	274.127	
17,400.00	6,914.98	6,125.00	6,124.37	170.15	4.57	-10.53	-1,697.59	408.46	10,991.32	10,951.52	39.80	276.138	
17,500.00	6,914.65	6,125.00	6,124.37	171.73	4.57	-10.53	-1,697.59	408.46	11,091.01	11,051.14	39.88	278.139	
17,600.00	6,914.33	6,125.00	6,124.37	173.31	4.57	-10.53	-1,697.59	408.46	11,190.71	11,150.76	39.95	280.128	
17,700.00	6,914.01	6,125.00	6,124.37	174.89	4.57	-10.53	-1,697.59	408.46	11,290.41	11,250.39	40.02	282.108	
17,800.00	6,913.68	6,125.00	6,124.37	176.47	4.57	-10.53	-1,697.59	408.46	11,390.12	11,350.02	40.10	284.077	
17,900.00	6,913.36	6,125.00	6,124.37	178.05	4.57	-10.53	-1,697.59	408.46	11,489.83	11,449.66	40.17	286.035	
18,000.00	6,913.04	6,125.00	6,124.37	179.63	4.57	-10.53	-1,697.59	408.46	11,589.54	11,549.30	40.24	287.983	
18,100.00	6,912.72	6,125.00	6,124.37	181.21	4.57	-10.53	-1,697.59	408.46	11,689.26	11,648.95	40.32	289.921	
18,111.83	6,912.68	6,125.00	6,124.37	181.40	4.57	-10.53	-1,697.59	408.46	11,701.06	11,660.74	40.33	290.150	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154B - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 95-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	Rule Assigned: Warning
0.00	0.00	46.70	46.70	0.00	0.02	164.69	-1,621.56	444.06	1,681.27				
54.25	54.25	101.39	101.38	0.02	0.05	103.14	-1,621.55	443.96	1,681.26	1,681.21	0.05	N/A	
130.42	130.42	174.24	174.24	0.11	0.11	75.99	-1,621.61	443.97	1,681.30	1,681.16	0.14	N/A	
219.69	219.69	255.13	255.12	0.23	0.14	102.05	-1,621.64	444.94	1,681.62	1,681.35	0.27	6,324.316	
308.67	308.67	1,069.32	1,042.74	0.35	1.11	91.67	-1,455.85	445.02	1,670.66	1,669.43	1.23	1,361.981	
454.00	453.99	1,222.43	1,180.86	0.51	1.41	-44.02	-1,389.81	443.00	1,609.14	1,606.86	2.27	707.739	
544.00	543.93	1,297.37	1,248.21	0.74	1.57	-44.99	-1,356.95	442.46	1,569.10	1,566.58	2.52	623.189	
667.00	666.63	1,402.10	1,342.40	1.13	1.80	-59.90	-1,311.17	442.89	1,513.15	1,510.23	2.93	516.569	
756.00	755.27	1,485.94	1,417.61	1.44	1.99	-45.80	-1,274.16	444.12	1,471.56	1,468.26	3.29	446.857	
850.00	848.62	1,559.67	1,483.78	1.79	2.16	-45.92	-1,241.63	444.82	1,425.46	1,421.77	3.68	387.179	
942.00	939.50	1,640.20	1,556.20	2.14	2.34	-41.11	-1,206.43	444.85	1,377.97	1,373.86	4.10	335.759	
1,033.00	1,028.89	1,721.51	1,629.13	2.52	2.54	-32.78	-1,170.46	444.83	1,327.88	1,323.34	4.54	292.658	
1,123.00	1,117.00	1,796.79	1,696.38	2.90	2.72	-27.23	-1,136.63	445.05	1,276.11	1,271.16	4.95	257.781	
1,214.00	1,206.00	1,856.21	1,749.54	3.29	2.86	-28.98	-1,110.10	445.49	1,223.82	1,218.48	5.33	229.463	
1,309.00	1,298.75	1,909.32	1,797.42	3.71	2.99	-26.89	-1,087.13	445.78	1,169.93	1,164.19	5.74	203.907	
1,403.00	1,390.39	1,989.19	1,869.77	4.13	3.18	-24.87	-1,053.29	445.85	1,116.75	1,110.57	6.19	180.515	
1,498.00	1,482.88	2,065.93	1,939.11	4.56	3.36	-30.36	-1,020.41	445.95	1,062.77	1,056.12	6.65	159.892	
1,592.00	1,573.82	2,127.83	1,995.05	5.00	3.51	-33.02	-993.90	446.29	1,008.76	1,001.64	7.12	141.654	
1,687.00	1,665.32	2,198.47	2,059.05	5.46	3.68	-31.55	-964.02	447.08	954.13	946.50	7.63	125.060	
1,876.00	1,847.35	2,357.27	2,202.60	6.38	4.07	-33.37	-896.12	448.14	846.27	837.58	8.70	97.310	
1,970.00	1,937.87	2,433.27	2,270.87	6.84	4.26	-35.91	-862.74	448.08	792.93	783.66	9.27	85.545	
2,064.00	2,028.42	2,501.77	2,332.20	7.30	4.44	-37.95	-832.22	448.09	740.64	730.76	9.88	74.940	
2,159.00	2,119.97	2,563.85	2,388.20	7.77	4.60	-39.31	-805.43	448.14	690.29	679.74	10.55	65.431	
2,348.00	2,302.44	2,712.44	2,522.24	8.69	4.98	-51.59	-741.32	448.62	598.95	586.90	12.05	49.713	
2,443.00	2,394.41	2,786.83	2,589.07	9.15	5.17	-56.58	-708.64	448.69	558.50	545.59	12.91	43.272	
2,537.00	2,485.45	2,858.55	2,653.32	9.61	5.36	-61.54	-676.77	448.80	522.66	508.83	13.83	37.800	
2,632.00	2,577.48	2,936.03	2,722.95	10.07	5.56	-66.71	-642.79	448.33	491.32	476.53	14.79	33.212	
2,727.00	2,669.50	3,011.99	2,791.48	10.53	5.76	-72.38	-610.08	446.61	465.05	449.28	15.76	29.500	
2,821.00	2,760.56	3,080.40	2,854.01	10.98	5.93	-77.88	-582.41	444.64	445.82	429.15	16.67	26.740	
2,916.00	2,852.68	3,151.74	2,920.02	11.44	6.10	-83.39	-555.40	443.08	434.35	416.87	17.48	24.844	
3,004.25	2,938.46	3,217.12	2,981.24	11.85	6.24	-88.12	-532.45	442.40	430.88	412.78	18.10	23.807 CC	
3,011.00	2,945.03	3,222.25	2,986.07	11.89	6.26	-88.49	-530.73	442.39	430.90	412.76	18.14	23.753 ES	
3,105.00	3,036.57	3,301.11	3,061.11	12.33	6.41	-99.44	-506.56	442.86	435.58	416.92	18.66	23.341 SF	
3,200.00	3,128.81	3,387.05	3,144.39	12.78	6.55	-107.68	-485.36	443.85	446.81	427.70	19.10	23.391	
3,294.00	3,219.76	3,470.26	3,225.42	13.24	6.68	-112.71	-466.51	445.13	462.79	443.33	19.46	23.780	
3,389.00	3,311.82	3,569.98	3,323.09	13.69	6.83	-116.78	-446.43	445.99	480.73	460.90	19.83	24.238	
3,483.00	3,403.03	3,657.74	3,409.59	14.14	6.94	-120.16	-431.70	446.19	498.90	478.77	20.13	24.781	
3,578.00	3,495.31	3,779.68	3,530.56	14.60	7.06	-123.97	-416.71	446.20	517.14	496.61	20.54	25.182	
3,672.00	3,586.65	3,886.03	3,636.76	15.04	7.10	-125.68	-412.11	443.27	529.96	509.11	20.85	25.418	
3,767.00	3,678.95	3,977.22	3,727.89	15.49	7.12	-127.44	-409.69	440.90	542.97	521.84	21.12	25.703	
3,862.00	3,771.63	4,072.17	3,822.81	15.93	7.15	-129.77	-408.37	439.14	555.55	534.14	21.41	25.949	
3,956.00	3,863.70	4,165.32	3,915.95	16.35	7.17	-131.03	-408.49	437.98	567.00	545.31	21.68	26.148	
4,052.00	3,957.54	4,261.78	4,012.40	16.79	7.20	-133.56	-409.50	437.01	579.40	557.43	21.97	26.372	
4,146.00	4,048.88	4,354.95	4,105.56	17.24	7.23	-134.96	-410.97	436.16	593.49	571.24	22.25	26.669	
4,241.00	4,140.47	4,449.04	4,199.63	17.71	7.25	-133.72	-412.81	435.41	609.59	587.05	22.54	27.042	
4,336.00	4,231.25	4,540.61	4,291.17	18.21	7.28	-131.94	-414.94	434.68	626.95	604.13	22.82	27.470	
4,430.00	4,320.59	4,630.06	4,380.60	18.71	7.31	-135.34	-416.98	433.96	645.58	622.48	23.10	27.952	
4,524.00	4,409.51	4,715.49	4,466.00	19.22	7.33	-140.48	-418.71	433.45	666.98	643.62	23.36	28.548	
4,619.00	4,498.98	4,804.11	4,554.61	19.75	7.36	-142.73	-420.15	433.16	691.23	667.58	23.65	29.231	
4,713.00	4,587.83	4,892.61	4,643.10	20.27	7.38	-144.32	-421.53	432.95	715.12	691.19	23.93	29.878	
4,807.00	4,676.97	4,981.55	4,732.03	20.78	7.41	-144.18	-422.84	432.80	738.60	714.38	24.23	30.486	
4,870.00	4,736.65	5,041.27	4,791.74	21.12	7.43	-144.66	-423.66	432.66	754.53	730.10	24.43	30.891	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154B - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 95-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	Rule Assigned: Warning
4,933.00	4,796.58	5,101.10	4,851.57	21.46	7.45	-145.68	-424.39	432.48	769.99	745.37	24.62	31.271	
5,027.00	4,886.13	5,190.68	4,941.14	21.96	7.48	-145.93	-425.47	432.20	792.91	767.98	24.92	31.813	
5,121.00	4,976.11	5,281.58	5,032.03	22.45	7.51	-146.96	-426.63	431.90	814.71	789.48	25.23	32.287	
5,216.00	5,068.11	5,374.74	5,125.19	22.91	7.54	-148.04	-427.83	431.57	833.66	808.11	25.55	32.626	
5,341.00	5,190.11	5,498.27	5,248.70	23.49	7.58	-149.55	-429.48	430.95	855.31	829.33	25.98	32.924	
5,436.00	5,283.20	5,593.04	5,343.46	23.91	7.62	-150.13	-430.82	430.29	870.31	844.00	26.31	33.081	
5,499.00	5,345.03	5,658.34	5,408.76	24.19	7.64	-150.64	-431.89	429.81	879.76	853.22	26.54	33.148	
5,561.00	5,405.97	5,720.37	5,470.77	24.45	7.66	-150.01	-433.10	429.34	888.47	861.71	26.76	33.201	
5,624.00	5,467.97	5,783.27	5,533.65	24.72	7.69	-151.44	-434.51	428.98	896.83	869.85	26.99	33.233	
5,687.00	5,530.05	5,845.89	5,596.25	24.99	7.71	-150.83	-435.99	428.81	904.91	877.70	27.21	33.252	
5,750.00	5,592.20	5,908.15	5,658.49	25.25	7.73	-150.89	-437.50	428.61	912.52	885.08	27.44	33.256	
5,813.00	5,654.42	5,972.03	5,722.35	25.51	7.75	-150.15	-439.11	428.42	919.69	892.01	27.67	33.233	
5,876.00	5,716.68	6,031.87	5,782.18	25.76	7.77	-150.21	-440.51	428.21	926.65	898.76	27.89	33.227	
5,939.00	5,778.99	6,089.10	5,839.40	26.01	7.80	-150.68	-441.54	428.00	933.66	905.57	28.09	33.237	
6,065.00	5,903.86	6,211.23	5,961.52	26.51	7.84	-151.31	-443.24	427.81	946.79	918.26	28.53	33.181	
6,128.00	5,966.41	6,273.73	6,024.01	26.74	7.86	-152.98	-444.07	427.74	952.60	923.83	28.76	33.117	
6,191.00	6,029.04	6,337.15	6,087.43	26.97	7.89	-152.54	-444.94	427.63	957.88	928.88	29.00	33.031	
6,254.00	6,091.75	6,401.16	6,151.42	27.20	7.91	-151.84	-445.82	427.55	962.42	933.18	29.24	32.917	
6,348.00	6,185.46	6,489.62	6,239.88	27.52	7.94	-149.22	-447.01	427.54	967.74	938.18	29.56	32.743	
6,390.00	6,227.36	6,529.31	6,279.57	27.61	7.96	-149.29	-447.39	427.65	969.95	940.33	29.62	32.751	
6,400.00	6,237.33	6,539.31	6,289.57	27.61	7.96	-149.31	-447.47	427.67	970.48	940.86	29.62	32.765	
6,490.00	6,327.12	6,625.07	6,375.32	27.66	7.99	-149.46	-448.13	427.89	975.37	945.73	29.64	32.909	
6,500.00	6,337.09	6,634.11	6,384.36	27.66	7.99	-161.92	-448.16	427.92	976.00	946.37	29.64	32.931	
6,550.00	6,386.85	6,683.55	6,433.81	27.70	8.01	161.21	-448.24	428.09	980.72	951.05	29.67	33.055	
6,600.00	6,436.20	6,731.80	6,482.05	27.74	8.02	148.10	-448.41	428.23	987.77	958.07	29.71	33.249	
6,650.00	6,484.82	6,777.94	6,528.20	27.79	8.04	141.94	-448.43	428.45	997.42	967.67	29.75	33.525	
6,700.00	6,532.40	6,824.72	6,574.98	27.85	8.05	138.34	-448.38	428.65	1,009.54	979.72	29.81	33.861	
6,750.00	6,578.63	6,872.23	6,622.48	27.92	8.07	135.92	-448.36	428.91	1,024.07	994.17	29.90	34.252	
6,800.00	6,623.24	6,913.18	6,663.43	28.00	8.08	133.98	-448.32	429.14	1,041.07	1,011.11	29.96	34.743	
6,850.00	6,665.93	6,954.32	6,704.57	28.09	8.10	132.33	-448.15	429.34	1,060.60	1,030.55	30.05	35.294	
6,900.00	6,706.42	6,995.22	6,745.47	28.19	8.11	130.82	-447.91	429.52	1,082.60	1,052.45	30.15	35.904	
6,950.00	6,744.48	7,035.40	6,785.65	28.30	8.13	129.34	-447.78	429.69	1,106.90	1,076.63	30.27	36.569	
7,000.00	6,779.84	7,065.06	6,815.30	28.43	8.14	127.45	-447.63	429.82	1,133.61	1,103.26	30.35	37.349	
7,050.00	6,812.30	7,099.01	6,849.26	28.57	8.15	125.58	-447.39	429.95	1,162.64	1,132.17	30.47	38.156	
7,100.00	6,841.63	7,127.20	6,877.45	28.73	8.16	123.30	-447.23	430.14	1,193.86	1,163.28	30.58	39.042	
7,150.00	6,867.66	7,154.97	6,905.22	28.90	8.17	120.74	-447.09	430.32	1,227.10	1,196.40	30.70	39.972	
7,200.00	6,890.22	7,178.92	6,929.17	29.08	8.18	117.67	-446.96	430.38	1,262.20	1,231.38	30.81	40.961	
7,250.00	6,909.17	7,197.59	6,947.83	29.28	8.19	113.94	-446.85	430.41	1,298.99	1,268.07	30.92	42.012	
7,300.00	6,924.38	7,211.30	6,961.55	29.49	8.20	109.46	-446.76	430.43	1,337.30	1,306.28	31.01	43.118	
7,350.00	6,935.77	7,223.00	6,973.24	29.72	8.20	104.36	-446.68	430.46	1,376.88	1,345.77	31.11	44.258	
7,400.00	6,943.25	7,231.06	6,981.30	29.97	8.20	98.57	-446.63	430.48	1,417.46	1,386.26	31.20	45.432	
7,450.00	6,946.78	7,234.79	6,985.04	30.22	8.20	92.11	-446.61	430.48	1,458.78	1,427.50	31.28	46.637	
7,471.54	6,947.08	7,235.05	6,985.30	30.34	8.21	89.16	-446.61	430.48	1,476.73	1,445.42	31.31	47.164	
7,500.00	6,946.98	7,234.86	6,985.11	30.49	8.21	89.16	-446.61	430.48	1,500.51	1,469.16	31.35	47.864	
7,600.00	6,946.65	7,234.19	6,984.44	31.07	8.20	89.17	-446.61	430.48	1,584.09	1,552.61	31.48	50.313	
7,700.00	6,946.32	7,233.54	6,983.79	31.69	8.20	89.18	-446.62	430.48	1,667.67	1,636.05	31.61	52.752	
7,800.00	6,945.99	7,232.91	6,983.15	32.35	8.20	89.19	-446.62	430.48	1,751.13	1,719.39	31.74	55.176	
7,900.00	6,945.67	7,232.29	6,982.53	33.05	8.20	89.21	-446.62	430.48	1,834.41	1,802.56	31.86	57.583	
8,000.00	6,945.34	7,231.69	6,981.94	33.79	8.20	89.22	-446.63	430.48	1,917.44	1,885.46	31.97	59.972	
8,034.58	6,945.23	7,231.49	6,981.74	34.05	8.20	89.23	-446.63	430.48	1,946.07	1,914.06	32.01	60.796	
8,100.00	6,945.02	7,231.11	6,981.36	34.57	8.20	89.21	-446.63	430.48	2,000.55	1,968.47	32.08	62.356	
8,200.00	6,944.69	7,230.53	6,980.77	35.41	8.20	89.18	-446.63	430.48	2,085.04	2,052.85	32.19	64.774	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154B - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 95-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	7,229.94	6,980.18	36.30	8.20	89.15	-446.64	430.47	2,170.85	2,138.56	32.29	67.234	
8,400.00	6,944.05	7,229.34	6,979.59	37.25	8.20	89.12	-446.64	430.47	2,257.83	2,225.45	32.38	69.728	
8,500.00	6,943.73	7,228.74	6,978.99	38.25	8.20	89.08	-446.64	430.47	2,345.84	2,313.38	32.47	72.254	
8,600.00	6,943.40	7,228.14	6,978.38	39.29	8.20	89.05	-446.65	430.47	2,434.79	2,402.24	32.55	74.806	
8,700.00	6,943.08	7,227.53	6,977.77	40.37	8.20	89.02	-446.65	430.47	2,524.55	2,491.93	32.62	77.383	
8,800.00	6,942.76	7,226.91	6,977.15	41.49	8.20	88.99	-446.66	430.47	2,615.06	2,582.37	32.70	79.979	
8,900.00	6,942.43	7,226.29	6,976.53	42.64	8.20	88.96	-446.66	430.47	2,706.24	2,673.48	32.77	82.594	
9,000.00	6,942.11	7,225.66	6,975.91	43.82	8.20	88.92	-446.66	430.47	2,798.02	2,765.19	32.83	85.223	
9,100.00	6,941.79	7,225.03	6,975.27	45.03	8.20	88.89	-446.67	430.46	2,890.35	2,857.46	32.89	87.866	
9,200.00	6,941.46	7,224.39	6,974.64	46.27	8.20	88.86	-446.67	430.46	2,983.17	2,950.22	32.96	90.520	
9,300.00	6,941.14	7,223.75	6,973.99	47.53	8.20	88.82	-446.68	430.46	3,076.44	3,043.43	33.01	93.184	
9,400.00	6,940.82	7,223.10	6,973.34	48.81	8.20	88.79	-446.68	430.46	3,170.13	3,137.05	33.07	95.855	
9,500.00	6,940.50	7,222.44	6,972.69	50.11	8.20	88.75	-446.68	430.46	3,264.18	3,231.05	33.13	98.533	
9,600.00	6,940.17	7,221.78	6,972.03	51.43	8.20	88.72	-446.69	430.46	3,358.58	3,325.40	33.18	101.216	
9,700.00	6,939.85	7,221.11	6,971.36	52.76	8.20	88.68	-446.69	430.46	3,453.30	3,420.06	33.24	103.903	
9,800.00	6,939.53	7,220.44	6,970.68	54.11	8.20	88.65	-446.70	430.45	3,548.30	3,515.01	33.29	106.593	
9,900.00	6,939.20	7,219.76	6,970.01	55.48	8.20	88.61	-446.70	430.45	3,643.57	3,610.23	33.34	109.285	
10,000.00	6,938.88	7,219.08	6,969.32	56.86	8.20	88.58	-446.71	430.45	3,739.09	3,705.70	33.39	111.979	
10,100.00	6,938.56	7,218.38	6,968.63	58.25	8.20	88.54	-446.71	430.45	3,834.84	3,801.40	33.44	114.672	
10,200.00	6,938.23	7,217.68	6,967.93	59.65	8.20	88.51	-446.71	430.45	3,930.80	3,897.31	33.49	117.365	
10,300.00	6,937.91	7,216.98	6,967.22	61.06	8.20	88.47	-446.72	430.45	4,026.95	3,993.41	33.54	120.057	
10,400.00	6,937.59	7,216.27	6,966.51	62.48	8.20	88.43	-446.72	430.44	4,123.29	4,089.70	33.59	122.747	
10,500.00	6,937.27	7,215.55	6,965.79	63.91	8.20	88.39	-446.73	430.44	4,219.80	4,186.16	33.64	125.434	
10,600.00	6,936.94	7,214.82	6,965.07	65.34	8.20	88.36	-446.73	430.44	4,316.47	4,282.78	33.69	128.118	
10,700.00	6,936.62	7,214.22	6,964.46	66.79	8.20	88.32	-446.74	430.44	4,413.28	4,379.54	33.74	130.799	
10,800.00	6,936.30	7,214.22	6,964.46	68.24	8.20	88.32	-446.74	430.44	4,510.24	4,476.45	33.79	133.473	
10,900.00	6,935.97	7,214.22	6,964.46	69.70	8.20	88.32	-446.74	430.44	4,607.32	4,573.48	33.84	136.143	
11,000.00	6,935.65	7,214.22	6,964.46	71.17	8.20	88.32	-446.74	430.44	4,704.53	4,670.64	33.89	138.808	
11,100.00	6,935.33	7,214.22	6,964.46	72.64	8.20	88.32	-446.74	430.44	4,801.85	4,767.91	33.94	141.467	
11,200.00	6,935.00	7,214.22	6,964.46	74.11	8.20	88.32	-446.74	430.44	4,899.28	4,865.29	33.99	144.121	
11,300.00	6,934.68	7,214.22	6,964.46	75.60	8.20	88.32	-446.74	430.44	4,996.81	4,962.77	34.05	146.768	
11,400.00	6,934.36	7,214.22	6,964.46	77.08	8.20	88.32	-446.74	430.44	5,094.44	5,060.34	34.10	149.409	
11,500.00	6,934.03	7,214.22	6,964.46	78.57	8.20	88.32	-446.74	430.44	5,192.16	5,158.01	34.15	152.043	
11,600.00	6,933.71	7,210.43	6,960.67	80.07	8.20	88.12	-446.76	430.43	5,289.96	5,255.76	34.20	154.680	
11,700.00	6,933.39	7,210.04	6,960.28	81.57	8.19	88.10	-446.77	430.43	5,387.84	5,353.59	34.25	157.301	
11,800.00	6,933.07	7,209.65	6,959.89	83.07	8.19	88.08	-446.77	430.43	5,485.80	5,451.49	34.30	159.913	
11,900.00	6,932.74	7,209.26	6,959.50	84.58	8.19	88.06	-446.77	430.43	5,583.83	5,549.47	34.36	162.517	
12,000.00	6,932.42	7,208.88	6,959.12	86.09	8.19	88.04	-446.77	430.43	5,681.93	5,647.52	34.41	165.113	
12,100.00	6,932.10	7,208.50	6,958.74	87.60	8.19	88.02	-446.78	430.43	5,780.10	5,745.63	34.47	167.701	
12,200.00	6,931.77	7,208.12	6,958.37	89.12	8.19	88.00	-446.78	430.43	5,878.32	5,843.80	34.52	170.280	
12,300.00	6,931.45	7,207.75	6,958.00	90.64	8.19	87.98	-446.78	430.42	5,976.61	5,942.03	34.58	172.849	
12,400.00	6,931.13	7,207.39	6,957.63	92.16	8.19	87.97	-446.78	430.42	6,074.95	6,040.32	34.63	175.409	
12,500.00	6,930.80	7,207.02	6,957.27	93.69	8.19	87.95	-446.79	430.42	6,173.34	6,138.65	34.69	177.960	
12,600.00	6,930.48	7,206.66	6,956.90	95.22	8.19	87.93	-446.79	430.42	6,271.79	6,237.04	34.75	180.501	
12,700.00	6,930.16	7,206.30	6,956.55	96.75	8.19	87.91	-446.79	430.42	6,370.28	6,335.48	34.80	183.033	
12,800.00	6,929.84	7,205.95	6,956.19	98.28	8.19	87.89	-446.79	430.42	6,468.82	6,433.96	34.86	185.554	
12,900.00	6,929.51	7,205.60	6,955.84	99.82	8.19	87.87	-446.80	430.42	6,567.41	6,532.49	34.92	188.065	
13,000.00	6,929.19	7,205.25	6,955.49	101.35	8.19	87.85	-446.80	430.42	6,666.03	6,631.05	34.98	190.566	
13,100.00	6,928.87	7,204.90	6,955.15	102.89	8.19	87.84	-446.80	430.42	6,764.70	6,729.66	35.04	193.057	
13,200.00	6,928.54	7,204.56	6,954.80	104.43	8.19	87.82	-446.80	430.42	6,863.41	6,828.31	35.10	195.537	
13,300.00	6,928.22	7,204.22	6,954.47	105.97	8.19	87.80	-446.80	430.42	6,962.15	6,926.99	35.16	198.006	
13,400.00	6,927.90	7,203.88	6,954.13	107.52	8.19	87.78	-446.81	430.42	7,060.93	7,025.70	35.22	200.464	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #154B - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 95-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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	7,203.55	6,953.80	109.06	8.19	87.76	-446.81	430.42	7,159.74	7,124.45	35.29	202.911	
13,600.00	6,927.25	7,203.22	6,953.47	110.61	8.19	87.75	-446.81	430.42	7,258.58	7,223.23	35.35	205.347	
13,700.00	6,926.93	7,202.89	6,953.14	112.16	8.19	87.73	-446.81	430.42	7,357.46	7,322.05	35.41	207.772	
13,800.00	6,926.61	7,202.57	6,952.81	113.71	8.19	87.71	-446.82	430.41	7,456.36	7,420.89	35.48	210.185	
13,900.00	6,926.28	7,202.25	6,952.49	115.26	8.19	87.70	-446.82	430.41	7,555.30	7,519.76	35.54	212.587	
14,000.00	6,925.96	7,201.93	6,952.17	116.82	8.19	87.68	-446.82	430.41	7,654.26	7,618.65	35.60	214.978	
14,100.00	6,925.64	7,201.61	6,951.86	118.37	8.19	87.66	-446.82	430.41	7,753.25	7,717.58	35.67	217.356	
14,200.00	6,925.31	7,201.30	6,951.54	119.93	8.19	87.65	-446.82	430.41	7,852.26	7,816.52	35.74	219.724	
14,300.00	6,924.99	7,200.99	6,951.23	121.48	8.19	87.63	-446.83	430.41	7,951.30	7,915.50	35.80	222.079	
14,400.00	6,924.67	7,200.68	6,950.92	123.04	8.19	87.61	-446.83	430.41	8,050.36	8,014.49	35.87	224.422	
14,500.00	6,924.34	7,200.37	6,950.62	124.60	8.19	87.60	-446.83	430.41	8,149.45	8,113.51	35.94	226.754	
14,600.00	6,924.02	7,200.07	6,950.32	126.16	8.19	87.58	-446.83	430.41	8,248.55	8,212.55	36.01	229.074	
14,700.00	6,923.70	7,199.77	6,950.02	127.72	8.19	87.57	-446.83	430.41	8,347.68	8,311.61	36.08	231.381	
14,800.00	6,923.38	7,199.47	6,949.72	129.28	8.19	87.55	-446.84	430.41	8,446.83	8,410.69	36.15	233.677	
14,900.00	6,923.05	7,199.18	6,949.42	130.85	8.19	87.54	-446.84	430.41	8,546.00	8,509.78	36.22	235.960	
15,000.00	6,922.73	7,198.88	6,949.13	132.41	8.19	87.52	-446.84	430.41	8,645.19	8,608.90	36.29	238.231	
15,100.00	6,922.41	7,198.59	6,948.84	133.97	8.19	87.50	-446.84	430.41	8,744.40	8,708.04	36.36	240.490	
15,200.00	6,922.08	7,198.31	6,948.55	135.54	8.19	87.49	-446.84	430.41	8,843.62	8,807.19	36.43	242.736	
15,300.00	6,921.76	7,198.02	6,948.26	137.11	8.19	87.47	-446.84	430.41	8,942.86	8,906.36	36.51	244.970	
15,400.00	6,921.44	7,197.74	6,947.98	138.67	8.19	87.46	-446.85	430.41	9,042.12	9,005.54	36.58	247.192	
15,500.00	6,921.11	7,197.46	6,947.70	140.24	8.19	87.44	-446.85	430.41	9,141.40	9,104.74	36.65	249.401	
15,600.00	6,920.79	7,197.18	6,947.42	141.81	8.19	87.43	-446.85	430.41	9,240.69	9,203.96	36.73	251.598	
15,700.00	6,920.47	7,196.90	6,947.14	143.38	8.19	87.42	-446.85	430.41	9,339.99	9,303.19	36.80	253.783	
15,800.00	6,920.14	7,196.62	6,946.87	144.95	8.19	87.40	-446.85	430.41	9,439.31	9,402.43	36.88	255.955	
15,900.00	6,919.82	7,196.35	6,946.60	146.52	8.19	87.39	-446.85	430.40	9,538.64	9,501.69	36.96	258.115	
16,000.00	6,919.50	7,196.08	6,946.33	148.09	8.19	87.37	-446.86	430.40	9,637.99	9,600.96	37.03	260.262	
16,100.00	6,919.18	7,195.81	6,946.06	149.66	8.19	87.36	-446.86	430.40	9,737.35	9,700.24	37.11	262.396	
16,200.00	6,918.85	7,195.55	6,945.79	151.24	8.19	87.35	-446.86	430.40	9,836.73	9,799.54	37.19	264.518	
16,300.00	6,918.53	7,195.28	6,945.53	152.81	8.19	87.33	-446.86	430.40	9,936.11	9,898.85	37.27	266.628	
16,400.00	6,918.21	7,195.02	6,945.27	154.38	8.19	87.32	-446.86	430.40	10,035.51	9,998.17	37.34	268.725	
16,500.00	6,917.88	7,194.76	6,945.01	155.96	8.19	87.30	-446.86	430.40	10,134.92	10,097.50	37.42	270.810	
16,600.00	6,917.56	7,194.50	6,944.75	157.53	8.19	87.29	-446.87	430.40	10,234.35	10,196.84	37.50	272.882	
16,700.00	6,917.24	7,187.82	6,938.07	159.11	8.19	86.94	-446.91	430.39	10,333.78	10,296.20	37.58	274.960	
16,800.00	6,916.91	7,187.32	6,937.56	160.68	8.19	86.91	-446.91	430.39	10,433.23	10,395.56	37.66	277.008	
16,900.00	6,916.59	7,186.81	6,937.05	162.26	8.19	86.89	-446.91	430.39	10,532.68	10,494.93	37.75	279.044	
17,000.00	6,916.27	7,186.30	6,936.55	163.84	8.19	86.86	-446.91	430.39	10,632.14	10,594.32	37.83	281.066	
17,100.00	6,915.95	7,185.80	6,936.04	165.41	8.19	86.83	-446.92	430.39	10,731.62	10,693.71	37.91	283.077	
17,200.00	6,915.62	7,185.29	6,935.54	166.99	8.18	86.81	-446.92	430.39	10,831.10	10,793.11	37.99	285.075	
17,300.00	6,915.30	7,184.79	6,935.03	168.57	8.18	86.78	-446.92	430.39	10,930.60	10,892.52	38.08	287.060	
17,400.00	6,914.98	7,184.28	6,934.52	170.15	8.18	86.76	-446.93	430.39	11,030.10	10,991.94	38.16	289.033	
17,500.00	6,914.65	7,183.77	6,934.02	171.73	8.18	86.73	-446.93	430.39	11,129.61	11,091.36	38.25	290.994	
17,600.00	6,914.33	7,116.66	6,866.91	173.31	8.16	83.23	-447.29	430.06	11,229.13	11,190.82	38.31	293.105	
17,700.00	6,914.01	7,114.87	6,865.12	174.89	8.16	83.14	-447.30	430.05	11,328.66	11,290.26	38.40	295.043	
17,800.00	6,913.68	7,114.87	6,865.12	176.47	8.16	83.14	-447.30	430.05	11,428.19	11,389.71	38.48	296.966	
17,900.00	6,913.36	7,114.87	6,865.12	178.05	8.16	83.14	-447.30	430.05	11,527.73	11,489.16	38.57	298.876	
18,000.00	6,913.04	7,114.87	6,865.12	179.63	8.16	83.14	-447.30	430.05	11,627.28	11,588.62	38.66	300.774	
18,100.00	6,912.72	7,114.87	6,865.12	181.21	8.16	83.14	-447.30	430.05	11,726.83	11,688.09	38.75	302.660	
18,111.83	6,912.68	7,114.87	6,865.12	181.40	8.16	83.14	-447.30	430.05	11,738.61	11,699.86	38.76	302.882	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 95-A027Ua_INC-ONLY **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-11.93	798.04	-168.59	817.86				
54.25	54.25	0.00	0.00	0.02	0.00	-73.49	798.04	-168.59	815.64	815.63	0.01	N/A	
72.61	72.61	12.06	12.06	0.04	0.22	-81.12	798.05	-168.59	815.61	815.37	0.24	3,370.717 CC	
130.42	130.42	67.36	67.35	0.11	1.23	-100.66	798.19	-168.49	815.75	814.46	1.29	632.522	
219.69	219.69	155.29	155.29	0.23	2.83	-74.59	798.72	-168.13	816.18	813.22	2.96	276.040	
308.67	308.67	246.24	246.24	0.35	4.48	-83.50	799.25	-167.66	816.49	811.83	4.66	175.042	
454.00	453.99	397.07	397.06	0.51	6.31	142.00	799.21	-166.72	817.00	810.34	6.67	122.555 ES	
544.00	543.93	486.89	486.87	0.74	7.44	142.43	799.00	-166.14	819.11	811.03	8.08	101.363	
667.00	666.63	609.90	609.89	1.13	9.22	129.79	798.69	-165.31	824.62	814.34	10.29	80.164	
756.00	755.27	698.59	698.57	1.44	10.65	145.06	798.48	-164.68	830.26	818.22	12.04	68.958	
850.00	848.62	791.78	791.76	1.79	12.17	146.98	798.25	-164.05	839.03	825.12	13.91	60.319	
942.00	939.50	884.54	884.52	2.14	13.55	153.80	797.89	-163.52	851.11	835.47	15.64	54.426	
1,033.00	1,028.89	974.33	974.30	2.52	14.82	163.60	797.39	-162.99	866.44	849.18	17.26	50.205	
1,123.00	1,117.00	1,062.91	1,062.89	2.90	16.27	170.24	796.90	-162.31	883.74	864.69	19.05	46.399	
1,214.00	1,206.00	1,153.62	1,153.59	3.29	17.82	169.80	796.32	-161.52	901.73	880.79	20.94	43.071	
1,309.00	1,298.75	1,245.54	1,245.49	3.71	19.51	173.06	795.75	-160.55	921.33	898.35	22.98	40.099	
1,403.00	1,390.39	1,339.20	1,339.15	4.13	21.24	176.35	795.14	-159.57	941.44	916.39	25.05	37.579	
1,498.00	1,482.88	1,432.18	1,432.13	4.56	23.04	173.13	794.50	-158.40	962.26	935.06	27.21	35.365	
1,592.00	1,573.82	1,525.71	1,525.64	5.00	24.98	172.90	793.66	-156.86	984.82	955.31	29.51	33.377	
1,687.00	1,665.32	1,612.87	1,612.78	5.46	26.82	176.22	793.01	-155.34	1,009.39	977.67	31.72	31.824	
1,876.00	1,847.35	1,790.43	1,790.33	6.38	30.29	179.18	792.36	-153.18	1,059.22	1,023.32	35.90	29.503	
1,970.00	1,937.87	1,878.27	1,878.17	6.84	31.80	179.42	792.30	-152.71	1,084.43	1,046.67	37.76	28.719	
2,064.00	2,028.42	1,968.51	1,968.41	7.30	33.21	-179.99	792.34	-152.41	1,109.66	1,070.13	39.53	28.069	
2,159.00	2,119.97	2,060.32	2,060.21	7.77	34.66	-178.70	792.35	-152.20	1,135.03	1,093.69	41.35	27.451 SF	
2,348.00	2,302.44	2,237.91	2,237.81	8.69	34.17	176.37	792.55	-152.50	1,184.47	1,142.90	41.57	28.494	
2,443.00	2,394.41	2,329.39	2,329.28	9.15	32.96	175.76	792.84	-153.16	1,208.63	1,167.90	40.73	29.674	
2,537.00	2,485.45	2,420.28	2,420.17	9.61	31.80	175.58	793.13	-153.75	1,232.31	1,192.38	39.93	30.860	
2,632.00	2,577.48	2,512.45	2,512.34	10.07	30.73	175.93	793.49	-154.38	1,256.28	1,217.06	39.22	32.030	
2,727.00	2,669.50	2,603.50	2,603.38	10.53	29.94	176.04	793.89	-154.75	1,280.26	1,241.46	38.80	32.998	
2,821.00	2,760.56	2,693.10	2,692.98	10.98	29.79	175.87	794.38	-154.84	1,304.06	1,265.05	39.00	33.433	
2,916.00	2,852.68	2,785.82	2,785.70	11.44	30.34	175.88	794.93	-154.67	1,327.74	1,287.81	39.93	33.252	
3,011.00	2,945.03	2,874.83	2,874.71	11.89	30.75	176.07	795.52	-154.62	1,350.55	1,309.85	40.70	33.185	
3,105.00	3,036.57	2,965.77	2,965.65	12.33	30.66	170.28	796.20	-154.92	1,372.49	1,331.53	40.96	33.507	
3,200.00	3,128.81	3,056.94	3,056.81	12.78	30.81	166.97	796.96	-155.14	1,395.58	1,354.10	41.48	33.644	
3,294.00	3,219.76	3,150.68	3,150.55	13.24	31.84	166.82	797.65	-154.86	1,419.36	1,376.49	42.87	33.106	
3,389.00	3,311.82	3,246.19	3,246.06	13.69	33.31	168.15	798.22	-154.31	1,442.79	1,398.07	44.72	32.263	
3,483.00	3,403.03	3,335.23	3,335.09	14.14	34.75	168.72	798.78	-153.74	1,465.57	1,419.04	46.52	31.502	
3,578.00	3,495.31	3,426.60	3,426.46	14.60	36.25	169.50	799.36	-153.15	1,488.27	1,439.89	48.38	30.761	
3,672.00	3,586.65	3,516.53	3,516.38	15.04	37.72	170.80	799.93	-152.60	1,510.71	1,460.50	50.21	30.088	
3,767.00	3,678.95	3,616.91	3,616.76	15.49	39.40	171.51	800.39	-151.95	1,533.27	1,481.00	52.27	29.333	
3,862.00	3,771.63	3,708.10	3,707.94	15.93	40.86	171.45	800.68	-151.49	1,554.16	1,500.06	54.09	28.731	
3,956.00	3,863.70	3,803.61	3,803.46	16.35	41.63	171.91	800.79	-151.34	1,573.02	1,517.80	55.22	28.485	
4,052.00	3,957.54	3,901.40	3,901.25	16.79	40.48	170.75	800.62	-151.63	1,592.90	1,538.45	54.45	29.255	
4,146.00	4,048.88	3,999.20	3,999.04	17.24	39.43	170.75	800.19	-152.36	1,614.49	1,560.72	53.77	30.025	
4,241.00	4,140.47	4,085.15	4,084.99	17.71	38.52	173.51	799.89	-152.97	1,639.21	1,585.98	53.23	30.797	
4,336.00	4,231.25	4,174.61	4,174.45	18.21	37.64	177.06	799.57	-153.69	1,666.83	1,614.11	52.72	31.614	
4,430.00	4,320.59	4,266.52	4,266.36	18.71	36.86	175.28	799.20	-154.47	1,695.70	1,643.38	52.33	32.407	
4,524.00	4,409.51	4,353.13	4,352.96	19.22	36.13	171.41	798.85	-155.15	1,725.70	1,673.72	51.97	33.205	
4,619.00	4,498.98	4,444.96	4,444.79	19.75	35.37	170.75	798.57	-155.82	1,757.08	1,705.49	51.59	34.058	
4,713.00	4,587.83	4,540.98	4,540.80	20.27	34.73	171.02	798.11	-156.52	1,787.05	1,735.70	51.34	34.805	
4,807.00	4,676.97	4,628.95	4,628.77	20.78	34.34	172.52	797.50	-157.04	1,816.05	1,764.72	51.33	35.382	
4,870.00	4,736.65	4,692.37	4,692.18	21.12	34.12	173.01	797.07	-157.36	1,835.69	1,784.33	51.36	35.740	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 95-A027Ua_INC-ONLY **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,751.78	4,751.59	21.46	34.04	173.08	796.54	-157.65	1,854.47	1,802.94	51.54	35.983	
5,027.00	4,886.13	4,837.51	4,837.32	21.96	34.05	173.92	795.86	-157.92	1,882.20	1,830.29	51.91	36.260	
5,121.00	4,976.11	4,930.23	4,930.04	22.45	33.92	174.43	795.21	-158.42	1,908.66	1,856.49	52.16	36.590	
5,216.00	5,068.11	5,026.37	5,026.17	22.91	33.99	174.54	794.37	-159.10	1,931.47	1,878.87	52.60	36.717	
5,341.00	5,190.11	5,141.64	5,141.43	23.49	34.11	174.20	793.50	-159.74	1,957.65	1,904.46	53.18	36.809	
5,436.00	5,283.20	5,237.86	5,237.65	23.91	34.32	174.33	792.74	-160.55	1,975.83	1,922.06	53.77	36.748	
5,499.00	5,345.03	5,294.77	5,294.55	24.19	34.45	174.27	792.32	-161.04	1,987.46	1,933.34	54.13	36.720	
5,561.00	5,405.97	5,365.24	5,365.02	24.45	34.79	175.32	791.70	-161.54	1,998.34	1,943.63	54.71	36.528	
5,624.00	5,467.97	5,425.88	5,425.65	24.72	35.16	174.25	791.12	-162.27	2,008.90	1,953.59	55.31	36.320	
5,687.00	5,530.05	5,498.47	5,498.24	24.99	35.69	175.19	790.39	-163.16	2,019.05	1,962.95	56.10	35.991	
5,750.00	5,592.20	5,552.46	5,552.21	25.25	36.16	175.45	789.80	-163.78	2,028.69	1,971.91	56.78	35.727	
5,813.00	5,654.42	5,623.07	5,622.82	25.51	36.80	176.49	788.97	-164.36	2,037.87	1,980.19	57.68	35.333	
5,876.00	5,716.68	5,681.25	5,681.00	25.76	37.38	176.71	788.27	-164.82	2,046.73	1,988.26	58.48	35.001	
5,939.00	5,778.99	5,737.37	5,737.11	26.01	37.90	176.50	787.67	-165.20	2,055.39	1,996.17	59.22	34.708	
6,065.00	5,903.86	5,869.83	5,869.56	26.51	39.45	176.40	786.06	-165.71	2,070.72	2,009.49	61.24	33.815	
6,128.00	5,966.41	5,932.48	5,932.20	26.74	40.24	174.94	785.26	-165.95	2,077.36	2,015.11	62.25	33.372	
6,191.00	6,029.04	5,995.19	5,994.90	26.97	41.03	175.60	784.47	-166.19	2,083.41	2,020.15	63.26	32.934	
6,254.00	6,091.75	6,028.00	6,027.71	27.20	41.44	176.49	784.05	-166.31	2,088.85	2,025.02	63.83	32.723	
6,348.00	6,185.46	6,028.00	6,027.71	27.52	41.44	179.32	784.05	-166.31	2,098.50	2,034.59	63.91	32.836	
6,390.00	6,227.36	6,028.00	6,027.71	27.61	41.44	179.32	784.05	-166.31	2,103.79	2,039.99	63.80	32.976	
6,400.00	6,237.33	6,028.00	6,027.71	27.61	41.44	179.32	784.05	-166.31	2,105.16	2,041.41	63.76	33.017	
6,490.00	6,327.12	6,028.00	6,027.71	27.66	41.44	179.32	784.05	-166.31	2,119.67	2,056.29	63.38	33.446	
6,500.00	6,337.09	6,028.00	6,027.71	27.66	41.44	166.74	784.05	-166.31	2,121.52	2,058.19	63.33	33.500	
6,550.00	6,386.85	6,028.00	6,027.71	27.70	41.44	129.22	784.05	-166.31	2,131.71	2,068.63	63.08	33.793	
6,600.00	6,436.20	6,028.00	6,027.71	27.74	41.44	115.32	784.05	-166.31	2,143.41	2,080.59	62.82	34.122	
6,650.00	6,484.82	6,028.00	6,027.71	27.79	41.44	108.27	784.05	-166.31	2,156.52	2,093.98	62.54	34.482	
6,700.00	6,532.40	6,028.00	6,027.71	27.85	41.44	103.66	784.05	-166.31	2,170.93	2,108.67	62.26	34.870	
6,750.00	6,578.63	6,028.00	6,027.71	27.92	41.44	100.12	784.05	-166.31	2,186.53	2,124.55	61.97	35.282	
6,800.00	6,623.24	6,028.00	6,027.71	28.00	41.44	97.11	784.05	-166.31	2,203.18	2,141.49	61.69	35.713	
6,850.00	6,665.93	6,028.00	6,027.71	28.09	41.44	94.40	784.05	-166.31	2,220.77	2,159.35	61.42	36.158	
6,900.00	6,706.42	6,028.00	6,027.71	28.19	41.44	91.85	784.05	-166.31	2,239.16	2,178.00	61.16	36.612	
6,950.00	6,744.48	6,028.00	6,027.71	28.30	41.44	89.40	784.05	-166.31	2,258.22	2,197.29	60.92	37.067	
7,000.00	6,779.84	6,028.00	6,027.71	28.43	41.44	87.03	784.05	-166.31	2,277.80	2,217.09	60.71	37.520	
7,050.00	6,812.30	6,028.00	6,027.71	28.57	41.44	84.71	784.05	-166.31	2,297.78	2,237.25	60.53	37.962	
7,100.00	6,841.63	6,028.00	6,027.71	28.73	41.44	82.44	784.05	-166.31	2,318.01	2,257.63	60.38	38.390	
7,150.00	6,867.66	6,028.00	6,027.71	28.90	41.44	80.24	784.05	-166.31	2,338.37	2,278.10	60.27	38.797	
7,200.00	6,890.22	6,028.00	6,027.71	29.08	41.44	78.09	784.05	-166.31	2,358.73	2,298.52	60.20	39.180	
7,250.00	6,909.17	6,028.00	6,027.71	29.28	41.44	76.03	784.05	-166.31	2,378.95	2,318.77	60.18	39.532	
7,300.00	6,924.38	6,028.00	6,027.71	29.49	41.44	74.04	784.05	-166.31	2,398.91	2,338.71	60.19	39.853	
7,350.00	6,935.77	6,028.00	6,027.71	29.72	41.44	72.15	784.05	-166.31	2,418.49	2,358.24	60.26	40.137	
7,400.00	6,943.25	6,028.00	6,027.71	29.97	41.44	70.36	784.05	-166.31	2,437.59	2,377.23	60.36	40.385	
7,450.00	6,946.78	6,028.00	6,027.71	30.22	41.44	68.68	784.05	-166.31	2,456.08	2,395.58	60.50	40.595	
7,471.54	6,947.08	6,028.00	6,027.71	30.34	41.44	68.00	784.05	-166.31	2,463.84	2,403.27	60.58	40.674	
7,500.00	6,946.98	6,028.00	6,027.71	30.49	41.44	68.08	784.05	-166.31	2,474.02	2,413.34	60.68	40.772	
7,600.00	6,946.65	6,028.00	6,027.71	31.07	41.44	68.37	784.05	-166.31	2,510.11	2,449.04	61.06	41.106	
7,700.00	6,946.32	6,028.00	6,027.71	31.69	41.44	68.67	784.05	-166.31	2,546.63	2,485.16	61.47	41.428	
7,800.00	6,945.99	6,028.00	6,027.71	32.35	41.44	68.96	784.05	-166.31	2,583.52	2,521.63	61.90	41.740	
7,900.00	6,945.67	6,028.00	6,027.71	33.05	41.44	69.25	784.05	-166.31	2,620.73	2,558.40	62.33	42.043	
8,000.00	6,945.34	6,028.00	6,027.71	33.79	41.44	69.55	784.05	-166.31	2,658.19	2,595.41	62.78	42.338	
8,034.58	6,945.23	6,028.00	6,027.71	34.05	41.44	69.65	784.05	-166.31	2,671.20	2,608.26	62.94	42.440	
8,100.00	6,945.02	6,028.00	6,027.71	34.57	41.44	69.65	784.05	-166.31	2,696.50	2,633.26	63.24	42.638	
8,200.00	6,944.69	6,028.00	6,027.71	35.41	41.44	69.65	784.05	-166.31	2,737.76	2,674.05	63.71	42.973	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 95-A027Ua_INC-ONLY **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
8,300.00	6,944.37	6,028.00	6,027.71	36.30	41.44	69.65	784.05	-166.31	2,781.99	2,717.81	64.18	43.348	
8,400.00	6,944.05	6,028.00	6,027.71	37.25	41.44	69.65	784.05	-166.31	2,829.07	2,764.43	64.64	43.764	
8,500.00	6,943.73	6,028.00	6,027.71	38.25	41.44	69.65	784.05	-166.31	2,878.86	2,813.75	65.10	44.219	
8,600.00	6,943.40	6,028.00	6,027.71	39.29	41.44	69.65	784.05	-166.31	2,931.21	2,865.65	65.56	44.712	
8,700.00	6,943.08	6,028.00	6,027.71	40.37	41.44	69.65	784.05	-166.31	2,985.99	2,920.00	66.00	45.244	
8,800.00	6,942.76	6,028.00	6,027.71	41.49	41.44	69.65	784.05	-166.31	3,043.08	2,976.65	66.43	45.811	
8,900.00	6,942.43	6,028.00	6,027.71	42.64	41.44	69.65	784.05	-166.31	3,102.34	3,035.50	66.84	46.413	
9,000.00	6,942.11	6,028.00	6,027.71	43.82	41.44	69.65	784.05	-166.31	3,163.65	3,096.41	67.24	47.048	
9,100.00	6,941.79	6,028.00	6,027.71	45.03	41.44	69.65	784.05	-166.31	3,226.89	3,159.27	67.63	47.715	
9,200.00	6,941.46	6,028.00	6,027.71	46.27	41.44	69.65	784.05	-166.31	3,291.96	3,223.96	68.00	48.413	
9,300.00	6,941.14	6,028.00	6,027.71	47.53	41.44	69.65	784.05	-166.31	3,358.75	3,290.40	68.35	49.138	
9,400.00	6,940.82	6,028.00	6,027.71	48.81	41.44	69.65	784.05	-166.31	3,427.15	3,358.46	68.69	49.891	
9,500.00	6,940.50	6,028.00	6,027.71	50.11	41.44	69.65	784.05	-166.31	3,497.08	3,428.06	69.02	50.669	
9,600.00	6,940.17	6,028.00	6,027.71	51.43	41.44	69.65	784.05	-166.31	3,568.43	3,499.10	69.33	51.471	
9,700.00	6,939.85	6,028.00	6,027.71	52.76	41.44	69.65	784.05	-166.31	3,641.14	3,571.51	69.63	52.296	
9,800.00	6,939.53	6,028.00	6,027.71	54.11	41.44	69.65	784.05	-166.31	3,715.11	3,645.20	69.91	53.143	
9,900.00	6,939.20	6,028.00	6,027.71	55.48	41.44	69.65	784.05	-166.31	3,790.28	3,720.10	70.18	54.009	
10,000.00	6,938.88	6,028.00	6,027.71	56.86	41.44	69.65	784.05	-166.31	3,866.57	3,796.14	70.44	54.894	
10,100.00	6,938.56	6,028.00	6,027.71	58.25	41.44	69.65	784.05	-166.31	3,943.93	3,873.24	70.68	55.797	
10,200.00	6,938.23	6,028.00	6,027.71	59.65	41.44	69.65	784.05	-166.31	4,022.28	3,951.36	70.92	56.717	
10,300.00	6,937.91	6,028.00	6,027.71	61.06	41.44	69.65	784.05	-166.31	4,101.57	4,030.43	71.14	57.652	
10,400.00	6,937.59	6,028.00	6,027.71	62.48	41.44	69.65	784.05	-166.31	4,181.76	4,110.40	71.36	58.602	
10,500.00	6,937.27	6,028.00	6,027.71	63.91	41.44	69.65	784.05	-166.31	4,262.77	4,191.21	71.56	59.566	
10,600.00	6,936.94	6,028.00	6,027.71	65.34	41.44	69.65	784.05	-166.31	4,344.59	4,272.82	71.76	60.542	
10,700.00	6,936.62	6,028.00	6,027.71	66.79	41.44	69.65	784.05	-166.31	4,427.14	4,355.19	71.95	61.531	
10,800.00	6,936.30	6,028.00	6,027.71	68.24	41.44	69.65	784.05	-166.31	4,510.41	4,438.27	72.13	62.530	
10,900.00	6,935.97	6,028.00	6,027.71	69.70	41.44	69.65	784.05	-166.31	4,594.34	4,522.03	72.31	63.541	
11,000.00	6,935.65	6,028.00	6,027.71	71.17	41.44	69.65	784.05	-166.31	4,678.90	4,606.43	72.47	64.561	
11,100.00	6,935.33	6,028.00	6,027.71	72.64	41.44	69.65	784.05	-166.31	4,764.06	4,691.43	72.63	65.591	
11,200.00	6,935.00	6,028.00	6,027.71	74.11	41.44	69.65	784.05	-166.31	4,849.79	4,777.00	72.79	66.629	
11,300.00	6,934.68	6,028.00	6,027.71	75.60	41.44	69.65	784.05	-166.31	4,936.05	4,863.12	72.94	67.676	
11,400.00	6,934.36	6,028.00	6,027.71	77.08	41.44	69.65	784.05	-166.31	5,022.83	4,949.75	73.08	68.730	
11,500.00	6,934.03	6,028.00	6,027.71	78.57	41.44	69.65	784.05	-166.31	5,110.08	5,036.87	73.22	69.791	
11,600.00	6,933.71	6,028.00	6,027.71	80.07	41.44	69.65	784.05	-166.31	5,197.80	5,124.45	73.35	70.859	
11,700.00	6,933.39	6,028.00	6,027.71	81.57	41.44	69.65	784.05	-166.31	5,285.95	5,212.47	73.48	71.933	
11,800.00	6,933.07	6,028.00	6,027.71	83.07	41.44	69.65	784.05	-166.31	5,374.52	5,300.91	73.61	73.013	
11,900.00	6,932.74	6,028.00	6,027.71	84.58	41.44	69.65	784.05	-166.31	5,463.48	5,389.75	73.73	74.099	
12,000.00	6,932.42	6,028.00	6,027.71	86.09	41.44	69.65	784.05	-166.31	5,552.82	5,478.97	73.85	75.189	
12,100.00	6,932.10	6,028.00	6,027.71	87.60	41.44	69.65	784.05	-166.31	5,642.52	5,568.55	73.97	76.284	
12,200.00	6,931.77	6,028.00	6,027.71	89.12	41.44	69.65	784.05	-166.31	5,732.55	5,658.47	74.08	77.384	
12,300.00	6,931.45	6,028.00	6,027.71	90.64	41.44	69.65	784.05	-166.31	5,822.91	5,748.73	74.19	78.487	
12,400.00	6,931.13	6,028.00	6,027.71	92.16	41.44	69.65	784.05	-166.31	5,913.59	5,839.29	74.30	79.595	
12,500.00	6,930.80	6,028.00	6,027.71	93.69	41.44	69.65	784.05	-166.31	6,004.55	5,930.15	74.40	80.705	
12,600.00	6,930.48	6,028.00	6,027.71	95.22	41.44	69.65	784.05	-166.31	6,095.81	6,021.30	74.50	81.819	
12,700.00	6,930.16	6,028.00	6,027.71	96.75	41.44	69.65	784.05	-166.31	6,187.33	6,112.72	74.60	82.936	
12,800.00	6,929.84	6,028.00	6,027.71	98.28	41.44	69.65	784.05	-166.31	6,279.11	6,204.41	74.70	84.056	
12,900.00	6,929.51	6,028.00	6,027.71	99.82	41.44	69.65	784.05	-166.31	6,371.14	6,296.34	74.80	85.178	
13,000.00	6,929.19	6,028.00	6,027.71	101.35	41.44	69.65	784.05	-166.31	6,463.40	6,388.51	74.89	86.302	
13,100.00	6,928.87	6,028.00	6,027.71	102.89	41.44	69.65	784.05	-166.31	6,555.89	6,480.91	74.99	87.429	
13,200.00	6,928.54	6,028.00	6,027.71	104.43	41.44	69.65	784.05	-166.31	6,648.60	6,573.52	75.08	88.557	
13,300.00	6,928.22	6,028.00	6,027.71	105.97	41.44	69.65	784.05	-166.31	6,741.52	6,666.35	75.17	89.687	
13,400.00	6,927.90	6,028.00	6,027.71	107.52	41.44	69.65	784.05	-166.31	6,834.63	6,759.38	75.26	90.819	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 95-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,028.00	6,027.71	109.06	41.44	69.65	784.05	-166.31	6,927.94	6,852.60	75.34	91.952	
13,600.00	6,927.25	6,028.00	6,027.71	110.61	41.44	69.65	784.05	-166.31	7,021.44	6,946.01	75.43	93.086	
13,700.00	6,926.93	6,028.00	6,027.71	112.16	41.44	69.65	784.05	-166.31	7,115.11	7,039.59	75.52	94.221	
13,800.00	6,926.61	6,028.00	6,027.71	113.71	41.44	69.65	784.05	-166.31	7,208.95	7,133.35	75.60	95.357	
13,900.00	6,926.28	6,028.00	6,027.71	115.26	41.44	69.65	784.05	-166.31	7,302.95	7,227.27	75.68	96.494	
14,000.00	6,925.96	6,028.00	6,027.71	116.82	41.44	69.65	784.05	-166.31	7,397.11	7,321.35	75.77	97.631	
14,100.00	6,925.64	6,028.00	6,027.71	118.37	41.44	69.65	784.05	-166.31	7,491.42	7,415.58	75.85	98.769	
14,200.00	6,925.31	6,028.00	6,027.71	119.93	41.44	69.65	784.05	-166.31	7,585.88	7,509.95	75.93	99.907	
14,300.00	6,924.99	6,028.00	6,027.71	121.48	41.44	69.65	784.05	-166.31	7,680.48	7,604.47	76.01	101.046	
14,400.00	6,924.67	6,028.00	6,027.71	123.04	41.44	69.65	784.05	-166.31	7,775.21	7,699.12	76.09	102.184	
14,500.00	6,924.34	6,028.00	6,027.71	124.60	41.44	69.65	784.05	-166.31	7,870.08	7,793.91	76.17	103.323	
14,600.00	6,924.02	6,028.00	6,027.71	126.16	41.44	69.65	784.05	-166.31	7,965.07	7,888.82	76.25	104.461	
14,700.00	6,923.70	6,028.00	6,027.71	127.72	41.44	69.65	784.05	-166.31	8,060.18	7,983.85	76.33	105.599	
14,800.00	6,923.38	6,028.00	6,027.71	129.28	41.44	69.65	784.05	-166.31	8,155.40	8,079.00	76.41	106.737	
14,900.00	6,923.05	6,028.00	6,027.71	130.85	41.44	69.65	784.05	-166.31	8,250.75	8,174.26	76.48	107.875	
15,000.00	6,922.73	6,028.00	6,027.71	132.41	41.44	69.65	784.05	-166.31	8,346.19	8,269.63	76.56	109.012	
15,100.00	6,922.41	6,028.00	6,027.71	133.97	41.44	69.65	784.05	-166.31	8,441.75	8,365.11	76.64	110.149	
15,200.00	6,922.08	6,028.00	6,027.71	135.54	41.44	69.65	784.05	-166.31	8,537.41	8,460.69	76.72	111.285	
15,300.00	6,921.76	6,028.00	6,027.71	137.11	41.44	69.65	784.05	-166.31	8,633.16	8,556.37	76.79	112.420	
15,400.00	6,921.44	6,028.00	6,027.71	138.67	41.44	69.65	784.05	-166.31	8,729.01	8,652.14	76.87	113.555	
15,500.00	6,921.11	6,028.00	6,027.71	140.24	41.44	69.65	784.05	-166.31	8,824.95	8,748.01	76.95	114.689	
15,600.00	6,920.79	6,028.00	6,027.71	141.81	41.44	69.65	784.05	-166.31	8,920.99	8,843.96	77.02	115.821	
15,700.00	6,920.47	6,028.00	6,027.71	143.38	41.44	69.65	784.05	-166.31	9,017.10	8,940.00	77.10	116.953	
15,800.00	6,920.14	6,028.00	6,027.71	144.95	41.44	69.65	784.05	-166.31	9,113.31	9,036.13	77.18	118.084	
15,900.00	6,919.82	6,028.00	6,027.71	146.52	41.44	69.65	784.05	-166.31	9,209.59	9,132.34	77.25	119.213	
16,000.00	6,919.50	6,028.00	6,027.71	148.09	41.44	69.65	784.05	-166.31	9,305.95	9,228.62	77.33	120.342	
16,100.00	6,919.18	6,028.00	6,027.71	149.66	41.44	69.65	784.05	-166.31	9,402.39	9,324.98	77.41	121.469	
16,200.00	6,918.85	6,028.00	6,027.71	151.24	41.44	69.65	784.05	-166.31	9,498.90	9,421.41	77.48	122.595	
16,300.00	6,918.53	6,028.00	6,027.71	152.81	41.44	69.65	784.05	-166.31	9,595.48	9,517.92	77.56	123.719	
16,400.00	6,918.21	6,028.00	6,027.71	154.38	41.44	69.65	784.05	-166.31	9,692.13	9,614.49	77.63	124.843	
16,500.00	6,917.88	6,028.00	6,027.71	155.96	41.44	69.65	784.05	-166.31	9,788.85	9,711.14	77.71	125.964	
16,600.00	6,917.56	6,028.00	6,027.71	157.53	41.44	69.65	784.05	-166.31	9,885.63	9,807.84	77.79	127.084	
16,700.00	6,917.24	6,028.00	6,027.71	159.11	41.44	69.65	784.05	-166.31	9,982.48	9,904.61	77.86	128.203	
16,800.00	6,916.91	6,028.00	6,027.71	160.68	41.44	69.65	784.05	-166.31	10,079.39	10,001.45	77.94	129.320	
16,900.00	6,916.59	6,028.00	6,027.71	162.26	41.44	69.65	784.05	-166.31	10,176.36	10,098.34	78.02	130.435	
17,000.00	6,916.27	6,028.00	6,027.71	163.84	41.44	69.65	784.05	-166.31	10,273.38	10,195.29	78.10	131.549	
17,100.00	6,915.95	6,028.00	6,027.71	165.41	41.44	69.65	784.05	-166.31	10,370.47	10,292.29	78.17	132.661	
17,200.00	6,915.62	6,028.00	6,027.71	166.99	41.44	69.65	784.05	-166.31	10,467.60	10,389.35	78.25	133.771	
17,300.00	6,915.30	6,028.00	6,027.71	168.57	41.44	69.65	784.05	-166.31	10,564.80	10,486.47	78.33	134.880	
17,400.00	6,914.98	6,028.00	6,027.71	170.15	41.44	69.65	784.05	-166.31	10,662.04	10,583.63	78.41	135.986	
17,500.00	6,914.65	6,028.00	6,027.71	171.73	41.44	69.65	784.05	-166.31	10,759.33	10,680.85	78.48	137.091	
17,600.00	6,914.33	6,028.00	6,027.71	173.31	41.44	69.65	784.05	-166.31	10,856.68	10,778.12	78.56	138.194	
17,700.00	6,914.01	6,028.00	6,027.71	174.89	41.44	69.65	784.05	-166.31	10,954.07	10,875.43	78.64	139.295	
17,800.00	6,913.68	6,028.00	6,027.71	176.47	41.44	69.65	784.05	-166.31	11,051.51	10,972.79	78.72	140.394	
17,900.00	6,913.36	6,028.00	6,027.71	178.05	41.44	69.65	784.05	-166.31	11,148.99	11,070.19	78.80	141.491	
18,000.00	6,913.04	6,028.00	6,027.71	179.63	41.44	69.65	784.05	-166.31	11,246.52	11,167.64	78.88	142.586	
18,100.00	6,912.72	6,028.00	6,027.71	181.21	41.44	69.65	784.05	-166.31	11,344.09	11,265.13	78.95	143.678	
18,111.83	6,912.68	6,028.00	6,027.71	181.40	41.44	69.65	784.05	-166.31	11,355.63	11,276.67	78.96	143.808	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 561-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-17.11	793.86	-244.42	832.72				
54.25	54.25	0.00	0.00	0.02	0.00	-78.67	793.86	-244.42	830.62	830.61	0.01	N/A	
59.58	59.58	0.00	0.00	0.02	0.00	-80.94	793.86	-244.42	830.61	830.59	0.01	N/A	CC, ES
130.42	130.42	66.73	66.72	0.11	0.14	-105.90	793.82	-245.17	830.83	830.63	0.20	4,150.872	
219.69	219.69	150.01	149.95	0.23	0.32	-80.07	793.68	-248.20	831.68	831.25	0.43	1,912.160	
308.67	308.67	232.77	232.53	0.35	0.49	-89.36	793.44	-253.51	833.12	832.45	0.67	1,247.750	
454.00	453.99	367.14	366.21	0.51	0.77	135.15	792.83	-267.01	837.81	836.69	1.12	747.048	
544.00	543.93	449.79	448.08	0.74	0.95	134.74	792.32	-278.31	843.49	841.91	1.58	534.537	
667.00	666.63	561.00	557.68	1.13	1.18	120.73	791.47	-297.08	854.72	852.48	2.24	381.706	
756.00	755.27	652.00	647.06	1.44	1.53	134.92	790.55	-314.15	864.75	861.85	2.90	298.222	
850.00	848.62	712.00	705.89	1.79	1.78	135.85	790.84	-325.91	879.69	876.19	3.50	251.335	
942.00	939.50	773.00	765.06	2.14	2.09	141.58	792.85	-340.58	901.24	897.10	4.14	217.530	
1,033.00	1,028.89	847.09	836.44	2.52	2.48	150.30	795.33	-360.29	927.32	922.48	4.85	191.254	
1,123.00	1,117.00	901.25	888.11	2.90	2.81	156.17	798.11	-376.25	957.97	952.50	5.47	175.203	
1,214.00	1,206.00	975.12	958.04	3.29	3.29	154.59	802.60	-399.61	991.44	985.23	6.20	159.853	
1,309.00	1,298.75	1,046.18	1,024.56	3.71	3.80	156.68	806.86	-424.23	1,028.58	1,021.61	6.97	147.664	
1,403.00	1,390.39	1,117.16	1,090.28	4.13	4.35	158.96	811.10	-450.71	1,067.62	1,059.89	7.74	137.979	
1,498.00	1,482.88	1,186.88	1,154.45	4.56	4.90	154.29	815.73	-477.59	1,108.93	1,100.43	8.50	130.434	
1,592.00	1,573.82	1,244.67	1,207.33	5.00	5.38	152.66	820.20	-500.44	1,152.99	1,143.79	9.20	125.370	
1,687.00	1,665.32	1,396.89	1,344.95	5.46	6.67	154.00	829.73	-564.67	1,200.79	1,190.14	10.65	112.717	
1,876.00	1,847.35	1,556.62	1,490.38	6.38	7.95	154.87	831.37	-630.68	1,286.82	1,274.44	12.37	104.008	
1,970.00	1,937.87	1,620.10	1,547.94	6.84	8.51	154.28	832.33	-657.46	1,331.13	1,318.01	13.12	101.440	
2,064.00	2,028.42	1,670.00	1,592.93	7.30	8.95	154.34	833.56	-678.99	1,376.95	1,363.21	13.74	100.181	
2,159.00	2,119.97	1,741.28	1,656.90	7.77	9.61	154.87	836.06	-710.32	1,424.62	1,410.06	14.56	97.847	
2,348.00	2,302.44	1,856.00	1,759.21	8.69	10.70	148.63	842.16	-761.87	1,521.96	1,506.05	15.91	95.674	
2,443.00	2,394.41	1,900.31	1,798.37	9.15	11.14	147.59	845.47	-782.33	1,572.07	1,555.62	16.45	95.579	
2,537.00	2,485.45	1,949.00	1,840.98	9.61	11.63	146.89	850.02	-805.45	1,623.38	1,606.35	17.02	95.362	
2,632.00	2,577.48	2,014.65	1,898.12	10.07	12.30	146.66	856.75	-837.07	1,676.41	1,658.65	17.76	94.370	
2,727.00	2,669.50	2,090.19	1,963.86	10.53	13.07	146.07	864.47	-873.45	1,729.64	1,711.05	18.59	93.019	
2,821.00	2,760.56	2,162.90	2,027.19	10.98	13.79	145.25	872.18	-908.34	1,782.59	1,763.21	19.38	91.982	
2,916.00	2,852.68	2,266.73	2,118.39	11.44	14.78	144.67	884.59	-956.39	1,835.96	1,815.51	20.44	89.807	
3,011.00	2,945.03	2,371.87	2,211.79	11.89	15.75	144.41	895.24	-1,003.47	1,886.45	1,864.96	21.49	87.765	
3,105.00	3,036.57	2,506.00	2,331.56	12.33	16.98	137.53	907.51	-1,062.57	1,934.75	1,911.94	22.81	84.802	
3,200.00	3,128.81	2,559.57	2,379.56	12.78	17.48	133.14	911.48	-1,086.01	1,982.13	1,958.71	23.41	84.657	
3,294.00	3,219.76	2,599.75	2,415.14	13.24	17.85	132.54	915.01	-1,104.34	2,031.13	2,007.24	23.89	85.023	
3,389.00	3,311.82	2,717.07	2,518.90	13.69	18.98	133.45	924.72	-1,158.22	2,080.30	2,055.18	25.12	82.808	
3,483.00	3,403.03	2,795.52	2,588.42	14.14	19.72	133.46	930.64	-1,194.08	2,128.36	2,102.40	25.96	81.987	
3,578.00	3,495.31	2,860.06	2,645.62	14.60	20.34	134.02	936.00	-1,223.50	2,177.24	2,150.58	26.66	81.667	
3,672.00	3,586.65	3,129.98	2,892.07	15.04	22.50	134.42	960.81	-1,330.11	2,223.09	2,194.07	29.02	76.600	
3,767.00	3,678.95	3,337.00	3,088.56	15.49	23.75	134.96	974.69	-1,393.63	2,261.11	2,230.53	30.58	73.946	SF
3,862.00	3,771.63	3,337.00	3,088.56	15.93	23.75	135.20	974.69	-1,393.63	2,299.61	2,268.87	30.74	74.810	
3,956.00	3,863.70	3,337.00	3,088.56	16.35	23.75	135.71	974.69	-1,393.63	2,339.81	2,308.97	30.85	75.857	
4,052.00	3,957.54	3,337.00	3,088.56	16.79	23.75	133.89	974.69	-1,393.63	2,384.44	2,353.51	30.93	77.100	
4,146.00	4,048.88	3,337.00	3,088.56	17.24	23.75	133.20	974.69	-1,393.63	2,432.35	2,401.35	31.00	78.472	
4,241.00	4,140.47	3,337.00	3,088.56	17.71	23.75	135.12	974.69	-1,393.63	2,485.43	2,454.37	31.06	80.023	
4,336.00	4,231.25	3,337.00	3,088.56	18.21	23.75	138.13	974.69	-1,393.63	2,543.36	2,512.25	31.11	81.750	
4,430.00	4,320.59	3,337.00	3,088.56	18.71	23.75	135.88	974.69	-1,393.63	2,603.92	2,572.77	31.15	83.594	
4,524.00	4,409.51	3,337.00	3,088.56	19.22	23.75	130.92	974.69	-1,393.63	2,666.36	2,635.17	31.18	85.505	
4,619.00	4,498.98	3,337.00	3,088.56	19.75	23.75	129.83	974.69	-1,393.63	2,731.24	2,700.03	31.22	87.493	
4,713.00	4,587.83	3,337.00	3,088.56	20.27	23.75	131.01	974.69	-1,393.63	2,796.59	2,765.36	31.23	89.554	
4,807.00	4,676.97	3,337.00	3,088.56	20.78	23.75	132.21	974.69	-1,393.63	2,863.32	2,832.10	31.22	91.708	
4,870.00	4,736.65	3,337.00	3,088.56	21.12	23.75	132.79	974.69	-1,393.63	2,909.12	2,877.91	31.21	93.197	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 561-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	3,337.00	3,088.56	21.46	23.75	133.74	974.69	-1,393.63	2,955.22	2,924.02	31.20	94.731	
5,027.00	4,886.13	3,337.00	3,088.56	21.96	23.75	134.00	974.69	-1,393.63	3,025.04	2,993.88	31.16	97.076	
5,121.00	4,976.11	3,337.00	3,088.56	22.45	23.75	136.49	974.69	-1,393.63	3,095.58	3,064.47	31.11	99.502	
5,216.00	5,068.11	3,337.00	3,088.56	22.91	23.75	138.13	974.69	-1,393.63	3,166.30	3,135.28	31.03	102.053	
5,341.00	5,190.11	3,337.00	3,088.56	23.49	23.75	138.82	974.69	-1,393.63	3,259.23	3,228.34	30.89	105.516	
5,436.00	5,283.20	3,337.00	3,088.56	23.91	23.75	139.29	974.69	-1,393.63	3,330.38	3,299.60	30.77	108.220	
5,499.00	5,345.03	3,337.00	3,088.56	24.19	23.75	139.49	974.69	-1,393.63	3,377.97	3,347.28	30.70	110.042	
5,561.00	5,405.97	3,337.00	3,088.56	24.45	23.75	141.01	974.69	-1,393.63	3,425.10	3,394.49	30.62	111.861	
5,624.00	5,467.97	3,337.00	3,088.56	24.72	23.75	140.09	974.69	-1,393.63	3,473.23	3,442.70	30.54	113.733	
5,687.00	5,530.05	3,337.00	3,088.56	24.99	23.75	141.40	974.69	-1,393.63	3,521.63	3,491.17	30.46	115.626	
5,750.00	5,592.20	3,337.00	3,088.56	25.25	23.75	142.03	974.69	-1,393.63	3,570.30	3,539.93	30.37	117.541	
5,813.00	5,654.42	3,337.00	3,088.56	25.51	23.75	143.43	974.69	-1,393.63	3,619.25	3,588.96	30.29	119.478	
5,876.00	5,716.68	3,337.00	3,088.56	25.76	23.75	143.84	974.69	-1,393.63	3,668.52	3,638.31	30.21	121.433	
5,939.00	5,778.99	3,337.00	3,088.56	26.01	23.75	143.83	974.69	-1,393.63	3,718.07	3,687.94	30.13	123.404	
6,065.00	5,903.86	3,337.00	3,088.56	26.51	23.75	144.68	974.69	-1,393.63	3,817.45	3,787.48	29.96	127.401	
6,128.00	5,966.41	3,337.00	3,088.56	26.74	23.75	143.43	974.69	-1,393.63	3,867.20	3,837.32	29.88	129.428	
6,191.00	6,029.04	3,337.00	3,088.56	26.97	23.75	144.58	974.69	-1,393.63	3,917.02	3,887.22	29.79	131.466	
6,254.00	6,091.75	3,337.00	3,088.56	27.20	23.75	146.22	974.69	-1,393.63	3,966.83	3,937.12	29.71	133.525	
6,348.00	6,185.46	3,337.00	3,088.56	27.52	23.75	149.97	974.69	-1,393.63	4,041.11	4,011.53	29.58	136.631	
6,390.00	6,227.36	3,337.00	3,088.56	27.61	23.75	149.97	974.69	-1,393.63	4,074.40	4,045.06	29.33	138.897	
6,400.00	6,237.33	3,337.00	3,088.56	27.61	23.75	149.97	974.69	-1,393.63	4,082.34	4,053.04	29.30	139.307	
6,490.00	6,327.12	3,337.00	3,088.56	27.66	23.75	149.97	974.69	-1,393.63	4,154.28	4,125.23	29.05	142.997	
6,500.00	6,337.09	3,337.00	3,088.56	27.66	23.75	136.44	974.69	-1,393.63	4,162.30	4,133.27	29.02	143.408	
6,550.00	6,386.85	3,337.00	3,088.56	27.70	23.75	94.55	974.69	-1,393.63	4,201.91	4,173.01	28.89	145.429	
6,600.00	6,436.20	3,337.00	3,088.56	27.74	23.75	76.99	974.69	-1,393.63	4,240.55	4,211.78	28.77	147.392	
6,650.00	6,484.82	3,337.00	3,088.56	27.79	23.75	66.98	974.69	-1,393.63	4,278.01	4,249.35	28.66	149.275	
6,700.00	6,532.40	3,337.00	3,088.56	27.85	23.75	60.08	974.69	-1,393.63	4,314.08	4,285.52	28.56	151.066	
6,750.00	6,578.63	3,337.00	3,088.56	27.92	23.75	54.86	974.69	-1,393.63	4,348.57	4,320.10	28.47	152.749	
6,800.00	6,623.24	3,337.00	3,088.56	28.00	23.75	50.72	974.69	-1,393.63	4,381.31	4,352.92	28.39	154.311	
6,850.00	6,665.93	3,337.00	3,088.56	28.09	23.75	47.36	974.69	-1,393.63	4,412.12	4,383.79	28.33	155.737	
6,900.00	6,706.42	3,337.00	3,088.56	28.19	23.75	44.59	974.69	-1,393.63	4,440.85	4,412.57	28.28	157.010	
6,950.00	6,744.48	3,337.00	3,088.56	28.30	23.75	42.28	974.69	-1,393.63	4,467.37	4,439.11	28.25	158.117	
7,000.00	6,779.84	3,337.00	3,088.56	28.43	23.75	40.36	974.69	-1,393.63	4,491.53	4,463.29	28.24	159.040	
7,050.00	6,812.30	3,337.00	3,088.56	28.57	23.75	38.76	974.69	-1,393.63	4,513.24	4,484.99	28.25	159.765	
7,100.00	6,841.63	3,337.00	3,088.56	28.73	23.75	37.45	974.69	-1,393.63	4,532.38	4,504.10	28.28	160.279	
7,150.00	6,867.66	3,337.00	3,088.56	28.90	23.75	36.37	974.69	-1,393.63	4,548.87	4,520.54	28.33	160.571	
7,200.00	6,890.22	3,337.00	3,088.56	29.08	23.75	35.50	974.69	-1,393.63	4,562.64	4,534.23	28.40	160.631	
7,250.00	6,909.17	3,337.00	3,088.56	29.28	23.75	34.84	974.69	-1,393.63	4,573.61	4,545.11	28.50	160.455	
7,300.00	6,924.38	3,337.00	3,088.56	29.49	23.75	34.35	974.69	-1,393.63	4,581.75	4,553.12	28.63	160.041	
7,350.00	6,935.77	3,337.00	3,088.56	29.72	23.75	34.03	974.69	-1,393.63	4,587.01	4,558.23	28.78	159.391	
7,400.00	6,943.25	3,337.00	3,088.56	29.97	23.75	33.88	974.69	-1,393.63	4,589.37	4,560.42	28.95	158.514	
7,450.00	6,946.78	3,337.00	3,088.56	30.22	23.75	33.88	974.69	-1,393.63	4,588.83	4,559.68	29.15	157.419	
7,471.54	6,947.08	3,337.00	3,088.56	30.34	23.75	33.93	974.69	-1,393.63	4,587.69	4,558.45	29.24	156.883	
7,500.00	6,946.98	3,337.00	3,088.56	30.49	23.75	33.90	974.69	-1,393.63	4,585.85	4,556.48	29.37	156.151	
7,600.00	6,946.65	3,337.00	3,088.56	31.07	23.75	33.80	974.69	-1,393.63	4,579.53	4,549.70	29.83	153.522	
7,700.00	6,946.32	3,337.00	3,088.56	31.69	23.75	33.71	974.69	-1,393.63	4,573.44	4,543.12	30.32	150.840	
7,800.00	6,945.99	3,337.00	3,088.56	32.35	23.75	33.61	974.69	-1,393.63	4,567.60	4,536.76	30.83	148.138	
7,900.00	6,945.67	3,337.00	3,088.56	33.05	23.75	33.53	974.69	-1,393.63	4,562.01	4,530.64	31.37	145.444	
8,000.00	6,945.34	3,337.00	3,088.56	33.79	23.75	33.44	974.69	-1,393.63	4,556.68	4,524.77	31.91	142.782	
8,034.58	6,945.23	3,337.00	3,088.56	34.05	23.75	33.42	974.69	-1,393.63	4,554.90	4,522.80	32.10	141.876	
8,100.00	6,945.02	3,337.00	3,088.56	34.57	23.75	33.42	974.69	-1,393.63	4,552.04	4,519.56	32.47	140.171	
8,200.00	6,944.69	3,337.00	3,088.56	35.41	23.75	33.42	974.69	-1,393.63	4,549.47	4,516.40	33.07	137.591	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 561-APC_ISCWSA REV 2 MWD

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,266.81	6,944.48	3,337.00	3,088.56	36.00	23.75	33.42	974.69	-1,393.63	4,548.98	4,515.50	33.48	135.882	
8,300.00	6,944.37	3,337.00	3,088.56	36.30	23.75	33.42	974.69	-1,393.63	4,549.10	4,515.42	33.68	135.067	
8,400.00	6,944.05	3,337.00	3,088.56	37.25	23.75	33.42	974.69	-1,393.63	4,550.93	4,516.61	34.32	132.618	
8,500.00	6,943.73	3,337.00	3,088.56	38.25	23.75	33.42	974.69	-1,393.63	4,554.95	4,519.98	34.97	130.257	
8,600.00	6,943.40	3,337.00	3,088.56	39.29	23.75	33.42	974.69	-1,393.63	4,561.17	4,525.53	35.63	127.998	
8,700.00	6,943.08	3,337.00	3,088.56	40.37	23.75	33.42	974.69	-1,393.63	4,569.56	4,533.25	36.31	125.847	
8,800.00	6,942.76	3,337.00	3,088.56	41.49	23.75	33.42	974.69	-1,393.63	4,580.12	4,543.13	36.99	123.813	
8,900.00	6,942.43	3,337.00	3,088.56	42.64	23.75	33.42	974.69	-1,393.63	4,592.84	4,555.16	37.68	121.898	
9,000.00	6,942.11	3,337.00	3,088.56	43.82	23.75	33.42	974.69	-1,393.63	4,607.69	4,569.32	38.36	120.105	
9,100.00	6,941.79	3,337.00	3,088.56	45.03	23.75	33.42	974.69	-1,393.63	4,624.65	4,585.61	39.05	118.434	
9,200.00	6,941.46	3,337.00	3,088.56	46.27	23.75	33.42	974.69	-1,393.63	4,643.71	4,603.98	39.73	116.885	
9,300.00	6,941.14	3,337.00	3,088.56	47.53	23.75	33.42	974.69	-1,393.63	4,664.84	4,624.43	40.40	115.457	
9,400.00	6,940.82	3,337.00	3,088.56	48.81	23.75	33.42	974.69	-1,393.63	4,688.00	4,646.93	41.07	114.146	
9,500.00	6,940.50	3,337.00	3,088.56	50.11	23.75	33.42	974.69	-1,393.63	4,713.17	4,671.44	41.73	112.951	
9,600.00	6,940.17	3,337.00	3,088.56	51.43	23.75	33.42	974.69	-1,393.63	4,740.32	4,697.94	42.37	111.867	
9,700.00	6,939.85	3,337.00	3,088.56	52.76	23.75	33.42	974.69	-1,393.63	4,769.41	4,726.40	43.01	110.892	
9,800.00	6,939.53	3,337.00	3,088.56	54.11	23.75	33.42	974.69	-1,393.63	4,800.41	4,756.77	43.63	110.022	
9,900.00	6,939.20	3,337.00	3,088.56	55.48	23.75	33.42	974.69	-1,393.63	4,833.27	4,789.03	44.24	109.252	
10,000.00	6,938.88	3,337.00	3,088.56	56.86	23.75	33.42	974.69	-1,393.63	4,867.97	4,823.14	44.83	108.579	
10,100.00	6,938.56	3,337.00	3,088.56	58.25	23.75	33.42	974.69	-1,393.63	4,904.47	4,859.06	45.41	107.998	
10,200.00	6,938.23	3,337.00	3,088.56	59.65	23.75	33.42	974.69	-1,393.63	4,942.72	4,896.74	45.98	107.507	
10,300.00	6,937.91	3,337.00	3,088.56	61.06	23.75	33.42	974.69	-1,393.63	4,982.68	4,936.16	46.52	107.100	
10,400.00	6,937.59	3,337.00	3,088.56	62.48	23.75	33.42	974.69	-1,393.63	5,024.31	4,977.26	47.06	106.775	
10,500.00	6,937.27	3,337.00	3,088.56	63.91	23.75	33.42	974.69	-1,393.63	5,067.58	5,020.01	47.57	106.528	
10,600.00	6,936.94	3,337.00	3,088.56	65.34	23.75	33.42	974.69	-1,393.63	5,112.44	5,064.37	48.07	106.354	
10,700.00	6,936.62	3,337.00	3,088.56	66.79	23.75	33.42	974.69	-1,393.63	5,158.84	5,110.29	48.55	106.251	
10,800.00	6,936.30	3,337.00	3,088.56	68.24	23.75	33.42	974.69	-1,393.63	5,206.75	5,157.73	49.02	106.216	
10,900.00	6,935.97	3,337.00	3,088.56	69.70	23.75	33.42	974.69	-1,393.63	5,256.13	5,206.66	49.47	106.244	
11,000.00	6,935.65	3,337.00	3,088.56	71.17	23.75	33.42	974.69	-1,393.63	5,306.94	5,257.03	49.91	106.335	
11,100.00	6,935.33	3,337.00	3,088.56	72.64	23.75	33.42	974.69	-1,393.63	5,359.12	5,308.79	50.33	106.483	
11,200.00	6,935.00	3,337.00	3,088.56	74.11	23.75	33.42	974.69	-1,393.63	5,412.66	5,361.92	50.73	106.687	
11,300.00	6,934.68	3,337.00	3,088.56	75.60	23.75	33.42	974.69	-1,393.63	5,467.49	5,416.37	51.12	106.944	
11,400.00	6,934.36	3,337.00	3,088.56	77.08	23.75	33.42	974.69	-1,393.63	5,523.60	5,472.10	51.50	107.252	
11,500.00	6,934.03	3,337.00	3,088.56	78.57	23.75	33.42	974.69	-1,393.63	5,580.93	5,529.06	51.86	107.608	
11,600.00	6,933.71	3,337.00	3,088.56	80.07	23.75	33.42	974.69	-1,393.63	5,639.45	5,587.24	52.21	108.010	
11,700.00	6,933.39	3,337.00	3,088.56	81.57	23.75	33.42	974.69	-1,393.63	5,699.13	5,646.58	52.55	108.455	
11,800.00	6,933.07	3,337.00	3,088.56	83.07	23.75	33.42	974.69	-1,393.63	5,759.92	5,707.05	52.87	108.942	
11,900.00	6,932.74	3,337.00	3,088.56	84.58	23.75	33.42	974.69	-1,393.63	5,821.80	5,768.61	53.18	109.469	
12,000.00	6,932.42	3,337.00	3,088.56	86.09	23.75	33.42	974.69	-1,393.63	5,884.72	5,831.24	53.48	110.034	
12,100.00	6,932.10	3,337.00	3,088.56	87.60	23.75	33.42	974.69	-1,393.63	5,948.66	5,894.89	53.77	110.636	
12,200.00	6,931.77	3,337.00	3,088.56	89.12	23.75	33.42	974.69	-1,393.63	6,013.59	5,959.54	54.04	111.271	
12,300.00	6,931.45	3,337.00	3,088.56	90.64	23.75	33.42	974.69	-1,393.63	6,079.46	6,025.15	54.31	111.940	
12,400.00	6,931.13	3,337.00	3,088.56	92.16	23.75	33.42	974.69	-1,393.63	6,146.26	6,091.69	54.57	112.640	
12,500.00	6,930.80	3,337.00	3,088.56	93.69	23.75	33.42	974.69	-1,393.63	6,213.95	6,159.14	54.81	113.369	
12,600.00	6,930.48	3,337.00	3,088.56	95.22	23.75	33.42	974.69	-1,393.63	6,282.50	6,227.45	55.05	114.128	
12,700.00	6,930.16	3,337.00	3,088.56	96.75	23.75	33.42	974.69	-1,393.63	6,351.88	6,296.61	55.28	114.913	
12,800.00	6,929.84	3,337.00	3,088.56	98.28	23.75	33.42	974.69	-1,393.63	6,422.08	6,366.58	55.49	115.725	
12,900.00	6,929.51	3,337.00	3,088.56	99.82	23.75	33.42	974.69	-1,393.63	6,493.05	6,437.35	55.70	116.562	
13,000.00	6,929.19	3,337.00	3,088.56	101.35	23.75	33.42	974.69	-1,393.63	6,564.78	6,508.87	55.91	117.422	
13,100.00	6,928.87	3,337.00	3,088.56	102.89	23.75	33.42	974.69	-1,393.63	6,637.24	6,581.14	56.10	118.305	
13,200.00	6,928.54	3,337.00	3,088.56	104.43	23.75	33.42	974.69	-1,393.63	6,710.41	6,654.12	56.29	119.210	
13,300.00	6,928.22	3,337.00	3,088.56	105.97	23.75	33.42	974.69	-1,393.63	6,784.27	6,727.79	56.47	120.135	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #171A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 561-APC_ISCWSA REV 2 MWD

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	6,927.90	3,337.00	3,088.56	107.52	23.75	33.42	974.69	-1,393.63	6,858.78	6,802.14	56.65	121.080	
13,500.00	6,927.57	3,337.00	3,088.56	109.06	23.75	33.42	974.69	-1,393.63	6,933.94	6,877.13	56.82	122.043	
13,600.00	6,927.25	3,337.00	3,088.56	110.61	23.75	33.42	974.69	-1,393.63	7,009.72	6,952.74	56.98	123.025	
13,700.00	6,926.93	3,337.00	3,088.56	112.16	23.75	33.42	974.69	-1,393.63	7,086.10	7,028.96	57.13	124.024	
13,800.00	6,926.61	3,337.00	3,088.56	113.71	23.75	33.42	974.69	-1,393.63	7,163.06	7,105.77	57.29	125.040	
13,900.00	6,926.28	3,337.00	3,088.56	115.26	23.75	33.42	974.69	-1,393.63	7,240.59	7,183.15	57.43	126.071	
14,000.00	6,925.96	3,337.00	3,088.56	116.82	23.75	33.42	974.69	-1,393.63	7,318.66	7,261.08	57.57	127.117	
14,100.00	6,925.64	3,337.00	3,088.56	118.37	23.75	33.42	974.69	-1,393.63	7,397.25	7,339.54	57.71	128.177	
14,200.00	6,925.31	3,337.00	3,088.56	119.93	23.75	33.42	974.69	-1,393.63	7,476.36	7,418.52	57.84	129.251	
14,300.00	6,924.99	3,337.00	3,088.56	121.48	23.75	33.42	974.69	-1,393.63	7,555.97	7,497.99	57.97	130.338	
14,400.00	6,924.67	3,337.00	3,088.56	123.04	23.75	33.42	974.69	-1,393.63	7,636.05	7,577.95	58.10	131.437	
14,500.00	6,924.34	3,337.00	3,088.56	124.60	23.75	33.42	974.69	-1,393.63	7,716.60	7,658.38	58.22	132.548	
14,600.00	6,924.02	3,337.00	3,088.56	126.16	23.75	33.42	974.69	-1,393.63	7,797.60	7,739.27	58.33	133.671	
14,700.00	6,923.70	3,337.00	3,088.56	127.72	23.75	33.42	974.69	-1,393.63	7,879.04	7,820.59	58.45	134.804	
14,800.00	6,923.38	3,337.00	3,088.56	129.28	23.75	33.42	974.69	-1,393.63	7,960.89	7,902.34	58.56	135.948	
14,900.00	6,923.05	3,337.00	3,088.56	130.85	23.75	33.42	974.69	-1,393.63	8,043.16	7,984.50	58.67	137.102	
15,000.00	6,922.73	3,337.00	3,088.56	132.41	23.75	33.42	974.69	-1,393.63	8,125.83	8,067.06	58.77	138.265	
15,100.00	6,922.41	3,337.00	3,088.56	133.97	23.75	33.42	974.69	-1,393.63	8,208.88	8,150.01	58.87	139.436	
15,200.00	6,922.08	3,337.00	3,088.56	135.54	23.75	33.42	974.69	-1,393.63	8,292.31	8,233.34	58.97	140.617	
15,300.00	6,921.76	3,337.00	3,088.56	137.11	23.75	33.42	974.69	-1,393.63	8,376.10	8,317.03	59.07	141.805	
15,400.00	6,921.44	3,337.00	3,088.56	138.67	23.75	33.42	974.69	-1,393.63	8,460.24	8,401.08	59.16	143.001	
15,500.00	6,921.11	3,337.00	3,088.56	140.24	23.75	33.42	974.69	-1,393.63	8,544.72	8,485.47	59.25	144.205	
15,600.00	6,920.79	3,337.00	3,088.56	141.81	23.75	33.42	974.69	-1,393.63	8,629.54	8,570.19	59.34	145.415	
15,700.00	6,920.47	3,337.00	3,088.56	143.38	23.75	33.42	974.69	-1,393.63	8,714.68	8,655.24	59.43	146.632	
15,800.00	6,920.14	3,337.00	3,088.56	144.95	23.75	33.42	974.69	-1,393.63	8,800.13	8,740.61	59.52	147.855	
15,900.00	6,919.82	3,337.00	3,088.56	146.52	23.75	33.42	974.69	-1,393.63	8,885.88	8,826.28	59.60	149.085	
16,000.00	6,919.50	3,337.00	3,088.56	148.09	23.75	33.42	974.69	-1,393.63	8,971.93	8,912.24	59.69	150.320	
16,100.00	6,919.18	3,337.00	3,088.56	149.66	23.75	33.42	974.69	-1,393.63	9,058.26	8,998.50	59.77	151.560	
16,200.00	6,918.85	3,337.00	3,088.56	151.24	23.75	33.42	974.69	-1,393.63	9,144.88	9,085.03	59.85	152.805	
16,300.00	6,918.53	3,337.00	3,088.56	152.81	23.75	33.42	974.69	-1,393.63	9,231.76	9,171.84	59.92	154.056	
16,400.00	6,918.21	3,337.00	3,088.56	154.38	23.75	33.42	974.69	-1,393.63	9,318.91	9,258.91	60.00	155.310	
16,500.00	6,917.88	3,337.00	3,088.56	155.96	23.75	33.42	974.69	-1,393.63	9,406.31	9,346.23	60.08	156.569	
16,600.00	6,917.56	3,337.00	3,088.56	157.53	23.75	33.42	974.69	-1,393.63	9,493.96	9,433.81	60.15	157.832	
16,700.00	6,917.24	3,337.00	3,088.56	159.11	23.75	33.42	974.69	-1,393.63	9,581.86	9,521.63	60.23	159.099	
16,800.00	6,916.91	3,337.00	3,088.56	160.68	23.75	33.42	974.69	-1,393.63	9,669.99	9,609.69	60.30	160.369	
16,900.00	6,916.59	3,337.00	3,088.56	162.26	23.75	33.42	974.69	-1,393.63	9,758.34	9,697.97	60.37	161.643	
17,000.00	6,916.27	3,337.00	3,088.56	163.84	23.75	33.42	974.69	-1,393.63	9,846.92	9,786.48	60.44	162.919	
17,100.00	6,915.95	3,337.00	3,088.56	165.41	23.75	33.42	974.69	-1,393.63	9,935.72	9,875.21	60.51	164.199	
17,200.00	6,915.62	3,337.00	3,088.56	166.99	23.75	33.42	974.69	-1,393.63	10,024.73	9,964.15	60.58	165.481	
17,300.00	6,915.30	3,337.00	3,088.56	168.57	23.75	33.42	974.69	-1,393.63	10,113.94	10,053.29	60.65	166.766	
17,400.00	6,914.98	3,337.00	3,088.56	170.15	23.75	33.42	974.69	-1,393.63	10,203.35	10,142.64	60.72	168.053	
17,500.00	6,914.65	3,337.00	3,088.56	171.73	23.75	33.42	974.69	-1,393.63	10,292.96	10,232.18	60.78	169.342	
17,600.00	6,914.33	3,337.00	3,088.56	173.31	23.75	33.42	974.69	-1,393.63	10,382.76	10,321.91	60.85	170.633	
17,700.00	6,914.01	3,337.00	3,088.56	174.89	23.75	33.42	974.69	-1,393.63	10,472.74	10,411.83	60.91	171.926	
17,800.00	6,913.68	3,337.00	3,088.56	176.47	23.75	33.42	974.69	-1,393.63	10,562.91	10,501.93	60.98	173.221	
17,900.00	6,913.36	3,337.00	3,088.56	178.05	23.75	33.42	974.69	-1,393.63	10,653.25	10,592.20	61.04	174.517	
18,000.00	6,913.04	3,337.00	3,088.56	179.63	23.75	33.42	974.69	-1,393.63	10,743.76	10,682.65	61.11	175.814	
18,100.00	6,912.72	3,337.00	3,088.56	181.21	23.75	33.42	974.69	-1,393.63	10,834.43	10,773.26	61.17	177.112	
18,111.83	6,912.68	3,337.00	3,088.56	181.40	23.75	33.42	974.69	-1,393.63	10,845.17	10,783.99	61.18	177.266	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #181 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 553-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	-90.65	-123.71	-10,854.96	10,855.86				
54.25	54.25	0.00	0.00	0.02	0.00	-152.20	-123.71	-10,854.96	10,855.77				
130.42	130.42	205.48	205.47	0.11	0.24	-179.36	-123.05	-10,853.65	10,855.68	10,855.34	0.34	N/A	
219.69	219.69	481.55	481.46	0.23	0.56	-153.28	-120.09	-10,847.78	10,854.23	10,853.46	0.77	N/A	
308.67	308.67	595.29	595.13	0.35	0.74	-162.18	-118.61	-10,844.00	10,851.69	10,850.64	1.05	N/A	
454.00	453.99	627.11	626.93	0.51	0.80	63.27	-118.11	-10,843.15	10,847.74	10,846.46	1.28	8,465.329	
544.00	543.93	643.00	642.81	0.74	0.83	63.64	-117.75	-10,842.84	10,844.70	10,843.16	1.54	7,044.651	
667.00	666.63	657.23	657.04	1.13	0.86	50.66	-117.46	-10,842.69	10,838.65	10,836.69	1.97	5,512.341	
756.00	755.27	673.00	672.81	1.44	0.89	65.55	-117.29	-10,842.72	10,834.37	10,832.06	2.31	4,695.404	
850.00	848.62	673.00	672.81	1.79	0.89	67.21	-117.29	-10,842.72	10,830.55	10,827.89	2.65	4,083.092	
942.00	939.50	673.00	672.81	2.14	0.89	73.64	-117.29	-10,842.72	10,827.15	10,824.14	3.01	3,596.657	
1,033.00	1,028.89	704.00	703.79	2.52	0.95	82.88	-116.79	-10,843.43	10,825.75	10,822.31	3.44	3,146.434	
1,037.05	1,032.86	704.00	703.79	2.54	0.95	83.17	-116.79	-10,843.43	10,825.75	10,822.29	3.46	3,130.873	
1,123.00	1,117.00	704.00	703.79	2.90	0.95	88.98	-116.79	-10,843.43	10,827.03	10,823.21	3.82	2,833.216	
1,214.00	1,206.00	704.00	703.79	3.29	0.95	88.31	-116.79	-10,843.43	10,829.96	10,825.74	4.21	2,569.917	
1,309.00	1,298.75	720.20	719.98	3.71	0.98	91.19	-116.43	-10,844.12	10,834.14	10,829.48	4.66	2,323.092	
1,403.00	1,390.39	733.00	732.76	4.13	1.00	94.19	-116.20	-10,844.78	10,840.08	10,834.97	5.11	2,122.342	
1,498.00	1,482.88	733.00	732.76	4.56	1.00	90.90	-116.20	-10,844.78	10,846.81	10,841.27	5.54	1,959.055	
1,592.00	1,573.82	747.42	747.15	5.00	1.04	90.37	-115.85	-10,845.68	10,853.50	10,847.50	6.01	1,806.856	
1,687.00	1,665.32	764.00	763.66	5.46	1.07	93.29	-115.16	-10,846.98	10,861.71	10,855.21	6.50	1,671.530	
1,876.00	1,847.35	764.00	763.66	6.38	1.07	95.85	-115.16	-10,846.98	10,882.64	10,875.23	7.41	1,467.679	
1,970.00	1,937.87	778.65	778.22	6.84	1.11	96.04	-114.40	-10,848.35	10,894.78	10,886.88	7.90	1,378.902	
2,064.00	2,028.42	794.00	793.47	7.30	1.15	96.62	-113.63	-10,849.98	10,907.84	10,899.45	8.39	1,300.600	
2,159.00	2,119.97	794.00	793.47	7.77	1.15	97.82	-113.63	-10,849.98	10,922.10	10,913.26	8.84	1,235.026	
2,348.00	2,302.44	825.00	824.18	8.69	1.22	93.36	-112.07	-10,853.91	10,951.20	10,941.39	9.81	1,116.121	
2,443.00	2,394.41	825.00	824.18	9.15	1.22	92.78	-112.07	-10,853.91	10,965.58	10,955.32	10.26	1,069.147	
2,537.00	2,485.45	825.00	824.18	9.61	1.22	92.56	-112.07	-10,853.91	10,980.42	10,969.72	10.70	1,026.685	
2,632.00	2,577.48	825.00	824.18	10.07	1.22	92.85	-112.07	-10,853.91	10,996.21	10,985.08	11.14	987.354	
2,727.00	2,669.50	855.00	853.80	10.53	1.29	92.93	-111.06	-10,858.51	11,012.69	11,001.05	11.64	945.958	
2,821.00	2,760.56	855.00	853.80	10.98	1.29	92.70	-111.06	-10,858.51	11,029.68	11,017.61	12.08	913.365	
2,916.00	2,852.68	869.65	868.24	11.44	1.33	92.73	-110.83	-10,861.00	11,047.49	11,034.95	12.54	880.826	
3,011.00	2,945.03	886.00	884.33	11.89	1.37	93.00	-110.57	-10,863.90	11,065.94	11,052.94	13.00	851.030	
3,105.00	3,036.57	886.00	884.33	12.33	1.37	87.44	-110.57	-10,863.90	11,083.83	11,070.41	13.42	826.108	
3,200.00	3,128.81	886.00	884.33	12.78	1.37	83.96	-110.57	-10,863.90	11,100.89	11,087.05	13.84	801.944	
3,294.00	3,219.76	886.00	884.33	13.24	1.37	83.59	-110.57	-10,863.90	11,117.74	11,103.47	14.27	778.976	
3,389.00	3,311.82	886.00	884.33	13.69	1.37	84.71	-110.57	-10,863.90	11,135.73	11,121.03	14.70	757.435	
3,483.00	3,403.03	919.12	916.78	14.14	1.45	85.09	-109.84	-10,870.48	11,153.98	11,138.78	15.20	733.804	
3,578.00	3,495.31	948.00	944.86	14.60	1.53	85.77	-108.91	-10,877.15	11,174.04	11,158.35	15.69	712.262	
3,672.00	3,586.65	948.00	944.86	15.04	1.53	86.77	-108.91	-10,877.15	11,194.49	11,178.39	16.10	695.330	
3,767.00	3,678.95	948.00	944.86	15.49	1.53	87.36	-108.91	-10,877.15	11,216.23	11,199.72	16.51	679.228	
3,862.00	3,771.63	948.00	944.86	15.93	1.53	87.51	-108.91	-10,877.15	11,238.86	11,221.95	16.91	664.546	
3,956.00	3,863.70	961.27	957.70	16.35	1.58	87.97	-108.37	-10,880.44	11,262.04	11,244.71	17.33	649.988	
4,052.00	3,957.54	978.00	973.87	16.79	1.64	86.44	-107.57	-10,884.67	11,286.14	11,268.38	17.76	635.407	
4,146.00	4,048.88	978.00	973.87	17.24	1.64	86.01	-107.57	-10,884.67	11,310.08	11,291.91	18.16	622.747	
4,241.00	4,140.47	1,010.00	1,004.69	17.71	1.76	88.05	-105.79	-10,893.09	11,335.20	11,316.53	18.67	607.020	
4,336.00	4,231.25	1,010.00	1,004.69	18.21	1.76	90.85	-105.79	-10,893.09	11,362.27	11,343.16	19.12	594.416	
4,430.00	4,320.59	1,010.00	1,004.69	18.71	1.76	89.05	-105.79	-10,893.09	11,390.12	11,370.56	19.56	582.317	
4,524.00	4,409.51	1,041.00	1,034.33	19.22	1.90	85.29	-103.72	-10,901.94	11,417.23	11,397.13	20.10	567.939	
4,619.00	4,498.98	1,041.00	1,034.33	19.75	1.90	84.50	-103.72	-10,901.94	11,443.95	11,423.38	20.57	556.409	
4,713.00	4,587.83	1,041.00	1,034.33	20.27	1.90	85.00	-103.72	-10,901.94	11,471.01	11,449.99	21.02	545.749	
4,807.00	4,676.97	1,071.00	1,062.83	20.78	2.05	86.17	-101.38	-10,911.01	11,499.14	11,477.58	21.55	533.493	
4,870.00	4,736.65	1,071.00	1,062.83	21.12	2.05	86.59	-101.38	-10,911.01	11,518.54	11,496.69	21.85	527.143	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #181 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 553-APC_ISCWSA REV 2 MWD **Rule Assigned:** **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	1,071.00	1,062.83	21.46	2.05	86.98	-101.38	-10,911.01	11,538.36	11,516.22	22.14	521.153	
5,027.00	4,886.13	1,085.38	1,076.44	21.96	2.13	87.45	-100.14	-10,915.48	11,568.60	11,545.99	22.61	511.584	
5,121.00	4,976.11	1,101.00	1,091.15	22.45	2.21	88.72	-98.65	-10,920.52	11,599.83	11,576.75	23.08	502.664	
5,216.00	5,068.11	1,101.00	1,091.15	22.91	2.21	89.51	-98.65	-10,920.52	11,632.13	11,608.67	23.46	495.808	
5,341.00	5,190.11	1,115.28	1,104.53	23.49	2.30	89.71	-97.13	-10,925.25	11,675.56	11,651.58	23.98	486.875	
5,436.00	5,283.20	1,132.00	1,120.15	23.91	2.40	90.02	-95.11	-10,930.88	11,709.20	11,684.82	24.38	480.287	
5,499.00	5,345.03	1,132.00	1,120.15	24.19	2.40	90.09	-95.11	-10,930.88	11,731.83	11,707.23	24.60	476.891	
5,561.00	5,405.97	1,147.44	1,134.51	24.45	2.50	91.29	-93.09	-10,936.16	11,754.42	11,729.55	24.87	472.631	
5,624.00	5,467.97	1,163.00	1,148.95	24.72	2.60	90.42	-90.94	-10,941.56	11,777.62	11,752.48	25.14	468.508	
5,687.00	5,530.05	1,163.00	1,148.95	24.99	2.60	91.47	-90.94	-10,941.56	11,801.03	11,775.68	25.35	465.597	
5,750.00	5,592.20	1,177.31	1,162.19	25.25	2.70	91.92	-88.93	-10,946.59	11,824.76	11,799.16	25.60	461.842	
5,813.00	5,654.42	1,194.00	1,177.60	25.51	2.82	93.08	-86.58	-10,952.56	11,848.85	11,822.99	25.87	458.096	
5,876.00	5,716.68	1,194.00	1,177.60	25.76	2.82	93.39	-86.58	-10,952.56	11,873.24	11,847.18	26.06	455.594	
5,939.00	5,778.99	1,194.00	1,177.60	26.01	2.82	93.31	-86.58	-10,952.56	11,897.90	11,871.64	26.25	453.195	
6,065.00	5,903.86	1,225.00	1,206.03	26.51	3.04	93.79	-82.03	-10,964.05	11,947.83	11,921.08	26.74	446.737	
6,128.00	5,966.41	1,225.00	1,206.03	26.74	3.04	92.56	-82.03	-10,964.05	11,972.96	11,946.04	26.92	444.753	
6,191.00	6,029.04	1,225.00	1,206.03	26.97	3.04	93.45	-82.03	-10,964.05	11,998.28	11,971.19	27.09	442.885	
6,254.00	6,091.75	1,225.00	1,206.03	27.20	3.04	94.74	-82.03	-10,964.05	12,023.92	11,996.66	27.26	441.162	
6,348.00	6,185.46	1,257.00	1,235.10	27.52	3.29	98.05	-76.92	-10,976.41	12,062.70	12,035.08	27.62	436.744	
6,390.00	6,227.36	1,257.00	1,235.10	27.61	3.29	98.05	-76.92	-10,976.41	12,080.18	12,052.52	27.67	436.622	
6,400.00	6,237.33	1,257.00	1,235.10	27.61	3.29	98.05	-76.92	-10,976.41	12,084.37	12,056.70	27.67	436.801	
6,490.00	6,327.12	1,297.00	1,271.28	27.66	3.61	98.09	-70.11	-10,992.06	12,122.21	12,094.38	27.82	435.675	
6,500.00	6,337.09	1,297.00	1,271.28	27.66	3.61	85.58	-70.11	-10,992.06	12,126.36	12,098.54	27.82	435.852	
6,550.00	6,386.85	1,297.00	1,271.28	27.70	3.61	48.52	-70.11	-10,992.06	12,145.09	12,117.28	27.82	436.611	
6,600.00	6,436.20	1,314.61	1,287.16	27.74	3.76	35.35	-66.93	-10,998.97	12,160.31	12,132.42	27.90	435.927	
6,650.00	6,484.82	1,328.00	1,299.18	27.79	3.87	29.28	-64.37	-11,004.29	12,172.02	12,144.06	27.96	435.312	
6,700.00	6,532.40	1,328.00	1,299.18	27.85	3.87	25.85	-64.37	-11,004.29	12,180.10	12,152.12	27.98	435.373	
6,750.00	6,578.63	1,340.51	1,310.38	27.92	3.97	23.73	-61.97	-11,009.31	12,184.52	12,156.47	28.06	434.296	
6,800.00	6,623.24	1,359.00	1,326.92	28.00	4.13	22.35	-58.53	-11,016.83	12,185.26	12,157.09	28.17	432.557	
6,850.00	6,665.93	1,359.00	1,326.92	28.09	4.13	21.42	-58.53	-11,016.83	12,182.28	12,154.07	28.21	431.846	
6,900.00	6,706.42	1,359.00	1,326.92	28.19	4.13	20.83	-58.53	-11,016.83	12,175.65	12,147.40	28.26	430.873	
6,950.00	6,744.48	1,374.06	1,340.36	28.30	4.26	20.52	-55.77	-11,023.04	12,165.36	12,136.98	28.39	428.573	
7,000.00	6,779.84	1,391.00	1,355.41	28.43	4.41	20.45	-52.60	-11,030.14	12,151.56	12,123.03	28.53	425.914	
7,050.00	6,812.30	1,391.00	1,355.41	28.57	4.41	20.54	-52.60	-11,030.14	12,134.20	12,105.60	28.61	424.181	
7,100.00	6,841.63	1,391.00	1,355.41	28.73	4.41	20.82	-52.60	-11,030.14	12,113.47	12,084.78	28.69	422.212	
7,150.00	6,867.66	1,391.00	1,355.41	28.90	4.41	21.30	-52.60	-11,030.14	12,089.48	12,060.70	28.78	420.022	
7,200.00	6,890.22	1,409.67	1,371.93	29.08	4.58	22.05	-49.05	-11,038.08	12,062.31	12,033.33	28.97	416.314	
7,250.00	6,909.17	1,422.00	1,382.82	29.28	4.70	23.03	-46.68	-11,043.36	12,032.16	12,003.02	29.14	412.905	
7,300.00	6,924.38	1,422.00	1,382.82	29.49	4.70	24.27	-46.68	-11,043.36	11,999.19	11,969.93	29.25	410.192	
7,350.00	6,935.77	1,422.00	1,382.82	29.72	4.70	25.85	-46.68	-11,043.36	11,963.60	11,934.23	29.37	407.351	
7,400.00	6,943.25	1,422.00	1,382.82	29.97	4.70	27.88	-46.68	-11,043.36	11,925.62	11,896.13	29.49	404.410	
7,450.00	6,946.78	1,435.87	1,395.03	30.22	4.83	30.56	-43.98	-11,049.36	11,885.39	11,855.71	29.68	400.447	
7,471.54	6,947.08	1,437.22	1,396.21	30.34	4.85	31.92	-43.71	-11,049.94	11,867.45	11,837.71	29.74	399.021	
7,500.00	6,946.98	1,438.94	1,397.72	30.49	4.86	31.18	-43.37	-11,050.69	11,843.50	11,813.68	29.82	397.209	
7,600.00	6,946.65	1,452.00	1,409.17	31.07	4.99	28.51	-40.74	-11,056.41	11,758.86	11,728.76	30.10	390.611	
7,700.00	6,946.32	1,452.00	1,409.17	31.69	4.99	25.60	-40.74	-11,056.41	11,673.54	11,643.23	30.31	385.113	
7,800.00	6,945.99	1,452.00	1,409.17	32.35	4.99	22.55	-40.74	-11,056.41	11,587.66	11,557.16	30.50	379.875	
7,900.00	6,945.67	1,452.00	1,409.17	33.05	4.99	19.36	-40.74	-11,056.41	11,501.34	11,470.66	30.68	374.908	
8,000.00	6,945.34	1,481.00	1,434.42	33.79	5.28	16.18	-34.82	-11,069.38	11,414.61	11,383.63	30.98	368.423	
8,034.58	6,945.23	1,481.00	1,434.42	34.05	5.28	15.01	-34.82	-11,069.38	11,384.53	11,353.49	31.03	366.874	
8,100.00	6,945.02	1,481.00	1,434.42	34.57	5.28	15.01	-34.82	-11,069.38	11,327.63	11,296.51	31.12	363.974	
8,200.00	6,944.69	1,481.00	1,434.42	35.41	5.28	15.01	-34.82	-11,069.38	11,240.85	11,209.58	31.27	359.498	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #181 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 553-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	1,481.00	1,434.42	36.30	5.28	15.01	-34.82	-11,069.38	11,154.28	11,122.86	31.42	354.970	
8,400.00	6,944.05	1,495.97	1,447.37	37.25	5.44	15.07	-31.74	-11,076.22	11,067.88	11,036.22	31.67	349.503	
8,500.00	6,943.73	1,511.00	1,460.32	38.25	5.59	15.14	-28.59	-11,083.17	10,981.71	10,949.79	31.92	344.040	
8,600.00	6,943.40	1,511.00	1,460.32	39.29	5.59	15.14	-28.59	-11,083.17	10,895.72	10,863.61	32.10	339.402	
8,700.00	6,943.08	1,511.00	1,460.32	40.37	5.59	15.14	-28.59	-11,083.17	10,809.96	10,777.67	32.30	334.724	
8,800.00	6,942.76	1,526.42	1,473.55	41.49	5.76	15.21	-25.31	-11,090.39	10,724.38	10,691.80	32.58	329.136	
8,900.00	6,942.43	1,542.00	1,486.85	42.64	5.93	15.28	-21.96	-11,097.77	10,639.06	10,606.18	32.88	323.591	
9,000.00	6,942.11	1,542.00	1,486.85	43.82	5.93	15.28	-21.96	-11,097.77	10,553.93	10,520.83	33.10	318.845	
9,100.00	6,941.79	1,542.00	1,486.85	45.03	5.93	15.28	-21.96	-11,097.77	10,469.05	10,435.72	33.33	314.073	
9,200.00	6,941.46	1,573.00	1,513.17	46.27	6.27	15.41	-15.21	-11,112.70	10,384.39	10,350.64	33.75	307.711	
9,300.00	6,941.14	1,573.00	1,513.17	47.53	6.27	15.41	-15.21	-11,112.70	10,299.91	10,265.91	34.00	302.930	
9,400.00	6,940.82	1,573.00	1,513.17	48.81	6.27	15.41	-15.21	-11,112.70	10,215.72	10,181.45	34.27	298.134	
9,500.00	6,940.50	1,573.00	1,513.17	50.11	6.27	15.41	-15.21	-11,112.70	10,131.82	10,097.27	34.54	293.325	
9,600.00	6,940.17	1,588.14	1,525.93	51.43	6.44	15.48	-11.84	-11,120.13	10,048.10	10,013.19	34.91	287.824	
9,700.00	6,939.85	1,605.00	1,539.99	52.76	6.64	15.56	-7.93	-11,128.56	9,964.76	9,929.46	35.31	282.239	
9,800.00	6,939.53	1,605.00	1,539.99	54.11	6.64	15.56	-7.93	-11,128.56	9,881.60	9,845.99	35.62	277.451	
9,900.00	6,939.20	1,605.00	1,539.99	55.48	6.64	15.56	-7.93	-11,128.56	9,798.76	9,762.82	35.94	272.665	
10,000.00	6,938.88	1,605.00	1,539.99	56.86	6.64	15.56	-7.93	-11,128.56	9,716.24	9,679.97	36.27	267.884	
10,100.00	6,938.56	1,620.90	1,553.16	58.25	6.83	15.63	-4.13	-11,136.64	9,633.97	9,597.27	36.71	262.465	
10,200.00	6,938.23	1,636.00	1,565.59	59.65	7.01	15.71	-0.49	-11,144.39	9,552.02	9,514.87	37.15	257.119	
10,300.00	6,937.91	1,636.00	1,565.59	61.06	7.01	15.71	-0.49	-11,144.39	9,470.35	9,432.83	37.52	252.410	
10,400.00	6,937.59	1,636.00	1,565.59	62.48	7.01	15.71	-0.49	-11,144.39	9,389.04	9,351.13	37.90	247.720	
10,500.00	6,937.27	1,666.00	1,590.05	63.91	7.38	15.85	6.90	-11,160.10	9,308.03	9,269.56	38.47	241.958	
10,600.00	6,936.94	1,666.00	1,590.05	65.34	7.38	15.85	6.90	-11,160.10	9,227.28	9,188.41	38.88	237.348	
10,700.00	6,936.62	1,666.00	1,590.05	66.79	7.38	15.85	6.90	-11,160.10	9,146.91	9,107.62	39.30	232.765	
10,800.00	6,936.30	1,682.23	1,603.18	68.24	7.59	15.93	10.93	-11,168.76	9,066.87	9,027.05	39.82	227.677	
10,900.00	6,935.97	1,696.00	1,614.26	69.70	7.77	15.99	14.35	-11,176.17	8,987.16	8,946.81	40.35	222.735	
11,000.00	6,935.65	1,696.00	1,614.26	71.17	7.77	15.99	14.35	-11,176.17	8,907.81	8,867.01	40.81	218.283	
11,100.00	6,935.33	1,714.05	1,628.73	72.64	8.00	16.08	18.83	-11,186.00	8,828.78	8,787.40	41.39	213.331	
11,200.00	6,935.00	1,727.00	1,639.04	74.11	8.17	16.14	22.05	-11,193.14	8,750.15	8,708.20	41.95	208.604	
11,300.00	6,934.68	1,727.00	1,639.04	75.60	8.17	16.14	22.05	-11,193.14	8,671.90	8,629.45	42.45	204.302	
11,400.00	6,934.36	1,741.36	1,650.41	77.08	8.37	16.21	25.65	-11,201.14	8,594.02	8,550.97	43.04	199.659	
11,500.00	6,934.03	1,757.00	1,662.69	78.57	8.58	16.29	29.61	-11,209.97	8,516.58	8,472.91	43.66	195.059	
11,600.00	6,933.71	1,757.00	1,662.69	80.07	8.58	16.29	29.61	-11,209.97	8,439.51	8,395.31	44.20	190.924	
11,700.00	6,933.39	1,757.00	1,662.69	81.57	8.58	16.29	29.61	-11,209.97	8,362.94	8,318.18	44.76	186.839	
11,800.00	6,933.07	1,787.00	1,685.99	83.07	9.00	16.44	37.27	-11,227.25	8,286.76	8,241.25	45.50	182.109	
11,900.00	6,932.74	1,787.00	1,685.99	84.58	9.00	16.44	37.27	-11,227.25	8,210.98	8,164.89	46.09	178.153	
12,000.00	6,932.42	1,800.77	1,696.58	86.09	9.19	16.50	40.82	-11,235.30	8,135.69	8,088.92	46.77	173.954	
12,100.00	6,932.10	1,818.00	1,709.77	87.60	9.44	16.59	45.33	-11,245.42	8,060.82	8,013.33	47.48	169.759	
12,200.00	6,931.77	1,818.00	1,709.77	89.12	9.44	16.59	45.33	-11,245.42	7,986.43	7,938.32	48.11	165.993	
12,300.00	6,931.45	1,836.16	1,723.57	90.64	9.71	16.68	50.20	-11,256.18	7,912.47	7,863.61	48.86	161.927	
12,400.00	6,931.13	1,850.00	1,733.98	92.16	9.91	16.75	54.01	-11,264.47	7,839.06	7,789.46	49.61	158.028	
12,500.00	6,930.80	1,850.00	1,733.98	93.69	9.91	16.75	54.01	-11,264.47	7,766.17	7,715.89	50.28	154.458	
12,600.00	6,930.48	1,881.00	1,757.03	95.22	10.38	16.91	62.67	-11,283.30	7,693.82	7,642.66	51.16	150.400	
12,700.00	6,930.16	1,881.00	1,757.03	96.75	10.38	16.91	62.67	-11,283.30	7,621.91	7,570.05	51.86	146.969	
12,800.00	6,929.84	6,896.00	6,053.19	98.28	54.34	71.97	948.73	-13,029.63	7,537.93	7,465.94	71.98	104.719	
12,900.00	6,929.51	6,896.00	6,053.19	99.82	54.34	71.97	948.73	-13,029.63	7,443.91	7,371.19	72.72	102.362	
13,000.00	6,929.19	6,896.00	6,053.19	101.35	54.34	71.97	948.73	-13,029.63	7,350.05	7,276.56	73.48	100.024	
13,100.00	6,928.87	6,896.00	6,053.19	102.89	54.34	71.97	948.73	-13,029.63	7,256.35	7,182.08	74.27	97.703	
13,200.00	6,928.54	6,896.00	6,053.19	104.43	54.34	71.97	948.73	-13,029.63	7,162.82	7,087.74	75.08	95.401	
13,300.00	6,928.22	6,896.00	6,053.19	105.97	54.34	71.97	948.73	-13,029.63	7,069.47	6,993.55	75.92	93.119	
13,400.00	6,927.90	6,896.00	6,053.19	107.52	54.34	71.97	948.73	-13,029.63	6,976.31	6,899.52	76.78	90.857	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #181 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 553-APC_ISCWSA REV 2 MWD

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,896.00	6,053.19	109.06	54.34	71.97	948.73	-13,029.63	6,883.33	6,805.65	77.68	88.615	
13,600.00	6,927.25	6,896.00	6,053.19	110.61	54.34	71.97	948.73	-13,029.63	6,790.56	6,711.96	78.60	86.394	
13,700.00	6,926.93	6,896.00	6,053.19	112.16	54.34	71.97	948.73	-13,029.63	6,697.99	6,618.44	79.55	84.195	
13,800.00	6,926.61	6,896.00	6,053.19	113.71	54.34	71.97	948.73	-13,029.63	6,605.64	6,525.10	80.54	82.018	
13,900.00	6,926.28	6,896.00	6,053.19	115.26	54.34	71.97	948.73	-13,029.63	6,513.52	6,431.96	81.56	79.863	
14,000.00	6,925.96	6,896.00	6,053.19	116.82	54.34	71.97	948.73	-13,029.63	6,421.63	6,339.02	82.61	77.732	
14,100.00	6,925.64	6,896.00	6,053.19	118.37	54.34	71.97	948.73	-13,029.63	6,329.99	6,246.29	83.70	75.625	
14,200.00	6,925.31	6,896.00	6,053.19	119.93	54.34	71.97	948.73	-13,029.63	6,238.60	6,153.77	84.83	73.542	
14,300.00	6,924.99	6,896.00	6,053.19	121.48	54.34	71.97	948.73	-13,029.63	6,147.49	6,061.49	86.00	71.484	
14,400.00	6,924.67	6,896.00	6,053.19	123.04	54.34	71.97	948.73	-13,029.63	6,056.65	5,969.44	87.21	69.452	
14,500.00	6,924.34	6,896.00	6,053.19	124.60	54.34	71.97	948.73	-13,029.63	5,966.11	5,877.65	88.46	67.445	
14,600.00	6,924.02	6,896.00	6,053.19	126.16	54.34	71.97	948.73	-13,029.63	5,875.87	5,786.11	89.75	65.466	
14,700.00	6,923.70	6,896.00	6,053.19	127.72	54.34	71.97	948.73	-13,029.63	5,785.95	5,694.85	91.10	63.513	
14,800.00	6,923.38	6,896.00	6,053.19	129.28	54.34	71.97	948.73	-13,029.63	5,696.37	5,603.88	92.49	61.588	
14,900.00	6,923.05	6,896.00	6,053.19	130.85	54.34	71.97	948.73	-13,029.63	5,607.15	5,513.21	93.94	59.691	
15,000.00	6,922.73	6,896.00	6,053.19	132.41	54.34	71.97	948.73	-13,029.63	5,518.29	5,422.85	95.43	57.824	
15,100.00	6,922.41	6,896.00	6,053.19	133.97	54.34	71.97	948.73	-13,029.63	5,429.82	5,332.83	96.99	55.985	
15,200.00	6,922.08	6,896.00	6,053.19	135.54	54.34	71.97	948.73	-13,029.63	5,341.75	5,243.16	98.60	54.177	
15,300.00	6,921.76	6,896.00	6,053.19	137.11	54.34	71.97	948.73	-13,029.63	5,254.12	5,153.85	100.27	52.399	
15,400.00	6,921.44	6,896.00	6,053.19	138.67	54.34	71.97	948.73	-13,029.63	5,166.93	5,064.92	102.01	50.652	
15,500.00	6,921.11	6,896.00	6,053.19	140.24	54.34	71.97	948.73	-13,029.63	5,080.21	4,976.40	103.81	48.937	
15,600.00	6,920.79	6,896.00	6,053.19	141.81	54.34	71.97	948.73	-13,029.63	4,994.00	4,888.31	105.68	47.254	
15,700.00	6,920.47	6,896.00	6,053.19	143.38	54.34	71.97	948.73	-13,029.63	4,908.30	4,800.67	107.63	45.604	
15,800.00	6,920.14	6,896.00	6,053.19	144.95	54.34	71.97	948.73	-13,029.63	4,823.16	4,713.51	109.65	43.987	
15,900.00	6,919.82	6,896.00	6,053.19	146.52	54.34	71.97	948.73	-13,029.63	4,738.59	4,626.84	111.75	42.404	
16,000.00	6,919.50	6,896.00	6,053.19	148.09	54.34	71.97	948.73	-13,029.63	4,654.64	4,540.71	113.93	40.855	
16,100.00	6,919.18	6,896.00	6,053.19	149.66	54.34	71.97	948.73	-13,029.63	4,571.33	4,455.14	116.20	39.342	
16,200.00	6,918.85	6,896.00	6,053.19	151.24	54.34	71.97	948.73	-13,029.63	4,488.71	4,370.16	118.55	37.864	
16,300.00	6,918.53	6,896.00	6,053.19	152.81	54.34	71.97	948.73	-13,029.63	4,406.80	4,285.81	120.99	36.422	
16,400.00	6,918.21	6,896.00	6,053.19	154.38	54.34	71.97	948.73	-13,029.63	4,325.66	4,202.13	123.53	35.016	
16,500.00	6,917.88	6,896.00	6,053.19	155.96	54.34	71.97	948.73	-13,029.63	4,245.32	4,119.15	126.17	33.647	
16,600.00	6,917.56	6,896.00	6,053.19	157.53	54.34	71.97	948.73	-13,029.63	4,165.83	4,036.92	128.91	32.316	
16,700.00	6,917.24	6,896.00	6,053.19	159.11	54.34	71.97	948.73	-13,029.63	4,087.25	3,955.50	131.75	31.023	
16,800.00	6,916.91	6,896.00	6,053.19	160.68	54.34	71.97	948.73	-13,029.63	4,009.61	3,874.92	134.70	29.768	
16,900.00	6,916.59	6,896.00	6,053.19	162.26	54.34	71.97	948.73	-13,029.63	3,932.99	3,795.24	137.75	28.551	
17,000.00	6,916.27	6,896.00	6,053.19	163.84	54.34	71.97	948.73	-13,029.63	3,857.44	3,716.52	140.92	27.374	
17,100.00	6,915.95	6,896.00	6,053.19	165.41	54.34	71.97	948.73	-13,029.63	3,783.02	3,638.83	144.19	26.236	
17,200.00	6,915.62	6,896.00	6,053.19	166.99	54.34	71.97	948.73	-13,029.63	3,709.81	3,562.22	147.58	25.137	
17,300.00	6,915.30	6,896.00	6,053.19	168.57	54.34	71.97	948.73	-13,029.63	3,637.87	3,486.78	151.08	24.079	
17,400.00	6,914.98	6,896.00	6,053.19	170.15	54.34	71.97	948.73	-13,029.63	3,567.28	3,412.58	154.70	23.060	
17,500.00	6,914.65	6,896.00	6,053.19	171.73	54.34	71.97	948.73	-13,029.63	3,498.13	3,339.71	158.42	22.081	
17,600.00	6,914.33	6,896.00	6,053.19	173.31	54.34	71.97	948.73	-13,029.63	3,430.50	3,268.24	162.25	21.143	
17,700.00	6,914.01	6,896.00	6,053.19	174.89	54.34	71.97	948.73	-13,029.63	3,364.48	3,198.29	166.19	20.245	
17,800.00	6,913.68	6,896.00	6,053.19	176.47	54.34	71.97	948.73	-13,029.63	3,300.17	3,129.95	170.23	19.387	
17,900.00	6,913.36	6,896.00	6,053.19	178.05	54.34	71.97	948.73	-13,029.63	3,237.68	3,063.32	174.36	18.569	
18,000.00	6,913.04	6,896.00	6,053.19	179.63	54.34	71.97	948.73	-13,029.63	3,177.10	2,998.53	178.57	17.791	
18,100.00	6,912.72	6,896.00	6,053.19	181.21	54.34	71.97	948.73	-13,029.63	3,118.56	2,935.69	182.87	17.054	
18,111.83	6,912.68	6,896.00	6,053.19	181.40	54.34	71.97	948.73	-13,029.63	3,111.77	2,928.39	183.38	16.969	CC, ES, SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #228A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 352-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-46.85	459.17	-489.75	674.19				
54.25	54.25	0.00	0.00	0.02	0.00	-108.41	459.17	-489.75	671.42	671.41	0.01	N/A	
60.95	60.95	0.00	0.00	0.02	0.00	-111.25	459.17	-489.75	671.38	671.37	0.02	N/A	
130.42	130.42	69.79	69.79	0.11	0.08	-135.59	459.12	-489.70	671.50	671.34	0.16	4,281.240	
219.69	219.69	160.84	160.84	0.23	0.18	-109.56	458.89	-489.50	671.45	671.11	0.34	1,971.822	
308.67	308.67	251.59	251.59	0.35	0.28	-118.51	458.48	-489.13	671.13	670.61	0.52	1,299.540	
442.32	442.32	383.00	382.99	0.50	0.46	108.58	457.63	-488.41	670.47	669.63	0.84	798.204	CC
454.00	453.99	392.61	392.60	0.51	0.48	106.94	457.60	-488.40	670.49	669.62	0.87	770.322	ES
544.00	543.93	461.27	461.25	0.74	0.61	107.37	458.15	-489.13	672.63	671.36	1.27	529.950	
667.00	666.63	547.02	546.85	1.13	0.80	94.70	461.56	-492.76	681.20	679.32	1.88	361.749	
756.00	755.27	605.59	605.08	1.44	0.95	109.90	465.91	-497.35	692.56	690.22	2.34	295.439	
850.00	848.62	668.91	667.69	1.79	1.11	111.64	472.45	-504.07	710.43	707.58	2.85	249.372	
942.00	939.50	727.92	725.66	2.14	1.29	118.24	480.24	-511.86	733.83	730.48	3.35	218.985	
1,033.00	1,028.89	780.00	776.43	2.52	1.50	127.96	488.45	-520.02	763.65	759.81	3.84	198.887	
1,123.00	1,117.00	842.00	836.27	2.90	1.78	135.01	500.05	-531.35	799.11	794.77	4.34	184.172	
1,214.00	1,206.00	889.08	881.20	3.29	2.03	134.79	510.14	-541.13	838.97	834.19	4.78	175.482	
1,309.00	1,298.75	944.64	933.64	3.71	2.36	138.17	523.25	-553.97	884.39	879.14	5.25	168.297	
1,403.00	1,390.39	999.00	984.45	4.13	2.71	142.00	536.99	-567.55	932.72	927.00	5.72	163.108	
1,498.00	1,482.88	1,050.69	1,032.15	4.56	3.09	138.50	551.36	-581.34	984.48	978.31	6.17	159.558	
1,592.00	1,573.82	1,093.00	1,070.71	5.00	3.41	137.52	563.91	-593.38	1,039.12	1,032.54	6.58	157.804	
1,687.00	1,665.32	1,138.73	1,111.82	5.46	3.80	141.33	578.35	-607.28	1,097.96	1,090.94	7.02	156.412	
1,876.00	1,847.35	1,217.00	1,180.74	6.38	4.51	145.06	605.43	-632.62	1,222.31	1,214.53	7.78	157.045	
1,970.00	1,937.87	1,265.24	1,222.47	6.84	4.99	145.58	623.38	-648.82	1,286.82	1,278.60	8.22	156.613	
2,064.00	2,028.42	1,303.04	1,254.77	7.30	5.38	146.62	638.01	-661.91	1,352.74	1,344.16	8.58	157.641	
2,159.00	2,119.97	1,344.37	1,289.63	7.77	5.82	148.29	654.52	-676.76	1,420.85	1,411.86	8.99	158.067	
2,348.00	2,302.44	1,426.81	1,358.07	8.69	6.75	143.53	688.21	-708.02	1,558.17	1,548.42	9.75	159.800	
2,443.00	2,394.41	1,476.09	1,398.29	9.15	7.33	143.13	708.74	-727.75	1,627.67	1,617.47	10.20	159.499	
2,537.00	2,485.45	1,529.00	1,441.15	9.61	7.96	143.00	730.40	-749.97	1,696.75	1,686.05	10.70	158.582	
2,632.00	2,577.48	1,574.77	1,477.96	10.07	8.53	143.49	749.14	-769.67	1,767.08	1,755.93	11.15	158.506	
2,727.00	2,669.50	1,616.20	1,511.02	10.53	9.05	143.61	766.39	-787.72	1,838.13	1,826.56	11.57	158.929	
2,821.00	2,760.56	1,655.00	1,541.73	10.98	9.55	143.40	782.89	-804.76	1,909.14	1,897.18	11.96	159.600	
2,916.00	2,852.68	1,701.90	1,578.54	11.44	10.16	143.73	803.30	-825.44	1,981.36	1,968.93	12.42	159.471	
3,011.00	2,945.03	1,755.94	1,620.84	11.89	10.84	144.42	826.90	-849.41	2,053.30	2,040.35	12.94	158.669	
3,105.00	3,036.57	1,794.34	1,650.65	12.33	11.35	137.80	843.93	-866.61	2,124.30	2,110.97	13.33	159.354	
3,200.00	3,128.81	1,860.33	1,701.69	12.78	12.20	132.92	873.45	-896.24	2,196.18	2,182.22	13.97	157.222	
3,294.00	3,219.76	1,951.42	1,772.62	13.24	13.33	132.79	914.65	-935.85	2,267.31	2,252.49	14.82	152.989	
3,389.00	3,311.82	2,082.93	1,877.06	13.69	14.93	134.99	972.09	-991.39	2,337.32	2,321.32	16.00	146.059	
3,483.00	3,403.03	2,200.91	1,972.70	14.14	16.31	135.72	1,021.98	-1,039.14	2,404.74	2,387.69	17.05	141.033	
3,578.00	3,495.31	3,253.00	2,925.31	14.60	24.19	139.69	1,316.42	-1,317.12	2,446.69	2,423.58	23.11	105.865	
3,672.00	3,586.65	3,253.00	2,925.31	15.04	24.19	140.75	1,316.42	-1,317.12	2,484.51	2,461.07	23.44	106.007	
3,767.00	3,678.95	3,253.00	2,925.31	15.49	24.19	141.42	1,316.42	-1,317.12	2,525.88	2,502.15	23.73	106.425	
3,862.00	3,771.63	3,253.00	2,925.31	15.93	24.19	141.66	1,316.42	-1,317.12	2,569.00	2,545.01	23.99	107.085	
3,956.00	3,863.70	3,253.00	2,925.31	16.35	24.19	142.18	1,316.42	-1,317.12	2,613.21	2,589.00	24.21	107.946	
4,052.00	3,957.54	3,253.00	2,925.31	16.79	24.19	140.34	1,316.42	-1,317.12	2,661.53	2,637.12	24.41	109.014	
4,146.00	4,048.88	3,253.00	2,925.31	17.24	24.19	139.68	1,316.42	-1,317.12	2,712.78	2,688.17	24.61	110.236	
4,241.00	4,140.47	3,253.00	2,925.31	17.71	24.19	141.70	1,316.42	-1,317.12	2,768.92	2,744.13	24.80	111.666	
4,336.00	4,231.25	3,253.00	2,925.31	18.21	24.19	144.87	1,316.42	-1,317.12	2,829.56	2,804.59	24.97	113.307	
4,430.00	4,320.59	3,253.00	2,925.31	18.71	24.19	142.57	1,316.42	-1,317.12	2,892.51	2,867.38	25.13	115.091	
4,524.00	4,409.51	3,253.00	2,925.31	19.22	24.19	137.51	1,316.42	-1,317.12	2,957.21	2,931.92	25.29	116.946	
4,619.00	4,498.98	3,253.00	2,925.31	19.75	24.19	136.40	1,316.42	-1,317.12	3,024.25	2,998.81	25.44	118.877	
4,713.00	4,587.83	3,253.00	2,925.31	20.27	24.19	137.52	1,316.42	-1,317.12	3,091.44	3,065.87	25.58	120.877	
4,807.00	4,676.97	3,253.00	2,925.31	20.78	24.19	138.80	1,316.42	-1,317.12	3,159.73	3,134.04	25.70	122.968	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #228A - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 352-APC_ISCWSA REV 2 MWD — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,870.00	4,736.65	3,253.00	2,925.31	21.12	24.19	139.39	1,316.42	-1,317.12	3,206.45	3,180.68	25.77	124.414	
4,933.00	4,796.58	3,253.00	2,925.31	21.46	24.19	140.26	1,316.42	-1,317.12	3,253.34	3,227.50	25.84	125.905	
5,027.00	4,886.13	3,253.00	2,925.31	21.96	24.19	140.60	1,316.42	-1,317.12	3,324.18	3,298.24	25.93	128.177	
5,121.00	4,976.11	3,253.00	2,925.31	22.45	24.19	142.89	1,316.42	-1,317.12	3,395.50	3,369.48	26.01	130.525	
5,216.00	5,068.11	3,253.00	2,925.31	22.91	24.19	144.35	1,316.42	-1,317.12	3,466.69	3,440.63	26.07	132.982	
5,341.00	5,190.11	3,253.00	2,925.31	23.49	24.19	144.89	1,316.42	-1,317.12	3,559.89	3,533.77	26.12	136.286	
5,436.00	5,283.20	3,253.00	2,925.31	23.91	24.19	145.32	1,316.42	-1,317.12	3,631.05	3,604.90	26.15	138.851	
5,499.00	5,345.03	3,253.00	2,925.31	24.19	24.19	145.47	1,316.42	-1,317.12	3,678.58	3,652.41	26.17	140.574	
5,561.00	5,405.97	3,253.00	2,925.31	24.45	24.19	146.96	1,316.42	-1,317.12	3,725.58	3,699.40	26.18	142.290	
5,624.00	5,467.97	3,253.00	2,925.31	24.72	24.19	145.98	1,316.42	-1,317.12	3,773.52	3,747.33	26.20	144.053	
5,687.00	5,530.05	3,253.00	2,925.31	24.99	24.19	147.27	1,316.42	-1,317.12	3,821.68	3,795.48	26.21	145.830	
5,750.00	5,592.20	3,253.00	2,925.31	25.25	24.19	147.85	1,316.42	-1,317.12	3,870.07	3,843.85	26.22	147.625	
5,813.00	5,654.42	3,253.00	2,925.31	25.51	24.19	149.22	1,316.42	-1,317.12	3,918.68	3,892.46	26.22	149.436	
5,876.00	5,716.68	3,253.00	2,925.31	25.76	24.19	149.61	1,316.42	-1,317.12	3,967.57	3,941.34	26.23	151.261	
5,939.00	5,778.99	3,253.00	2,925.31	26.01	24.19	149.56	1,316.42	-1,317.12	4,016.70	3,990.46	26.24	153.096	
6,065.00	5,903.86	3,253.00	2,925.31	26.51	24.19	150.25	1,316.42	-1,317.12	4,115.13	4,088.89	26.24	156.802	
6,128.00	5,966.41	3,253.00	2,925.31	26.74	24.19	148.93	1,316.42	-1,317.12	4,164.34	4,138.10	26.24	158.675	
6,191.00	6,029.04	3,253.00	2,925.31	26.97	24.19	150.01	1,316.42	-1,317.12	4,213.59	4,187.34	26.24	160.549	
6,254.00	6,091.75	3,253.00	2,925.31	27.20	24.19	151.54	1,316.42	-1,317.12	4,262.77	4,236.53	26.24	162.437	
6,348.00	6,185.46	3,253.00	2,925.31	27.52	24.19	155.16	1,316.42	-1,317.12	4,336.02	4,309.79	26.24	165.274	
6,390.00	6,227.36	3,253.00	2,925.31	27.61	24.19	155.16	1,316.42	-1,317.12	4,368.82	4,342.79	26.03	167.831	
6,400.00	6,237.33	3,253.00	2,925.31	27.61	24.19	155.16	1,316.42	-1,317.12	4,376.66	4,350.64	26.01	168.244	
6,490.00	6,327.12	3,253.00	2,925.31	27.66	24.19	155.16	1,316.42	-1,317.12	4,447.54	4,421.67	25.87	171.936	
6,500.00	6,337.09	3,253.00	2,925.31	27.66	24.19	141.64	1,316.42	-1,317.12	4,455.45	4,429.59	25.85	172.346	
6,550.00	6,386.85	3,253.00	2,925.31	27.70	24.19	99.70	1,316.42	-1,317.12	4,494.59	4,468.81	25.78	174.343	
6,600.00	6,436.20	3,253.00	2,925.31	27.74	24.19	82.00	1,316.42	-1,317.12	4,532.95	4,507.23	25.72	176.256	
6,650.00	6,484.82	3,253.00	2,925.31	27.79	24.19	71.78	1,316.42	-1,317.12	4,570.29	4,544.62	25.67	178.062	
6,700.00	6,532.40	3,253.00	2,925.31	27.85	24.19	64.63	1,316.42	-1,317.12	4,606.42	4,580.79	25.63	179.745	
6,750.00	6,578.63	3,253.00	2,925.31	27.92	24.19	59.15	1,316.42	-1,317.12	4,641.12	4,615.52	25.60	181.292	
6,800.00	6,623.24	3,253.00	2,925.31	28.00	24.19	54.76	1,316.42	-1,317.12	4,674.22	4,648.63	25.59	182.685	
6,850.00	6,665.93	3,253.00	2,925.31	28.09	24.19	51.15	1,316.42	-1,317.12	4,705.54	4,679.95	25.59	183.908	
6,900.00	6,706.42	3,253.00	2,925.31	28.19	24.19	48.15	1,316.42	-1,317.12	4,734.91	4,709.31	25.60	184.942	
6,950.00	6,744.48	3,253.00	2,925.31	28.30	24.19	45.63	1,316.42	-1,317.12	4,762.20	4,736.57	25.63	185.770	
7,000.00	6,779.84	3,253.00	2,925.31	28.43	24.19	43.52	1,316.42	-1,317.12	4,787.26	4,761.57	25.69	186.373	
7,050.00	6,812.30	3,253.00	2,925.31	28.57	24.19	41.75	1,316.42	-1,317.12	4,809.97	4,784.21	25.76	186.736	
7,100.00	6,841.63	3,253.00	2,925.31	28.73	24.19	40.27	1,316.42	-1,317.12	4,830.22	4,804.37	25.85	186.845	
7,150.00	6,867.66	3,253.00	2,925.31	28.90	24.19	39.06	1,316.42	-1,317.12	4,847.91	4,821.95	25.97	186.687	
7,200.00	6,890.22	3,253.00	2,925.31	29.08	24.19	38.07	1,316.42	-1,317.12	4,862.97	4,836.86	26.11	186.257	
7,250.00	6,909.17	3,253.00	2,925.31	29.28	24.19	37.29	1,316.42	-1,317.12	4,875.31	4,849.03	26.27	185.550	
7,300.00	6,924.38	3,253.00	2,925.31	29.49	24.19	36.70	1,316.42	-1,317.12	4,884.88	4,858.41	26.47	184.571	
7,350.00	6,935.77	3,253.00	2,925.31	29.72	24.19	36.29	1,316.42	-1,317.12	4,891.63	4,864.95	26.68	183.327	
7,400.00	6,943.25	3,253.00	2,925.31	29.97	24.19	36.05	1,316.42	-1,317.12	4,895.54	4,868.62	26.92	181.831	
7,450.00	6,946.78	3,253.00	2,925.31	30.22	24.19	35.98	1,316.42	-1,317.12	4,896.59	4,869.40	27.19	180.102	
7,471.54	6,947.08	3,253.00	2,925.31	30.34	24.19	35.99	1,316.42	-1,317.12	4,896.16	4,868.85	27.31	179.290	
7,500.00	6,946.98	3,253.00	2,925.31	30.49	24.19	35.98	1,316.42	-1,317.12	4,895.24	4,867.76	27.47	178.188	
7,600.00	6,946.65	3,253.00	2,925.31	31.07	24.19	35.94	1,316.42	-1,317.12	4,891.99	4,863.91	28.08	174.219	
7,700.00	6,946.32	3,253.00	2,925.31	31.69	24.19	35.89	1,316.42	-1,317.12	4,888.74	4,860.01	28.73	170.168	
7,800.00	6,945.99	3,253.00	2,925.31	32.35	24.19	35.84	1,316.42	-1,317.12	4,885.48	4,856.07	29.42	166.088	
7,900.00	6,945.67	3,253.00	2,925.31	33.05	24.19	35.80	1,316.42	-1,317.12	4,882.23	4,852.10	30.13	162.025	
8,000.00	6,945.34	3,253.00	2,925.31	33.79	24.19	35.75	1,316.42	-1,317.12	4,878.99	4,848.11	30.88	158.018	
8,034.58	6,945.23	3,253.00	2,925.31	34.05	24.19	35.73	1,316.42	-1,317.12	4,877.87	4,846.73	31.14	156.654	
8,100.00	6,945.02	3,253.00	2,925.31	34.57	24.19	35.73	1,316.42	-1,317.12	4,876.19	4,844.55	31.64	154.098	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #228A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 352-APC_ISCWSA REV 2 MWD

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,192.37	6,944.72	3,253.00	2,925.31	35.34	24.19	35.73	1,316.42	-1,317.12	4,875.31	4,842.93	32.38	150.547	
8,200.00	6,944.69	3,253.00	2,925.31	35.41	24.19	35.73	1,316.42	-1,317.12	4,875.32	4,842.88	32.44	150.265	
8,300.00	6,944.37	3,253.00	2,925.31	36.30	24.19	35.73	1,316.42	-1,317.12	4,876.50	4,843.23	33.28	146.550	
8,400.00	6,944.05	3,253.00	2,925.31	37.25	24.19	35.73	1,316.42	-1,317.12	4,879.73	4,845.60	34.13	142.974	
8,500.00	6,943.73	3,253.00	2,925.31	38.25	24.19	35.73	1,316.42	-1,317.12	4,885.01	4,850.00	35.01	139.550	
8,600.00	6,943.40	3,253.00	2,925.31	39.29	24.19	35.73	1,316.42	-1,317.12	4,892.33	4,856.43	35.90	136.289	
8,700.00	6,943.08	3,253.00	2,925.31	40.37	24.19	35.73	1,316.42	-1,317.12	4,901.67	4,864.87	36.80	133.197	
8,800.00	6,942.76	3,253.00	2,925.31	41.49	24.19	35.73	1,316.42	-1,317.12	4,913.03	4,875.32	37.71	130.277	
8,900.00	6,942.43	3,253.00	2,925.31	42.64	24.19	35.73	1,316.42	-1,317.12	4,926.40	4,887.77	38.63	127.530	
9,000.00	6,942.11	3,253.00	2,925.31	43.82	24.19	35.73	1,316.42	-1,317.12	4,941.76	4,902.21	39.55	124.952	
9,100.00	6,941.79	3,253.00	2,925.31	45.03	24.19	35.73	1,316.42	-1,317.12	4,959.08	4,918.61	40.47	122.543	
9,200.00	6,941.46	3,253.00	2,925.31	46.27	24.19	35.73	1,316.42	-1,317.12	4,978.35	4,936.97	41.38	120.296	
9,300.00	6,941.14	3,253.00	2,925.31	47.53	24.19	35.73	1,316.42	-1,317.12	4,999.55	4,957.26	42.29	118.207	
9,400.00	6,940.82	3,253.00	2,925.31	48.81	24.19	35.73	1,316.42	-1,317.12	5,022.65	4,979.46	43.20	116.271	
9,500.00	6,940.50	3,253.00	2,925.31	50.11	24.19	35.73	1,316.42	-1,317.12	5,047.63	5,003.54	44.09	114.481	
9,600.00	6,940.17	3,253.00	2,925.31	51.43	24.19	35.73	1,316.42	-1,317.12	5,074.46	5,029.48	44.97	112.831	
9,700.00	6,939.85	3,253.00	2,925.31	52.76	24.19	35.73	1,316.42	-1,317.12	5,103.10	5,057.26	45.84	111.314	
9,800.00	6,939.53	3,253.00	2,925.31	54.11	24.19	35.73	1,316.42	-1,317.12	5,133.53	5,086.83	46.70	109.926	
9,900.00	6,939.20	3,253.00	2,925.31	55.48	24.19	35.73	1,316.42	-1,317.12	5,165.72	5,118.18	47.54	108.658	
10,000.00	6,938.88	3,253.00	2,925.31	56.86	24.19	35.73	1,316.42	-1,317.12	5,199.64	5,151.27	48.37	107.506	
10,100.00	6,938.56	3,253.00	2,925.31	58.25	24.19	35.73	1,316.42	-1,317.12	5,235.24	5,186.07	49.17	106.463	
10,200.00	6,938.23	3,253.00	2,925.31	59.65	24.19	35.73	1,316.42	-1,317.12	5,272.50	5,222.54	49.96	105.524	
10,300.00	6,937.91	3,253.00	2,925.31	61.06	24.19	35.73	1,316.42	-1,317.12	5,311.38	5,260.65	50.74	104.684	
10,400.00	6,937.59	3,253.00	2,925.31	62.48	24.19	35.73	1,316.42	-1,317.12	5,351.85	5,300.36	51.49	103.937	
10,500.00	6,937.27	3,253.00	2,925.31	63.91	24.19	35.73	1,316.42	-1,317.12	5,393.87	5,341.64	52.23	103.279	
10,600.00	6,936.94	3,253.00	2,925.31	65.34	24.19	35.73	1,316.42	-1,317.12	5,437.40	5,384.46	52.94	102.705	
10,700.00	6,936.62	3,253.00	2,925.31	66.79	24.19	35.73	1,316.42	-1,317.12	5,482.42	5,428.78	53.64	102.210	
10,800.00	6,936.30	3,253.00	2,925.31	68.24	24.19	35.73	1,316.42	-1,317.12	5,528.87	5,474.55	54.32	101.791	
10,900.00	6,935.97	3,253.00	2,925.31	69.70	24.19	35.73	1,316.42	-1,317.12	5,576.73	5,521.76	54.97	101.443	
11,000.00	6,935.65	3,253.00	2,925.31	71.17	24.19	35.73	1,316.42	-1,317.12	5,625.96	5,570.35	55.61	101.163	
11,100.00	6,935.33	3,253.00	2,925.31	72.64	24.19	35.73	1,316.42	-1,317.12	5,676.53	5,620.30	56.23	100.948	
11,200.00	6,935.00	3,253.00	2,925.31	74.11	24.19	35.73	1,316.42	-1,317.12	5,728.40	5,671.56	56.83	100.793	
11,300.00	6,934.68	3,253.00	2,925.31	75.60	24.19	35.73	1,316.42	-1,317.12	5,781.53	5,724.11	57.42	100.696	
11,400.00	6,934.36	3,253.00	2,925.31	77.08	24.19	35.73	1,316.42	-1,317.12	5,835.89	5,777.91	57.98	100.655 SF	
11,500.00	6,934.03	3,253.00	2,925.31	78.57	24.19	35.73	1,316.42	-1,317.12	5,891.44	5,832.92	58.53	100.665	
11,600.00	6,933.71	3,253.00	2,925.31	80.07	24.19	35.73	1,316.42	-1,317.12	5,948.16	5,889.11	59.05	100.725	
11,700.00	6,933.39	3,253.00	2,925.31	81.57	24.19	35.73	1,316.42	-1,317.12	6,006.01	5,946.44	59.56	100.833	
11,800.00	6,933.07	3,253.00	2,925.31	83.07	24.19	35.73	1,316.42	-1,317.12	6,064.95	6,004.90	60.06	100.985	
11,900.00	6,932.74	3,253.00	2,925.31	84.58	24.19	35.73	1,316.42	-1,317.12	6,124.96	6,064.43	60.54	101.179	
12,000.00	6,932.42	3,253.00	2,925.31	86.09	24.19	35.73	1,316.42	-1,317.12	6,186.01	6,125.01	61.00	101.414	
12,100.00	6,932.10	3,253.00	2,925.31	87.60	24.19	35.73	1,316.42	-1,317.12	6,248.06	6,186.62	61.44	101.688	
12,200.00	6,931.77	3,253.00	2,925.31	89.12	24.19	35.73	1,316.42	-1,317.12	6,311.08	6,249.21	61.87	101.999	
12,300.00	6,931.45	3,253.00	2,925.31	90.64	24.19	35.73	1,316.42	-1,317.12	6,375.05	6,312.76	62.29	102.344	
12,400.00	6,931.13	3,253.00	2,925.31	92.16	24.19	35.73	1,316.42	-1,317.12	6,439.94	6,377.25	62.69	102.723	
12,500.00	6,930.80	3,253.00	2,925.31	93.69	24.19	35.73	1,316.42	-1,317.12	6,505.72	6,442.64	63.08	103.134	
12,600.00	6,930.48	3,253.00	2,925.31	95.22	24.19	35.73	1,316.42	-1,317.12	6,572.36	6,508.90	63.45	103.575	
12,700.00	6,930.16	3,253.00	2,925.31	96.75	24.19	35.73	1,316.42	-1,317.12	6,639.83	6,576.02	63.82	104.045	
12,800.00	6,929.84	3,253.00	2,925.31	98.28	24.19	35.73	1,316.42	-1,317.12	6,708.12	6,643.96	64.17	104.543	
12,900.00	6,929.51	3,253.00	2,925.31	99.82	24.19	35.73	1,316.42	-1,317.12	6,777.20	6,712.70	64.50	105.067	
13,000.00	6,929.19	3,253.00	2,925.31	101.35	24.19	35.73	1,316.42	-1,317.12	6,847.04	6,782.21	64.83	105.616	
13,100.00	6,928.87	3,253.00	2,925.31	102.89	24.19	35.73	1,316.42	-1,317.12	6,917.62	6,852.48	65.14	106.189	
13,200.00	6,928.54	3,253.00	2,925.31	104.43	24.19	35.73	1,316.42	-1,317.12	6,988.92	6,923.47	65.45	106.785	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #228A - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 352-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,300.00	6,928.22	3,253.00	2,925.31	105.97	24.19	35.73	1,316.42	-1,317.12	7,060.92	6,995.18	65.74	107.404	
13,400.00	6,927.90	3,253.00	2,925.31	107.52	24.19	35.73	1,316.42	-1,317.12	7,133.59	7,067.56	66.03	108.043	
13,500.00	6,927.57	3,253.00	2,925.31	109.06	24.19	35.73	1,316.42	-1,317.12	7,206.91	7,140.61	66.30	108.702	
13,600.00	6,927.25	3,253.00	2,925.31	110.61	24.19	35.73	1,316.42	-1,317.12	7,280.87	7,214.31	66.56	109.381	
13,700.00	6,926.93	3,253.00	2,925.31	112.16	24.19	35.73	1,316.42	-1,317.12	7,355.45	7,288.63	66.82	110.077	
13,800.00	6,926.61	3,253.00	2,925.31	113.71	24.19	35.73	1,316.42	-1,317.12	7,430.62	7,363.56	67.07	110.792	
13,900.00	6,926.28	3,253.00	2,925.31	115.26	24.19	35.73	1,316.42	-1,317.12	7,506.38	7,439.07	67.31	111.523	
14,000.00	6,925.96	3,253.00	2,925.31	116.82	24.19	35.73	1,316.42	-1,317.12	7,582.69	7,515.15	67.54	112.271	
14,100.00	6,925.64	3,253.00	2,925.31	118.37	24.19	35.73	1,316.42	-1,317.12	7,659.55	7,591.79	67.76	113.034	
14,200.00	6,925.31	3,253.00	2,925.31	119.93	24.19	35.73	1,316.42	-1,317.12	7,736.94	7,668.96	67.98	113.811	
14,300.00	6,924.99	3,253.00	2,925.31	121.48	24.19	35.73	1,316.42	-1,317.12	7,814.85	7,746.65	68.19	114.603	
14,400.00	6,924.67	3,253.00	2,925.31	123.04	24.19	35.73	1,316.42	-1,317.12	7,893.25	7,824.85	68.39	115.409	
14,500.00	6,924.34	3,253.00	2,925.31	124.60	24.19	35.73	1,316.42	-1,317.12	7,972.13	7,903.54	68.59	116.227	
14,600.00	6,924.02	3,253.00	2,925.31	126.16	24.19	35.73	1,316.42	-1,317.12	8,051.48	7,982.70	68.78	117.058	
14,700.00	6,923.70	3,253.00	2,925.31	127.72	24.19	35.73	1,316.42	-1,317.12	8,131.29	8,062.32	68.97	117.901	
14,800.00	6,923.38	3,253.00	2,925.31	129.28	24.19	35.73	1,316.42	-1,317.12	8,211.54	8,142.40	69.15	118.755	
14,900.00	6,923.05	3,253.00	2,925.31	130.85	24.19	35.73	1,316.42	-1,317.12	8,292.22	8,222.90	69.32	119.621	
15,000.00	6,922.73	3,253.00	2,925.31	132.41	24.19	35.73	1,316.42	-1,317.12	8,373.32	8,303.83	69.49	120.496	
15,100.00	6,922.41	3,253.00	2,925.31	133.97	24.19	35.73	1,316.42	-1,317.12	8,454.82	8,385.17	69.65	121.382	
15,200.00	6,922.08	3,253.00	2,925.31	135.54	24.19	35.73	1,316.42	-1,317.12	8,536.72	8,466.90	69.81	122.278	
15,300.00	6,921.76	3,253.00	2,925.31	137.11	24.19	35.73	1,316.42	-1,317.12	8,618.99	8,549.03	69.97	123.183	
15,400.00	6,921.44	3,253.00	2,925.31	138.67	24.19	35.73	1,316.42	-1,317.12	8,701.64	8,631.52	70.12	124.096	
15,500.00	6,921.11	3,253.00	2,925.31	140.24	24.19	35.73	1,316.42	-1,317.12	8,784.65	8,714.39	70.27	125.019	
15,600.00	6,920.79	3,253.00	2,925.31	141.81	24.19	35.73	1,316.42	-1,317.12	8,868.01	8,797.60	70.41	125.949	
15,700.00	6,920.47	3,253.00	2,925.31	143.38	24.19	35.73	1,316.42	-1,317.12	8,951.71	8,881.16	70.55	126.887	
15,800.00	6,920.14	3,253.00	2,925.31	144.95	24.19	35.73	1,316.42	-1,317.12	9,035.75	8,965.06	70.68	127.833	
15,900.00	6,919.82	3,253.00	2,925.31	146.52	24.19	35.73	1,316.42	-1,317.12	9,120.10	9,049.28	70.82	128.786	
16,000.00	6,919.50	3,253.00	2,925.31	148.09	24.19	35.73	1,316.42	-1,317.12	9,204.77	9,133.82	70.94	129.746	
16,100.00	6,919.18	3,253.00	2,925.31	149.66	24.19	35.73	1,316.42	-1,317.12	9,289.74	9,218.67	71.07	130.712	
16,200.00	6,918.85	3,253.00	2,925.31	151.24	24.19	35.73	1,316.42	-1,317.12	9,375.01	9,303.82	71.19	131.685	
16,300.00	6,918.53	3,253.00	2,925.31	152.81	24.19	35.73	1,316.42	-1,317.12	9,460.57	9,389.25	71.31	132.663	
16,400.00	6,918.21	3,253.00	2,925.31	154.38	24.19	35.73	1,316.42	-1,317.12	9,546.40	9,474.98	71.43	133.648	
16,500.00	6,917.88	3,253.00	2,925.31	155.96	24.19	35.73	1,316.42	-1,317.12	9,632.52	9,560.97	71.54	134.638	
16,600.00	6,917.56	3,253.00	2,925.31	157.53	24.19	35.73	1,316.42	-1,317.12	9,718.89	9,647.24	71.66	135.633	
16,700.00	6,917.24	3,253.00	2,925.31	159.11	24.19	35.73	1,316.42	-1,317.12	9,805.53	9,733.77	71.77	136.633	
16,800.00	6,916.91	3,253.00	2,925.31	160.68	24.19	35.73	1,316.42	-1,317.12	9,892.42	9,820.55	71.87	137.639	
16,900.00	6,916.59	3,253.00	2,925.31	162.26	24.19	35.73	1,316.42	-1,317.12	9,979.55	9,907.58	71.98	138.648	
17,000.00	6,916.27	3,253.00	2,925.31	163.84	24.19	35.73	1,316.42	-1,317.12	10,066.93	9,994.85	72.08	139.662	
17,100.00	6,915.95	3,253.00	2,925.31	165.41	24.19	35.73	1,316.42	-1,317.12	10,154.53	10,082.35	72.18	140.681	
17,200.00	6,915.62	3,253.00	2,925.31	166.99	24.19	35.73	1,316.42	-1,317.12	10,242.37	10,170.09	72.28	141.703	
17,300.00	6,915.30	3,253.00	2,925.31	168.57	24.19	35.73	1,316.42	-1,317.12	10,330.42	10,258.04	72.38	142.729	
17,400.00	6,914.98	3,253.00	2,925.31	170.15	24.19	35.73	1,316.42	-1,317.12	10,418.69	10,346.22	72.47	143.759	
17,500.00	6,914.65	3,253.00	2,925.31	171.73	24.19	35.73	1,316.42	-1,317.12	10,507.17	10,434.60	72.57	144.792	
17,600.00	6,914.33	3,253.00	2,925.31	173.31	24.19	35.73	1,316.42	-1,317.12	10,595.86	10,523.20	72.66	145.829	
17,700.00	6,914.01	3,253.00	2,925.31	174.89	24.19	35.73	1,316.42	-1,317.12	10,684.74	10,611.99	72.75	146.868	
17,800.00	6,913.68	3,253.00	2,925.31	176.47	24.19	35.73	1,316.42	-1,317.12	10,773.82	10,700.98	72.84	147.911	
17,900.00	6,913.36	3,253.00	2,925.31	178.05	24.19	35.73	1,316.42	-1,317.12	10,863.09	10,790.16	72.93	148.956	
18,000.00	6,913.04	3,253.00	2,925.31	179.63	24.19	35.73	1,316.42	-1,317.12	10,952.55	10,879.53	73.01	150.004	
18,100.00	6,912.72	3,253.00	2,925.31	181.21	24.19	35.73	1,316.42	-1,317.12	11,042.18	10,969.08	73.10	151.055	
18,111.83	6,912.68	3,253.00	2,925.31	181.40	24.19	35.73	1,316.42	-1,317.12	11,052.80	10,979.69	73.11	151.180	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 67-Standard Keeper 104, 443-MWD+HRGM+MS, 18177-A026Ua_BLIND — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	-35.37	40.78	-28.94	50.00				
54.25	54.25	54.34	54.34	0.02	0.02	-96.93	40.80	-28.83	49.97	49.95	0.02	2,357.482	
130.42	130.42	130.57	130.57	0.11	0.11	-124.07	40.84	-28.45	49.91	49.77	0.14	353.794	
219.69	219.69	219.91	219.91	0.23	0.22	-98.09	40.78	-27.96	49.75	49.45	0.30	164.324	
308.67	308.67	309.06	309.05	0.35	0.33	-107.22	40.52	-27.38	49.32	48.85	0.47	104.589	
454.00	453.99	454.67	454.65	0.51	0.52	119.09	39.37	-26.20	48.32	47.50	0.82	58.589	
480.01	480.00	480.63	480.62	0.58	0.58	120.13	39.24	-25.78	48.23	47.26	0.97	49.665	CC, ES
544.00	543.93	544.30	544.25	0.74	0.75	124.91	39.62	-23.87	48.92	47.59	1.33	36.711	
667.00	666.63	664.47	664.19	1.13	1.13	127.09	43.73	-17.89	55.52	53.35	2.16	25.644	
756.00	755.27	749.50	748.82	1.44	1.41	151.83	50.40	-13.30	67.87	65.07	2.80	24.204	
850.00	848.62	838.00	836.58	1.79	1.73	159.61	61.04	-9.14	89.04	85.57	3.48	25.608	
942.00	939.50	920.51	917.94	2.14	2.04	169.38	74.34	-5.87	117.57	113.45	4.13	28.496	
1,033.00	1,028.89	1,004.80	1,000.74	2.52	2.38	-179.61	89.86	-2.81	150.94	146.18	4.75	31.745	
1,123.00	1,117.00	1,084.17	1,078.58	2.90	2.70	-172.95	105.03	0.14	186.03	180.68	5.35	34.766	
1,214.00	1,206.00	1,166.53	1,159.06	3.29	3.04	-173.81	122.16	3.84	223.31	217.35	5.96	37.479	
1,309.00	1,298.75	1,252.47	1,243.08	3.71	3.40	-170.73	139.79	7.87	262.64	256.04	6.60	39.783	
1,403.00	1,390.39	1,335.22	1,323.86	4.13	3.76	-167.90	157.35	11.46	302.56	295.33	7.22	41.882	
1,498.00	1,482.88	1,418.85	1,405.36	4.56	4.12	-171.89	175.84	14.44	344.12	336.26	7.86	43.767	
1,592.00	1,573.82	1,501.90	1,486.28	5.00	4.48	-172.65	194.39	16.69	387.54	379.03	8.51	45.530	
1,687.00	1,665.32	1,582.59	1,564.82	5.46	4.84	-169.89	212.82	18.16	433.16	424.01	9.14	47.366	
1,876.00	1,847.35	1,754.43	1,732.07	6.38	5.60	-167.87	251.82	23.88	523.57	513.10	10.48	49.968	
1,970.00	1,937.87	1,840.54	1,816.08	6.84	5.99	-167.90	270.23	28.05	567.48	556.33	11.15	50.895	
2,064.00	2,028.42	1,923.55	1,897.13	7.30	6.35	-167.58	287.79	31.80	611.06	599.26	11.80	51.777	
2,159.00	2,119.97	2,009.10	1,980.66	7.77	6.73	-166.50	305.96	35.19	654.98	642.51	12.47	52.513	
2,348.00	2,302.44	2,171.86	2,139.57	8.69	7.45	-172.33	340.84	39.91	741.69	727.94	13.76	53.921	
2,443.00	2,394.41	2,266.91	2,232.39	9.15	7.87	-173.18	361.12	42.43	784.55	770.06	14.49	54.131	
2,537.00	2,485.45	2,371.22	2,334.69	9.61	8.32	-173.48	381.18	45.98	825.00	809.70	15.29	53.946	
2,632.00	2,577.48	2,469.69	2,431.64	10.07	8.73	-173.25	398.26	48.51	864.14	848.10	16.05	53.852	
2,727.00	2,669.50	2,556.84	2,517.56	10.53	9.09	-173.28	412.68	50.60	902.57	885.85	16.72	53.968	
2,821.00	2,760.56	2,635.88	2,595.38	10.98	9.41	-173.56	426.25	53.31	941.20	923.85	17.35	54.256	
2,916.00	2,852.68	2,727.51	2,685.58	11.44	9.80	-173.63	441.88	57.24	979.84	961.78	18.06	54.265	
3,011.00	2,945.03	2,814.29	2,771.03	11.89	10.16	-173.50	456.54	60.99	1,017.44	998.71	18.73	54.322	
3,105.00	3,036.57	2,904.71	2,860.09	12.33	10.53	-179.51	471.65	65.07	1,053.96	1,034.53	19.43	54.256	
3,200.00	3,128.81	3,005.16	2,959.16	12.78	10.95	177.15	487.67	69.41	1,091.30	1,071.11	20.19	54.044	
3,294.00	3,219.76	3,109.62	3,062.46	13.24	11.36	176.99	502.73	73.06	1,127.99	1,107.01	20.98	53.764	
3,389.00	3,311.82	3,194.10	3,146.08	13.69	11.70	178.22	514.50	75.35	1,164.17	1,142.53	21.64	53.807	
3,483.00	3,403.03	3,271.76	3,222.88	14.14	12.01	178.73	525.72	77.85	1,199.96	1,177.72	22.25	53.940	
3,578.00	3,495.31	3,373.69	3,323.68	14.60	12.41	179.50	540.32	81.98	1,235.74	1,212.72	23.02	53.692	
3,672.00	3,586.65	3,450.08	3,399.26	15.04	12.72	-179.21	551.07	84.67	1,270.78	1,247.16	23.62	53.806	
3,767.00	3,678.95	3,525.39	3,473.68	15.49	13.02	-178.61	562.41	86.90	1,307.03	1,282.81	24.21	53.977	
3,862.00	3,771.63	3,596.15	3,543.49	15.93	13.31	-178.85	573.78	88.81	1,342.65	1,317.88	24.77	54.200	
3,956.00	3,863.70	3,670.00	3,616.10	16.35	13.62	-178.45	587.03	91.25	1,377.91	1,352.57	25.35	54.362	
4,052.00	3,957.54	3,714.68	3,659.85	16.79	13.82	-179.66	595.93	93.05	1,416.35	1,390.64	25.71	55.083	
4,146.00	4,048.88	3,764.00	3,707.94	17.24	14.04	-179.65	606.62	95.33	1,458.16	1,432.05	26.11	55.851	
4,241.00	4,140.47	3,839.12	3,780.93	17.71	14.38	-176.59	623.98	99.07	1,504.13	1,477.41	26.72	56.298	
4,336.00	4,231.25	3,908.14	3,847.84	18.21	14.70	-172.66	640.54	102.61	1,553.23	1,525.95	27.29	56.926	
4,430.00	4,320.59	3,972.37	3,909.99	18.71	15.00	-174.60	656.43	105.97	1,603.79	1,575.98	27.82	57.657	
4,524.00	4,409.51	4,028.23	3,963.84	19.22	15.27	-178.84	670.89	109.14	1,656.51	1,628.23	28.28	58.576	
4,619.00	4,498.98	4,081.03	4,014.55	19.75	15.52	-179.63	685.24	112.36	1,711.89	1,683.17	28.72	59.611	
4,713.00	4,587.83	4,143.00	4,073.78	20.27	15.83	-179.50	703.07	116.14	1,767.08	1,737.85	29.23	60.455	
4,807.00	4,676.97	4,198.14	4,126.33	20.78	16.10	-177.85	719.48	119.35	1,822.29	1,792.61	29.68	61.396	
4,870.00	4,736.65	4,238.00	4,164.29	21.12	16.30	-177.37	731.42	121.52	1,859.60	1,829.59	30.01	61.963	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 67-Standard Keeper 104, 443-MWD+HRGM+MS, 18177-A026Ua_BLIND — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,285.40	4,209.40	21.46	16.55	-177.43	745.79	124.03	1,896.44	1,866.04	30.41	62.371	
5,027.00	4,886.13	4,345.62	4,266.55	21.96	16.85	-176.49	764.47	127.27	1,951.64	1,920.74	30.90	63.156	
5,121.00	4,976.11	4,406.31	4,323.98	22.45	17.17	-176.16	783.71	131.11	2,006.24	1,974.84	31.40	63.896	
5,216.00	5,068.11	4,565.23	4,474.97	22.91	17.98	-176.09	832.00	142.23	2,057.29	2,024.53	32.75	62.808	
5,341.00	5,190.11	4,716.90	4,620.58	23.49	18.72	-176.51	873.49	150.93	2,117.16	2,083.17	33.99	62.287	
5,436.00	5,283.20	4,990.57	4,887.18	23.91	19.96	-176.37	933.98	161.34	2,155.87	2,119.79	36.08	59.750	
5,499.00	5,345.03	5,136.29	5,030.98	24.19	20.55	-176.48	957.27	164.44	2,177.50	2,140.40	37.10	58.699	
5,561.00	5,405.97	5,260.13	5,153.84	24.45	21.02	-175.46	972.63	166.61	2,196.15	2,158.23	37.92	57.912	
5,624.00	5,467.97	5,351.23	5,244.41	24.72	21.35	-176.59	982.36	168.01	2,213.88	2,175.34	38.54	57.442	
5,687.00	5,530.05	5,418.64	5,311.49	24.99	21.60	-175.66	989.00	169.07	2,230.72	2,191.70	39.03	57.161	
5,750.00	5,592.20	5,483.97	5,376.50	25.25	21.83	-175.42	995.27	169.93	2,246.97	2,207.47	39.50	56.891	
5,813.00	5,654.42	5,545.74	5,437.99	25.51	22.05	-174.40	1,001.14	170.76	2,262.74	2,222.79	39.95	56.645	
5,876.00	5,716.68	5,613.76	5,505.70	25.76	22.30	-174.20	1,007.54	171.77	2,278.17	2,237.74	40.43	56.349	
5,939.00	5,778.99	5,690.22	5,581.86	26.01	22.57	-174.44	1,014.25	172.95	2,292.92	2,251.96	40.96	55.985	
6,065.00	5,903.86	5,816.70	5,707.88	26.51	23.02	-174.60	1,024.81	174.95	2,320.19	2,278.33	41.86	55.425	
6,128.00	5,966.41	5,886.58	5,777.51	26.74	23.26	-176.09	1,030.57	176.08	2,332.80	2,290.45	42.35	55.089	
6,191.00	6,029.04	5,962.54	5,853.24	26.97	23.53	-175.45	1,036.41	177.32	2,344.49	2,301.63	42.86	54.702	
6,254.00	6,091.75	6,052.03	5,942.51	27.20	23.83	-174.57	1,042.53	178.57	2,354.83	2,311.39	43.43	54.217	
6,348.00	6,185.46	6,173.14	6,063.42	27.52	24.24	-171.77	1,049.32	179.66	2,367.43	2,323.21	44.22	53.542	
6,390.00	6,227.36	6,221.86	6,112.09	27.61	24.40	-171.78	1,051.74	180.06	2,372.42	2,327.99	44.43	53.396	
6,400.00	6,237.33	6,236.99	6,127.19	27.61	24.45	-171.78	1,052.45	180.17	2,373.58	2,329.09	44.49	53.351	
6,490.00	6,327.12	6,348.62	6,238.73	27.66	24.82	-171.80	1,056.92	180.87	2,383.38	2,338.48	44.91	53.074	
6,500.00	6,337.09	6,360.07	6,250.17	27.66	24.85	175.70	1,057.34	180.94	2,384.46	2,339.51	44.95	53.049	
6,550.00	6,386.85	6,407.00	6,297.07	27.70	25.01	138.65	1,058.97	181.24	2,390.41	2,345.30	45.11	52.989	
6,600.00	6,436.20	6,407.00	6,297.07	27.74	25.01	125.16	1,058.97	181.24	2,398.01	2,352.96	45.05	53.225	
6,650.00	6,484.82	6,451.82	6,341.84	27.79	25.16	118.72	1,061.11	180.80	2,406.62	2,361.42	45.21	53.234	
6,700.00	6,532.40	6,471.85	6,361.81	27.85	25.22	114.65	1,062.48	180.13	2,417.07	2,371.82	45.24	53.425	
6,750.00	6,578.63	6,502.00	6,391.81	27.92	25.32	111.74	1,065.02	178.59	2,429.04	2,383.71	45.33	53.588	
6,800.00	6,623.24	6,502.00	6,391.81	28.00	25.32	109.11	1,065.02	178.59	2,442.34	2,397.08	45.26	53.963	
6,850.00	6,665.93	6,502.00	6,391.81	28.09	25.32	106.70	1,065.02	178.59	2,457.32	2,412.13	45.19	54.380	
6,900.00	6,706.42	6,502.00	6,391.81	28.19	25.32	104.38	1,065.02	178.59	2,473.83	2,428.71	45.12	54.831	
6,950.00	6,744.48	6,540.46	6,429.86	28.30	25.47	102.63	1,069.55	175.37	2,490.65	2,445.37	45.28	55.006	
7,000.00	6,779.84	6,550.46	6,439.69	28.43	25.51	100.51	1,071.02	174.25	2,509.21	2,463.92	45.29	55.406	
7,050.00	6,812.30	6,559.86	6,448.89	28.57	25.54	98.37	1,072.52	173.10	2,528.81	2,483.50	45.30	55.819	
7,100.00	6,841.63	6,596.00	6,483.98	28.73	25.68	96.67	1,079.31	167.76	2,549.87	2,504.37	45.50	56.045	
7,150.00	6,867.66	6,596.00	6,483.98	28.90	25.68	94.33	1,079.31	167.76	2,570.91	2,525.42	45.49	56.516	
7,200.00	6,890.22	6,596.00	6,483.98	29.08	25.68	91.93	1,079.31	167.76	2,592.74	2,547.24	45.50	56.983	
7,250.00	6,909.17	6,596.00	6,483.98	29.28	25.68	89.50	1,079.31	167.76	2,615.18	2,569.66	45.53	57.441	
7,300.00	6,924.38	6,596.00	6,483.98	29.49	25.68	87.05	1,079.31	167.76	2,638.10	2,592.52	45.58	57.884	
7,350.00	6,935.77	6,596.00	6,483.98	29.72	25.68	84.61	1,079.31	167.76	2,661.33	2,615.69	45.64	58.309	
7,400.00	6,943.25	6,616.78	6,503.92	29.97	25.76	82.67	1,083.77	163.97	2,684.59	2,638.73	45.86	58.538	
7,450.00	6,946.78	6,624.44	6,511.23	30.22	25.79	80.47	1,085.47	162.43	2,707.89	2,661.88	46.01	58.851	
7,471.54	6,947.08	6,627.13	6,513.78	30.34	25.80	79.53	1,086.07	161.87	2,717.90	2,671.82	46.08	58.985	
7,500.00	6,946.98	6,630.52	6,517.02	30.49	25.82	79.67	1,086.84	161.15	2,731.09	2,684.93	46.17	59.156	
7,600.00	6,946.65	6,644.48	6,530.23	31.07	25.87	80.18	1,090.05	158.03	2,777.28	2,730.76	46.52	59.700	
7,700.00	6,946.32	7,991.55	6,953.01	31.69	32.27	90.12	1,285.39	-969.16	2,801.46	2,745.59	55.87	50.143	
7,800.00	6,945.99	8,116.71	6,958.47	32.35	33.27	90.25	1,279.49	-1,094.06	2,806.22	2,748.42	57.80	48.552	
7,900.00	6,945.67	8,202.00	6,963.15	33.05	34.00	90.36	1,275.45	-1,179.12	2,807.47	2,747.97	59.49	47.188	
8,000.00	6,945.34	8,294.94	6,967.99	33.79	34.84	90.47	1,271.34	-1,271.85	2,805.57	2,744.21	61.37	45.719	
8,034.58	6,945.23	8,330.81	6,969.69	34.05	35.18	90.51	1,269.77	-1,307.64	2,804.12	2,742.05	62.08	45.172	
8,100.00	6,945.02	8,392.00	6,972.44	34.57	35.77	90.57	1,267.04	-1,368.71	2,800.94	2,737.57	63.37	44.200	
8,200.00	6,944.69	8,486.00	6,975.89	35.41	36.70	90.65	1,263.22	-1,462.56	2,796.45	2,731.02	65.43	42.739	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 67-Standard Keeper 104, 443-MWD+HRGM+MS, 18177-A026Ua_BLIND — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	8,611.37	6,979.20	36.30	38.01	90.73	1,257.50	-1,587.76	2,791.45	2,723.51	67.94	41.088	
8,400.00	6,944.05	8,725.63	6,981.40	37.25	39.24	90.78	1,251.99	-1,701.86	2,786.26	2,715.86	70.40	39.578	
8,500.00	6,943.73	8,814.60	6,982.19	38.25	40.23	90.80	1,246.84	-1,790.68	2,780.09	2,707.47	72.63	38.279	
8,600.00	6,943.40	8,864.00	6,982.79	39.29	40.78	90.82	1,244.69	-1,840.03	2,775.41	2,701.00	74.41	37.300	
8,700.00	6,943.08	8,959.00	6,982.96	40.37	41.89	90.83	1,241.69	-1,934.98	2,771.80	2,694.99	76.81	36.086	
8,800.00	6,942.76	9,030.95	6,982.24	41.49	42.75	90.82	1,240.00	-2,006.91	2,768.94	2,689.98	78.96	35.067	
8,900.00	6,942.43	9,185.57	6,979.73	42.64	44.64	90.78	1,235.27	-2,161.42	2,765.37	2,683.12	82.26	33.619	
9,000.00	6,942.11	9,279.14	6,977.61	43.82	45.80	90.75	1,231.64	-2,254.90	2,761.02	2,676.23	84.79	32.565	
9,100.00	6,941.79	9,377.86	6,975.55	45.03	47.05	90.71	1,228.02	-2,353.53	2,756.88	2,669.45	87.42	31.535	
9,200.00	6,941.46	9,484.32	6,973.97	46.27	48.42	90.69	1,223.92	-2,459.90	2,752.55	2,662.35	90.20	30.516	
9,300.00	6,941.14	9,587.80	6,973.06	47.53	49.76	90.67	1,219.74	-2,563.29	2,748.05	2,655.08	92.97	29.560	
9,400.00	6,940.82	9,671.56	6,972.74	48.81	50.87	90.67	1,216.44	-2,646.99	2,743.68	2,648.19	95.49	28.733	
9,500.00	6,940.50	9,756.73	6,972.80	50.11	52.00	90.68	1,213.78	-2,732.11	2,740.09	2,642.04	98.05	27.946	
9,600.00	6,940.17	9,845.06	6,973.41	51.43	53.19	90.70	1,211.22	-2,820.41	2,736.76	2,636.08	100.68	27.183	
9,700.00	6,939.85	9,924.66	6,974.38	52.76	54.28	90.73	1,209.53	-2,899.99	2,734.18	2,630.99	103.20	26.495	
9,800.00	6,939.53	10,059.46	6,976.38	54.11	56.13	90.78	1,206.78	-3,034.74	2,731.86	2,625.31	106.55	25.640	
9,900.00	6,939.20	10,161.83	6,976.74	55.48	57.55	90.80	1,203.18	-3,137.05	2,727.89	2,618.45	109.44	24.926	
10,000.00	6,938.88	10,244.73	6,977.08	56.86	58.70	90.81	1,200.83	-3,219.90	2,724.60	2,612.54	112.07	24.312	
10,100.00	6,938.56	10,328.39	6,977.65	58.25	59.88	90.83	1,198.93	-3,303.55	2,721.89	2,607.17	114.72	23.727	
10,200.00	6,938.23	10,419.04	6,978.64	59.65	61.16	90.86	1,197.39	-3,394.18	2,719.75	2,602.27	117.48	23.150	
10,300.00	6,937.91	10,575.11	6,979.99	61.06	63.39	90.90	1,193.76	-3,550.20	2,717.17	2,595.93	121.25	22.410	
10,400.00	6,937.59	10,670.28	6,979.81	62.48	64.75	90.90	1,190.41	-3,645.30	2,713.20	2,589.08	124.11	21.860	
10,500.00	6,937.27	10,755.23	6,979.89	63.91	65.97	90.91	1,187.68	-3,730.21	2,709.53	2,582.69	126.84	21.362	
10,600.00	6,936.94	10,858.76	6,980.48	65.34	67.47	90.93	1,184.58	-3,833.69	2,706.10	2,576.24	129.86	20.839	
10,700.00	6,936.62	10,999.22	6,980.57	66.79	69.51	90.94	1,179.42	-3,974.06	2,702.04	2,568.61	133.42	20.252	
10,800.00	6,936.30	11,123.25	6,980.38	68.24	71.31	90.95	1,172.98	-4,097.92	2,696.35	2,559.61	136.74	19.718	
10,900.00	6,935.97	11,227.00	6,979.90	69.70	72.82	90.95	1,167.14	-4,201.50	2,690.26	2,550.48	139.79	19.245	
11,000.00	6,935.65	11,306.38	6,979.53	71.17	73.98	90.95	1,162.92	-4,280.76	2,684.51	2,542.01	142.50	18.839	
11,100.00	6,935.33	11,439.52	6,978.11	72.64	75.94	90.93	1,155.72	-4,413.71	2,678.65	2,532.68	145.97	18.350	
11,200.00	6,935.00	11,540.98	6,976.81	74.11	77.44	90.91	1,149.47	-4,514.96	2,672.02	2,523.01	149.01	17.932	
11,300.00	6,934.68	11,627.97	6,975.87	75.60	78.72	90.90	1,144.26	-4,601.79	2,665.58	2,513.72	151.86	17.553	
11,400.00	6,934.36	11,703.61	6,975.08	77.08	79.85	90.89	1,140.34	-4,677.32	2,659.93	2,505.38	154.55	17.211	
11,500.00	6,934.03	11,800.34	6,973.97	78.57	81.29	90.87	1,135.83	-4,773.94	2,654.79	2,497.25	157.54	16.852	
11,600.00	6,933.71	11,913.02	6,972.83	80.07	82.97	90.86	1,130.24	-4,886.48	2,649.35	2,488.59	160.77	16.479	
11,700.00	6,933.39	12,011.73	6,971.71	81.57	84.45	90.84	1,125.27	-4,985.05	2,643.86	2,480.06	163.80	16.141	
11,800.00	6,933.07	12,113.73	6,970.59	83.07	85.98	90.83	1,119.94	-5,086.91	2,638.17	2,471.28	166.89	15.808	
11,900.00	6,932.74	12,197.95	6,970.06	84.58	87.25	90.82	1,115.79	-5,171.02	2,632.79	2,463.07	169.72	15.512	
12,000.00	6,932.42	12,278.59	6,969.88	86.09	88.46	90.83	1,112.46	-5,251.60	2,628.19	2,455.69	172.50	15.236	
12,100.00	6,932.10	12,380.73	6,968.12	87.60	90.01	90.80	1,108.41	-5,353.64	2,623.75	2,448.14	175.61	14.941	
12,200.00	6,931.77	12,463.55	6,965.92	89.12	91.26	90.75	1,105.49	-5,436.38	2,619.72	2,441.29	178.43	14.682	
12,300.00	6,931.45	12,549.00	6,963.55	90.64	92.56	90.71	1,102.71	-5,521.75	2,616.03	2,434.73	181.30	14.430	
12,400.00	6,931.13	12,644.00	6,960.98	92.16	94.01	90.66	1,100.28	-5,616.68	2,612.98	2,428.67	184.31	14.177	
12,500.00	6,930.80	12,734.10	6,958.91	93.69	95.39	90.62	1,098.47	-5,706.74	2,610.46	2,423.22	187.25	13.941	
12,600.00	6,930.48	12,871.57	6,955.80	95.22	97.49	90.56	1,092.75	-5,844.05	2,605.34	2,414.41	190.92	13.646	
12,700.00	6,930.16	12,927.00	6,955.69	96.75	98.34	90.57	1,091.68	-5,899.46	2,602.59	2,409.27	193.33	13.462	
12,800.00	6,929.84	12,999.69	6,956.18	98.28	99.45	90.58	1,091.27	-5,972.15	2,601.37	2,405.39	195.97	13.274	
12,900.00	6,929.51	13,125.51	6,956.93	99.82	101.39	90.61	1,089.59	-6,097.96	2,599.58	2,400.08	199.50	13.031	
13,000.00	6,929.19	13,211.00	6,958.18	101.35	102.71	90.64	1,088.22	-6,183.43	2,597.55	2,395.19	202.37	12.836	
13,100.00	6,928.87	13,279.39	6,959.86	102.89	103.76	90.68	1,087.68	-6,251.80	2,596.37	2,391.44	204.93	12.669	
13,200.00	6,928.54	13,376.13	6,962.20	104.43	105.26	90.74	1,087.91	-6,348.50	2,596.18	2,388.20	207.98	12.483	
13,300.00	6,928.22	13,481.81	6,962.26	105.97	106.89	90.75	1,087.82	-6,454.18	2,595.64	2,384.45	211.19	12.290	
13,400.00	6,927.90	13,598.91	6,962.33	107.52	108.70	90.76	1,087.30	-6,571.28	2,594.75	2,380.15	214.60	12.091	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 67-Standard Keeper 104, 443-MWD+HRGM+MS, 18177-A026Ua_BLIND — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	13,684.00	6,962.27	109.06	110.02	90.77	1,087.00	-6,656.37	2,593.93	2,376.46	217.47	11.928	
13,559.01	6,927.38	13,725.39	6,962.11	109.98	110.66	90.77	1,087.09	-6,697.76	2,593.76	2,374.77	219.00	11.844	
13,600.00	6,927.25	13,756.80	6,961.89	110.61	111.15	90.76	1,087.29	-6,729.16	2,593.84	2,373.73	220.11	11.785	
13,700.00	6,926.93	13,812.58	6,961.35	112.16	112.02	90.76	1,088.12	-6,784.94	2,594.95	2,372.55	222.40	11.668	
13,800.00	6,926.61	13,873.00	6,960.72	113.71	112.96	90.75	1,090.42	-6,845.31	2,598.09	2,373.37	224.72	11.561	
13,900.00	6,926.28	13,933.74	6,960.14	115.26	113.91	90.74	1,093.65	-6,905.96	2,602.75	2,375.74	227.01	11.465	
14,000.00	6,925.96	14,038.98	6,959.46	116.82	115.56	90.73	1,099.57	-7,011.03	2,607.92	2,377.66	230.26	11.326	
14,100.00	6,925.64	14,130.60	6,959.10	118.37	116.99	90.73	1,104.51	-7,102.52	2,612.86	2,379.66	233.20	11.204	
14,200.00	6,925.31	14,375.78	6,955.66	119.93	120.82	90.67	1,112.88	-7,347.47	2,616.55	2,377.31	239.24	10.937	
14,287.11	6,925.03	14,454.01	6,954.85	121.28	122.04	90.65	1,113.04	-7,425.70	2,616.34	2,374.53	241.81	10.820	
14,300.00	6,924.99	14,463.17	6,954.76	121.48	122.19	90.65	1,113.09	-7,434.85	2,616.35	2,374.20	242.15	10.805	
14,400.00	6,924.67	14,535.00	6,953.87	123.04	123.31	90.64	1,113.93	-7,506.68	2,617.04	2,372.27	244.77	10.692	
14,500.00	6,924.34	14,653.27	6,952.49	124.60	125.16	90.62	1,115.31	-7,624.93	2,617.72	2,369.46	248.25	10.545	
14,600.00	6,924.02	14,735.04	6,951.61	126.16	126.44	90.60	1,116.44	-7,706.69	2,618.63	2,367.57	251.06	10.430	
14,700.00	6,923.70	14,836.76	6,950.51	127.72	128.03	90.58	1,118.10	-7,808.39	2,619.79	2,365.56	254.23	10.305	
14,800.00	6,923.38	14,935.24	6,949.30	129.28	129.57	90.56	1,119.75	-7,906.84	2,621.01	2,363.65	257.35	10.185	
14,900.00	6,923.05	15,029.28	6,948.11	130.85	131.05	90.54	1,121.27	-8,000.86	2,622.17	2,361.78	260.39	10.070	
15,000.00	6,922.73	15,101.00	6,946.93	132.41	132.17	90.52	1,123.10	-8,072.55	2,624.22	2,361.24	262.98	9.979	
15,100.00	6,922.41	15,193.35	6,945.80	133.97	133.63	90.51	1,126.08	-8,164.85	2,626.97	2,361.00	265.97	9.877	
15,200.00	6,922.08	15,270.99	6,945.27	135.54	134.85	90.50	1,128.93	-8,242.43	2,630.19	2,361.54	268.65	9.790	
15,300.00	6,921.76	15,436.21	6,945.90	137.11	137.44	90.52	1,133.62	-8,407.57	2,632.56	2,359.45	273.12	9.639	
15,400.00	6,921.44	15,578.75	6,945.53	138.67	139.68	90.53	1,134.93	-8,550.10	2,633.08	2,356.03	277.04	9.504	
15,500.00	6,921.11	15,703.01	6,943.53	140.24	141.63	90.49	1,134.47	-8,674.34	2,632.25	2,351.64	280.61	9.381	
15,600.00	6,920.79	15,808.72	6,941.40	141.81	143.29	90.45	1,133.15	-8,780.03	2,630.52	2,346.66	283.86	9.267	
15,700.00	6,920.47	15,916.57	6,939.01	143.38	144.98	90.41	1,132.09	-8,887.85	2,629.09	2,341.94	287.14	9.156	
15,800.00	6,920.14	16,025.90	6,936.45	144.95	146.70	90.36	1,130.18	-8,997.12	2,626.86	2,336.41	290.45	9.044	
15,900.00	6,919.82	16,130.99	6,934.05	146.52	148.35	90.32	1,128.26	-9,102.17	2,624.56	2,330.87	293.69	8.937	
16,000.00	6,919.50	16,231.68	6,932.10	148.09	149.93	90.28	1,126.25	-9,202.82	2,622.11	2,325.25	296.86	8.833	
16,100.00	6,919.18	16,314.04	6,929.95	149.66	151.22	90.24	1,124.88	-9,285.14	2,619.98	2,320.24	299.74	8.741	
16,200.00	6,918.85	16,396.33	6,927.63	151.24	152.51	90.19	1,124.08	-9,367.40	2,618.54	2,315.92	302.62	8.653	
16,300.00	6,918.53	16,493.55	6,925.26	152.81	154.04	90.15	1,123.60	-9,464.58	2,617.58	2,311.85	305.74	8.562	
16,400.00	6,918.21	16,578.37	6,922.17	154.38	155.38	90.09	1,123.31	-9,549.34	2,616.79	2,308.14	308.64	8.478	
16,445.50	6,918.06	16,613.00	6,920.73	155.10	155.92	90.06	1,123.38	-9,583.95	2,616.68	2,306.79	309.89	8.444	
16,500.00	6,917.88	16,638.62	6,919.67	155.96	156.33	90.04	1,123.64	-9,609.54	2,616.98	2,305.90	311.08	8.412	
16,600.00	6,917.56	16,707.00	6,917.17	157.53	157.41	89.99	1,125.76	-9,677.84	2,619.33	2,305.71	313.62	8.352	
16,700.00	6,917.24	16,761.90	6,915.47	159.11	158.28	89.95	1,128.27	-9,732.66	2,623.03	2,307.21	315.81	8.306	
16,800.00	6,916.91	16,885.27	6,913.16	160.68	160.23	89.91	1,133.35	-9,855.90	2,626.71	2,307.21	319.50	8.221	
16,900.00	6,916.59	17,001.34	6,914.57	162.26	162.06	89.95	1,137.15	-9,971.89	2,629.52	2,306.52	323.00	8.141	
17,000.00	6,916.27	17,109.71	6,917.27	163.84	163.78	90.02	1,140.14	-10,080.18	2,631.82	2,305.49	326.34	8.065	
17,100.00	6,915.95	17,244.91	6,920.19	165.41	165.92	90.09	1,142.89	-10,215.31	2,633.42	2,303.23	330.19	7.975	
17,200.00	6,915.62	17,369.91	6,923.88	166.99	167.89	90.18	1,143.39	-10,340.26	2,633.26	2,299.45	333.81	7.889	
17,300.00	6,915.30	17,479.66	6,926.95	168.57	169.62	90.25	1,143.59	-10,449.97	2,633.00	2,295.86	337.14	7.810	
17,400.00	6,914.98	17,586.65	6,929.35	170.15	171.31	90.31	1,143.44	-10,556.93	2,632.41	2,292.00	340.42	7.733	
17,500.00	6,914.65	17,693.51	6,931.13	171.73	173.00	90.36	1,143.05	-10,663.78	2,631.61	2,287.91	343.70	7.657	
17,600.00	6,914.33	17,818.48	6,932.14	173.31	174.97	90.39	1,141.94	-10,788.74	2,630.30	2,283.04	347.26	7.574	
17,700.00	6,914.01	17,904.04	6,932.26	174.89	176.32	90.40	1,140.78	-10,874.29	2,628.51	2,278.31	350.20	7.506	
17,800.00	6,913.68	17,995.76	6,932.03	176.47	177.77	90.40	1,140.20	-10,966.00	2,627.42	2,274.19	353.23	7.438	
17,900.00	6,913.36	18,123.34	6,931.14	178.05	181.80	90.39	1,138.86	-11,093.57	2,625.92	2,267.05	358.88	7.317	
18,000.00	6,913.04	18,177.00	6,930.68	179.63	189.71	90.39	1,137.98	-11,147.22	2,624.23	2,255.85	368.39	7.124	
18,008.77	6,913.01	18,177.00	6,930.68	179.77	189.71	90.39	1,137.98	-11,147.22	2,624.22	2,255.71	368.51	7.121	
18,100.00	6,912.72	18,177.00	6,930.68	181.21	189.71	90.39	1,137.98	-11,147.22	2,625.80	2,256.28	369.52	7.106	
18,111.83	6,912.68	18,177.00	6,930.68	181.40	189.71	90.39	1,137.98	-11,147.22	2,626.24	2,256.62	369.62	7.105	SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 447-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	-35.64	20.39	-14.62	25.09				
54.25	54.25	54.20	54.19	0.02	0.02	-97.72	20.36	-14.75	25.16	25.14	0.02	1,175.415	
130.42	130.42	130.39	130.38	0.11	0.11	-126.41	20.28	-15.13	25.46	25.32	0.14	182.730	
219.69	219.69	219.68	219.68	0.23	0.22	-102.10	20.12	-15.46	25.73	25.44	0.28	91.294	
308.67	308.67	308.71	308.71	0.35	0.33	-113.25	19.74	-15.80	25.83	25.42	0.41	62.326	
454.00	453.99	454.14	454.13	0.51	0.51	112.24	19.08	-15.86	25.94	25.19	0.75	34.541	
458.23	458.22	458.38	458.38	0.52	0.52	112.42	19.06	-15.85	25.94	25.16	0.78	33.369	
544.00	543.93	544.40	544.39	0.74	0.73	118.38	18.19	-15.31	26.22	24.93	1.29	20.348 ES	
667.00	666.63	667.10	667.06	1.13	1.12	122.36	16.25	-13.65	27.87	25.73	2.14	13.051	
756.00	755.27	755.32	755.27	1.44	1.42	150.25	15.98	-12.08	33.15	30.37	2.78	11.944 SF	
850.00	848.62	848.19	848.12	1.79	1.73	160.16	16.47	-11.00	43.62	40.17	3.45	12.644	
942.00	939.50	939.00	938.92	2.14	2.04	170.98	17.84	-10.42	58.92	54.82	4.11	14.352	
1,033.00	1,028.89	1,030.25	1,030.16	2.52	2.34	-179.20	17.60	-11.19	75.56	70.81	4.75	15.919	
1,123.00	1,117.00	1,120.64	1,120.46	2.90	2.65	-175.65	15.39	-14.58	91.40	86.02	5.38	16.987	
1,214.00	1,206.00	1,211.79	1,211.42	3.29	2.96	-179.27	11.47	-18.95	106.24	100.21	6.03	17.623	
1,309.00	1,298.75	1,306.58	1,305.93	3.71	3.29	-179.01	6.30	-24.07	121.64	114.93	6.72	18.112	
1,403.00	1,390.39	1,400.43	1,399.38	4.13	3.62	-178.99	0.18	-30.27	136.81	129.40	7.41	18.474	
1,498.00	1,482.88	1,495.59	1,494.10	4.56	3.96	175.48	-6.93	-35.78	152.02	143.91	8.11	18.744	
1,592.00	1,573.82	1,589.68	1,587.82	5.00	4.30	174.38	-14.74	-38.82	168.41	159.60	8.81	19.106	
1,687.00	1,665.32	1,682.89	1,680.68	5.46	4.65	177.32	-22.69	-40.03	186.23	176.71	9.52	19.562	
1,876.00	1,847.35	1,865.09	1,862.34	6.38	5.32	179.49	-36.67	-41.50	223.21	212.30	10.90	20.470	
1,970.00	1,937.87	1,956.00	1,953.06	6.84	5.65	179.45	-42.48	-41.88	242.80	231.21	11.59	20.943	
2,064.00	2,028.42	2,046.21	2,043.12	7.30	5.98	179.91	-47.67	-41.74	262.81	250.53	12.28	21.405	
2,159.00	2,119.97	2,139.77	2,136.53	7.77	6.32	-178.96	-53.02	-41.49	282.93	269.94	12.98	21.792	
2,348.00	2,302.44	2,329.51	2,325.84	8.69	7.01	176.13	-65.71	-41.14	319.88	305.47	14.41	22.202	
2,443.00	2,394.41	2,425.76	2,421.80	9.15	7.37	175.69	-73.15	-40.72	336.47	321.35	15.13	22.242	
2,537.00	2,485.45	2,519.04	2,514.76	9.61	7.72	175.65	-80.85	-40.33	352.21	336.38	15.83	22.247	
2,632.00	2,577.48	2,616.13	2,611.48	10.07	8.08	176.15	-89.35	-39.68	367.59	351.03	16.56	22.199	
2,727.00	2,669.50	2,711.73	2,706.65	10.53	8.44	176.40	-98.39	-38.84	382.28	365.00	17.28	22.125	
2,821.00	2,760.56	2,806.78	2,801.22	10.98	8.80	176.37	-107.82	-37.77	396.37	378.38	17.99	22.029	
2,916.00	2,852.68	2,901.00	2,894.91	11.44	9.15	176.50	-117.73	-36.55	409.65	390.94	18.71	21.899	
3,011.00	2,945.03	2,991.64	2,985.07	11.89	9.49	176.82	-126.90	-35.27	422.34	402.94	19.40	21.773	
3,105.00	3,036.57	3,077.37	3,070.48	12.33	9.81	171.38	-134.23	-34.14	435.61	415.55	20.06	21.720	
3,200.00	3,128.81	3,163.13	3,156.03	12.78	10.13	168.48	-140.11	-33.34	451.56	430.85	20.71	21.801	
3,294.00	3,219.76	3,251.75	3,244.51	13.24	10.46	168.73	-144.92	-32.29	469.77	448.39	21.39	21.967	
3,389.00	3,311.82	3,343.70	3,336.34	13.69	10.79	170.44	-149.52	-30.73	488.13	466.05	22.08	22.109	
3,483.00	3,403.03	3,435.49	3,428.00	14.14	11.12	171.39	-153.97	-28.97	506.00	483.23	22.77	22.224	
3,578.00	3,495.31	3,526.93	3,519.32	14.60	11.45	172.47	-158.29	-27.31	523.87	500.42	23.46	22.335	
3,672.00	3,586.65	3,607.89	3,600.22	15.04	11.74	173.86	-161.51	-27.05	542.33	518.27	24.06	22.540	
3,767.00	3,678.95	3,681.56	3,673.87	15.49	12.00	174.42	-162.06	-28.55	564.06	539.47	24.59	22.941	
3,862.00	3,771.63	3,762.00	3,754.22	15.93	12.26	174.04	-160.74	-32.04	586.54	561.39	25.15	23.323	
3,956.00	3,863.70	3,846.57	3,838.64	16.35	12.53	174.19	-158.01	-36.00	608.61	582.87	25.74	23.646	
4,052.00	3,957.54	3,937.30	3,929.24	16.79	12.82	172.84	-154.24	-39.24	632.78	606.39	26.39	23.980	
4,146.00	4,048.88	4,031.13	4,022.95	17.24	13.12	172.75	-150.39	-42.09	658.69	631.61	27.08	24.322	
4,241.00	4,140.47	4,129.65	4,121.39	17.71	13.44	175.51	-147.17	-44.31	686.88	659.06	27.83	24.683	
4,336.00	4,231.25	4,240.21	4,231.92	18.21	13.81	179.02	-145.70	-46.11	716.13	687.44	28.69	24.964	
4,430.00	4,320.59	4,338.74	4,330.45	18.71	14.15	177.21	-146.38	-47.08	744.78	715.33	29.45	25.290	
4,524.00	4,409.51	4,443.73	4,435.39	19.22	14.53	173.41	-149.08	-48.33	772.89	742.63	30.26	25.540	
4,619.00	4,498.98	4,533.10	4,524.70	19.75	14.85	172.80	-152.17	-49.34	801.58	770.61	30.96	25.889	
4,713.00	4,587.83	4,614.75	4,606.31	20.27	15.14	173.09	-154.28	-49.93	829.76	798.16	31.60	26.257	
4,807.00	4,676.97	4,701.83	4,693.38	20.78	15.45	174.64	-156.15	-50.58	857.57	825.30	32.28	26.569	
4,870.00	4,736.65	4,762.82	4,754.35	21.12	15.67	175.14	-157.35	-50.94	876.50	843.75	32.75	26.762	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 447-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,823.64	4,815.16	21.46	15.89	175.21	-158.63	-51.28	894.60	861.38	33.22	26.928	
5,027.00	4,886.13	4,911.58	4,903.08	21.96	16.21	176.08	-160.39	-51.69	921.33	887.43	33.90	27.176	
5,121.00	4,976.11	4,997.40	4,988.89	22.45	16.51	176.56	-161.77	-52.09	947.03	912.47	34.56	27.401	
5,216.00	5,068.11	5,088.44	5,079.92	22.91	16.84	176.67	-162.95	-52.39	969.48	934.23	35.25	27.504	
5,341.00	5,190.11	5,210.44	5,201.91	23.49	17.27	176.33	-164.49	-52.63	995.07	958.91	36.16	27.519	
5,436.00	5,283.20	5,296.64	5,288.11	23.91	17.58	176.49	-165.33	-52.74	1,013.09	976.30	36.80	27.533	
5,499.00	5,345.03	5,356.61	5,348.07	24.19	17.79	176.44	-165.52	-52.86	1,024.98	987.74	37.24	27.526	
5,561.00	5,405.97	5,417.94	5,409.40	24.45	18.01	177.50	-165.72	-53.03	1,036.22	998.53	37.69	27.494	
5,624.00	5,467.97	5,480.92	5,472.39	24.72	18.23	176.44	-165.95	-53.10	1,047.12	1,008.96	38.15	27.446	
5,687.00	5,530.05	5,544.18	5,535.64	24.99	18.46	177.41	-166.26	-53.15	1,057.55	1,018.93	38.62	27.387	
5,750.00	5,592.20	5,607.80	5,599.27	25.25	18.68	177.68	-166.64	-53.23	1,067.48	1,028.40	39.08	27.315	
5,813.00	5,654.42	5,675.94	5,667.40	25.51	18.92	178.73	-167.25	-53.35	1,076.82	1,037.24	39.58	27.206	
5,876.00	5,716.68	5,739.58	5,731.04	25.76	19.15	178.95	-168.08	-53.40	1,085.61	1,045.56	40.04	27.111	
5,939.00	5,778.99	5,792.20	5,783.65	26.01	19.34	178.73	-168.58	-53.57	1,094.33	1,053.91	40.42	27.075	
6,065.00	5,903.86	5,927.82	5,919.27	26.51	19.82	178.62	-169.27	-53.82	1,110.59	1,069.20	41.40	26.827	
6,128.00	5,966.41	6,001.54	5,992.97	26.74	20.08	177.17	-170.67	-53.91	1,116.83	1,074.90	41.93	26.636	
6,191.00	6,029.04	6,061.05	6,052.47	26.97	20.29	177.82	-172.00	-54.05	1,122.28	1,079.93	42.35	26.498	
6,254.00	6,091.75	6,121.17	6,112.58	27.20	20.51	178.70	-173.19	-54.17	1,127.06	1,084.28	42.78	26.346	
6,348.00	6,185.46	6,213.00	6,204.39	27.52	20.84	-178.49	-174.78	-54.30	1,132.82	1,089.40	43.43	26.087	
6,390.00	6,227.36	6,213.00	6,204.39	27.61	20.84	-178.49	-174.78	-54.30	1,135.82	1,092.53	43.29	26.240	
6,400.00	6,237.33	6,213.00	6,204.39	27.61	20.84	-178.49	-174.78	-54.30	1,136.76	1,093.53	43.23	26.294	
6,490.00	6,327.12	6,213.00	6,204.39	27.66	20.84	-178.49	-174.78	-54.30	1,149.11	1,106.47	42.65	26.944	
6,500.00	6,337.09	6,213.00	6,204.39	27.66	20.84	168.94	-174.78	-54.30	1,150.92	1,108.35	42.57	27.035	
6,550.00	6,386.85	6,213.00	6,204.39	27.70	20.84	131.38	-174.78	-54.30	1,161.58	1,119.42	42.16	27.549	
6,600.00	6,436.20	6,213.00	6,204.39	27.74	20.84	117.33	-174.78	-54.30	1,174.80	1,133.09	41.72	28.162	
6,650.00	6,484.82	6,213.00	6,204.39	27.79	20.84	110.02	-174.78	-54.30	1,190.41	1,149.17	41.24	28.865	
6,700.00	6,532.40	6,213.00	6,204.39	27.85	20.84	105.04	-174.78	-54.30	1,208.23	1,167.48	40.75	29.649	
6,750.00	6,578.63	6,213.00	6,204.39	27.92	20.84	101.04	-174.78	-54.30	1,228.04	1,187.78	40.26	30.502	
6,800.00	6,623.24	6,213.00	6,204.39	28.00	20.84	97.46	-174.78	-54.30	1,249.63	1,209.85	39.78	31.412	
6,850.00	6,665.93	6,213.00	6,204.39	28.09	20.84	94.07	-174.78	-54.30	1,272.78	1,233.45	39.33	32.364	
6,900.00	6,706.42	6,213.00	6,204.39	28.19	20.84	90.77	-174.78	-54.30	1,297.25	1,258.35	38.91	33.342	
6,950.00	6,744.48	6,213.00	6,204.39	28.30	20.84	87.50	-174.78	-54.30	1,322.83	1,284.30	38.53	34.331	
7,000.00	6,779.84	6,213.00	6,204.39	28.43	20.84	84.24	-174.78	-54.30	1,349.30	1,311.09	38.21	35.314	
7,050.00	6,812.30	6,213.00	6,204.39	28.57	20.84	81.01	-174.78	-54.30	1,376.43	1,338.49	37.94	36.276	
7,100.00	6,841.63	6,213.00	6,204.39	28.73	20.84	77.81	-174.78	-54.30	1,404.03	1,366.29	37.74	37.204	
7,150.00	6,867.66	6,213.00	6,204.39	28.90	20.84	74.68	-174.78	-54.30	1,431.89	1,394.29	37.60	38.084	
7,200.00	6,890.22	6,213.00	6,204.39	29.08	20.84	71.63	-174.78	-54.30	1,459.84	1,422.31	37.52	38.905	
7,250.00	6,909.17	6,213.00	6,204.39	29.28	20.84	68.70	-174.78	-54.30	1,487.68	1,450.17	37.51	39.661	
7,300.00	6,924.38	6,213.00	6,204.39	29.49	20.84	65.90	-174.78	-54.30	1,515.26	1,477.71	37.56	40.345	
7,350.00	6,935.77	6,213.00	6,204.39	29.72	20.84	63.25	-174.78	-54.30	1,542.43	1,504.76	37.66	40.953	
7,400.00	6,943.25	6,213.00	6,204.39	29.97	20.84	60.77	-174.78	-54.30	1,569.02	1,531.20	37.82	41.485	
7,450.00	6,946.78	6,213.00	6,204.39	30.22	20.84	58.46	-174.78	-54.30	1,594.91	1,556.88	38.03	41.941	
7,471.54	6,947.08	6,213.00	6,204.39	30.34	20.84	57.53	-174.78	-54.30	1,605.82	1,567.69	38.13	42.117	
7,500.00	6,946.98	6,213.00	6,204.39	30.49	20.84	57.71	-174.78	-54.30	1,620.20	1,581.93	38.27	42.338	
7,600.00	6,946.65	6,213.00	6,204.39	31.07	20.84	58.36	-174.78	-54.30	1,672.02	1,633.26	38.77	43.131	
7,700.00	6,946.32	6,213.00	6,204.39	31.69	20.84	59.02	-174.78	-54.30	1,725.64	1,686.39	39.25	43.961	
7,800.00	6,945.99	6,213.00	6,204.39	32.35	20.84	59.71	-174.78	-54.30	1,780.82	1,741.10	39.73	44.825	
7,900.00	6,945.67	6,213.00	6,204.39	33.05	20.84	60.40	-174.78	-54.30	1,837.37	1,797.19	40.19	45.721	
8,000.00	6,945.34	6,213.00	6,204.39	33.79	20.84	61.10	-174.78	-54.30	1,895.10	1,854.47	40.63	46.646	
8,034.58	6,945.23	6,213.00	6,204.39	34.05	20.84	61.34	-174.78	-54.30	1,915.30	1,874.53	40.77	46.975	
8,100.00	6,945.02	6,213.00	6,204.39	34.57	20.84	61.34	-174.78	-54.30	1,954.35	1,913.30	41.05	47.611	
8,200.00	6,944.69	6,213.00	6,204.39	35.41	20.84	61.34	-174.78	-54.30	2,016.68	1,975.22	41.46	48.646	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 67-Standard Keeper 104, 447-MWD+HRGM+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,213.00	6,204.39	36.30	20.84	61.34	-174.78	-54.30	2,081.95	2,040.11	41.85	49.754	
8,400.00	6,944.05	6,213.00	6,204.39	37.25	20.84	61.34	-174.78	-54.30	2,149.89	2,107.68	42.21	50.930	
8,500.00	6,943.73	6,213.00	6,204.39	38.25	20.84	61.34	-174.78	-54.30	2,220.26	2,177.70	42.56	52.170	
8,600.00	6,943.40	6,213.00	6,204.39	39.29	20.84	61.34	-174.78	-54.30	2,292.83	2,249.95	42.88	53.468	
8,700.00	6,943.08	6,213.00	6,204.39	40.37	20.84	61.34	-174.78	-54.30	2,367.41	2,324.22	43.19	54.819	
8,800.00	6,942.76	6,213.00	6,204.39	41.49	20.84	61.34	-174.78	-54.30	2,443.79	2,400.33	43.47	56.219	
8,900.00	6,942.43	6,213.00	6,204.39	42.64	20.84	61.34	-174.78	-54.30	2,521.84	2,478.10	43.73	57.663	
9,000.00	6,942.11	6,213.00	6,204.39	43.82	20.84	61.34	-174.78	-54.30	2,601.38	2,557.40	43.98	59.147	
9,100.00	6,941.79	6,213.00	6,204.39	45.03	20.84	61.34	-174.78	-54.30	2,682.29	2,638.08	44.21	60.668	
9,200.00	6,941.46	6,213.00	6,204.39	46.27	20.84	61.34	-174.78	-54.30	2,764.46	2,720.03	44.43	62.221	
9,300.00	6,941.14	6,213.00	6,204.39	47.53	20.84	61.34	-174.78	-54.30	2,847.76	2,803.13	44.63	63.805	
9,400.00	6,940.82	6,213.00	6,204.39	48.81	20.84	61.34	-174.78	-54.30	2,932.11	2,887.29	44.82	65.417	
9,500.00	6,940.50	6,213.00	6,204.39	50.11	20.84	61.34	-174.78	-54.30	3,017.41	2,972.41	45.00	67.052	
9,600.00	6,940.17	6,213.00	6,204.39	51.43	20.84	61.34	-174.78	-54.30	3,103.60	3,058.43	45.17	68.711	
9,700.00	6,939.85	6,213.00	6,204.39	52.76	20.84	61.34	-174.78	-54.30	3,190.58	3,145.26	45.33	70.389	
9,800.00	6,939.53	6,213.00	6,204.39	54.11	20.84	61.34	-174.78	-54.30	3,278.32	3,232.84	45.48	72.086	
9,900.00	6,939.20	6,213.00	6,204.39	55.48	20.84	61.34	-174.78	-54.30	3,366.73	3,321.11	45.62	73.799	
10,000.00	6,938.88	6,213.00	6,204.39	56.86	20.84	61.34	-174.78	-54.30	3,455.78	3,410.02	45.76	75.528	
10,100.00	6,938.56	6,213.00	6,204.39	58.25	20.84	61.34	-174.78	-54.30	3,545.41	3,499.52	45.88	77.269	
10,200.00	6,938.23	6,213.00	6,204.39	59.65	20.84	61.34	-174.78	-54.30	3,635.58	3,589.57	46.01	79.023	
10,300.00	6,937.91	6,213.00	6,204.39	61.06	20.84	61.34	-174.78	-54.30	3,726.25	3,680.13	46.12	80.788	
10,400.00	6,937.59	6,213.00	6,204.39	62.48	20.84	61.34	-174.78	-54.30	3,817.39	3,771.16	46.24	82.562	
10,500.00	6,937.27	6,213.00	6,204.39	63.91	20.84	61.34	-174.78	-54.30	3,908.97	3,862.62	46.34	84.346	
10,600.00	6,936.94	6,213.00	6,204.39	65.34	20.84	61.34	-174.78	-54.30	4,000.94	3,954.49	46.45	86.137	
10,700.00	6,936.62	6,213.00	6,204.39	66.79	20.84	61.34	-174.78	-54.30	4,093.29	4,046.74	46.55	87.934	
10,800.00	6,936.30	6,213.00	6,204.39	68.24	20.84	61.34	-174.78	-54.30	4,186.00	4,139.35	46.65	89.738	
10,900.00	6,935.97	6,213.00	6,204.39	69.70	20.84	61.34	-174.78	-54.30	4,279.03	4,232.29	46.74	91.547	
11,000.00	6,935.65	6,213.00	6,204.39	71.17	20.84	61.34	-174.78	-54.30	4,372.37	4,325.54	46.83	93.361	
11,100.00	6,935.33	6,213.00	6,204.39	72.64	20.84	61.34	-174.78	-54.30	4,466.00	4,419.08	46.92	95.179	
11,200.00	6,935.00	6,213.00	6,204.39	74.11	20.84	61.34	-174.78	-54.30	4,559.90	4,512.89	47.01	97.000	
11,300.00	6,934.68	6,213.00	6,204.39	75.60	20.84	61.34	-174.78	-54.30	4,654.05	4,606.96	47.09	98.823	
11,400.00	6,934.36	6,213.00	6,204.39	77.08	20.84	61.34	-174.78	-54.30	4,748.44	4,701.26	47.18	100.649	
11,500.00	6,934.03	6,213.00	6,204.39	78.57	20.84	61.34	-174.78	-54.30	4,843.06	4,795.80	47.26	102.477	
11,600.00	6,933.71	6,213.00	6,204.39	80.07	20.84	61.34	-174.78	-54.30	4,937.89	4,890.55	47.34	104.306	
11,700.00	6,933.39	6,213.00	6,204.39	81.57	20.84	61.34	-174.78	-54.30	5,032.92	4,985.50	47.42	106.136	
11,800.00	6,933.07	6,213.00	6,204.39	83.07	20.84	61.34	-174.78	-54.30	5,128.14	5,080.64	47.50	107.967	
11,900.00	6,932.74	6,213.00	6,204.39	84.58	20.84	61.34	-174.78	-54.30	5,223.54	5,175.96	47.57	109.797	
12,000.00	6,932.42	6,213.00	6,204.39	86.09	20.84	61.34	-174.78	-54.30	5,319.10	5,271.45	47.65	111.627	
12,100.00	6,932.10	6,213.00	6,204.39	87.60	20.84	61.34	-174.78	-54.30	5,414.83	5,367.10	47.73	113.457	
12,200.00	6,931.77	6,213.00	6,204.39	89.12	20.84	61.34	-174.78	-54.30	5,510.71	5,462.91	47.80	115.286	
12,300.00	6,931.45	6,213.00	6,204.39	90.64	20.84	61.34	-174.78	-54.30	5,606.73	5,558.85	47.87	117.114	
12,400.00	6,931.13	6,213.00	6,204.39	92.16	20.84	61.34	-174.78	-54.30	5,702.89	5,654.94	47.95	118.940	
12,500.00	6,930.80	6,213.00	6,204.39	93.69	20.84	61.34	-174.78	-54.30	5,799.18	5,751.16	48.02	120.764	
12,600.00	6,930.48	6,213.00	6,204.39	95.22	20.84	61.34	-174.78	-54.30	5,895.59	5,847.50	48.09	122.587	
12,700.00	6,930.16	6,213.00	6,204.39	96.75	20.84	61.34	-174.78	-54.30	5,992.12	5,943.95	48.17	124.407	
12,800.00	6,929.84	6,213.00	6,204.39	98.28	20.84	61.34	-174.78	-54.30	6,088.76	6,040.52	48.24	126.225	
12,900.00	6,929.51	6,213.00	6,204.39	99.82	20.84	61.34	-174.78	-54.30	6,185.51	6,137.20	48.31	128.040	
13,000.00	6,929.19	6,213.00	6,204.39	101.35	20.84	61.34	-174.78	-54.30	6,282.36	6,233.98	48.38	129.852	
13,100.00	6,928.87	6,213.00	6,204.39	102.89	20.84	61.34	-174.78	-54.30	6,379.31	6,330.86	48.45	131.661	
13,200.00	6,928.54	6,213.00	6,204.39	104.43	20.84	61.34	-174.78	-54.30	6,476.35	6,427.83	48.52	133.467	
13,300.00	6,928.22	6,213.00	6,204.39	105.97	20.84	61.34	-174.78	-54.30	6,573.48	6,524.88	48.60	135.269	
13,400.00	6,927.90	6,213.00	6,204.39	107.52	20.84	61.34	-174.78	-54.30	6,670.69	6,622.03	48.67	137.068	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 447-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,213.00	6,204.39	109.06	20.84	61.34	-174.78	-54.30	6,767.99	6,719.25	48.74	138.864	
13,600.00	6,927.25	6,213.00	6,204.39	110.61	20.84	61.34	-174.78	-54.30	6,865.36	6,816.55	48.81	140.655	
13,700.00	6,926.93	6,213.00	6,204.39	112.16	20.84	61.34	-174.78	-54.30	6,962.81	6,913.93	48.88	142.442	
13,800.00	6,926.61	6,213.00	6,204.39	113.71	20.84	61.34	-174.78	-54.30	7,060.33	7,011.38	48.95	144.225	
13,900.00	6,926.28	6,213.00	6,204.39	115.26	20.84	61.34	-174.78	-54.30	7,157.92	7,108.89	49.03	146.004	
14,000.00	6,925.96	6,213.00	6,204.39	116.82	20.84	61.34	-174.78	-54.30	7,255.57	7,206.47	49.10	147.779	
14,100.00	6,925.64	6,213.00	6,204.39	118.37	20.84	61.34	-174.78	-54.30	7,353.29	7,304.12	49.17	149.548	
14,200.00	6,925.31	6,213.00	6,204.39	119.93	20.84	61.34	-174.78	-54.30	7,451.06	7,401.82	49.24	151.314	
14,300.00	6,924.99	6,213.00	6,204.39	121.48	20.84	61.34	-174.78	-54.30	7,548.90	7,499.58	49.32	153.074	
14,400.00	6,924.67	6,213.00	6,204.39	123.04	20.84	61.34	-174.78	-54.30	7,646.79	7,597.40	49.39	154.830	
14,500.00	6,924.34	6,213.00	6,204.39	124.60	20.84	61.34	-174.78	-54.30	7,744.73	7,695.27	49.46	156.580	
14,600.00	6,924.02	6,213.00	6,204.39	126.16	20.84	61.34	-174.78	-54.30	7,842.73	7,793.20	49.54	158.326	
14,700.00	6,923.70	6,213.00	6,204.39	127.72	20.84	61.34	-174.78	-54.30	7,940.78	7,891.17	49.61	160.066	
14,800.00	6,923.38	6,213.00	6,204.39	129.28	20.84	61.34	-174.78	-54.30	8,038.87	7,989.19	49.68	161.802	
14,900.00	6,923.05	6,213.00	6,204.39	130.85	20.84	61.34	-174.78	-54.30	8,137.01	8,087.26	49.76	163.531	
15,000.00	6,922.73	6,213.00	6,204.39	132.41	20.84	61.34	-174.78	-54.30	8,235.20	8,185.37	49.83	165.256	
15,100.00	6,922.41	6,213.00	6,204.39	133.97	20.84	61.34	-174.78	-54.30	8,333.43	8,283.52	49.91	166.975	
15,200.00	6,922.08	6,213.00	6,204.39	135.54	20.84	61.34	-174.78	-54.30	8,431.70	8,381.72	49.98	168.689	
15,300.00	6,921.76	6,213.00	6,204.39	137.11	20.84	61.34	-174.78	-54.30	8,530.01	8,479.95	50.06	170.396	
15,400.00	6,921.44	6,213.00	6,204.39	138.67	20.84	61.34	-174.78	-54.30	8,628.36	8,578.22	50.14	172.099	
15,500.00	6,921.11	6,213.00	6,204.39	140.24	20.84	61.34	-174.78	-54.30	8,726.75	8,676.53	50.21	173.795	
15,600.00	6,920.79	6,213.00	6,204.39	141.81	20.84	61.34	-174.78	-54.30	8,825.17	8,774.88	50.29	175.486	
15,700.00	6,920.47	6,213.00	6,204.39	143.38	20.84	61.34	-174.78	-54.30	8,923.63	8,873.26	50.37	177.171	
15,800.00	6,920.14	6,213.00	6,204.39	144.95	20.84	61.34	-174.78	-54.30	9,022.12	8,971.68	50.45	178.850	
15,900.00	6,919.82	6,213.00	6,204.39	146.52	20.84	61.34	-174.78	-54.30	9,120.65	9,070.12	50.52	180.523	
16,000.00	6,919.50	6,213.00	6,204.39	148.09	20.84	61.34	-174.78	-54.30	9,219.20	9,168.60	50.60	182.190	
16,100.00	6,919.18	6,213.00	6,204.39	149.66	20.84	61.34	-174.78	-54.30	9,317.79	9,267.11	50.68	183.851	
16,200.00	6,918.85	6,213.00	6,204.39	151.24	20.84	61.34	-174.78	-54.30	9,416.41	9,365.65	50.76	185.506	
16,300.00	6,918.53	6,213.00	6,204.39	152.81	20.84	61.34	-174.78	-54.30	9,515.06	9,464.22	50.84	187.155	
16,400.00	6,918.21	6,213.00	6,204.39	154.38	20.84	61.34	-174.78	-54.30	9,613.73	9,562.81	50.92	188.797	
16,500.00	6,917.88	6,213.00	6,204.39	155.96	20.84	61.34	-174.78	-54.30	9,712.43	9,661.43	51.00	190.434	
16,600.00	6,917.56	6,213.00	6,204.39	157.53	20.84	61.34	-174.78	-54.30	9,811.16	9,760.08	51.08	192.064	
16,700.00	6,917.24	6,213.00	6,204.39	159.11	20.84	61.34	-174.78	-54.30	9,909.91	9,858.75	51.16	193.688	
16,800.00	6,916.91	6,213.00	6,204.39	160.68	20.84	61.34	-174.78	-54.30	10,008.69	9,957.45	51.25	195.306	
16,900.00	6,916.59	6,213.00	6,204.39	162.26	20.84	61.34	-174.78	-54.30	10,107.49	10,056.17	51.33	196.917	
17,000.00	6,916.27	6,213.00	6,204.39	163.84	20.84	61.34	-174.78	-54.30	10,206.32	10,154.91	51.41	198.522	
17,100.00	6,915.95	6,213.00	6,204.39	165.41	20.84	61.34	-174.78	-54.30	10,305.17	10,253.67	51.49	200.121	
17,200.00	6,915.62	6,213.00	6,204.39	166.99	20.84	61.34	-174.78	-54.30	10,404.04	10,352.46	51.58	201.713	
17,300.00	6,915.30	6,213.00	6,204.39	168.57	20.84	61.34	-174.78	-54.30	10,502.93	10,451.27	51.66	203.299	
17,400.00	6,914.98	6,213.00	6,204.39	170.15	20.84	61.34	-174.78	-54.30	10,601.84	10,550.09	51.75	204.878	
17,500.00	6,914.65	6,213.00	6,204.39	171.73	20.84	61.34	-174.78	-54.30	10,700.77	10,648.94	51.83	206.451	
17,600.00	6,914.33	6,213.00	6,204.39	173.31	20.84	61.34	-174.78	-54.30	10,799.73	10,747.81	51.92	208.017	
17,700.00	6,914.01	6,213.00	6,204.39	174.89	20.84	61.34	-174.78	-54.30	10,898.70	10,846.69	52.00	209.577	
17,800.00	6,913.68	6,213.00	6,204.39	176.47	20.84	61.34	-174.78	-54.30	10,997.69	10,945.60	52.09	211.131	
17,900.00	6,913.36	6,213.00	6,204.39	178.05	20.84	61.34	-174.78	-54.30	11,096.70	11,044.52	52.18	212.678	
18,000.00	6,913.04	6,213.00	6,204.39	179.63	20.84	61.34	-174.78	-54.30	11,195.72	11,143.46	52.26	214.218	
18,100.00	6,912.72	6,213.00	6,204.39	181.21	20.84	61.34	-174.78	-54.30	11,294.76	11,242.41	52.35	215.752	
18,111.83	6,912.68	6,213.00	6,204.39	181.40	20.84	61.34	-174.78	-54.30	11,306.48	11,254.12	52.36	215.933	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 306-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	-35.64	20.39	-14.62	25.09				
54.25	54.25	54.20	54.19	0.02	0.02	-97.72	20.36	-14.75	25.16	25.14	0.02	1,175.415	
130.42	130.42	130.39	130.38	0.11	0.11	-126.41	20.28	-15.13	25.46	25.32	0.14	182.730	
219.69	219.69	219.68	219.68	0.23	0.22	-102.10	20.12	-15.46	25.73	25.44	0.28	91.294	
308.67	308.67	308.71	308.71	0.35	0.33	-113.25	19.74	-15.80	25.83	25.42	0.41	62.409	
454.00	453.99	454.04	454.03	0.51	0.53	111.03	18.89	-16.44	26.18	25.37	0.81	32.272	
544.00	543.93	543.94	543.93	0.74	0.78	116.94	18.75	-16.53	27.39	26.04	1.35	20.229	
667.00	666.63	666.64	666.63	1.13	1.17	118.76	18.75	-16.53	31.22	29.03	2.19	14.257	
756.00	755.27	755.28	755.27	1.44	1.47	143.70	18.75	-16.53	36.58	33.76	2.83	12.949	
850.00	848.62	848.63	848.62	1.79	1.79	153.10	18.75	-16.53	45.97	42.46	3.51	13.113	
942.00	939.50	939.50	939.50	2.14	2.11	164.93	18.75	-16.53	59.39	55.21	4.18	14.222	
1,033.00	1,028.89	1,029.67	1,029.67	2.52	2.42	176.60	18.60	-16.57	76.05	71.22	4.83	15.740	
1,123.00	1,117.00	1,120.87	1,120.83	2.90	2.73	-177.27	16.26	-17.10	92.11	86.64	5.47	16.843	
1,214.00	1,206.00	1,210.86	1,210.73	3.29	3.03	-178.76	12.34	-17.98	107.11	101.00	6.11	17.539	
1,309.00	1,298.75	1,304.41	1,304.19	3.71	3.35	-176.55	8.25	-18.91	123.52	116.74	6.78	18.218	
1,403.00	1,390.39	1,396.86	1,396.54	4.13	3.67	-174.55	4.20	-19.82	140.35	132.90	7.45	18.836	
1,498.00	1,482.88	1,490.19	1,489.78	4.56	4.00	-178.74	0.12	-20.75	157.96	149.82	8.13	19.420	
1,592.00	1,573.82	1,582.08	1,581.57	5.00	4.32	-179.61	-3.90	-21.66	177.70	168.89	8.82	20.152	
1,687.00	1,665.32	1,674.58	1,673.98	5.46	4.65	-177.07	-7.95	-22.57	199.26	189.75	9.51	20.952	
1,876.00	1,847.35	1,858.60	1,857.82	6.38	5.30	-175.75	-16.00	-24.39	242.06	231.17	10.89	22.235	
1,970.00	1,937.87	1,950.10	1,949.23	6.84	5.63	-176.21	-20.00	-25.29	263.40	251.83	11.57	22.759	
2,064.00	2,028.42	2,041.63	2,040.66	7.30	5.95	-176.26	-24.00	-26.20	284.66	272.40	12.26	23.214	
2,159.00	2,119.97	2,134.14	2,133.08	7.77	6.29	-175.56	-28.05	-27.11	306.03	293.07	12.96	23.614	
2,348.00	2,302.44	2,318.52	2,317.27	8.69	6.95	178.82	-36.11	-28.94	347.38	333.02	14.35	24.206	
2,443.00	2,394.41	2,411.41	2,410.07	9.15	7.28	178.06	-40.18	-29.86	367.25	352.20	15.05	24.401	
2,537.00	2,485.45	2,503.38	2,501.94	9.61	7.62	177.76	-44.20	-30.77	386.71	370.97	15.74	24.562	
2,632.00	2,577.48	2,596.32	2,594.80	10.07	7.95	177.99	-48.26	-31.68	406.35	389.90	16.45	24.707	
2,727.00	2,669.50	2,689.27	2,687.65	10.53	8.29	177.97	-52.33	-32.60	425.97	408.82	17.15	24.839	
2,821.00	2,760.56	2,781.24	2,779.53	10.98	8.62	177.67	-56.35	-33.51	445.40	427.56	17.84	24.960	
2,916.00	2,852.68	2,874.27	2,872.46	11.44	8.96	177.55	-60.42	-34.43	464.66	446.11	18.55	25.053	
3,011.00	2,945.03	2,967.49	2,965.59	11.89	9.30	177.62	-64.50	-35.35	482.95	463.70	19.25	25.091	
3,105.00	3,036.57	3,059.87	3,057.87	12.33	9.63	171.87	-68.54	-36.27	500.31	480.37	19.94	25.089	
3,200.00	3,128.81	3,153.02	3,150.93	12.78	9.97	168.73	-72.61	-37.19	518.77	498.12	20.65	25.127	
3,294.00	3,219.76	3,244.94	3,242.76	13.24	10.30	168.71	-76.64	-38.10	538.15	516.80	21.34	25.214	
3,389.00	3,311.82	3,337.95	3,335.68	13.69	10.64	170.09	-80.70	-39.02	557.27	535.23	22.05	25.277	
3,483.00	3,403.03	3,430.08	3,427.72	14.14	10.97	170.72	-84.73	-39.93	575.75	553.01	22.74	25.316	
3,578.00	3,495.31	3,523.27	3,520.81	14.60	11.31	171.51	-88.81	-40.85	594.07	570.63	23.45	25.338	
3,672.00	3,586.65	3,615.50	3,612.95	15.04	11.65	172.81	-92.84	-41.76	612.15	588.01	24.14	25.357	
3,767.00	3,678.95	3,708.71	3,706.06	15.49	11.98	173.48	-96.92	-42.68	630.47	605.62	24.85	25.376	
3,862.00	3,771.63	3,802.21	3,799.47	15.93	12.32	173.37	-101.01	-43.61	647.18	621.64	25.55	25.334	
3,956.00	3,863.70	3,895.02	3,892.19	16.35	12.66	173.80	-105.07	-44.53	662.06	635.83	26.24	25.234	
4,052.00	3,957.54	3,989.67	3,986.74	16.79	13.00	172.66	-109.21	-45.46	678.09	651.15	26.95	25.165	
4,146.00	4,048.88	4,081.90	4,078.87	17.24	13.34	172.71	-113.24	-46.37	696.16	668.52	27.64	25.183	
4,241.00	4,140.47	4,174.50	4,171.39	17.71	13.68	175.49	-117.30	-47.29	717.28	688.93	28.35	25.298	
4,336.00	4,231.25	4,266.42	4,263.21	18.21	14.01	178.97	-121.32	-48.20	741.28	712.22	29.07	25.504	
4,430.00	4,320.59	4,356.94	4,353.64	18.71	14.34	177.17	-125.28	-49.09	766.61	736.84	29.77	25.751	
4,524.00	4,409.51	4,447.11	4,443.72	19.22	14.67	173.38	-129.22	-49.99	793.12	762.65	30.47	26.026	
4,619.00	4,498.98	4,537.90	4,534.42	19.75	15.00	172.79	-133.19	-50.88	820.97	789.78	31.19	26.325	
4,713.00	4,587.83	4,628.02	4,624.45	20.27	15.33	173.07	-137.13	-51.77	847.57	815.68	31.89	26.579	
4,807.00	4,676.97	4,718.39	4,714.72	20.78	15.65	174.58	-141.09	-52.67	873.38	840.78	32.59	26.797	
4,870.00	4,736.65	4,778.90	4,775.18	21.12	15.87	175.06	-143.73	-53.27	890.87	857.80	33.07	26.943	
4,933.00	4,796.58	4,839.63	4,835.84	21.46	16.10	175.11	-146.39	-53.87	907.61	874.07	33.54	27.064	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 306-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,027.00	4,886.13	4,930.34	4,926.47	21.96	16.43	175.94	-150.36	-54.76	932.21	897.97	34.24	27.226	
5,121.00	4,976.11	5,021.43	5,017.46	22.45	16.76	176.39	-154.34	-55.67	955.41	920.47	34.94	27.342	
5,216.00	5,068.11	5,114.37	5,110.31	22.91	17.10	176.45	-158.41	-56.58	975.03	939.38	35.65	27.352	
5,341.00	5,190.11	5,237.45	5,233.26	23.49	17.54	176.06	-163.79	-57.80	996.84	960.27	36.57	27.258	
5,436.00	5,283.20	5,331.28	5,327.00	23.91	17.89	176.17	-167.89	-58.73	1,011.71	974.44	37.27	27.146	
5,499.00	5,345.03	5,393.57	5,389.23	24.19	18.11	176.09	-170.62	-59.35	1,021.09	983.36	37.73	27.062	
5,561.00	5,405.97	5,454.95	5,450.55	24.45	18.34	177.11	-173.30	-59.95	1,029.86	991.68	38.19	26.970	
5,624.00	5,467.97	5,517.38	5,512.92	24.72	18.56	176.03	-176.03	-60.57	1,038.29	999.65	38.65	26.866	
5,687.00	5,530.05	5,579.87	5,575.34	24.99	18.79	176.96	-178.77	-61.19	1,046.32	1,007.21	39.11	26.756	
5,750.00	5,592.20	5,642.41	5,637.82	25.25	19.02	177.20	-181.50	-61.81	1,053.92	1,014.35	39.57	26.637	
5,813.00	5,654.42	5,705.00	5,700.34	25.51	19.25	178.21	-184.24	-62.42	1,061.10	1,021.08	40.02	26.512	
5,876.00	5,716.68	5,767.62	5,762.90	25.76	19.47	178.40	-186.98	-63.04	1,067.99	1,027.51	40.48	26.383	
5,939.00	5,778.99	5,830.27	5,825.49	26.01	19.70	178.16	-189.72	-63.66	1,074.59	1,033.65	40.94	26.249	
6,065.00	5,903.86	5,955.75	5,950.84	26.51	20.16	178.00	-195.21	-64.90	1,086.01	1,044.16	41.85	25.952	
6,128.00	5,966.41	6,018.57	6,013.60	26.74	20.39	176.52	-197.96	-65.53	1,090.73	1,048.43	42.30	25.786	
6,191.00	6,029.04	6,081.43	6,076.40	26.97	20.62	177.14	-200.71	-66.15	1,094.85	1,052.10	42.75	25.611	
6,254.00	6,091.75	6,144.34	6,139.24	27.20	20.85	178.00	-203.46	-66.77	1,098.15	1,054.95	43.20	25.421	
6,348.00	6,185.46	6,238.28	6,233.08	27.52	21.19	-179.25	-207.57	-67.70	1,101.47	1,057.61	43.86	25.112	
6,390.00	6,227.36	6,280.26	6,275.02	27.61	21.34	-179.27	-209.40	-68.11	1,102.58	1,058.50	44.08	25.014	
6,400.00	6,237.33	6,290.25	6,285.01	27.61	21.38	-179.28	-209.84	-68.21	1,102.84	1,058.73	44.11	25.000	
6,490.00	6,327.12	6,374.53	6,369.09	27.66	21.68	-179.48	-213.51	-71.88	1,105.38	1,060.98	44.40	24.894	
6,500.00	6,337.09	6,383.59	6,378.08	27.66	21.72	168.03	-213.90	-72.89	1,105.72	1,061.28	44.43	24.885	
6,550.00	6,386.85	6,428.69	6,422.60	27.70	21.88	131.03	-215.82	-79.80	1,107.84	1,063.26	44.58	24.849	
6,600.00	6,436.20	6,473.48	6,466.21	27.74	22.04	117.75	-217.69	-89.77	1,110.73	1,065.99	44.73	24.831	
6,650.00	6,484.82	6,517.97	6,508.74	27.79	22.19	111.41	-219.49	-102.69	1,114.35	1,069.47	44.88	24.829	
6,700.00	6,532.40	6,562.20	6,550.02	27.85	22.35	107.61	-221.23	-118.45	1,118.67	1,073.64	45.03	24.842	
6,750.00	6,578.63	6,606.17	6,589.87	27.92	22.50	104.98	-222.90	-136.92	1,123.68	1,078.49	45.19	24.868	
6,800.00	6,623.24	6,650.00	6,628.25	28.00	22.64	102.96	-224.48	-158.03	1,129.31	1,083.97	45.35	24.903	
6,850.00	6,665.93	6,693.46	6,664.77	28.09	22.79	101.30	-225.98	-181.52	1,135.55	1,090.03	45.52	24.947	
6,900.00	6,706.42	6,736.83	6,699.54	28.19	22.93	99.87	-227.39	-207.39	1,142.34	1,096.64	45.70	24.995	
6,950.00	6,744.48	6,780.06	6,732.37	28.30	23.08	98.60	-228.70	-235.47	1,149.63	1,103.73	45.90	25.045	
7,000.00	6,779.84	6,823.17	6,763.13	28.43	23.23	97.43	-229.91	-265.64	1,157.39	1,111.27	46.12	25.094	
7,050.00	6,812.30	6,866.21	6,791.74	28.57	23.39	96.35	-231.02	-297.76	1,165.55	1,119.19	46.36	25.139	
7,100.00	6,841.63	6,909.19	6,818.08	28.73	23.56	95.33	-232.03	-331.70	1,174.07	1,127.44	46.63	25.177	
7,150.00	6,867.66	6,950.00	6,840.93	28.90	23.73	94.37	-232.88	-365.50	1,182.90	1,135.99	46.91	25.216	
7,200.00	6,890.22	6,995.17	6,863.63	29.08	23.92	93.46	-233.70	-404.53	1,191.97	1,144.70	47.27	25.219	
7,250.00	6,909.17	7,038.24	6,882.65	29.28	24.12	92.60	-234.36	-443.15	1,201.24	1,153.60	47.63	25.218	
7,300.00	6,924.38	7,081.41	6,899.05	29.49	24.34	91.78	-234.90	-483.08	1,210.64	1,162.61	48.04	25.202	
7,350.00	6,935.77	7,124.74	6,912.76	29.72	24.56	91.02	-235.32	-524.17	1,220.14	1,171.66	48.48	25.169	
7,400.00	6,943.25	7,168.26	6,923.68	29.97	24.80	90.30	-235.61	-566.28	1,229.66	1,180.71	48.96	25.118	
7,450.00	6,946.78	7,212.02	6,931.75	30.22	25.05	89.63	-235.77	-609.29	1,239.16	1,189.69	49.47	25.049	
7,471.54	6,947.08	7,230.96	6,934.32	30.34	25.16	89.36	-235.80	-628.05	1,243.24	1,193.54	49.70	25.015	
7,500.00	6,946.98	7,256.15	6,936.87	30.49	25.31	89.49	-235.80	-653.11	1,248.50	1,198.49	50.01	24.964	
7,600.00	6,946.65	7,349.34	6,938.92	31.07	25.90	89.62	-235.47	-746.24	1,265.21	1,213.98	51.23	24.698	
7,700.00	6,946.32	7,448.43	6,938.73	31.69	26.59	89.64	-235.02	-845.34	1,278.59	1,225.94	52.65	24.285	
7,800.00	6,945.99	7,547.94	6,938.54	32.35	27.37	89.65	-234.57	-944.84	1,288.51	1,234.28	54.23	23.762	
7,900.00	6,945.67	7,647.72	6,938.35	33.05	28.21	89.67	-234.11	-1,044.62	1,294.94	1,239.00	55.95	23.146	
8,000.00	6,945.34	7,747.67	6,938.16	33.79	29.12	89.68	-233.66	-1,144.57	1,297.89	1,240.10	57.79	22.457	
8,034.58	6,945.23	7,782.25	6,938.10	34.05	29.44	89.69	-233.50	-1,179.15	1,298.10	1,239.65	58.46	22.206	
8,100.00	6,945.02	7,847.67	6,937.97	34.57	30.08	89.69	-233.20	-1,244.57	1,298.10	1,238.35	59.76	21.724	
8,200.00	6,944.69	7,947.67	6,937.78	35.41	31.10	89.69	-232.74	-1,344.57	1,298.10	1,236.28	61.82	20.997	
8,300.00	6,944.37	8,047.67	6,937.59	36.30	32.17	89.70	-232.29	-1,444.57	1,298.10	1,234.12	63.98	20.288	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 306-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,400.00	6,944.05	8,147.67	6,937.40	37.25	33.27	89.71	-231.83	-1,544.57	1,298.10	1,231.87	66.23	19.600	
8,500.00	6,943.73	8,247.67	6,937.20	38.25	34.42	89.71	-231.38	-1,644.57	1,298.10	1,229.55	68.55	18.936	
8,600.00	6,943.40	8,347.67	6,937.01	39.29	35.60	89.72	-230.92	-1,744.56	1,298.10	1,227.16	70.94	18.298	
8,700.00	6,943.08	8,447.67	6,936.82	40.37	36.82	89.72	-230.47	-1,844.56	1,298.10	1,224.71	73.39	17.687	
8,800.00	6,942.76	8,547.67	6,936.63	41.49	38.06	89.73	-230.01	-1,944.56	1,298.10	1,222.20	75.90	17.103	
8,900.00	6,942.43	8,647.67	6,936.44	42.64	39.33	89.74	-229.56	-2,044.56	1,298.10	1,219.64	78.46	16.545	
9,000.00	6,942.11	8,747.67	6,936.25	43.82	40.62	89.74	-229.10	-2,144.56	1,298.10	1,217.04	81.06	16.014	
9,100.00	6,941.79	8,847.67	6,936.06	45.03	41.93	89.75	-228.65	-2,244.56	1,298.10	1,214.39	83.71	15.508	
9,200.00	6,941.46	8,947.67	6,935.86	46.27	43.27	89.75	-228.19	-2,344.56	1,298.10	1,211.71	86.39	15.026	
9,300.00	6,941.14	9,047.67	6,935.67	47.53	44.62	89.76	-227.73	-2,444.55	1,298.10	1,208.99	89.11	14.568	
9,400.00	6,940.82	9,147.67	6,935.48	48.81	45.98	89.76	-227.28	-2,544.55	1,298.10	1,206.24	91.85	14.132	
9,500.00	6,940.50	9,247.67	6,935.29	50.11	47.36	89.77	-226.82	-2,644.55	1,298.10	1,203.46	94.63	13.717	
9,600.00	6,940.17	9,347.67	6,935.10	51.43	48.76	89.78	-226.37	-2,744.55	1,298.10	1,200.66	97.43	13.323	
9,700.00	6,939.85	9,447.67	6,934.91	52.76	50.16	89.78	-225.91	-2,844.55	1,298.09	1,197.83	100.26	12.947	
9,800.00	6,939.53	9,547.67	6,934.72	54.11	51.58	89.79	-225.46	-2,944.55	1,298.09	1,194.98	103.11	12.589	
9,900.00	6,939.20	9,647.67	6,934.53	55.48	53.01	89.79	-225.00	-3,044.55	1,298.09	1,192.12	105.98	12.249	
10,000.00	6,938.88	9,747.67	6,934.33	56.86	54.45	89.80	-224.55	-3,144.55	1,298.09	1,189.23	108.87	11.924	
10,100.00	6,938.56	9,847.67	6,934.14	58.25	55.89	89.81	-224.09	-3,244.54	1,298.09	1,186.32	111.77	11.614	
10,200.00	6,938.23	9,947.67	6,933.95	59.65	57.35	89.81	-223.64	-3,344.54	1,298.09	1,183.40	114.69	11.318	
10,300.00	6,937.91	10,047.67	6,933.76	61.06	58.81	89.82	-223.18	-3,444.54	1,298.09	1,180.47	117.63	11.036	
10,400.00	6,937.59	10,147.67	6,933.57	62.48	60.28	89.82	-222.72	-3,544.54	1,298.09	1,177.52	120.57	10.766	
10,500.00	6,937.27	10,247.67	6,933.38	63.91	61.76	89.83	-222.27	-3,644.54	1,298.09	1,174.56	123.53	10.508	
10,600.00	6,936.94	10,347.67	6,933.19	65.34	63.24	89.83	-221.81	-3,744.54	1,298.09	1,171.59	126.51	10.261	
10,700.00	6,936.62	10,447.67	6,932.99	66.79	64.73	89.84	-221.36	-3,844.54	1,298.09	1,168.60	129.49	10.025	
10,800.00	6,936.30	10,547.67	6,932.80	68.24	66.22	89.85	-220.90	-3,944.54	1,298.09	1,165.61	132.48	9.798	
10,900.00	6,935.97	10,647.67	6,932.61	69.70	67.72	89.85	-220.45	-4,044.53	1,298.09	1,162.60	135.49	9.581	
11,000.00	6,935.65	10,747.67	6,932.42	71.17	69.22	89.86	-219.99	-4,144.53	1,298.09	1,159.59	138.50	9.373	
11,100.00	6,935.33	10,847.67	6,932.23	72.64	70.73	89.86	-219.54	-4,244.53	1,298.09	1,156.57	141.52	9.173	
11,200.00	6,935.00	10,947.67	6,932.04	74.11	72.24	89.87	-219.08	-4,344.53	1,298.09	1,153.54	144.55	8.980	
11,300.00	6,934.68	11,047.67	6,931.85	75.60	73.75	89.87	-218.63	-4,444.53	1,298.09	1,150.51	147.58	8.796	
11,400.00	6,934.36	11,147.67	6,931.65	77.08	75.27	89.88	-218.17	-4,544.53	1,298.09	1,147.47	150.63	8.618	
11,500.00	6,934.03	11,247.67	6,931.46	78.57	76.79	89.89	-217.71	-4,644.53	1,298.09	1,144.42	153.67	8.447	
11,600.00	6,933.71	11,347.67	6,931.27	80.07	78.32	89.89	-217.26	-4,744.52	1,298.09	1,141.36	156.73	8.282	
11,700.00	6,933.39	11,447.67	6,931.08	81.57	79.84	89.90	-216.80	-4,844.52	1,298.09	1,138.30	159.79	8.124	
11,800.00	6,933.07	11,547.67	6,930.89	83.07	81.37	89.90	-216.35	-4,944.52	1,298.09	1,135.23	162.86	7.971	
11,900.00	6,932.74	11,647.67	6,930.70	84.58	82.91	89.91	-215.89	-5,044.52	1,298.09	1,132.16	165.93	7.823	
12,000.00	6,932.42	11,747.67	6,930.51	86.09	84.44	89.92	-215.44	-5,144.52	1,298.09	1,129.09	169.00	7.681	
12,100.00	6,932.10	11,847.67	6,930.31	87.60	85.98	89.92	-214.98	-5,244.52	1,298.09	1,126.01	172.08	7.543	
12,200.00	6,931.77	11,947.67	6,930.12	89.12	87.52	89.93	-214.53	-5,344.52	1,298.09	1,122.92	175.17	7.411	
12,300.00	6,931.45	12,047.67	6,929.93	90.64	89.06	89.93	-214.07	-5,444.52	1,298.09	1,119.83	178.26	7.282	
12,309.95	6,931.42	12,057.62	6,929.91	90.79	89.22	89.93	-214.03	-5,454.47	1,298.09	1,119.53	178.56	7.270	
12,400.00	6,931.13	12,147.67	6,929.74	92.16	90.61	89.94	-213.62	-5,544.51	1,298.09	1,116.74	181.35	7.158	
12,500.00	6,930.80	12,247.67	6,929.55	93.69	92.15	89.94	-213.16	-5,644.51	1,298.09	1,113.64	184.45	7.038	
12,600.00	6,930.48	12,347.67	6,929.36	95.22	93.70	89.95	-212.70	-5,744.51	1,298.09	1,110.54	187.55	6.921	
12,700.00	6,930.16	12,447.67	6,929.17	96.75	95.25	89.96	-212.25	-5,844.51	1,298.09	1,107.44	190.65	6.809	
12,800.00	6,929.84	12,547.67	6,928.98	98.28	96.80	89.96	-211.79	-5,944.51	1,298.09	1,104.34	193.76	6.700	
12,900.00	6,929.51	12,647.67	6,928.78	99.82	98.36	89.97	-211.34	-6,044.51	1,298.09	1,101.23	196.86	6.594	
13,000.00	6,929.19	12,747.67	6,928.59	101.35	99.91	89.97	-210.88	-6,144.51	1,298.09	1,098.11	199.98	6.491	
13,100.00	6,928.87	12,847.67	6,928.40	102.89	101.47	89.98	-210.43	-6,244.51	1,298.09	1,095.00	203.09	6.392	
13,200.00	6,928.54	12,947.67	6,928.21	104.43	103.02	89.99	-209.97	-6,344.50	1,298.09	1,091.88	206.21	6.295	
13,300.00	6,928.22	13,047.67	6,928.02	105.97	104.58	89.99	-209.52	-6,444.50	1,298.09	1,088.76	209.33	6.201	
13,400.00	6,927.90	13,147.67	6,927.83	107.52	106.14	90.00	-209.06	-6,544.50	1,298.09	1,085.64	212.45	6.110	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 67-Standard Keeper 104, 306-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	13,247.67	6,927.64	109.06	107.70	90.00	-208.61	-6,644.50	1,298.09	1,082.51	215.58	6.021	
13,600.00	6,927.25	13,347.67	6,927.44	110.61	109.27	90.01	-208.15	-6,744.50	1,298.09	1,079.39	218.71	5.935	
13,700.00	6,926.93	13,447.67	6,927.25	112.16	110.83	90.01	-207.69	-6,844.50	1,298.09	1,076.26	221.83	5.852	
13,800.00	6,926.61	13,547.67	6,927.06	113.71	112.39	90.02	-207.24	-6,944.50	1,298.09	1,073.13	224.97	5.770	
13,900.00	6,926.28	13,647.67	6,926.87	115.26	113.96	90.03	-206.78	-7,044.49	1,298.09	1,069.99	228.10	5.691	
14,000.00	6,925.96	13,747.67	6,926.68	116.82	115.53	90.03	-206.33	-7,144.49	1,298.09	1,066.86	231.23	5.614	
14,100.00	6,925.64	13,847.67	6,926.49	118.37	117.09	90.04	-205.87	-7,244.49	1,298.09	1,063.72	234.37	5.539	
14,200.00	6,925.31	13,947.67	6,926.30	119.93	118.66	90.04	-205.42	-7,344.49	1,298.09	1,060.58	237.51	5.465	
14,300.00	6,924.99	14,047.67	6,926.10	121.48	120.23	90.05	-204.96	-7,444.49	1,298.09	1,057.44	240.65	5.394	
14,400.00	6,924.67	14,147.67	6,925.91	123.04	121.80	90.05	-204.51	-7,544.49	1,298.09	1,054.30	243.79	5.325	
14,500.00	6,924.34	14,247.67	6,925.72	124.60	123.37	90.06	-204.05	-7,644.49	1,298.09	1,051.16	246.93	5.257	
14,600.00	6,924.02	14,347.67	6,925.53	126.16	124.94	90.07	-203.60	-7,744.49	1,298.09	1,048.01	250.08	5.191	
14,700.00	6,923.70	14,447.67	6,925.34	127.72	126.51	90.07	-203.14	-7,844.48	1,298.09	1,044.87	253.23	5.126	
14,800.00	6,923.38	14,547.67	6,925.15	129.28	128.09	90.08	-202.68	-7,944.48	1,298.09	1,041.72	256.37	5.063	
14,900.00	6,923.05	14,647.67	6,924.96	130.85	129.66	90.08	-202.23	-8,044.48	1,298.09	1,038.57	259.52	5.002	
15,000.00	6,922.73	14,747.67	6,924.76	132.41	131.23	90.09	-201.77	-8,144.48	1,298.10	1,035.42	262.67	4.942	
15,100.00	6,922.41	14,847.67	6,924.57	133.97	132.81	90.10	-201.32	-8,244.48	1,298.10	1,032.27	265.82	4.883	
15,200.00	6,922.08	14,947.67	6,924.38	135.54	134.38	90.10	-200.86	-8,344.48	1,298.10	1,029.12	268.98	4.826	
15,300.00	6,921.76	15,047.67	6,924.19	137.11	135.96	90.11	-200.41	-8,444.48	1,298.10	1,025.97	272.13	4.770	
15,400.00	6,921.44	15,147.67	6,924.00	138.67	137.54	90.11	-199.95	-8,544.48	1,298.10	1,022.81	275.28	4.715	
15,500.00	6,921.11	15,247.67	6,923.81	140.24	139.11	90.12	-199.50	-8,644.47	1,298.10	1,019.66	278.44	4.662	
15,600.00	6,920.79	15,347.67	6,923.62	141.81	140.69	90.12	-199.04	-8,744.47	1,298.10	1,016.50	281.60	4.610	
15,700.00	6,920.47	15,447.67	6,923.43	143.38	142.27	90.13	-198.59	-8,844.47	1,298.10	1,013.34	284.75	4.559	
15,800.00	6,920.14	15,547.67	6,923.23	144.95	143.85	90.14	-198.13	-8,944.47	1,298.10	1,010.19	287.91	4.509	
15,900.00	6,919.82	15,647.67	6,923.04	146.52	145.43	90.14	-197.67	-9,044.47	1,298.10	1,007.03	291.07	4.460	
16,000.00	6,919.50	15,747.67	6,922.85	148.09	147.01	90.15	-197.22	-9,144.47	1,298.10	1,003.87	294.23	4.412	
16,100.00	6,919.18	15,847.67	6,922.66	149.66	148.59	90.15	-196.76	-9,244.47	1,298.10	1,000.71	297.39	4.365	
16,200.00	6,918.85	15,947.67	6,922.47	151.24	150.17	90.16	-196.31	-9,344.46	1,298.10	997.54	300.56	4.319	
16,300.00	6,918.53	16,047.67	6,922.28	152.81	151.75	90.17	-195.85	-9,444.46	1,298.10	994.38	303.72	4.274	
16,400.00	6,918.21	16,147.67	6,922.09	154.38	153.33	90.17	-195.40	-9,544.46	1,298.10	991.22	306.88	4.230	
16,500.00	6,917.88	16,247.67	6,921.89	155.96	154.91	90.18	-194.94	-9,644.46	1,298.10	988.06	310.05	4.187	
16,600.00	6,917.56	16,347.67	6,921.70	157.53	156.49	90.18	-194.49	-9,744.46	1,298.10	984.89	313.21	4.144	
16,700.00	6,917.24	16,447.67	6,921.51	159.11	158.08	90.19	-194.03	-9,844.46	1,298.10	981.73	316.38	4.103	
16,800.00	6,916.91	16,547.67	6,921.32	160.68	159.66	90.19	-193.58	-9,944.46	1,298.10	978.56	319.54	4.062	
16,900.00	6,916.59	16,647.67	6,921.13	162.26	161.24	90.20	-193.12	-10,044.46	1,298.10	975.39	322.71	4.022	
17,000.00	6,916.27	16,747.67	6,920.94	163.84	162.82	90.21	-192.66	-10,144.45	1,298.10	972.23	325.88	3.983	
17,100.00	6,915.95	16,847.67	6,920.75	165.41	164.41	90.21	-192.21	-10,244.45	1,298.11	969.06	329.05	3.945	
17,200.00	6,915.62	16,947.67	6,920.55	166.99	165.99	90.22	-191.75	-10,344.45	1,298.11	965.89	332.22	3.907	
17,300.00	6,915.30	17,047.67	6,920.36	168.57	167.58	90.22	-191.30	-10,444.45	1,298.11	962.72	335.39	3.870	
17,400.00	6,914.98	17,147.67	6,920.17	170.15	169.16	90.23	-190.84	-10,544.45	1,298.11	959.55	338.56	3.834	
17,500.00	6,914.65	17,247.67	6,919.98	171.73	170.75	90.24	-190.39	-10,644.45	1,298.11	956.38	341.73	3.799	
17,600.00	6,914.33	17,347.67	6,919.79	173.31	172.33	90.24	-189.93	-10,744.45	1,298.11	953.21	344.90	3.764	
17,700.00	6,914.01	17,447.67	6,919.60	174.89	173.92	90.25	-189.48	-10,844.44	1,298.11	950.04	348.07	3.729	
17,800.00	6,913.68	17,547.67	6,919.41	176.47	175.50	90.25	-189.02	-10,944.44	1,298.11	946.87	351.24	3.696	
17,900.00	6,913.36	17,647.67	6,919.21	178.05	177.09	90.26	-188.57	-11,044.44	1,298.11	943.69	354.42	3.663	
18,000.00	6,913.04	17,747.67	6,919.02	179.63	178.68	90.26	-188.11	-11,144.44	1,298.11	940.52	357.59	3.630	SF
18,100.00	6,912.72	17,759.47	6,919.00	181.21	178.86	90.26	-188.06	-11,156.25	1,301.11	943.78	357.32	3.641	
18,111.83	6,912.68	17,759.47	6,919.00	181.40	178.86	90.26	-188.06	-11,156.25	1,301.96	944.85	357.12	3.646	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 54-Standard Keeper 104, 454-MWD+HRGM+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,352.57	6,190.02	6,348.00	6,185.46	0.07	0.00	0.00	-1,306.81	-16.51	4.57	4.57	0.00	101.000	CC, ES
6,390.00	6,227.36	6,348.00	6,185.46	0.68	0.00	0.00	-1,306.81	-16.51	42.00	42.00	0.00	101.000	
6,400.00	6,237.33	6,348.00	6,185.46	0.68	0.00	0.00	-1,306.81	-16.51	52.00				
6,490.00	6,327.12	6,348.00	6,185.46	0.81	0.00	0.00	-1,306.81	-16.51	142.00				
6,500.00	6,337.09	6,348.00	6,185.46	0.84	0.00	70.02	-1,306.81	-16.51	152.00	151.49	0.51	296.586	
6,550.00	6,386.85	6,348.00	6,185.46	0.96	0.00	33.45	-1,306.81	-16.51	201.93	200.78	1.15	175.711	
6,600.00	6,436.20	6,348.00	6,185.46	1.11	0.00	20.64	-1,306.81	-16.51	251.62	249.71	1.91	131.813	
6,650.00	6,484.82	6,348.00	6,185.46	1.28	0.00	14.82	-1,306.81	-16.51	300.96	298.27	2.68	112.094	
6,700.00	6,532.40	6,348.00	6,185.46	1.49	0.00	11.59	-1,306.81	-16.51	349.84	346.38	3.46	101.094	
6,750.00	6,578.63	6,348.00	6,185.46	1.72	0.00	9.55	-1,306.81	-16.51	398.18	393.95	4.23	94.172	
6,800.00	6,623.24	6,348.00	6,185.46	1.99	0.00	8.16	-1,306.81	-16.51	445.90	440.91	4.98	89.498	
6,850.00	6,665.93	6,348.00	6,185.46	2.33	0.00	7.16	-1,306.81	-16.51	492.91	487.20	5.72	86.212	
6,900.00	6,706.42	6,348.00	6,185.46	2.71	0.00	6.41	-1,306.81	-16.51	539.15	532.72	6.43	83.857	
6,950.00	6,744.48	6,348.00	6,185.46	3.14	0.00	5.84	-1,306.81	-16.51	584.54	577.43	7.11	82.173	
7,000.00	6,779.84	6,348.00	6,185.46	3.62	0.00	5.39	-1,306.81	-16.51	629.00	621.24	7.77	81.000	
7,050.00	6,812.30	6,348.00	6,185.46	4.14	0.00	5.04	-1,306.81	-16.51	672.47	664.09	8.38	80.237	
7,100.00	6,841.63	6,348.00	6,185.46	4.70	0.00	4.75	-1,306.81	-16.51	714.87	705.91	8.96	79.817	
7,150.00	6,867.66	6,348.00	6,185.46	5.31	0.00	4.53	-1,306.81	-16.51	756.13	746.65	9.49	79.699	SF
7,200.00	6,890.22	6,348.00	6,185.46	5.95	0.00	4.35	-1,306.81	-16.51	796.20	786.23	9.97	79.855	
7,250.00	6,909.17	6,348.00	6,185.46	6.62	0.00	4.21	-1,306.81	-16.51	835.00	824.60	10.40	80.269	
7,300.00	6,924.38	6,348.00	6,185.46	7.31	0.00	4.10	-1,306.81	-16.51	872.48	861.70	10.78	80.934	
7,350.00	6,935.77	6,348.00	6,185.46	8.03	0.00	4.03	-1,306.81	-16.51	908.57	897.47	11.10	81.849	
7,400.00	6,943.25	6,348.00	6,185.46	8.76	0.00	3.98	-1,306.81	-16.51	943.22	931.86	11.36	83.021	
7,450.00	6,946.78	6,348.00	6,185.46	9.50	0.00	3.96	-1,306.81	-16.51	976.37	964.81	11.56	84.462	
7,471.54	6,947.08	6,348.00	6,185.46	9.82	0.00	3.96	-1,306.81	-16.51	990.18	978.56	11.63	85.170	
7,500.00	6,946.98	6,348.00	6,185.46	10.24	0.00	4.43	-1,306.81	-16.51	1,008.47	996.76	11.71	86.141	
7,600.00	6,946.65	6,348.00	6,185.46	11.76	0.00	6.27	-1,306.81	-16.51	1,076.08	1,064.06	12.03	89.468	
7,700.00	6,946.32	6,348.00	6,185.46	13.28	0.00	8.34	-1,306.81	-16.51	1,148.18	1,135.78	12.41	92.540	
7,800.00	6,945.99	6,348.00	6,185.46	14.82	0.00	10.64	-1,306.81	-16.51	1,223.89	1,211.03	12.86	95.198	
7,900.00	6,945.67	6,348.00	6,185.46	16.37	0.00	13.13	-1,306.81	-16.51	1,302.50	1,289.11	13.39	97.301	
8,000.00	6,945.34	6,348.00	6,185.46	17.91	0.00	15.81	-1,306.81	-16.51	1,383.42	1,369.40	14.01	98.734	
8,034.58	6,945.23	6,348.00	6,185.46	18.45	0.00	16.77	-1,306.81	-16.51	1,411.85	1,397.60	14.25	99.061	
8,100.00	6,945.02	6,348.00	6,185.46	19.46	0.00	16.77	-1,306.81	-16.51	1,466.30	1,451.66	14.64	100.173	
8,200.00	6,944.69	6,348.00	6,185.46	21.02	0.00	16.77	-1,306.81	-16.51	1,551.17	1,535.92	15.25	101.711	
8,300.00	6,944.37	6,348.00	6,185.46	22.58	0.00	16.77	-1,306.81	-16.51	1,637.75	1,621.86	15.89	103.070	
8,400.00	6,944.05	6,348.00	6,185.46	24.15	0.00	16.77	-1,306.81	-16.51	1,725.78	1,709.23	16.55	104.268	
8,500.00	6,943.73	6,348.00	6,185.46	25.72	0.00	16.77	-1,306.81	-16.51	1,815.05	1,797.82	17.23	105.323	
8,600.00	6,943.40	6,348.00	6,185.46	27.29	0.00	16.77	-1,306.81	-16.51	1,905.39	1,887.46	17.93	106.251	
8,700.00	6,943.08	6,348.00	6,185.46	28.87	0.00	16.77	-1,306.81	-16.51	1,996.65	1,978.00	18.65	107.067	
8,800.00	6,942.76	6,348.00	6,185.46	30.45	0.00	16.77	-1,306.81	-16.51	2,088.71	2,069.33	19.38	107.786	
8,900.00	6,942.43	6,348.00	6,185.46	32.04	0.00	16.77	-1,306.81	-16.51	2,181.47	2,161.35	20.12	108.420	
9,000.00	6,942.11	6,348.00	6,185.46	33.62	0.00	16.77	-1,306.81	-16.51	2,274.84	2,253.97	20.87	108.980	
9,100.00	6,941.79	6,348.00	6,185.46	35.21	0.00	16.77	-1,306.81	-16.51	2,368.76	2,347.12	21.64	109.475	
9,200.00	6,941.46	6,348.00	6,185.46	36.79	0.00	16.77	-1,306.81	-16.51	2,463.15	2,440.74	22.41	109.913	
9,300.00	6,941.14	6,348.00	6,185.46	38.38	0.00	16.77	-1,306.81	-16.51	2,557.97	2,534.78	23.19	110.302	
9,400.00	6,940.82	6,348.00	6,185.46	39.97	0.00	16.77	-1,306.81	-16.51	2,653.17	2,629.19	23.98	110.648	
9,500.00	6,940.50	6,348.00	6,185.46	41.56	0.00	16.77	-1,306.81	-16.51	2,748.71	2,723.94	24.77	110.955	
9,600.00	6,940.17	6,348.00	6,185.46	43.15	0.00	16.77	-1,306.81	-16.51	2,844.56	2,818.98	25.57	111.229	
9,700.00	6,939.85	6,348.00	6,185.46	44.74	0.00	16.77	-1,306.81	-16.51	2,940.68	2,914.30	26.38	111.475	
9,800.00	6,939.53	6,348.00	6,185.46	46.33	0.00	16.77	-1,306.81	-16.51	3,037.06	3,009.86	27.19	111.694	
9,900.00	6,939.20	6,348.00	6,185.46	47.93	0.00	16.77	-1,306.81	-16.51	3,133.66	3,105.65	28.01	111.890	
10,000.00	6,938.88	6,348.00	6,185.46	49.52	0.00	16.77	-1,306.81	-16.51	3,230.46	3,201.64	28.83	112.067	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 54-Standard Keeper 104, 454-MWD+HRGM+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	6,938.56	6,348.00	6,185.46	51.11	0.00	16.77	-1,306.81	-16.51	3,327.46	3,297.81	29.65	112.225	
10,200.00	6,938.23	6,348.00	6,185.46	52.71	0.00	16.77	-1,306.81	-16.51	3,424.63	3,394.15	30.48	112.368	
10,300.00	6,937.91	6,348.00	6,185.46	54.30	0.00	16.77	-1,306.81	-16.51	3,521.96	3,490.65	31.31	112.497	
10,400.00	6,937.59	6,348.00	6,185.46	55.90	0.00	16.77	-1,306.81	-16.51	3,619.43	3,587.29	32.14	112.613	
10,500.00	6,937.27	6,348.00	6,185.46	57.49	0.00	16.77	-1,306.81	-16.51	3,717.04	3,684.06	32.98	112.718	
10,600.00	6,936.94	6,348.00	6,185.46	59.09	0.00	16.77	-1,306.81	-16.51	3,814.77	3,780.96	33.82	112.813	
10,700.00	6,936.62	6,348.00	6,185.46	60.68	0.00	16.77	-1,306.81	-16.51	3,912.62	3,877.96	34.66	112.899	
10,800.00	6,936.30	6,348.00	6,185.46	62.28	0.00	16.77	-1,306.81	-16.51	4,010.57	3,975.07	35.50	112.977	
10,900.00	6,935.97	6,348.00	6,185.46	63.87	0.00	16.77	-1,306.81	-16.51	4,108.62	4,072.28	36.34	113.047	
11,000.00	6,935.65	6,348.00	6,185.46	65.47	0.00	16.77	-1,306.81	-16.51	4,206.77	4,169.58	37.19	113.111	
11,100.00	6,935.33	6,348.00	6,185.46	67.07	0.00	16.77	-1,306.81	-16.51	4,305.00	4,266.96	38.04	113.170	
11,200.00	6,935.00	6,348.00	6,185.46	68.66	0.00	16.77	-1,306.81	-16.51	4,403.30	4,364.41	38.89	113.222	
11,300.00	6,934.68	6,348.00	6,185.46	70.26	0.00	16.77	-1,306.81	-16.51	4,501.69	4,461.94	39.74	113.270	
11,400.00	6,934.36	6,348.00	6,185.46	71.86	0.00	16.77	-1,306.81	-16.51	4,600.14	4,559.54	40.60	113.314	
11,500.00	6,934.03	6,348.00	6,185.46	73.45	0.00	16.77	-1,306.81	-16.51	4,698.66	4,657.21	41.45	113.354	
11,600.00	6,933.71	6,348.00	6,185.46	75.05	0.00	16.77	-1,306.81	-16.51	4,797.24	4,754.93	42.31	113.390	
11,700.00	6,933.39	6,348.00	6,185.46	76.65	0.00	16.77	-1,306.81	-16.51	4,895.87	4,852.71	43.16	113.423	
11,800.00	6,933.07	6,348.00	6,185.46	78.25	0.00	16.77	-1,306.81	-16.51	4,994.56	4,950.54	44.02	113.453	
11,900.00	6,932.74	6,348.00	6,185.46	79.84	0.00	16.77	-1,306.81	-16.51	5,093.31	5,048.42	44.88	113.480	
12,000.00	6,932.42	6,348.00	6,185.46	81.44	0.00	16.77	-1,306.81	-16.51	5,192.10	5,146.35	45.74	113.505	
12,100.00	6,932.10	6,348.00	6,185.46	83.04	0.00	16.77	-1,306.81	-16.51	5,290.93	5,244.33	46.60	113.527	
12,200.00	6,931.77	6,348.00	6,185.46	84.64	0.00	16.77	-1,306.81	-16.51	5,389.81	5,342.34	47.47	113.548	
12,300.00	6,931.45	6,348.00	6,185.46	86.24	0.00	16.77	-1,306.81	-16.51	5,488.73	5,440.40	48.33	113.566	
12,400.00	6,931.13	6,348.00	6,185.46	87.83	0.00	16.77	-1,306.81	-16.51	5,587.69	5,538.49	49.19	113.583	
12,500.00	6,930.80	6,348.00	6,185.46	89.43	0.00	16.77	-1,306.81	-16.51	5,686.68	5,636.62	50.06	113.598	
12,600.00	6,930.48	6,348.00	6,185.46	91.03	0.00	16.77	-1,306.81	-16.51	5,785.71	5,734.79	50.93	113.612	
12,700.00	6,930.16	6,348.00	6,185.46	92.63	0.00	16.77	-1,306.81	-16.51	5,884.77	5,832.98	51.79	113.624	
12,800.00	6,929.84	6,348.00	6,185.46	94.23	0.00	16.77	-1,306.81	-16.51	5,983.87	5,931.21	52.66	113.635	
12,900.00	6,929.51	6,348.00	6,185.46	95.83	0.00	16.77	-1,306.81	-16.51	6,082.99	6,029.46	53.53	113.645	
13,000.00	6,929.19	6,348.00	6,185.46	97.43	0.00	16.77	-1,306.81	-16.51	6,182.14	6,127.75	54.39	113.654	
13,100.00	6,928.87	6,348.00	6,185.46	99.02	0.00	16.77	-1,306.81	-16.51	6,281.32	6,226.05	55.26	113.662	
13,200.00	6,928.54	6,348.00	6,185.46	100.62	0.00	16.77	-1,306.81	-16.51	6,380.52	6,324.39	56.13	113.669	
13,300.00	6,928.22	6,348.00	6,185.46	102.22	0.00	16.77	-1,306.81	-16.51	6,479.75	6,422.75	57.00	113.676	
13,400.00	6,927.90	6,348.00	6,185.46	103.82	0.00	16.77	-1,306.81	-16.51	6,579.00	6,521.13	57.87	113.681	
13,500.00	6,927.57	6,348.00	6,185.46	105.42	0.00	16.77	-1,306.81	-16.51	6,678.27	6,619.53	58.74	113.686	
13,600.00	6,927.25	6,348.00	6,185.46	107.02	0.00	16.77	-1,306.81	-16.51	6,777.57	6,717.95	59.61	113.690	
13,700.00	6,926.93	6,348.00	6,185.46	108.62	0.00	16.77	-1,306.81	-16.51	6,876.88	6,816.40	60.49	113.694	
13,800.00	6,926.61	6,348.00	6,185.46	110.22	0.00	16.77	-1,306.81	-16.51	6,976.22	6,914.86	61.36	113.697	
13,900.00	6,926.28	6,348.00	6,185.46	111.82	0.00	16.77	-1,306.81	-16.51	7,075.57	7,013.34	62.23	113.699	
14,000.00	6,925.96	6,348.00	6,185.46	113.41	0.00	16.77	-1,306.81	-16.51	7,174.95	7,111.84	63.10	113.702	
14,100.00	6,925.64	6,348.00	6,185.46	115.01	0.00	16.77	-1,306.81	-16.51	7,274.33	7,210.36	63.98	113.703	
14,200.00	6,925.31	6,348.00	6,185.46	116.61	0.00	16.77	-1,306.81	-16.51	7,373.74	7,308.89	64.85	113.704	
14,300.00	6,924.99	6,348.00	6,185.46	118.21	0.00	16.77	-1,306.81	-16.51	7,473.16	7,407.44	65.72	113.705	
14,400.00	6,924.67	6,348.00	6,185.46	119.81	0.00	16.77	-1,306.81	-16.51	7,572.60	7,506.00	66.60	113.706	
14,500.00	6,924.34	6,348.00	6,185.46	121.41	0.00	16.77	-1,306.81	-16.51	7,672.05	7,604.58	67.47	113.706	
14,600.00	6,924.02	6,348.00	6,185.46	123.01	0.00	16.77	-1,306.81	-16.51	7,771.51	7,703.17	68.35	113.706	
14,700.00	6,923.70	6,348.00	6,185.46	124.61	0.00	16.77	-1,306.81	-16.51	7,870.99	7,801.77	69.22	113.706	
14,800.00	6,923.38	6,348.00	6,185.46	126.21	0.00	16.77	-1,306.81	-16.51	7,970.48	7,900.39	70.10	113.705	
14,900.00	6,923.05	6,348.00	6,185.46	127.81	0.00	16.77	-1,306.81	-16.51	8,069.99	7,999.02	70.97	113.704	
15,000.00	6,922.73	6,348.00	6,185.46	129.41	0.00	16.77	-1,306.81	-16.51	8,169.51	8,097.66	71.85	113.703	
15,100.00	6,922.41	6,348.00	6,185.46	131.01	0.00	16.77	-1,306.81	-16.51	8,269.03	8,196.31	72.73	113.702	
15,200.00	6,922.08	6,348.00	6,185.46	132.61	0.00	16.77	-1,306.81	-16.51	8,368.57	8,294.97	73.60	113.700	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 54-Standard Keeper 104, 454-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	6,921.76	6,348.00	6,185.46	134.21	0.00	16.77	-1,306.81	-16.51	8,468.12	8,393.65	74.48	113.699	
15,400.00	6,921.44	6,348.00	6,185.46	135.81	0.00	16.77	-1,306.81	-16.51	8,567.68	8,492.33	75.36	113.697	
15,500.00	6,921.11	6,348.00	6,185.46	137.41	0.00	16.77	-1,306.81	-16.51	8,667.26	8,591.02	76.23	113.695	
15,600.00	6,920.79	6,348.00	6,185.46	139.01	0.00	16.77	-1,306.81	-16.51	8,766.84	8,689.73	77.11	113.693	
15,700.00	6,920.47	6,348.00	6,185.46	140.60	0.00	16.77	-1,306.81	-16.51	8,866.43	8,788.44	77.99	113.691	
15,800.00	6,920.14	6,348.00	6,185.46	142.20	0.00	16.77	-1,306.81	-16.51	8,966.03	8,887.16	78.86	113.689	
15,900.00	6,919.82	6,348.00	6,185.46	143.80	0.00	16.77	-1,306.81	-16.51	9,065.63	8,985.89	79.74	113.686	
16,000.00	6,919.50	6,348.00	6,185.46	145.40	0.00	16.77	-1,306.81	-16.51	9,165.25	9,084.63	80.62	113.684	
16,100.00	6,919.18	6,348.00	6,185.46	147.00	0.00	16.77	-1,306.81	-16.51	9,264.88	9,183.38	81.50	113.681	
16,200.00	6,918.85	6,348.00	6,185.46	148.60	0.00	16.77	-1,306.81	-16.51	9,364.51	9,282.13	82.38	113.679	
16,300.00	6,918.53	6,348.00	6,185.46	150.20	0.00	16.77	-1,306.81	-16.51	9,464.15	9,380.89	83.26	113.676	
16,400.00	6,918.21	6,348.00	6,185.46	151.80	0.00	16.77	-1,306.81	-16.51	9,563.80	9,479.66	84.13	113.673	
16,500.00	6,917.88	6,348.00	6,185.46	153.40	0.00	16.77	-1,306.81	-16.51	9,663.45	9,578.44	85.01	113.670	
16,600.00	6,917.56	6,348.00	6,185.46	155.00	0.00	16.77	-1,306.81	-16.51	9,763.11	9,677.22	85.89	113.667	
16,700.00	6,917.24	6,348.00	6,185.46	156.60	0.00	16.77	-1,306.81	-16.51	9,862.78	9,776.01	86.77	113.664	
16,800.00	6,916.91	6,348.00	6,185.46	158.20	0.00	16.77	-1,306.81	-16.51	9,962.46	9,874.81	87.65	113.661	
16,900.00	6,916.59	6,348.00	6,185.46	159.80	0.00	16.77	-1,306.81	-16.51	10,062.14	9,973.61	88.53	113.658	
17,000.00	6,916.27	6,348.00	6,185.46	161.40	0.00	16.77	-1,306.81	-16.51	10,161.83	10,072.42	89.41	113.655	
17,100.00	6,915.95	6,348.00	6,185.46	163.00	0.00	16.77	-1,306.81	-16.51	10,261.52	10,171.24	90.29	113.652	
17,200.00	6,915.62	6,348.00	6,185.46	164.60	0.00	16.77	-1,306.81	-16.51	10,361.23	10,270.06	91.17	113.649	
17,300.00	6,915.30	6,348.00	6,185.46	166.20	0.00	16.77	-1,306.81	-16.51	10,460.93	10,368.88	92.05	113.646	
17,400.00	6,914.98	6,348.00	6,185.46	167.80	0.00	16.77	-1,306.81	-16.51	10,560.64	10,467.71	92.93	113.643	
17,500.00	6,914.65	6,348.00	6,185.46	169.40	0.00	16.77	-1,306.81	-16.51	10,660.36	10,566.55	93.81	113.640	
17,600.00	6,914.33	6,348.00	6,185.46	171.00	0.00	16.77	-1,306.81	-16.51	10,760.08	10,665.39	94.69	113.636	
17,700.00	6,914.01	6,348.00	6,185.46	172.60	0.00	16.77	-1,306.81	-16.51	10,859.81	10,764.24	95.57	113.633	
17,800.00	6,913.68	6,348.00	6,185.46	174.20	0.00	16.77	-1,306.81	-16.51	10,959.54	10,863.09	96.45	113.630	
17,900.00	6,913.36	6,348.00	6,185.46	175.80	0.00	16.77	-1,306.81	-16.51	11,059.28	10,961.95	97.33	113.626	
18,000.00	6,913.04	6,348.00	6,185.46	177.40	0.00	16.77	-1,306.81	-16.51	11,159.02	11,060.81	98.21	113.623	
18,100.00	6,912.72	6,348.00	6,185.46	179.00	0.00	16.77	-1,306.81	-16.51	11,258.77	11,159.68	99.09	113.620	
18,111.83	6,912.68	6,348.00	6,185.46	179.19	0.00	16.77	-1,306.81	-16.51	11,270.57	11,171.38	99.20	113.620	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	145.38	-20.75	14.32	25.22				
54.25	54.25	54.26	54.26	0.02	0.02	84.80	-20.92	14.06	25.19	25.17	0.02	1,407.047	
130.42	130.42	130.49	130.49	0.11	0.11	60.45	-21.30	13.24	24.97	24.84	0.13	195.462	
219.69	219.69	219.79	219.78	0.23	0.23	89.88	-21.52	12.22	24.55	24.29	0.26	95.403	
308.67	308.67	308.74	308.72	0.35	0.34	84.76	-21.73	11.11	24.23	23.84	0.38	63.410	
454.00	453.99	453.87	453.83	0.51	0.52	-44.80	-22.89	9.00	23.84	23.11	0.73	32.770	
544.00	543.93	543.75	543.71	0.74	0.75	-47.95	-23.90	8.48	22.48	21.20	1.29	17.462	
654.00	653.68	653.48	653.42	1.09	1.08	-80.95	-24.20	9.87	20.39	18.33	2.06	9.882	CC
667.00	666.63	666.39	666.33	1.13	1.12	-85.63	-24.13	10.20	20.45	18.29	2.16	9.473	ES
756.00	755.27	754.51	754.37	1.44	1.41	-99.01	-22.87	13.44	23.05	20.22	2.83	8.141	SF
850.00	848.62	846.13	845.72	1.79	1.72	-126.55	-18.56	18.89	33.26	29.74	3.52	9.458	
942.00	939.50	933.71	932.62	2.14	2.03	-139.44	-10.35	25.96	53.60	49.44	4.16	12.898	
1,033.00	1,028.89	1,020.17	1,018.31	2.52	2.33	-141.24	-1.24	32.92	78.50	73.73	4.77	16.453	
1,123.00	1,117.00	1,104.03	1,101.30	2.90	2.64	-142.56	8.82	39.61	105.77	100.39	5.38	19.659	
1,214.00	1,206.00	1,189.92	1,186.24	3.29	2.96	-148.78	19.84	45.99	134.74	128.74	6.00	22.450	
1,309.00	1,298.75	1,280.46	1,275.87	3.71	3.31	-149.70	31.22	51.99	165.66	158.99	6.67	24.846	
1,403.00	1,390.39	1,369.09	1,363.66	4.13	3.65	-149.91	42.18	57.21	196.42	189.10	7.32	26.826	
1,498.00	1,482.88	1,457.85	1,451.59	4.56	3.99	-155.88	53.35	61.90	228.44	220.45	7.99	28.604	
1,592.00	1,573.82	1,543.85	1,536.75	5.00	4.32	-158.12	64.50	66.21	262.96	254.31	8.65	30.415	
1,687.00	1,665.32	1,630.98	1,623.01	5.46	4.66	-156.81	76.04	70.53	299.54	290.22	9.31	32.162	
1,876.00	1,847.35	1,807.71	1,798.02	6.38	5.35	-157.16	99.11	78.89	371.65	360.99	10.66	34.862	
1,970.00	1,937.87	1,901.39	1,890.95	6.84	5.71	-158.27	110.21	82.91	406.51	395.13	11.37	35.743	
2,064.00	2,028.42	1,992.91	1,981.92	7.30	6.06	-158.85	119.64	86.43	439.92	427.85	12.07	36.447	
2,159.00	2,119.97	2,076.12	2,064.63	7.77	6.37	-158.45	128.21	89.46	473.57	460.86	12.71	37.253	
2,348.00	2,302.44	2,246.28	2,233.36	8.69	7.03	-164.93	148.90	96.91	543.46	529.43	14.02	38.752	
2,443.00	2,394.41	2,338.96	2,325.33	9.15	7.39	-166.09	159.70	100.58	577.62	562.89	14.73	39.208	
2,537.00	2,485.45	2,427.93	2,413.66	9.61	7.73	-166.75	170.05	103.46	611.20	595.79	15.41	39.655	
2,632.00	2,577.48	2,520.95	2,506.09	10.07	8.09	-166.88	180.17	105.95	644.36	628.24	16.12	39.968	
2,727.00	2,669.50	2,605.29	2,589.86	10.53	8.41	-167.18	189.66	108.40	677.89	661.12	16.77	40.422	
2,821.00	2,760.56	2,700.36	2,684.33	10.98	8.77	-167.78	199.95	111.10	710.73	693.24	17.49	40.625	
2,916.00	2,852.68	2,787.10	2,770.54	11.44	9.10	-168.17	209.17	113.70	743.43	725.27	18.16	40.939	
3,011.00	2,945.03	2,885.55	2,868.43	11.89	9.47	-168.35	219.15	116.80	774.84	755.94	18.90	40.990	
3,105.00	3,036.57	2,985.69	2,968.14	12.33	9.84	-174.52	228.08	119.31	804.30	784.64	19.65	40.927	
3,200.00	3,128.81	3,086.30	3,068.43	12.78	10.21	-178.07	235.97	120.65	834.25	813.84	20.40	40.888	
3,294.00	3,219.76	3,190.48	3,172.41	13.24	10.59	-178.52	242.46	121.34	863.60	842.43	21.17	40.790	
3,389.00	3,311.82	3,289.24	3,271.05	13.69	10.94	-177.50	247.29	122.31	891.61	869.71	21.90	40.707	
3,483.00	3,403.03	3,384.04	3,365.75	14.14	11.27	-177.14	251.21	123.66	918.18	895.57	22.61	40.612	
3,578.00	3,495.31	3,481.30	3,462.94	14.60	11.61	-176.60	254.71	125.09	944.17	920.84	23.33	40.472	
3,672.00	3,586.65	3,548.54	3,530.10	15.04	11.85	-175.45	257.61	126.15	970.45	946.58	23.87	40.651	
3,767.00	3,678.95	3,615.64	3,597.03	15.49	12.10	-174.97	262.25	127.45	999.32	974.91	24.41	40.944	
3,862.00	3,771.63	3,677.00	3,658.13	15.93	12.33	-175.29	267.71	128.84	1,028.62	1,003.73	24.88	41.338	
3,956.00	3,863.70	3,745.53	3,726.19	16.35	12.59	-174.99	275.46	130.46	1,058.11	1,032.72	25.40	41.662	
4,052.00	3,957.54	3,819.57	3,799.50	16.79	12.88	-176.25	285.73	132.12	1,091.22	1,065.26	25.96	42.042	
4,146.00	4,048.88	3,898.42	3,877.49	17.24	13.19	-176.32	297.29	133.74	1,126.66	1,100.10	26.56	42.418	
4,241.00	4,140.47	3,961.00	3,939.30	17.71	13.44	-173.44	306.95	135.08	1,165.91	1,138.87	27.04	43.120	
4,336.00	4,231.25	4,033.09	4,010.32	18.21	13.73	-169.74	319.14	137.10	1,208.85	1,181.25	27.60	43.793	
4,430.00	4,320.59	4,101.25	4,077.22	18.71	14.01	-171.75	331.89	139.61	1,254.21	1,226.07	28.14	44.572	
4,524.00	4,409.51	4,177.43	4,151.91	19.22	14.32	-175.97	346.66	142.49	1,301.46	1,272.71	28.75	45.268	
4,619.00	4,498.98	4,257.47	4,230.33	19.75	14.66	-176.76	362.05	146.84	1,350.39	1,320.99	29.40	45.932	
4,713.00	4,587.83	4,320.66	4,292.07	20.27	14.92	-176.65	374.47	151.98	1,398.61	1,368.71	29.90	46.782	
4,807.00	4,676.97	4,410.41	4,379.53	20.78	15.31	-174.88	392.39	161.15	1,446.56	1,415.93	30.63	47.221	
4,870.00	4,736.65	4,496.99	4,464.22	21.12	15.67	-174.29	408.45	169.32	1,478.03	1,446.67	31.36	47.132	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,527.99	4,494.59	21.46	15.81	-174.37	414.12	171.87	1,508.52	1,476.92	31.59	47.746	
5,027.00	4,886.13	4,581.17	4,546.48	21.96	16.03	-173.44	424.96	176.06	1,555.27	1,523.26	32.00	48.601	
5,121.00	4,976.11	4,675.28	4,638.26	22.45	16.44	-173.17	444.67	182.76	1,601.19	1,568.42	32.77	48.863	
5,216.00	5,068.11	4,819.43	4,779.60	22.91	17.04	-173.27	471.74	191.02	1,642.12	1,608.18	33.94	48.383	
5,341.00	5,190.11	4,945.00	4,903.33	23.49	17.56	-173.78	492.26	197.04	1,689.23	1,654.32	34.91	48.385	
5,436.00	5,283.20	5,015.55	4,972.76	23.91	17.85	-173.67	504.08	201.07	1,723.98	1,688.54	35.45	48.636	
5,499.00	5,345.03	5,064.00	5,020.29	24.19	18.05	-173.72	512.79	204.69	1,747.38	1,711.56	35.81	48.790	
5,561.00	5,405.97	5,109.68	5,065.00	24.45	18.25	-172.61	521.20	208.73	1,770.31	1,734.15	36.16	48.959	
5,624.00	5,467.97	5,190.90	5,144.61	24.72	18.59	-173.63	535.50	216.19	1,792.80	1,756.01	36.80	48.719	
5,687.00	5,530.05	5,265.05	5,217.45	24.99	18.90	-172.58	547.89	222.41	1,814.32	1,776.94	37.37	48.546	
5,750.00	5,592.20	5,351.38	5,302.48	25.25	19.26	-172.24	561.24	229.11	1,834.56	1,796.52	38.04	48.231	
5,813.00	5,654.42	5,414.41	5,364.65	25.51	19.51	-171.14	570.52	233.73	1,853.95	1,815.43	38.51	48.136	
5,876.00	5,716.68	5,489.65	5,438.88	25.76	19.82	-170.86	581.45	239.22	1,872.94	1,833.86	39.08	47.922	
5,939.00	5,778.99	5,552.95	5,501.43	26.01	20.07	-171.04	590.19	243.59	1,891.17	1,851.61	39.56	47.806	
6,065.00	5,903.86	5,707.16	5,653.97	26.51	20.69	-171.11	610.56	253.39	1,925.17	1,884.47	40.70	47.297	
6,128.00	5,966.41	5,774.87	5,721.07	26.74	20.96	-172.57	618.76	257.20	1,940.48	1,899.28	41.20	47.099	
6,191.00	6,029.04	5,854.31	5,799.85	26.97	21.26	-171.89	628.02	261.47	1,954.96	1,913.18	41.78	46.796	
6,254.00	6,091.75	5,915.71	5,860.81	27.20	21.50	-170.99	634.75	264.47	1,968.12	1,925.90	42.22	46.614	
6,348.00	6,185.46	6,002.25	5,946.67	27.52	21.84	-168.13	644.52	268.99	1,986.51	1,943.66	42.85	46.364	
6,390.00	6,227.36	6,043.06	5,987.17	27.61	22.00	-168.10	649.16	271.13	1,994.39	1,951.38	43.01	46.368	
6,400.00	6,237.33	6,052.78	5,996.81	27.61	22.03	-168.10	650.27	271.62	1,996.27	1,953.22	43.05	46.372	
6,490.00	6,327.12	6,166.91	6,110.11	27.66	22.47	-168.04	662.73	277.29	2,012.74	1,969.18	43.56	46.202	
6,500.00	6,337.09	6,181.18	6,124.30	27.66	22.53	179.41	664.18	277.93	2,014.51	1,970.88	43.63	46.171	
6,550.00	6,386.85	6,260.08	6,202.78	27.70	22.83	142.19	671.53	281.23	2,023.72	1,979.70	44.01	45.979	
6,600.00	6,436.20	6,255.00	6,197.73	27.74	22.81	128.40	671.09	281.03	2,034.52	1,990.68	43.84	46.407	
6,650.00	6,484.82	6,255.00	6,197.73	27.79	22.81	121.40	671.09	281.03	2,047.66	2,003.98	43.69	46.871	
6,700.00	6,532.40	6,255.00	6,197.73	27.85	22.81	116.74	671.09	281.03	2,063.02	2,019.49	43.52	47.400	
6,750.00	6,578.63	6,255.00	6,197.73	27.92	22.81	113.06	671.09	281.03	2,080.43	2,037.08	43.35	47.987	
6,800.00	6,623.24	6,255.00	6,197.73	28.00	22.81	109.80	671.09	281.03	2,099.75	2,056.56	43.18	48.624	
6,850.00	6,665.93	6,255.00	6,197.73	28.09	22.81	106.71	671.09	281.03	2,120.80	2,077.78	43.02	49.301	
6,900.00	6,706.42	6,255.00	6,197.73	28.19	22.81	103.68	671.09	281.03	2,143.40	2,100.54	42.86	50.011	
6,950.00	6,744.48	6,255.00	6,197.73	28.30	22.81	100.63	671.09	281.03	2,167.35	2,124.64	42.71	50.743	
7,000.00	6,779.84	6,255.00	6,197.73	28.43	22.81	97.53	671.09	281.03	2,192.47	2,149.89	42.58	51.487	
7,050.00	6,812.30	6,255.00	6,197.73	28.57	22.81	94.38	671.09	281.03	2,218.56	2,176.09	42.47	52.234	
7,100.00	6,841.63	6,255.00	6,197.73	28.73	22.81	91.19	671.09	281.03	2,245.42	2,203.04	42.39	52.974	
7,150.00	6,867.66	6,255.00	6,197.73	28.90	22.81	87.98	671.09	281.03	2,272.86	2,230.54	42.33	53.699	
7,200.00	6,890.22	6,255.00	6,197.73	29.08	22.81	84.77	671.09	281.03	2,300.68	2,258.39	42.29	54.402	
7,250.00	6,909.17	6,255.00	6,197.73	29.28	22.81	81.60	671.09	281.03	2,328.71	2,286.42	42.28	55.074	
7,300.00	6,924.38	6,255.00	6,197.73	29.49	22.81	78.50	671.09	281.03	2,356.74	2,314.44	42.30	55.710	
7,350.00	6,935.77	6,255.00	6,197.73	29.72	22.81	75.49	671.09	281.03	2,384.62	2,342.27	42.35	56.307	
7,400.00	6,943.25	6,255.00	6,197.73	29.97	22.81	72.61	671.09	281.03	2,412.17	2,369.74	42.42	56.859	
7,450.00	6,946.78	6,255.00	6,197.73	30.22	22.81	69.87	671.09	281.03	2,439.23	2,396.71	42.52	57.365	
7,471.54	6,947.08	6,255.00	6,197.73	30.34	22.81	68.75	671.09	281.03	2,450.70	2,408.13	42.57	57.571	
7,500.00	6,946.98	6,255.00	6,197.73	30.49	22.81	68.88	671.09	281.03	2,465.77	2,423.13	42.64	57.832	
7,600.00	6,946.65	6,255.00	6,197.73	31.07	22.81	69.33	671.09	281.03	2,518.83	2,475.93	42.90	58.719	
7,700.00	6,946.32	6,255.00	6,197.73	31.69	22.81	69.77	671.09	281.03	2,571.97	2,528.80	43.17	59.573	
7,800.00	6,945.99	6,255.00	6,197.73	32.35	22.81	70.21	671.09	281.03	2,625.13	2,581.66	43.47	60.395	
7,900.00	6,945.67	6,255.00	6,197.73	33.05	22.81	70.64	671.09	281.03	2,678.24	2,634.47	43.77	61.185	
8,000.00	6,945.34	6,255.00	6,197.73	33.79	22.81	71.06	671.09	281.03	2,731.24	2,687.15	44.09	61.944	
8,034.58	6,945.23	6,255.00	6,197.73	34.05	22.81	71.20	671.09	281.03	2,749.54	2,705.33	44.20	62.203	
8,100.00	6,945.02	6,255.00	6,197.73	34.57	22.81	71.20	671.09	281.03	2,784.68	2,740.26	44.42	62.691	
8,200.00	6,944.69	6,255.00	6,197.73	35.41	22.81	71.20	671.09	281.03	2,840.46	2,795.71	44.76	63.466	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,255.00	6,197.73	36.30	22.81	71.20	671.09	281.03	2,898.63	2,853.53	45.09	64.280	
8,400.00	6,944.05	6,255.00	6,197.73	37.25	22.81	71.20	671.09	281.03	2,959.03	2,913.60	45.43	65.133	
8,500.00	6,943.73	6,255.00	6,197.73	38.25	22.81	71.20	671.09	281.03	3,021.53	2,975.77	45.76	66.025	
8,600.00	6,943.40	6,255.00	6,197.73	39.29	22.81	71.20	671.09	281.03	3,086.01	3,039.92	46.09	66.954	
8,700.00	6,943.08	6,255.00	6,197.73	40.37	22.81	71.20	671.09	281.03	3,152.35	3,105.93	46.41	67.920	
8,800.00	6,942.76	6,255.00	6,197.73	41.49	22.81	71.20	671.09	281.03	3,220.42	3,173.69	46.73	68.922	
8,900.00	6,942.43	6,255.00	6,197.73	42.64	22.81	71.20	671.09	281.03	3,290.12	3,243.09	47.03	69.957	
9,000.00	6,942.11	6,255.00	6,197.73	43.82	22.81	71.20	671.09	281.03	3,361.36	3,314.03	47.33	71.025	
9,100.00	6,941.79	6,255.00	6,197.73	45.03	22.81	71.20	671.09	281.03	3,434.03	3,386.41	47.61	72.123	
9,200.00	6,941.46	6,255.00	6,197.73	46.27	22.81	71.20	671.09	281.03	3,508.04	3,460.15	47.89	73.251	
9,300.00	6,941.14	6,255.00	6,197.73	47.53	22.81	71.20	671.09	281.03	3,583.32	3,535.16	48.16	74.407	
9,400.00	6,940.82	6,255.00	6,197.73	48.81	22.81	71.20	671.09	281.03	3,659.78	3,611.36	48.42	75.589	
9,500.00	6,940.50	6,255.00	6,197.73	50.11	22.81	71.20	671.09	281.03	3,737.35	3,688.68	48.67	76.795	
9,600.00	6,940.17	6,255.00	6,197.73	51.43	22.81	71.20	671.09	281.03	3,815.97	3,767.06	48.91	78.025	
9,700.00	6,939.85	6,255.00	6,197.73	52.76	22.81	71.20	671.09	281.03	3,895.56	3,846.42	49.14	79.277	
9,800.00	6,939.53	6,255.00	6,197.73	54.11	22.81	71.20	671.09	281.03	3,976.08	3,926.72	49.36	80.549	
9,900.00	6,939.20	6,255.00	6,197.73	55.48	22.81	71.20	671.09	281.03	4,057.47	4,007.89	49.58	81.841	
10,000.00	6,938.88	6,255.00	6,197.73	56.86	22.81	71.20	671.09	281.03	4,139.67	4,089.88	49.79	83.151	
10,100.00	6,938.56	6,255.00	6,197.73	58.25	22.81	71.20	671.09	281.03	4,222.64	4,172.65	49.99	84.477	
10,200.00	6,938.23	6,255.00	6,197.73	59.65	22.81	71.20	671.09	281.03	4,306.33	4,256.15	50.18	85.819	
10,300.00	6,937.91	6,255.00	6,197.73	61.06	22.81	71.20	671.09	281.03	4,390.70	4,340.34	50.37	87.177	
10,400.00	6,937.59	6,255.00	6,197.73	62.48	22.81	71.20	671.09	281.03	4,475.72	4,425.18	50.55	88.547	
10,500.00	6,937.27	6,255.00	6,197.73	63.91	22.81	71.20	671.09	281.03	4,561.35	4,510.63	50.72	89.931	
10,600.00	6,936.94	6,255.00	6,197.73	65.34	22.81	71.20	671.09	281.03	4,647.55	4,596.66	50.89	91.327	
10,700.00	6,936.62	6,255.00	6,197.73	66.79	22.81	71.20	671.09	281.03	4,734.29	4,683.24	51.05	92.734	
10,800.00	6,936.30	6,255.00	6,197.73	68.24	22.81	71.20	671.09	281.03	4,821.55	4,770.34	51.21	94.151	
10,900.00	6,935.97	6,255.00	6,197.73	69.70	22.81	71.20	671.09	281.03	4,909.29	4,857.93	51.36	95.578	
11,000.00	6,935.65	6,255.00	6,197.73	71.17	22.81	71.20	671.09	281.03	4,997.50	4,945.98	51.51	97.013	
11,100.00	6,935.33	6,255.00	6,197.73	72.64	22.81	71.20	671.09	281.03	5,086.14	5,034.48	51.66	98.457	
11,200.00	6,935.00	6,255.00	6,197.73	74.11	22.81	71.20	671.09	281.03	5,175.19	5,123.39	51.80	99.909	
11,300.00	6,934.68	6,255.00	6,197.73	75.60	22.81	71.20	671.09	281.03	5,264.64	5,212.70	51.94	101.368	
11,400.00	6,934.36	6,255.00	6,197.73	77.08	22.81	71.20	671.09	281.03	5,354.46	5,302.39	52.07	102.833	
11,500.00	6,934.03	6,255.00	6,197.73	78.57	22.81	71.20	671.09	281.03	5,444.63	5,392.43	52.20	104.304	
11,600.00	6,933.71	6,255.00	6,197.73	80.07	22.81	71.20	671.09	281.03	5,535.15	5,482.82	52.33	105.781	
11,700.00	6,933.39	6,255.00	6,197.73	81.57	22.81	71.20	671.09	281.03	5,625.98	5,573.53	52.45	107.263	
11,800.00	6,933.07	6,255.00	6,197.73	83.07	22.81	71.20	671.09	281.03	5,717.12	5,664.55	52.57	108.749	
11,900.00	6,932.74	6,255.00	6,197.73	84.58	22.81	71.20	671.09	281.03	5,808.55	5,755.86	52.69	110.239	
12,000.00	6,932.42	6,255.00	6,197.73	86.09	22.81	71.20	671.09	281.03	5,900.26	5,847.46	52.81	111.734	
12,100.00	6,932.10	6,255.00	6,197.73	87.60	22.81	71.20	671.09	281.03	5,992.24	5,939.32	52.92	113.231	
12,200.00	6,931.77	6,255.00	6,197.73	89.12	22.81	71.20	671.09	281.03	6,084.47	6,031.43	53.03	114.732	
12,300.00	6,931.45	6,255.00	6,197.73	90.64	22.81	71.20	671.09	281.03	6,176.94	6,123.79	53.14	116.235	
12,400.00	6,931.13	6,255.00	6,197.73	92.16	22.81	71.20	671.09	281.03	6,269.64	6,216.39	53.25	117.741	
12,500.00	6,930.80	6,255.00	6,197.73	93.69	22.81	71.20	671.09	281.03	6,362.56	6,309.20	53.36	119.249	
12,600.00	6,930.48	6,255.00	6,197.73	95.22	22.81	71.20	671.09	281.03	6,455.69	6,402.23	53.46	120.758	
12,700.00	6,930.16	6,255.00	6,197.73	96.75	22.81	71.20	671.09	281.03	6,549.03	6,495.47	53.56	122.269	
12,800.00	6,929.84	6,255.00	6,197.73	98.28	22.81	71.20	671.09	281.03	6,642.56	6,588.90	53.66	123.781	
12,900.00	6,929.51	6,255.00	6,197.73	99.82	22.81	71.20	671.09	281.03	6,736.28	6,682.51	53.76	125.295	
13,000.00	6,929.19	6,255.00	6,197.73	101.35	22.81	71.20	671.09	281.03	6,830.17	6,776.31	53.86	126.809	
13,100.00	6,928.87	6,255.00	6,197.73	102.89	22.81	71.20	671.09	281.03	6,924.24	6,870.28	53.96	128.323	
13,200.00	6,928.54	6,255.00	6,197.73	104.43	22.81	71.20	671.09	281.03	7,018.46	6,964.41	54.06	129.838	
13,300.00	6,928.22	6,255.00	6,197.73	105.97	22.81	71.20	671.09	281.03	7,112.85	7,058.70	54.15	131.353	
13,400.00	6,927.90	6,255.00	6,197.73	107.52	22.81	71.20	671.09	281.03	7,207.39	7,153.14	54.25	132.867	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,255.00	6,197.73	109.06	22.81	71.20	671.09	281.03	7,302.07	7,247.74	54.34	134.382	
13,600.00	6,927.25	6,255.00	6,197.73	110.61	22.81	71.20	671.09	281.03	7,396.90	7,342.47	54.43	135.895	
13,700.00	6,926.93	6,255.00	6,197.73	112.16	22.81	71.20	671.09	281.03	7,491.86	7,437.33	54.52	137.409	
13,800.00	6,926.61	6,255.00	6,197.73	113.71	22.81	71.20	671.09	281.03	7,586.94	7,532.33	54.61	138.921	
13,900.00	6,926.28	6,255.00	6,197.73	115.26	22.81	71.20	671.09	281.03	7,682.16	7,627.45	54.70	140.432	
14,000.00	6,925.96	6,255.00	6,197.73	116.82	22.81	71.20	671.09	281.03	7,777.49	7,722.70	54.79	141.943	
14,100.00	6,925.64	6,255.00	6,197.73	118.37	22.81	71.20	671.09	281.03	7,872.94	7,818.06	54.88	143.451	
14,200.00	6,925.31	6,255.00	6,197.73	119.93	22.81	71.20	671.09	281.03	7,968.50	7,913.53	54.97	144.959	
14,300.00	6,924.99	6,255.00	6,197.73	121.48	22.81	71.20	671.09	281.03	8,064.17	8,009.11	55.06	146.465	
14,400.00	6,924.67	6,255.00	6,197.73	123.04	22.81	71.20	671.09	281.03	8,159.94	8,104.79	55.15	147.969	
14,500.00	6,924.34	6,255.00	6,197.73	124.60	22.81	71.20	671.09	281.03	8,255.81	8,200.58	55.23	149.471	
14,600.00	6,924.02	6,255.00	6,197.73	126.16	22.81	71.20	671.09	281.03	8,351.78	8,296.46	55.32	150.972	
14,700.00	6,923.70	6,255.00	6,197.73	127.72	22.81	71.20	671.09	281.03	8,447.84	8,392.44	55.41	152.470	
14,800.00	6,923.38	6,255.00	6,197.73	129.28	22.81	71.20	671.09	281.03	8,543.99	8,488.50	55.49	153.966	
14,900.00	6,923.05	6,255.00	6,197.73	130.85	22.81	71.20	671.09	281.03	8,640.23	8,584.66	55.58	155.460	
15,000.00	6,922.73	6,255.00	6,197.73	132.41	22.81	71.20	671.09	281.03	8,736.56	8,680.90	55.66	156.951	
15,100.00	6,922.41	6,255.00	6,197.73	133.97	22.81	71.20	671.09	281.03	8,832.97	8,777.22	55.75	158.440	
15,200.00	6,922.08	6,255.00	6,197.73	135.54	22.81	71.20	671.09	281.03	8,929.45	8,873.62	55.83	159.927	
15,300.00	6,921.76	6,255.00	6,197.73	137.11	22.81	71.20	671.09	281.03	9,026.01	8,970.09	55.92	161.410	
15,400.00	6,921.44	6,255.00	6,197.73	138.67	22.81	71.20	671.09	281.03	9,122.65	9,066.64	56.00	162.891	
15,500.00	6,921.11	6,255.00	6,197.73	140.24	22.81	71.20	671.09	281.03	9,219.36	9,163.27	56.09	164.369	
15,600.00	6,920.79	6,255.00	6,197.73	141.81	22.81	71.20	671.09	281.03	9,316.13	9,259.96	56.17	165.845	
15,700.00	6,920.47	6,255.00	6,197.73	143.38	22.81	71.20	671.09	281.03	9,412.98	9,356.72	56.26	167.317	
15,800.00	6,920.14	6,255.00	6,197.73	144.95	22.81	71.20	671.09	281.03	9,509.89	9,453.54	56.34	168.786	
15,900.00	6,919.82	6,255.00	6,197.73	146.52	22.81	71.20	671.09	281.03	9,606.86	9,550.43	56.43	170.252	
16,000.00	6,919.50	6,255.00	6,197.73	148.09	22.81	71.20	671.09	281.03	9,703.90	9,647.38	56.51	171.714	
16,100.00	6,919.18	6,255.00	6,197.73	149.66	22.81	71.20	671.09	281.03	9,800.99	9,744.39	56.60	173.174	
16,200.00	6,918.85	6,255.00	6,197.73	151.24	22.81	71.20	671.09	281.03	9,898.14	9,841.46	56.68	174.630	
16,300.00	6,918.53	6,255.00	6,197.73	152.81	22.81	71.20	671.09	281.03	9,995.35	9,938.59	56.77	176.083	
16,400.00	6,918.21	6,255.00	6,197.73	154.38	22.81	71.20	671.09	281.03	10,092.61	10,035.76	56.85	177.532	
16,500.00	6,917.88	6,255.00	6,197.73	155.96	22.81	71.20	671.09	281.03	10,189.93	10,132.99	56.93	178.977	
16,600.00	6,917.56	6,255.00	6,197.73	157.53	22.81	71.20	671.09	281.03	10,287.30	10,230.28	57.02	180.420	
16,700.00	6,917.24	6,255.00	6,197.73	159.11	22.81	71.20	671.09	281.03	10,384.71	10,327.61	57.10	181.858	
16,800.00	6,916.91	6,255.00	6,197.73	160.68	22.81	71.20	671.09	281.03	10,482.18	10,424.99	57.19	183.293	
16,900.00	6,916.59	6,255.00	6,197.73	162.26	22.81	71.20	671.09	281.03	10,579.69	10,522.42	57.27	184.724	
17,000.00	6,916.27	6,255.00	6,197.73	163.84	22.81	71.20	671.09	281.03	10,677.25	10,619.89	57.36	186.151	
17,100.00	6,915.95	6,255.00	6,197.73	165.41	22.81	71.20	671.09	281.03	10,774.86	10,717.41	57.44	187.574	
17,200.00	6,915.62	6,255.00	6,197.73	166.99	22.81	71.20	671.09	281.03	10,872.50	10,814.98	57.53	188.994	
17,300.00	6,915.30	6,255.00	6,197.73	168.57	22.81	71.20	671.09	281.03	10,970.19	10,912.58	57.61	190.410	
17,400.00	6,914.98	6,255.00	6,197.73	170.15	22.81	71.20	671.09	281.03	11,067.93	11,010.23	57.70	191.821	
17,500.00	6,914.65	6,255.00	6,197.73	171.73	22.81	71.20	671.09	281.03	11,165.70	11,107.91	57.78	193.229	
17,600.00	6,914.33	6,255.00	6,197.73	173.31	22.81	71.20	671.09	281.03	11,263.51	11,205.64	57.87	194.632	
17,700.00	6,914.01	6,255.00	6,197.73	174.89	22.81	71.20	671.09	281.03	11,361.36	11,303.40	57.96	196.032	
17,800.00	6,913.68	6,255.00	6,197.73	176.47	22.81	71.20	671.09	281.03	11,459.24	11,401.20	58.04	197.427	
17,900.00	6,913.36	6,255.00	6,197.73	178.05	22.81	71.20	671.09	281.03	11,557.16	11,499.03	58.13	198.819	
18,000.00	6,913.04	6,255.00	6,197.73	179.63	22.81	71.20	671.09	281.03	11,655.12	11,596.91	58.22	200.206	
18,100.00	6,912.72	6,255.00	6,197.73	181.21	22.81	71.20	671.09	281.03	11,753.11	11,694.81	58.30	201.589	
18,111.83	6,912.68	6,255.00	6,197.73	181.40	22.81	71.20	671.09	281.03	11,764.71	11,706.40	58.31	201.752	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS, 6255-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	145.38	-20.75	14.32	25.22				
54.25	54.25	54.26	54.26	0.02	0.02	84.80	-20.92	14.06	25.19	25.17	0.02	1,407.047	
130.42	130.42	130.49	130.49	0.11	0.11	60.45	-21.30	13.24	24.97	24.84	0.13	195.462	
219.69	219.69	219.79	219.78	0.23	0.23	89.88	-21.52	12.22	24.55	24.29	0.26	95.403	
308.67	308.67	308.74	308.72	0.35	0.34	84.76	-21.73	11.11	24.23	23.84	0.38	63.410	
454.00	453.99	453.87	453.83	0.51	0.52	-44.80	-22.89	9.00	23.84	23.11	0.73	32.770	
544.00	543.93	543.75	543.71	0.74	0.75	-47.95	-23.90	8.48	22.48	21.20	1.29	17.462	
654.00	653.68	653.48	653.42	1.09	1.08	-80.95	-24.20	9.87	20.39	18.33	2.06	9.882	CC
667.00	666.63	666.39	666.33	1.13	1.12	-85.63	-24.13	10.20	20.45	18.29	2.16	9.473	ES
756.00	755.27	754.51	754.37	1.44	1.41	-99.01	-22.87	13.44	23.05	20.22	2.83	8.141	SF
850.00	848.62	846.13	845.72	1.79	1.72	-126.55	-18.56	18.89	33.26	29.74	3.52	9.458	
942.00	939.50	933.71	932.62	2.14	2.03	-139.44	-10.35	25.96	53.60	49.44	4.16	12.898	
1,033.00	1,028.89	1,020.17	1,018.31	2.52	2.33	-141.24	-1.24	32.92	78.50	73.73	4.77	16.453	
1,123.00	1,117.00	1,104.03	1,101.30	2.90	2.64	-142.56	8.82	39.61	105.77	100.39	5.38	19.659	
1,214.00	1,206.00	1,189.92	1,186.24	3.29	2.96	-148.78	19.84	45.99	134.74	128.74	6.00	22.450	
1,309.00	1,298.75	1,280.46	1,275.87	3.71	3.31	-149.70	31.22	51.99	165.66	158.99	6.67	24.846	
1,403.00	1,390.39	1,369.09	1,363.66	4.13	3.65	-149.91	42.18	57.21	196.42	189.10	7.32	26.826	
1,498.00	1,482.88	1,457.85	1,451.59	4.56	3.99	-155.88	53.35	61.90	228.44	220.45	7.99	28.604	
1,592.00	1,573.82	1,543.85	1,536.75	5.00	4.32	-158.12	64.50	66.21	262.96	254.31	8.65	30.415	
1,687.00	1,665.32	1,630.98	1,623.01	5.46	4.66	-156.81	76.04	70.53	299.54	290.22	9.31	32.162	
1,876.00	1,847.35	1,807.71	1,798.02	6.38	5.35	-157.16	99.11	78.89	371.65	360.99	10.66	34.862	
1,970.00	1,937.87	1,901.39	1,890.95	6.84	5.71	-158.27	110.21	82.91	406.51	395.13	11.37	35.743	
2,064.00	2,028.42	1,992.91	1,981.92	7.30	6.06	-158.85	119.64	86.43	439.92	427.85	12.07	36.447	
2,159.00	2,119.97	2,076.12	2,064.63	7.77	6.37	-158.45	128.21	89.46	473.57	460.86	12.71	37.253	
2,348.00	2,302.44	2,246.28	2,233.36	8.69	7.03	-164.93	148.90	96.91	543.46	529.43	14.02	38.752	
2,443.00	2,394.41	2,338.96	2,325.33	9.15	7.39	-166.09	159.70	100.58	577.62	562.89	14.73	39.208	
2,537.00	2,485.45	2,427.93	2,413.66	9.61	7.73	-166.75	170.05	103.46	611.20	595.79	15.41	39.655	
2,632.00	2,577.48	2,520.95	2,506.09	10.07	8.09	-166.88	180.17	105.95	644.36	628.24	16.12	39.968	
2,727.00	2,669.50	2,605.29	2,589.86	10.53	8.41	-167.18	189.66	108.40	677.89	661.12	16.77	40.422	
2,821.00	2,760.56	2,700.36	2,684.33	10.98	8.77	-167.78	199.95	111.10	710.73	693.24	17.49	40.625	
2,916.00	2,852.68	2,787.10	2,770.54	11.44	9.10	-168.17	209.17	113.70	743.43	725.27	18.16	40.939	
3,011.00	2,945.03	2,885.55	2,868.43	11.89	9.47	-168.35	219.15	116.80	774.84	755.94	18.90	40.990	
3,105.00	3,036.57	2,985.69	2,968.14	12.33	9.84	-174.52	228.08	119.31	804.30	784.64	19.65	40.927	
3,200.00	3,128.81	3,086.30	3,068.43	12.78	10.21	-178.07	235.97	120.65	834.25	813.84	20.40	40.888	
3,294.00	3,219.76	3,190.48	3,172.41	13.24	10.59	-178.52	242.46	121.34	863.60	842.43	21.17	40.790	
3,389.00	3,311.82	3,289.24	3,271.05	13.69	10.94	-177.50	247.29	122.31	891.61	869.71	21.90	40.707	
3,483.00	3,403.03	3,384.04	3,365.75	14.14	11.27	-177.14	251.21	123.66	918.18	895.57	22.61	40.612	
3,578.00	3,495.31	3,481.30	3,462.94	14.60	11.61	-176.60	254.71	125.09	944.17	920.84	23.33	40.472	
3,672.00	3,586.65	3,548.54	3,530.10	15.04	11.85	-175.45	257.61	126.15	970.45	946.58	23.87	40.651	
3,767.00	3,678.95	3,615.64	3,597.03	15.49	12.10	-174.97	262.25	127.45	999.32	974.91	24.41	40.944	
3,862.00	3,771.63	3,677.00	3,658.13	15.93	12.33	-175.29	267.71	128.84	1,028.62	1,003.73	24.88	41.338	
3,956.00	3,863.70	3,745.53	3,726.19	16.35	12.59	-174.99	275.46	130.46	1,058.11	1,032.72	25.40	41.662	
4,052.00	3,957.54	3,819.57	3,799.50	16.79	12.88	-176.25	285.73	132.12	1,091.22	1,065.26	25.96	42.042	
4,146.00	4,048.88	3,898.42	3,877.49	17.24	13.19	-176.32	297.29	133.74	1,126.66	1,100.10	26.56	42.418	
4,241.00	4,140.47	3,961.00	3,939.30	17.71	13.44	-173.44	306.95	135.08	1,165.91	1,138.87	27.04	43.120	
4,336.00	4,231.25	4,033.09	4,010.32	18.21	13.73	-169.74	319.14	137.10	1,208.85	1,181.25	27.60	43.793	
4,430.00	4,320.59	4,101.25	4,077.22	18.71	14.01	-171.75	331.89	139.61	1,254.21	1,226.07	28.14	44.572	
4,524.00	4,409.51	4,177.43	4,151.91	19.22	14.32	-175.97	346.66	142.49	1,301.46	1,272.71	28.75	45.268	
4,619.00	4,498.98	4,257.47	4,230.33	19.75	14.66	-176.76	362.05	146.84	1,350.39	1,320.99	29.40	45.932	
4,713.00	4,587.83	4,320.66	4,292.07	20.27	14.92	-176.65	374.47	151.98	1,398.61	1,368.71	29.90	46.782	
4,807.00	4,676.97	4,410.41	4,379.53	20.78	15.31	-174.88	392.39	161.15	1,446.56	1,415.93	30.63	47.221	
4,870.00	4,736.65	4,496.99	4,464.22	21.12	15.67	-174.29	408.45	169.32	1,478.03	1,446.67	31.36	47.132	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6 — **Offset Site Error:** 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS, 6255-MWD+HRGM+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,527.99	4,494.59	21.46	15.81	-174.37	414.12	171.87	1,508.52	1,476.92	31.59	47.746	
5,027.00	4,886.13	4,581.17	4,546.48	21.96	16.03	-173.44	424.96	176.06	1,555.27	1,523.26	32.00	48.601	
5,121.00	4,976.11	4,675.28	4,638.26	22.45	16.44	-173.17	444.67	182.76	1,601.19	1,568.42	32.77	48.863	
5,216.00	5,068.11	4,819.43	4,779.60	22.91	17.04	-173.27	471.74	191.02	1,642.12	1,608.18	33.94	48.383	
5,341.00	5,190.11	4,945.00	4,903.33	23.49	17.56	-173.78	492.26	197.04	1,689.23	1,654.32	34.91	48.385	
5,436.00	5,283.20	5,015.55	4,972.76	23.91	17.85	-173.67	504.08	201.07	1,723.98	1,688.54	35.45	48.636	
5,499.00	5,345.03	5,064.00	5,020.29	24.19	18.05	-173.72	512.79	204.69	1,747.38	1,711.56	35.81	48.790	
5,561.00	5,405.97	5,109.68	5,065.00	24.45	18.25	-172.61	521.20	208.73	1,770.31	1,734.15	36.16	48.959	
5,624.00	5,467.97	5,190.90	5,144.61	24.72	18.59	-173.63	535.50	216.19	1,792.80	1,756.01	36.80	48.719	
5,687.00	5,530.05	5,265.05	5,217.45	24.99	18.90	-172.58	547.89	222.41	1,814.32	1,776.94	37.37	48.546	
5,750.00	5,592.20	5,351.38	5,302.48	25.25	19.26	-172.24	561.24	229.11	1,834.56	1,796.52	38.04	48.231	
5,813.00	5,654.42	5,414.41	5,364.65	25.51	19.51	-171.14	570.52	233.73	1,853.95	1,815.43	38.51	48.136	
5,876.00	5,716.68	5,489.65	5,438.88	25.76	19.82	-170.86	581.45	239.22	1,872.94	1,833.86	39.08	47.922	
5,939.00	5,778.99	5,552.95	5,501.43	26.01	20.07	-171.04	590.19	243.59	1,891.17	1,851.61	39.56	47.806	
6,065.00	5,903.86	5,707.16	5,653.97	26.51	20.69	-171.11	610.56	253.39	1,925.17	1,884.47	40.70	47.297	
6,128.00	5,966.41	5,774.87	5,721.07	26.74	20.96	-172.57	618.76	257.20	1,940.48	1,899.28	41.20	47.099	
6,191.00	6,029.04	5,854.31	5,799.85	26.97	21.26	-171.89	628.02	261.47	1,954.96	1,913.18	41.78	46.796	
6,254.00	6,091.75	5,915.71	5,860.81	27.20	21.50	-170.99	634.75	264.47	1,968.12	1,925.90	42.22	46.614	
6,348.00	6,185.46	6,002.25	5,946.67	27.52	21.84	-168.13	644.52	268.99	1,986.51	1,943.66	42.85	46.364	
6,390.00	6,227.36	6,043.06	5,987.17	27.61	22.00	-168.10	649.16	271.13	1,994.39	1,951.38	43.01	46.368	
6,400.00	6,237.33	6,052.78	5,996.81	27.61	22.03	-168.10	650.27	271.62	1,996.27	1,953.22	43.05	46.372	
6,490.00	6,327.12	6,166.91	6,110.11	27.66	22.47	-168.04	662.73	277.29	2,012.74	1,969.18	43.56	46.202	
6,500.00	6,337.09	6,181.18	6,124.30	27.66	22.53	179.41	664.18	277.93	2,014.51	1,970.88	43.63	46.171	
6,550.00	6,386.85	6,260.08	6,202.78	27.70	22.83	142.19	671.53	281.23	2,023.72	1,979.70	44.01	45.979	
6,600.00	6,436.20	6,306.57	6,249.06	27.74	23.00	128.67	675.57	283.09	2,033.87	1,989.69	44.18	46.033	
6,650.00	6,484.82	6,354.08	6,296.36	27.79	23.18	122.13	679.70	284.99	2,045.27	2,000.91	44.36	46.106	
6,700.00	6,532.40	6,398.39	6,340.45	27.85	23.34	118.12	683.55	286.79	2,057.89	2,013.37	44.52	46.224	
6,750.00	6,578.63	6,430.28	6,372.14	27.92	23.46	115.17	686.26	289.14	2,071.91	2,027.31	44.61	46.449	
6,800.00	6,623.24	6,459.14	6,400.68	28.00	23.57	112.76	688.63	292.66	2,087.44	2,042.76	44.68	46.722	
6,850.00	6,665.93	6,484.61	6,425.72	28.09	23.67	110.61	690.65	296.84	2,104.47	2,059.73	44.73	47.043	
6,900.00	6,706.42	6,500.00	6,440.77	28.19	23.73	108.39	691.84	299.86	2,123.02	2,078.29	44.73	47.462	
6,950.00	6,744.48	6,524.97	6,465.02	28.30	23.83	106.42	693.71	305.54	2,143.02	2,098.22	44.80	47.831	
7,000.00	6,779.84	6,550.00	6,489.07	28.43	23.93	104.46	695.51	312.20	2,164.49	2,119.60	44.89	48.219	
7,050.00	6,812.30	6,550.00	6,489.07	28.57	23.93	101.80	695.51	312.20	2,187.23	2,142.41	44.81	48.809	
7,100.00	6,841.63	6,550.00	6,489.07	28.73	23.93	99.02	695.51	312.20	2,211.27	2,166.52	44.75	49.415	
7,150.00	6,867.66	6,566.81	6,505.08	28.90	24.00	96.63	696.68	317.21	2,236.30	2,191.48	44.82	49.891	
7,200.00	6,890.22	6,570.49	6,508.56	29.08	24.01	93.78	696.93	318.36	2,262.31	2,217.49	44.82	50.473	
7,250.00	6,909.17	6,571.95	6,509.95	29.28	24.02	90.79	697.03	318.82	2,289.08	2,244.25	44.82	51.068	
7,300.00	6,924.38	6,571.43	6,509.45	29.49	24.02	87.69	696.99	318.65	2,316.42	2,271.58	44.83	51.669	
7,350.00	6,935.77	6,569.13	6,507.27	29.72	24.01	84.54	696.84	317.93	2,344.13	2,299.28	44.85	52.269	
7,400.00	6,943.25	6,565.24	6,503.59	29.97	23.99	81.37	696.57	316.72	2,372.03	2,327.16	44.87	52.864	
7,450.00	6,946.78	6,550.00	6,489.07	30.22	23.93	77.95	695.51	312.20	2,399.96	2,355.12	44.83	53.532	
7,471.54	6,947.08	6,550.00	6,489.07	30.34	23.93	76.70	695.51	312.20	2,411.89	2,367.02	44.87	53.756	
7,500.00	6,946.98	6,550.00	6,489.07	30.49	23.93	76.78	695.51	312.20	2,427.63	2,382.71	44.92	54.046	
7,600.00	6,946.65	6,550.00	6,489.07	31.07	23.93	77.09	695.51	312.20	2,482.94	2,437.83	45.11	55.036	
7,700.00	6,946.32	6,531.43	6,471.25	31.69	23.86	76.92	694.18	307.17	2,538.03	2,492.82	45.21	56.140	
7,800.00	6,945.99	6,522.15	6,462.29	32.35	23.82	76.99	693.50	304.85	2,592.96	2,547.57	45.39	57.128	
7,900.00	6,945.67	6,500.00	6,440.77	33.05	23.73	76.73	691.84	299.86	2,647.77	2,602.27	45.51	58.186	
8,000.00	6,945.34	6,500.00	6,440.77	33.79	23.73	77.04	691.84	299.86	2,702.12	2,656.33	45.78	59.021	
8,034.58	6,945.23	6,500.00	6,440.77	34.05	23.73	77.14	691.84	299.86	2,720.85	2,674.98	45.88	59.305	
8,100.00	6,945.02	6,500.00	6,440.77	34.57	23.73	77.14	691.84	299.86	2,756.82	2,710.75	46.07	59.841	
8,200.00	6,944.69	6,500.00	6,440.77	35.41	23.73	77.14	691.84	299.86	2,813.86	2,767.49	46.37	60.686	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6 — **Offset Site Error:** 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS, 6255-MWD+HRGM+MS — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,500.00	6,440.77	36.30	23.73	77.14	691.84	299.86	2,873.24	2,826.57	46.67	61.569	
8,400.00	6,944.05	6,500.00	6,440.77	37.25	23.73	77.14	691.84	299.86	2,934.83	2,887.86	46.97	62.487	
8,500.00	6,943.73	6,478.44	6,419.68	38.25	23.65	76.61	690.17	295.74	2,998.18	2,951.04	47.15	63.594	
8,600.00	6,943.40	6,474.12	6,415.43	39.29	23.63	76.51	689.83	294.99	3,063.64	3,016.23	47.42	64.608	
8,700.00	6,943.08	6,470.11	6,411.49	40.37	23.62	76.41	689.51	294.33	3,130.91	3,083.22	47.69	65.652	
8,800.00	6,942.76	6,450.00	6,391.66	41.49	23.54	75.92	687.89	291.40	3,200.05	3,152.18	47.87	66.851	
8,900.00	6,942.43	6,450.00	6,391.66	42.64	23.54	75.92	687.89	291.40	3,270.52	3,222.37	48.15	67.924	
9,000.00	6,942.11	6,450.00	6,391.66	43.82	23.54	75.92	687.89	291.40	3,342.50	3,294.07	48.42	69.027	
9,100.00	6,941.79	6,450.00	6,391.66	45.03	23.54	75.92	687.89	291.40	3,415.89	3,367.20	48.69	70.159	
9,200.00	6,941.46	6,450.00	6,391.66	46.27	23.54	75.92	687.89	291.40	3,490.60	3,441.65	48.94	71.317	
9,300.00	6,941.14	6,450.00	6,391.66	47.53	23.54	75.92	687.89	291.40	3,566.55	3,517.36	49.19	72.501	
9,400.00	6,940.82	6,450.00	6,391.66	48.81	23.54	75.92	687.89	291.40	3,643.66	3,594.23	49.43	73.709	
9,500.00	6,940.50	6,450.00	6,391.66	50.11	23.54	75.92	687.89	291.40	3,721.86	3,672.20	49.67	74.939	
9,600.00	6,940.17	6,450.00	6,391.66	51.43	23.54	75.92	687.89	291.40	3,801.09	3,751.20	49.89	76.191	
9,700.00	6,939.85	6,450.00	6,391.66	52.76	23.54	75.92	687.89	291.40	3,881.27	3,831.17	50.11	77.463	
9,800.00	6,939.53	6,450.00	6,391.66	54.11	23.54	75.92	687.89	291.40	3,962.35	3,912.04	50.31	78.753	
9,900.00	6,939.20	6,450.00	6,391.66	55.48	23.54	75.92	687.89	291.40	4,044.29	3,993.77	50.52	80.061	
10,000.00	6,938.88	6,450.00	6,391.66	56.86	23.54	75.92	687.89	291.40	4,127.01	4,076.31	50.71	81.386	
10,100.00	6,938.56	6,450.00	6,391.66	58.25	23.54	75.92	687.89	291.40	4,210.49	4,159.60	50.90	82.725	
10,200.00	6,938.23	6,450.00	6,391.66	59.65	23.54	75.92	687.89	291.40	4,294.68	4,243.60	51.08	84.080	
10,300.00	6,937.91	6,450.00	6,391.66	61.06	23.54	75.92	687.89	291.40	4,379.53	4,328.27	51.25	85.447	
10,400.00	6,937.59	6,450.00	6,391.66	62.48	23.54	75.92	687.89	291.40	4,465.00	4,413.58	51.42	86.828	
10,500.00	6,937.27	6,428.34	6,370.21	63.91	23.46	75.39	686.10	288.95	4,550.70	4,499.21	51.50	88.368	
10,600.00	6,936.94	6,426.97	6,368.86	65.34	23.45	75.36	685.99	288.82	4,637.28	4,585.63	51.65	89.780	
10,700.00	6,936.62	6,425.67	6,367.57	66.79	23.45	75.33	685.88	288.70	4,724.39	4,672.59	51.80	91.202	
10,800.00	6,936.30	6,424.42	6,366.33	68.24	23.44	75.30	685.77	288.59	4,811.99	4,760.05	51.95	92.633	
10,900.00	6,935.97	6,423.22	6,365.14	69.70	23.44	75.27	685.67	288.48	4,900.07	4,847.98	52.09	94.072	
11,000.00	6,935.65	6,422.07	6,364.00	71.17	23.43	75.24	685.57	288.38	4,988.59	4,936.37	52.23	95.520	
11,100.00	6,935.33	6,400.00	6,342.06	72.64	23.35	74.70	683.69	286.87	5,077.89	5,025.62	52.27	97.141	
11,200.00	6,935.00	6,400.00	6,342.06	74.11	23.35	74.70	683.69	286.87	5,167.21	5,114.80	52.41	98.594	
11,300.00	6,934.68	6,400.00	6,342.06	75.60	23.35	74.70	683.69	286.87	5,256.91	5,204.37	52.54	100.054	
11,400.00	6,934.36	6,400.00	6,342.06	77.08	23.35	74.70	683.69	286.87	5,346.98	5,294.31	52.67	101.520	
11,500.00	6,934.03	6,400.00	6,342.06	78.57	23.35	74.70	683.69	286.87	5,437.39	5,384.60	52.79	102.991	
11,600.00	6,933.71	6,400.00	6,342.06	80.07	23.35	74.70	683.69	286.87	5,528.14	5,475.22	52.92	104.468	
11,700.00	6,933.39	6,400.00	6,342.06	81.57	23.35	74.70	683.69	286.87	5,619.19	5,566.16	53.04	105.949	
11,800.00	6,933.07	6,400.00	6,342.06	83.07	23.35	74.70	683.69	286.87	5,710.55	5,657.40	53.15	107.434	
11,900.00	6,932.74	6,400.00	6,342.06	84.58	23.35	74.70	683.69	286.87	5,802.19	5,748.93	53.27	108.923	
12,000.00	6,932.42	6,400.00	6,342.06	86.09	23.35	74.70	683.69	286.87	5,894.11	5,840.73	53.38	110.415	
12,100.00	6,932.10	6,400.00	6,342.06	87.60	23.35	74.70	683.69	286.87	5,986.28	5,932.79	53.49	111.910	
12,200.00	6,931.77	6,400.00	6,342.06	89.12	23.35	74.70	683.69	286.87	6,078.70	6,025.10	53.60	113.408	
12,300.00	6,931.45	6,400.00	6,342.06	90.64	23.35	74.70	683.69	286.87	6,171.36	6,117.66	53.71	114.909	
12,400.00	6,931.13	6,400.00	6,342.06	92.16	23.35	74.70	683.69	286.87	6,264.25	6,210.43	53.81	116.411	
12,500.00	6,930.80	6,400.00	6,342.06	93.69	23.35	74.70	683.69	286.87	6,357.35	6,303.43	53.91	117.915	
12,600.00	6,930.48	6,400.00	6,342.06	95.22	23.35	74.70	683.69	286.87	6,450.65	6,396.64	54.02	119.421	
12,700.00	6,930.16	6,400.00	6,342.06	96.75	23.35	74.70	683.69	286.87	6,544.15	6,490.04	54.12	120.928	
12,800.00	6,929.84	6,400.00	6,342.06	98.28	23.35	74.70	683.69	286.87	6,637.85	6,583.63	54.21	122.436	
12,900.00	6,929.51	6,400.00	6,342.06	99.82	23.35	74.70	683.69	286.87	6,731.72	6,677.41	54.31	123.945	
13,000.00	6,929.19	6,400.00	6,342.06	101.35	23.35	74.70	683.69	286.87	6,825.77	6,771.36	54.41	125.454	
13,100.00	6,928.87	6,400.00	6,342.06	102.89	23.35	74.70	683.69	286.87	6,919.99	6,865.48	54.50	126.964	
13,200.00	6,928.54	6,400.00	6,342.06	104.43	23.35	74.70	683.69	286.87	7,014.36	6,959.76	54.60	128.473	
13,300.00	6,928.22	6,400.00	6,342.06	105.97	23.35	74.70	683.69	286.87	7,108.89	7,054.20	54.69	129.983	
13,400.00	6,927.90	6,400.00	6,342.06	107.52	23.35	74.70	683.69	286.87	7,203.57	7,148.79	54.78	131.492	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Plan #6 — **Offset Site Error:** 0.00 usft

Survey Program: 58-Standard Keeper 104, 446-MWD+HRGM+MS, 6255-MWD+HRGM+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,400.00	6,342.06	109.06	23.35	74.70	683.69	286.87	7,298.39	7,243.51	54.87	133.001	
13,600.00	6,927.25	6,400.00	6,342.06	110.61	23.35	74.70	683.69	286.87	7,393.34	7,338.38	54.97	134.509	
13,700.00	6,926.93	6,400.00	6,342.06	112.16	23.35	74.70	683.69	286.87	7,488.43	7,433.37	55.06	136.016	
13,800.00	6,926.61	6,400.00	6,342.06	113.71	23.35	74.70	683.69	286.87	7,583.64	7,528.50	55.14	137.523	
13,900.00	6,926.28	6,400.00	6,342.06	115.26	23.35	74.70	683.69	286.87	7,678.98	7,623.75	55.23	139.028	
14,000.00	6,925.96	6,400.00	6,342.06	116.82	23.35	74.70	683.69	286.87	7,774.43	7,719.11	55.32	140.532	
14,100.00	6,925.64	6,400.00	6,342.06	118.37	23.35	74.70	683.69	286.87	7,870.00	7,814.59	55.41	142.035	
14,200.00	6,925.31	6,400.00	6,342.06	119.93	23.35	74.70	683.69	286.87	7,965.67	7,910.17	55.50	143.536	
14,300.00	6,924.99	6,400.00	6,342.06	121.48	23.35	74.70	683.69	286.87	8,061.45	8,005.87	55.58	145.035	
14,400.00	6,924.67	6,400.00	6,342.06	123.04	23.35	74.70	683.69	286.87	8,157.33	8,101.66	55.67	146.533	
14,500.00	6,924.34	6,400.00	6,342.06	124.60	23.35	74.70	683.69	286.87	8,253.31	8,197.55	55.75	148.028	
14,600.00	6,924.02	6,400.00	6,342.06	126.16	23.35	74.70	683.69	286.87	8,349.38	8,293.54	55.84	149.522	
14,700.00	6,923.70	6,400.00	6,342.06	127.72	23.35	74.70	683.69	286.87	8,445.54	8,389.62	55.93	151.013	
14,800.00	6,923.38	6,400.00	6,342.06	129.28	23.35	74.70	683.69	286.87	8,541.80	8,485.78	56.01	152.502	
14,900.00	6,923.05	6,400.00	6,342.06	130.85	23.35	74.70	683.69	286.87	8,638.13	8,582.04	56.10	153.989	
15,000.00	6,922.73	6,400.00	6,342.06	132.41	23.35	74.70	683.69	286.87	8,734.55	8,678.37	56.18	155.474	
15,100.00	6,922.41	6,396.72	6,338.79	133.97	23.34	74.62	683.41	286.71	8,831.04	8,774.79	56.25	156.988	
15,200.00	6,922.08	6,396.38	6,338.46	135.54	23.33	74.61	683.38	286.70	8,927.62	8,871.28	56.34	158.471	
15,300.00	6,921.76	6,393.00	6,335.09	137.11	23.32	74.53	683.08	286.55	9,024.27	8,967.86	56.41	159.983	
15,400.00	6,921.44	6,393.00	6,335.09	138.67	23.32	74.53	683.08	286.55	9,120.99	9,064.50	56.49	161.457	
15,500.00	6,921.11	6,393.00	6,335.09	140.24	23.32	74.53	683.08	286.55	9,217.78	9,161.20	56.58	162.928	
15,600.00	6,920.79	6,393.00	6,335.09	141.81	23.32	74.53	683.08	286.55	9,314.64	9,257.98	56.66	164.396	
15,700.00	6,920.47	6,393.00	6,335.09	143.38	23.32	74.53	683.08	286.55	9,411.56	9,354.82	56.74	165.862	
15,800.00	6,920.14	6,393.00	6,335.09	144.95	23.32	74.53	683.08	286.55	9,508.55	9,451.72	56.83	167.324	
15,900.00	6,919.82	6,393.00	6,335.09	146.52	23.32	74.53	683.08	286.55	9,605.59	9,548.68	56.91	168.783	
16,000.00	6,919.50	6,393.00	6,335.09	148.09	23.32	74.53	683.08	286.55	9,702.70	9,645.71	56.99	170.238	
16,100.00	6,919.18	6,393.00	6,335.09	149.66	23.32	74.53	683.08	286.55	9,799.87	9,742.79	57.08	171.691	
16,200.00	6,918.85	6,393.00	6,335.09	151.24	23.32	74.53	683.08	286.55	9,897.09	9,839.93	57.16	173.140	
16,300.00	6,918.53	6,393.00	6,335.09	152.81	23.32	74.53	683.08	286.55	9,994.37	9,937.12	57.25	174.585	
16,400.00	6,918.21	6,390.72	6,332.83	154.38	23.31	74.47	682.89	286.46	10,091.70	10,034.38	57.32	176.052	
16,500.00	6,917.88	6,386.44	6,328.56	155.96	23.30	74.37	682.51	286.29	10,189.08	10,131.69	57.39	177.538	
16,600.00	6,917.56	6,382.16	6,324.30	157.53	23.28	74.26	682.14	286.12	10,286.51	10,229.05	57.46	179.021	
16,700.00	6,917.24	6,377.88	6,320.04	159.11	23.27	74.16	681.77	285.95	10,383.99	10,326.46	57.53	180.500	
16,800.00	6,916.91	6,373.59	6,315.78	160.68	23.25	74.05	681.40	285.78	10,481.51	10,423.91	57.60	181.976	
16,900.00	6,916.59	6,369.31	6,311.51	162.26	23.23	73.95	681.03	285.60	10,579.08	10,521.41	57.67	183.449	
17,000.00	6,916.27	6,365.03	6,307.25	163.84	23.22	73.85	680.65	285.43	10,676.69	10,618.95	57.74	184.919	
17,100.00	6,915.95	6,360.75	6,302.99	165.41	23.20	73.74	680.28	285.26	10,774.34	10,716.53	57.81	186.385	
17,200.00	6,915.62	6,356.46	6,298.72	166.99	23.19	73.64	679.91	285.09	10,872.03	10,814.15	57.88	187.848	
17,300.00	6,915.30	6,352.18	6,294.46	168.57	23.17	73.53	679.54	284.92	10,969.76	10,911.82	57.95	189.307	
17,400.00	6,914.98	6,347.90	6,290.20	170.15	23.15	73.43	679.17	284.75	11,067.54	11,009.52	58.02	190.763	
17,500.00	6,914.65	6,343.61	6,285.93	171.73	23.14	73.33	678.79	284.58	11,165.34	11,107.26	58.09	192.215	
17,600.00	6,914.33	6,339.33	6,281.67	173.31	23.12	73.22	678.42	284.40	11,263.19	11,205.03	58.16	193.664	
17,700.00	6,914.01	6,335.05	6,277.41	174.89	23.11	73.12	678.05	284.23	11,361.07	11,302.84	58.23	195.109	
17,800.00	6,913.68	6,330.77	6,273.14	176.47	23.09	73.02	677.68	284.06	11,458.99	11,400.69	58.30	196.550	
17,900.00	6,913.36	6,326.48	6,268.88	178.05	23.07	72.91	677.30	283.89	11,556.94	11,498.57	58.37	197.988	
18,000.00	6,913.04	6,322.20	6,264.62	179.63	23.06	72.81	676.93	283.72	11,654.93	11,596.48	58.44	199.421	
18,100.00	6,912.72	6,317.92	6,260.36	181.21	23.04	72.71	676.56	283.55	11,752.94	11,694.43	58.52	200.852	
18,111.83	6,912.68	6,317.41	6,259.85	181.40	23.04	72.69	676.52	283.53	11,764.54	11,706.02	58.52	201.021	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	144.88	-61.53	43.27	75.22				
54.25	54.25	54.01	54.01	0.02	0.02	83.54	-61.74	43.22	75.35	75.33	0.02	3,236.769	
130.42	130.42	130.21	130.21	0.11	0.07	56.83	-62.06	43.13	75.44	75.31	0.13	601.341	
134.44	134.44	134.22	134.22	0.12	0.07	58.06	-62.08	43.12	75.44	75.30	0.13	566.933	
219.69	219.69	219.35	219.35	0.23	0.19	83.39	-62.44	43.12	75.59	75.30	0.30	255.560	
308.67	308.67	308.15	308.15	0.35	0.30	75.08	-63.04	43.21	76.04	75.57	0.46	163.634	
454.00	453.99	451.00	450.97	0.51	0.55	-59.31	-65.23	43.86	77.65	76.75	0.90	86.111	
544.00	543.93	537.87	537.69	0.74	0.83	-60.80	-69.38	46.70	81.33	79.86	1.46	55.570	
667.00	666.63	659.34	658.74	1.13	1.24	-79.05	-77.40	52.85	88.88	86.57	2.31	38.512	
756.00	755.27	747.63	746.66	1.44	1.56	-68.60	-83.68	57.78	94.64	91.69	2.94	32.144	
850.00	848.62	840.99	839.63	1.79	1.90	-72.24	-90.34	63.17	99.51	95.88	3.63	27.387	
942.00	939.50	931.90	930.14	2.14	2.25	-72.39	-96.74	68.67	103.45	99.12	4.33	23.888	
1,033.00	1,028.89	1,022.08	1,019.90	2.52	2.59	-69.97	-103.85	73.80	105.98	100.94	5.04	21.013	
1,123.00	1,117.00	1,110.10	1,107.41	2.90	2.92	-69.98	-111.96	78.62	107.51	101.75	5.76	18.668	
1,214.00	1,206.00	1,200.91	1,197.65	3.29	3.27	-76.70	-120.68	83.90	109.74	103.24	6.50	16.875	
1,309.00	1,298.75	1,295.23	1,291.42	3.71	3.64	-80.23	-129.39	89.00	112.37	105.08	7.29	15.417	
1,403.00	1,390.39	1,388.17	1,383.86	4.13	3.99	-83.76	-137.54	94.08	115.26	107.19	8.07	14.289	
1,498.00	1,482.88	1,482.77	1,478.01	4.56	4.35	-93.66	-145.35	99.05	119.56	110.71	8.85	13.503	
1,592.00	1,573.82	1,575.83	1,570.71	5.00	4.71	-101.34	-152.41	103.32	125.95	116.32	9.63	13.079	
1,687.00	1,665.32	1,668.43	1,662.94	5.46	5.06	-105.70	-159.50	107.50	134.21	123.82	10.39	12.913 SF	
1,876.00	1,847.35	1,852.33	1,845.93	6.38	5.76	-114.59	-174.46	118.04	155.31	143.44	11.87	13.082	
1,970.00	1,937.87	1,943.54	1,936.69	6.84	6.11	-119.09	-181.43	123.71	167.83	155.25	12.59	13.335	
2,064.00	2,028.42	2,036.56	2,029.28	7.30	6.46	-122.77	-188.21	129.57	181.43	168.13	13.31	13.636	
2,159.00	2,119.97	2,130.57	2,122.80	7.77	6.82	-125.03	-195.88	135.39	194.96	180.93	14.03	13.892	
2,348.00	2,302.44	2,318.05	2,309.21	8.69	7.55	-134.88	-211.92	147.26	223.45	207.95	15.49	14.422	
2,443.00	2,394.41	2,413.21	2,403.80	9.15	7.91	-137.25	-220.81	152.68	237.47	221.24	16.23	14.628	
2,537.00	2,485.45	2,505.94	2,495.98	9.61	8.27	-138.93	-229.57	157.66	251.24	234.28	16.96	14.818	
2,632.00	2,577.48	2,599.44	2,588.92	10.07	8.63	-139.95	-238.34	162.80	265.38	247.69	17.68	15.008	
2,727.00	2,669.50	2,692.82	2,681.77	10.53	8.99	-141.09	-246.97	167.91	279.67	261.26	18.41	15.192	
2,821.00	2,760.56	2,785.12	2,773.54	10.98	9.35	-142.40	-255.36	173.01	294.11	274.99	19.13	15.377	
2,916.00	2,852.68	2,877.90	2,865.80	11.44	9.71	-143.45	-263.62	178.21	308.71	288.86	19.85	15.555	
3,011.00	2,945.03	2,971.77	2,959.18	11.89	10.07	-144.19	-271.66	183.44	322.85	302.28	20.57	15.694	
3,105.00	3,036.57	3,065.59	3,052.56	12.33	10.43	-150.57	-279.48	187.95	336.72	315.43	21.29	15.813	
3,200.00	3,128.81	3,158.93	3,145.43	12.78	10.79	-154.14	-287.62	192.71	352.48	330.46	22.02	16.005	
3,294.00	3,219.76	3,254.95	3,240.90	13.24	11.16	-154.74	-296.36	198.00	369.43	346.65	22.78	16.219	
3,389.00	3,311.82	3,352.37	3,337.63	13.69	11.54	-153.87	-306.71	203.22	384.72	361.17	23.55	16.338	
3,483.00	3,403.03	3,446.51	3,431.03	14.14	11.91	-153.54	-317.32	208.34	398.79	374.49	24.30	16.413	
3,578.00	3,495.31	3,538.57	3,522.32	14.60	12.27	-152.99	-327.94	213.74	412.56	387.52	25.04	16.478	
3,672.00	3,586.65	3,628.42	3,611.52	15.04	12.63	-151.92	-337.41	218.82	426.64	400.89	25.75	16.566	
3,767.00	3,678.95	3,717.83	3,700.41	15.49	12.97	-151.65	-345.86	223.59	441.46	415.00	26.46	16.685	
3,862.00	3,771.63	3,807.34	3,789.52	15.93	13.31	-152.24	-352.93	228.05	455.91	428.76	27.15	16.793	
3,956.00	3,863.70	3,899.29	3,881.10	16.35	13.66	-152.09	-359.66	232.84	469.30	441.45	27.85	16.849	
4,052.00	3,957.54	3,997.86	3,979.23	16.79	14.04	-153.31	-367.25	238.19	483.61	454.99	28.62	16.900	
4,146.00	4,048.88	4,092.59	4,073.53	17.24	14.40	-153.54	-375.10	242.44	498.97	469.62	29.35	17.001	
4,241.00	4,140.47	4,185.90	4,166.48	17.71	14.75	-151.21	-382.46	246.34	516.96	486.89	30.07	17.192	
4,336.00	4,231.25	4,285.04	4,265.10	18.21	15.13	-148.35	-391.38	251.06	536.17	505.32	30.84	17.384	
4,430.00	4,320.59	4,379.99	4,359.39	18.71	15.50	-150.67	-401.45	256.01	555.30	523.71	31.59	17.576	
4,524.00	4,409.51	4,470.21	4,448.94	19.22	15.86	-154.76	-411.13	261.09	576.37	544.05	32.32	17.832	
4,619.00	4,498.98	4,567.79	4,545.75	19.75	16.24	-155.85	-421.88	266.91	599.19	566.08	33.11	18.096	
4,713.00	4,587.83	4,664.63	4,641.56	20.27	16.63	-156.09	-434.42	273.28	619.62	585.72	33.90	18.277	
4,807.00	4,676.97	4,751.14	4,727.16	20.78	16.98	-154.81	-445.51	279.05	639.30	604.67	34.62	18.464	
4,870.00	4,736.65	4,806.51	4,782.05	21.12	17.20	-154.57	-451.91	282.63	653.15	618.07	35.08	18.616	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,861.78	4,836.91	21.46	17.42	-154.88	-457.67	286.10	666.86	631.32	35.54	18.765	
5,027.00	4,886.13	4,943.64	4,918.28	21.96	17.74	-154.30	-465.00	290.98	687.97	651.78	36.20	19.006	
5,121.00	4,976.11	5,039.50	5,013.69	22.45	18.10	-154.52	-472.78	296.24	708.20	671.25	36.95	19.166	
5,216.00	5,068.11	5,129.95	5,103.70	22.91	18.45	-154.84	-480.23	301.03	724.94	687.28	37.66	19.251	
5,341.00	5,190.11	5,254.96	5,228.14	23.49	18.93	-155.47	-490.33	307.32	743.40	704.78	38.62	19.248	
5,436.00	5,283.20	5,347.40	5,320.20	23.91	19.28	-155.45	-497.55	311.71	756.01	716.68	39.33	19.222	
5,499.00	5,345.03	5,408.42	5,380.96	24.19	19.51	-155.57	-502.20	314.66	764.06	724.27	39.80	19.200	
5,561.00	5,405.97	5,470.04	5,442.35	24.45	19.74	-154.60	-506.77	317.49	771.58	731.31	40.26	19.163	
5,624.00	5,467.97	5,533.73	5,505.81	24.72	19.98	-155.71	-511.46	320.22	778.72	737.98	40.75	19.112	
5,687.00	5,530.05	5,597.07	5,568.92	24.99	20.22	-154.81	-516.21	322.91	785.42	744.20	41.22	19.053	
5,750.00	5,592.20	5,657.70	5,629.34	25.25	20.45	-154.59	-520.57	325.28	791.76	750.08	41.68	18.997	
5,813.00	5,654.42	5,722.00	5,693.45	25.51	20.69	-153.63	-524.98	327.35	797.67	755.51	42.15	18.923	
5,876.00	5,716.68	5,785.32	5,756.59	25.76	20.92	-153.47	-529.41	329.38	803.19	760.57	42.62	18.845	
5,939.00	5,778.99	5,847.54	5,818.62	26.01	21.15	-153.72	-533.79	331.36	808.41	765.33	43.08	18.765	
6,065.00	5,903.86	5,962.98	5,933.79	26.51	21.58	-153.92	-540.86	335.08	818.34	774.41	43.92	18.632	
6,128.00	5,966.41	6,023.86	5,994.55	26.74	21.80	-155.40	-544.11	336.92	822.84	778.48	44.36	18.549	
6,191.00	6,029.04	6,082.26	6,052.86	26.97	22.01	-154.77	-546.92	338.51	827.07	782.29	44.78	18.471	
6,254.00	6,091.75	6,141.06	6,111.59	27.20	22.23	-153.91	-549.41	340.16	830.85	785.66	45.19	18.385	
6,348.00	6,185.46	6,230.21	6,200.64	27.52	22.55	-151.10	-552.62	342.59	835.45	789.64	45.81	18.236	
6,390.00	6,227.36	6,235.00	6,205.43	27.61	22.56	-151.10	-552.77	342.70	838.08	792.42	45.66	18.355	
6,400.00	6,237.33	6,235.00	6,205.43	27.61	22.56	-151.10	-552.77	342.70	839.00	793.42	45.59	18.405	
6,490.00	6,327.12	6,235.00	6,205.43	27.66	22.56	-151.10	-552.77	342.70	852.62	807.91	44.71	19.071	
6,500.00	6,337.09	6,235.00	6,205.43	27.66	22.56	-163.66	-552.77	342.70	854.75	810.16	44.59	19.169	
6,550.00	6,386.85	6,235.00	6,205.43	27.70	22.56	158.71	-552.77	342.70	868.41	824.45	43.96	19.756	
6,600.00	6,436.20	6,235.00	6,205.43	27.74	22.56	144.42	-552.77	342.70	886.81	843.54	43.28	20.491	
6,650.00	6,484.82	6,235.00	6,205.43	27.79	22.56	136.63	-552.77	342.70	909.57	866.99	42.59	21.358	
6,700.00	6,532.40	6,235.00	6,205.43	27.85	22.56	130.91	-552.77	342.70	936.23	894.31	41.92	22.335	
6,750.00	6,578.63	6,235.00	6,205.43	27.92	22.56	125.83	-552.77	342.70	966.29	925.00	41.29	23.401	
6,800.00	6,623.24	6,235.00	6,205.43	28.00	22.56	120.79	-552.77	342.70	999.28	958.55	40.73	24.532	
6,850.00	6,665.93	6,235.00	6,205.43	28.09	22.56	115.49	-552.77	342.70	1,034.71	994.46	40.26	25.703	
6,900.00	6,706.42	6,235.00	6,205.43	28.19	22.56	109.78	-552.77	342.70	1,072.13	1,032.27	39.87	26.893	
6,950.00	6,744.48	6,235.00	6,205.43	28.30	22.56	103.62	-552.77	342.70	1,111.11	1,071.54	39.57	28.080	
7,000.00	6,779.84	6,235.00	6,205.43	28.43	22.56	97.04	-552.77	342.70	1,151.26	1,111.90	39.36	29.247	
7,050.00	6,812.30	6,235.00	6,205.43	28.57	22.56	90.17	-552.77	342.70	1,192.22	1,152.98	39.24	30.380	
7,100.00	6,841.63	6,235.00	6,205.43	28.73	22.56	83.19	-552.77	342.70	1,233.66	1,194.45	39.21	31.465	
7,150.00	6,867.66	6,235.00	6,205.43	28.90	22.56	76.34	-552.77	342.70	1,275.28	1,236.04	39.25	32.495	
7,200.00	6,890.22	6,235.00	6,205.43	29.08	22.56	69.81	-552.77	342.70	1,316.82	1,277.47	39.35	33.463	
7,250.00	6,909.17	6,235.00	6,205.43	29.28	22.56	63.78	-552.77	342.70	1,358.03	1,318.51	39.52	34.366	
7,300.00	6,924.38	6,235.00	6,205.43	29.49	22.56	58.33	-552.77	342.70	1,398.69	1,358.95	39.73	35.201	
7,350.00	6,935.77	6,235.00	6,205.43	29.72	22.56	53.50	-552.77	342.70	1,438.59	1,398.59	40.00	35.967	
7,400.00	6,943.25	6,235.00	6,205.43	29.97	22.56	49.27	-552.77	342.70	1,477.56	1,437.27	40.30	36.667	
7,450.00	6,946.78	6,235.00	6,205.43	30.22	22.56	45.60	-552.77	342.70	1,515.44	1,474.81	40.63	37.300	
7,471.54	6,947.08	6,235.00	6,205.43	30.34	22.56	44.18	-552.77	342.70	1,531.37	1,490.60	40.78	37.556	
7,500.00	6,946.98	6,235.00	6,205.43	30.49	22.56	44.63	-552.77	342.70	1,552.33	1,511.35	40.98	37.884	
7,600.00	6,946.65	6,235.00	6,205.43	31.07	22.56	46.20	-552.77	342.70	1,626.73	1,585.10	41.64	39.071	
7,700.00	6,946.32	6,235.00	6,205.43	31.69	22.56	47.77	-552.77	342.70	1,702.17	1,659.95	42.22	40.314	
7,800.00	6,945.99	6,235.00	6,205.43	32.35	22.56	49.34	-552.77	342.70	1,778.42	1,735.67	42.75	41.601	
7,900.00	6,945.67	6,235.00	6,205.43	33.05	22.56	50.89	-552.77	342.70	1,855.29	1,812.07	43.22	42.925	
8,000.00	6,945.34	6,235.00	6,205.43	33.79	22.56	52.41	-552.77	342.70	1,932.62	1,888.98	43.65	44.278	
8,034.58	6,945.23	6,235.00	6,205.43	34.05	22.56	52.93	-552.77	342.70	1,959.45	1,915.66	43.78	44.753	
8,100.00	6,945.02	6,235.00	6,205.43	34.57	22.56	52.93	-552.77	342.70	2,010.65	1,966.62	44.03	45.663	
8,200.00	6,944.69	6,235.00	6,205.43	35.41	22.56	52.93	-552.77	342.70	2,090.45	2,046.06	44.38	47.099	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,235.00	6,205.43	36.30	22.56	52.93	-552.77	342.70	2,171.92	2,127.22	44.70	48.585	
8,400.00	6,944.05	6,235.00	6,205.43	37.25	22.56	52.93	-552.77	342.70	2,254.88	2,209.89	44.99	50.115	
8,500.00	6,943.73	6,235.00	6,205.43	38.25	22.56	52.93	-552.77	342.70	2,339.18	2,293.92	45.26	51.685	
8,600.00	6,943.40	6,235.00	6,205.43	39.29	22.56	52.93	-552.77	342.70	2,424.67	2,379.17	45.50	53.290	
8,700.00	6,943.08	6,235.00	6,205.43	40.37	22.56	52.93	-552.77	342.70	2,511.23	2,465.51	45.72	54.926	
8,800.00	6,942.76	6,235.00	6,205.43	41.49	22.56	52.93	-552.77	342.70	2,598.76	2,552.84	45.92	56.590	
8,900.00	6,942.43	6,235.00	6,205.43	42.64	22.56	52.93	-552.77	342.70	2,687.16	2,641.05	46.11	58.279	
9,000.00	6,942.11	6,235.00	6,205.43	43.82	22.56	52.93	-552.77	342.70	2,776.35	2,730.07	46.28	59.990	
9,100.00	6,941.79	6,235.00	6,205.43	45.03	22.56	52.93	-552.77	342.70	2,866.24	2,819.81	46.44	61.720	
9,200.00	6,941.46	6,235.00	6,205.43	46.27	22.56	52.93	-552.77	342.70	2,956.79	2,910.21	46.59	63.467	
9,300.00	6,941.14	6,235.00	6,205.43	47.53	22.56	52.93	-552.77	342.70	3,047.93	3,001.21	46.73	65.230	
9,400.00	6,940.82	6,235.00	6,205.43	48.81	22.56	52.93	-552.77	342.70	3,139.61	3,092.76	46.86	67.007	
9,500.00	6,940.50	6,235.00	6,205.43	50.11	22.56	52.93	-552.77	342.70	3,231.78	3,184.81	46.98	68.796	
9,600.00	6,940.17	6,235.00	6,205.43	51.43	22.56	52.93	-552.77	342.70	3,324.41	3,277.32	47.09	70.595	
9,700.00	6,939.85	6,235.00	6,205.43	52.76	22.56	52.93	-552.77	342.70	3,417.45	3,370.25	47.20	72.405	
9,800.00	6,939.53	6,235.00	6,205.43	54.11	22.56	52.93	-552.77	342.70	3,510.87	3,463.57	47.30	74.223	
9,900.00	6,939.20	6,235.00	6,205.43	55.48	22.56	52.93	-552.77	342.70	3,604.65	3,557.25	47.40	76.048	
10,000.00	6,938.88	6,235.00	6,205.43	56.86	22.56	52.93	-552.77	342.70	3,698.75	3,651.26	47.49	77.879	
10,100.00	6,938.56	6,235.00	6,205.43	58.25	22.56	52.93	-552.77	342.70	3,793.15	3,745.57	47.58	79.717	
10,200.00	6,938.23	6,235.00	6,205.43	59.65	22.56	52.93	-552.77	342.70	3,887.84	3,840.17	47.67	81.559	
10,300.00	6,937.91	6,235.00	6,205.43	61.06	22.56	52.93	-552.77	342.70	3,982.78	3,935.03	47.75	83.405	
10,400.00	6,937.59	6,235.00	6,205.43	62.48	22.56	52.93	-552.77	342.70	4,077.97	4,030.13	47.83	85.255	
10,500.00	6,937.27	6,235.00	6,205.43	63.91	22.56	52.93	-552.77	342.70	4,173.38	4,125.47	47.91	87.107	
10,600.00	6,936.94	6,235.00	6,205.43	65.34	22.56	52.93	-552.77	342.70	4,269.00	4,221.01	47.99	88.962	
10,700.00	6,936.62	6,235.00	6,205.43	66.79	22.56	52.93	-552.77	342.70	4,364.81	4,316.75	48.06	90.819	
10,800.00	6,936.30	6,235.00	6,205.43	68.24	22.56	52.93	-552.77	342.70	4,460.81	4,412.68	48.13	92.677	
10,900.00	6,935.97	6,235.00	6,205.43	69.70	22.56	52.93	-552.77	342.70	4,556.99	4,508.78	48.20	94.536	
11,000.00	6,935.65	6,235.00	6,205.43	71.17	22.56	52.93	-552.77	342.70	4,653.32	4,605.05	48.27	96.395	
11,100.00	6,935.33	6,235.00	6,205.43	72.64	22.56	52.93	-552.77	342.70	4,749.81	4,701.46	48.34	98.254	
11,200.00	6,935.00	6,235.00	6,205.43	74.11	22.56	52.93	-552.77	342.70	4,846.43	4,798.02	48.41	100.113	
11,300.00	6,934.68	6,235.00	6,205.43	75.60	22.56	52.93	-552.77	342.70	4,943.20	4,894.72	48.48	101.972	
11,400.00	6,934.36	6,235.00	6,205.43	77.08	22.56	52.93	-552.77	342.70	5,040.08	4,991.54	48.54	103.829	
11,500.00	6,934.03	6,235.00	6,205.43	78.57	22.56	52.93	-552.77	342.70	5,137.09	5,088.49	48.61	105.686	
11,600.00	6,933.71	6,235.00	6,205.43	80.07	22.56	52.93	-552.77	342.70	5,234.21	5,185.54	48.67	107.541	
11,700.00	6,933.39	6,235.00	6,205.43	81.57	22.56	52.93	-552.77	342.70	5,331.44	5,282.70	48.74	109.394	
11,800.00	6,933.07	6,235.00	6,205.43	83.07	22.56	52.93	-552.77	342.70	5,428.77	5,379.97	48.80	111.245	
11,900.00	6,932.74	6,235.00	6,205.43	84.58	22.56	52.93	-552.77	342.70	5,526.19	5,477.33	48.86	113.093	
12,000.00	6,932.42	6,235.00	6,205.43	86.09	22.56	52.93	-552.77	342.70	5,623.70	5,574.78	48.93	114.939	
12,100.00	6,932.10	6,235.00	6,205.43	87.60	22.56	52.93	-552.77	342.70	5,721.30	5,672.31	48.99	116.783	
12,200.00	6,931.77	6,235.00	6,205.43	89.12	22.56	52.93	-552.77	342.70	5,818.98	5,769.93	49.05	118.624	
12,300.00	6,931.45	6,235.00	6,205.43	90.64	22.56	52.93	-552.77	342.70	5,916.74	5,867.62	49.12	120.461	
12,400.00	6,931.13	6,235.00	6,205.43	92.16	22.56	52.93	-552.77	342.70	6,014.57	5,965.39	49.18	122.295	
12,500.00	6,930.80	6,235.00	6,205.43	93.69	22.56	52.93	-552.77	342.70	6,112.48	6,063.23	49.24	124.126	
12,600.00	6,930.48	6,235.00	6,205.43	95.22	22.56	52.93	-552.77	342.70	6,210.45	6,161.14	49.31	125.953	
12,700.00	6,930.16	6,235.00	6,205.43	96.75	22.56	52.93	-552.77	342.70	6,308.48	6,259.11	49.37	127.777	
12,800.00	6,929.84	6,235.00	6,205.43	98.28	22.56	52.93	-552.77	342.70	6,406.57	6,357.14	49.43	129.596	
12,900.00	6,929.51	6,235.00	6,205.43	99.82	22.56	52.93	-552.77	342.70	6,504.72	6,455.22	49.50	131.412	
13,000.00	6,929.19	6,235.00	6,205.43	101.35	22.56	52.93	-552.77	342.70	6,602.93	6,553.37	49.56	133.223	
13,100.00	6,928.87	6,235.00	6,205.43	102.89	22.56	52.93	-552.77	342.70	6,701.19	6,651.56	49.63	135.030	
13,200.00	6,928.54	6,235.00	6,205.43	104.43	22.56	52.93	-552.77	342.70	6,799.50	6,749.81	49.69	136.833	
13,300.00	6,928.22	6,235.00	6,205.43	105.97	22.56	52.93	-552.77	342.70	6,897.86	6,848.10	49.76	138.631	
13,400.00	6,927.90	6,235.00	6,205.43	107.52	22.56	52.93	-552.77	342.70	6,996.27	6,946.44	49.82	140.424	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,235.00	6,205.43	109.06	22.56	52.93	-552.77	342.70	7,094.72	7,044.83	49.89	142.213	
13,600.00	6,927.25	6,235.00	6,205.43	110.61	22.56	52.93	-552.77	342.70	7,193.21	7,143.26	49.95	143.996	
13,700.00	6,926.93	6,235.00	6,205.43	112.16	22.56	52.93	-552.77	342.70	7,291.75	7,241.72	50.02	145.775	
13,800.00	6,926.61	6,235.00	6,205.43	113.71	22.56	52.93	-552.77	342.70	7,390.32	7,340.23	50.09	147.549	
13,900.00	6,926.28	6,235.00	6,205.43	115.26	22.56	52.93	-552.77	342.70	7,488.93	7,438.78	50.15	149.317	
14,000.00	6,925.96	6,235.00	6,205.43	116.82	22.56	52.93	-552.77	342.70	7,587.58	7,537.36	50.22	151.080	
14,100.00	6,925.64	6,235.00	6,205.43	118.37	22.56	52.93	-552.77	342.70	7,686.26	7,635.97	50.29	152.838	
14,200.00	6,925.31	6,235.00	6,205.43	119.93	22.56	52.93	-552.77	342.70	7,784.98	7,734.62	50.36	154.591	
14,300.00	6,924.99	6,235.00	6,205.43	121.48	22.56	52.93	-552.77	342.70	7,883.73	7,833.30	50.43	156.338	
14,400.00	6,924.67	6,235.00	6,205.43	123.04	22.56	52.93	-552.77	342.70	7,982.51	7,932.01	50.50	158.080	
14,500.00	6,924.34	6,235.00	6,205.43	124.60	22.56	52.93	-552.77	342.70	8,081.32	8,030.75	50.57	159.815	
14,600.00	6,924.02	6,235.00	6,205.43	126.16	22.56	52.93	-552.77	342.70	8,180.15	8,129.52	50.64	161.546	
14,700.00	6,923.70	6,235.00	6,205.43	127.72	22.56	52.93	-552.77	342.70	8,279.02	8,228.31	50.71	163.270	
14,800.00	6,923.38	6,235.00	6,205.43	129.28	22.56	52.93	-552.77	342.70	8,377.92	8,327.14	50.78	164.989	
14,900.00	6,923.05	6,235.00	6,205.43	130.85	22.56	52.93	-552.77	342.70	8,476.83	8,425.98	50.85	166.702	
15,000.00	6,922.73	6,235.00	6,205.43	132.41	22.56	52.93	-552.77	342.70	8,575.78	8,524.86	50.92	168.409	
15,100.00	6,922.41	6,235.00	6,205.43	133.97	22.56	52.93	-552.77	342.70	8,674.75	8,623.75	51.00	170.110	
15,200.00	6,922.08	6,235.00	6,205.43	135.54	22.56	52.93	-552.77	342.70	8,773.74	8,722.67	51.07	171.805	
15,300.00	6,921.76	6,235.00	6,205.43	137.11	22.56	52.93	-552.77	342.70	8,872.76	8,821.61	51.14	173.493	
15,400.00	6,921.44	6,235.00	6,205.43	138.67	22.56	52.93	-552.77	342.70	8,971.79	8,920.58	51.22	175.176	
15,500.00	6,921.11	6,235.00	6,205.43	140.24	22.56	52.93	-552.77	342.70	9,070.85	9,019.56	51.29	176.853	
15,600.00	6,920.79	6,235.00	6,205.43	141.81	22.56	52.93	-552.77	342.70	9,169.93	9,118.56	51.37	178.523	
15,700.00	6,920.47	6,235.00	6,205.43	143.38	22.56	52.93	-552.77	342.70	9,269.03	9,217.59	51.44	180.188	
15,800.00	6,920.14	6,235.00	6,205.43	144.95	22.56	52.93	-552.77	342.70	9,368.14	9,316.63	51.52	181.846	
15,900.00	6,919.82	6,235.00	6,205.43	146.52	22.56	52.93	-552.77	342.70	9,467.28	9,415.69	51.59	183.497	
16,000.00	6,919.50	6,235.00	6,205.43	148.09	22.56	52.93	-552.77	342.70	9,566.43	9,514.76	51.67	185.143	
16,100.00	6,919.18	6,235.00	6,205.43	149.66	22.56	52.93	-552.77	342.70	9,665.60	9,613.86	51.75	186.782	
16,200.00	6,918.85	6,235.00	6,205.43	151.24	22.56	52.93	-552.77	342.70	9,764.79	9,712.97	51.83	188.414	
16,300.00	6,918.53	6,235.00	6,205.43	152.81	22.56	52.93	-552.77	342.70	9,864.00	9,812.09	51.90	190.041	
16,400.00	6,918.21	6,235.00	6,205.43	154.38	22.56	52.93	-552.77	342.70	9,963.22	9,911.23	51.98	191.660	
16,500.00	6,917.88	6,235.00	6,205.43	155.96	22.56	52.93	-552.77	342.70	10,062.45	10,010.39	52.06	193.274	
16,600.00	6,917.56	6,235.00	6,205.43	157.53	22.56	52.93	-552.77	342.70	10,161.70	10,109.56	52.14	194.880	
16,700.00	6,917.24	6,235.00	6,205.43	159.11	22.56	52.93	-552.77	342.70	10,260.97	10,208.75	52.22	196.481	
16,800.00	6,916.91	6,235.00	6,205.43	160.68	22.56	52.93	-552.77	342.70	10,360.25	10,307.94	52.30	198.075	
16,900.00	6,916.59	6,235.00	6,205.43	162.26	22.56	52.93	-552.77	342.70	10,459.54	10,407.16	52.39	199.662	
17,000.00	6,916.27	6,235.00	6,205.43	163.84	22.56	52.93	-552.77	342.70	10,558.85	10,506.38	52.47	201.243	
17,100.00	6,915.95	6,235.00	6,205.43	165.41	22.56	52.93	-552.77	342.70	10,658.17	10,605.62	52.55	202.817	
17,200.00	6,915.62	6,235.00	6,205.43	166.99	22.56	52.93	-552.77	342.70	10,757.50	10,704.87	52.63	204.384	
17,300.00	6,915.30	6,235.00	6,205.43	168.57	22.56	52.93	-552.77	342.70	10,856.85	10,804.13	52.72	205.945	
17,400.00	6,914.98	6,235.00	6,205.43	170.15	22.56	52.93	-552.77	342.70	10,956.20	10,903.40	52.80	207.500	
17,500.00	6,914.65	6,235.00	6,205.43	171.73	22.56	52.93	-552.77	342.70	11,055.57	11,002.68	52.89	209.048	
17,600.00	6,914.33	6,235.00	6,205.43	173.31	22.56	52.93	-552.77	342.70	11,154.95	11,101.98	52.97	210.589	
17,700.00	6,914.01	6,235.00	6,205.43	174.89	22.56	52.93	-552.77	342.70	11,254.34	11,201.28	53.06	212.123	
17,800.00	6,913.68	6,235.00	6,205.43	176.47	22.56	52.93	-552.77	342.70	11,353.74	11,300.60	53.14	213.651	
17,900.00	6,913.36	6,235.00	6,205.43	178.05	22.56	52.93	-552.77	342.70	11,453.15	11,399.92	53.23	215.173	
18,000.00	6,913.04	6,235.00	6,205.43	179.63	22.56	52.93	-552.77	342.70	11,552.57	11,499.26	53.31	216.687	
18,100.00	6,912.72	6,235.00	6,205.43	181.21	22.56	52.93	-552.77	342.70	11,652.00	11,598.60	53.40	218.195	
18,111.83	6,912.68	6,235.00	6,205.43	181.40	22.56	52.93	-552.77	342.70	11,663.77	11,610.36	53.41	218.373	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Plan #4

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS, 6235-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: 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	144.88	-61.53	43.27	75.22				
54.25	54.25	54.01	54.01	0.02	0.02	83.54	-61.74	43.22	75.35	75.33	0.02	3,236.769	
130.42	130.42	130.21	130.21	0.11	0.07	56.83	-62.06	43.13	75.44	75.31	0.13	601.341	
134.44	134.44	134.22	134.22	0.12	0.07	58.06	-62.08	43.12	75.44	75.30	0.13	566.933	
219.69	219.69	219.35	219.35	0.23	0.19	83.39	-62.44	43.12	75.59	75.30	0.30	255.560	
308.67	308.67	308.15	308.15	0.35	0.30	75.08	-63.04	43.21	76.04	75.57	0.46	163.634	
454.00	453.99	451.00	450.97	0.51	0.55	-59.31	-65.23	43.86	77.65	76.75	0.90	86.111	
544.00	543.93	537.87	537.69	0.74	0.83	-60.80	-69.38	46.70	81.33	79.86	1.46	55.570	
667.00	666.63	659.34	658.74	1.13	1.24	-79.05	-77.40	52.85	88.88	86.57	2.31	38.512	
756.00	755.27	747.63	746.66	1.44	1.56	-68.60	-83.68	57.78	94.64	91.69	2.94	32.144	
850.00	848.62	840.99	839.63	1.79	1.90	-72.24	-90.34	63.17	99.51	95.88	3.63	27.387	
942.00	939.50	931.90	930.14	2.14	2.25	-72.39	-96.74	68.67	103.45	99.12	4.33	23.888	
1,033.00	1,028.89	1,022.08	1,019.90	2.52	2.59	-69.97	-103.85	73.80	105.98	100.94	5.04	21.013	
1,123.00	1,117.00	1,110.10	1,107.41	2.90	2.92	-69.98	-111.96	78.62	107.51	101.75	5.76	18.668	
1,214.00	1,206.00	1,200.91	1,197.65	3.29	3.27	-76.70	-120.68	83.90	109.74	103.24	6.50	16.875	
1,309.00	1,298.75	1,295.23	1,291.42	3.71	3.64	-80.23	-129.39	89.00	112.37	105.08	7.29	15.417	
1,403.00	1,390.39	1,388.17	1,383.86	4.13	3.99	-83.76	-137.54	94.08	115.26	107.19	8.07	14.289	
1,498.00	1,482.88	1,482.77	1,478.01	4.56	4.35	-93.66	-145.35	99.05	119.56	110.71	8.85	13.503	
1,592.00	1,573.82	1,575.83	1,570.71	5.00	4.71	-101.34	-152.41	103.32	125.95	116.32	9.63	13.079	
1,687.00	1,665.32	1,668.43	1,662.94	5.46	5.06	-105.70	-159.50	107.50	134.21	123.82	10.39	12.913 SF	
1,876.00	1,847.35	1,852.33	1,845.93	6.38	5.76	-114.59	-174.46	118.04	155.31	143.44	11.87	13.082	
1,970.00	1,937.87	1,943.54	1,936.69	6.84	6.11	-119.09	-181.43	123.71	167.83	155.25	12.59	13.335	
2,064.00	2,028.42	2,036.56	2,029.28	7.30	6.46	-122.77	-188.21	129.57	181.43	168.13	13.31	13.636	
2,159.00	2,119.97	2,130.57	2,122.80	7.77	6.82	-125.03	-195.88	135.39	194.96	180.93	14.03	13.892	
2,348.00	2,302.44	2,318.05	2,309.21	8.69	7.55	-134.88	-211.92	147.26	223.45	207.95	15.49	14.422	
2,443.00	2,394.41	2,413.21	2,403.80	9.15	7.91	-137.25	-220.81	152.68	237.47	221.24	16.23	14.628	
2,537.00	2,485.45	2,505.94	2,495.98	9.61	8.27	-138.93	-229.57	157.66	251.24	234.28	16.96	14.818	
2,632.00	2,577.48	2,599.44	2,588.92	10.07	8.63	-139.95	-238.34	162.80	265.38	247.69	17.68	15.008	
2,727.00	2,669.50	2,692.82	2,681.77	10.53	8.99	-141.09	-246.97	167.91	279.67	261.26	18.41	15.192	
2,821.00	2,760.56	2,785.12	2,773.54	10.98	9.35	-142.40	-255.36	173.01	294.11	274.99	19.13	15.377	
2,916.00	2,852.68	2,877.90	2,865.80	11.44	9.71	-143.45	-263.62	178.21	308.71	288.86	19.85	15.555	
3,011.00	2,945.03	2,971.77	2,959.18	11.89	10.07	-144.19	-271.66	183.44	322.85	302.28	20.57	15.694	
3,105.00	3,036.57	3,065.59	3,052.56	12.33	10.43	-150.57	-279.48	187.95	336.72	315.43	21.29	15.813	
3,200.00	3,128.81	3,158.93	3,145.43	12.78	10.79	-154.14	-287.62	192.71	352.48	330.46	22.02	16.005	
3,294.00	3,219.76	3,254.95	3,240.90	13.24	11.16	-154.74	-296.36	198.00	369.43	346.65	22.78	16.219	
3,389.00	3,311.82	3,352.37	3,337.63	13.69	11.54	-153.87	-306.71	203.22	384.72	361.17	23.55	16.338	
3,483.00	3,403.03	3,446.51	3,431.03	14.14	11.91	-153.54	-317.32	208.34	398.79	374.49	24.30	16.413	
3,578.00	3,495.31	3,538.57	3,522.32	14.60	12.27	-152.99	-327.94	213.74	412.56	387.52	25.04	16.478	
3,672.00	3,586.65	3,628.42	3,611.52	15.04	12.63	-151.92	-337.41	218.82	426.64	400.89	25.75	16.566	
3,767.00	3,678.95	3,717.83	3,700.41	15.49	12.97	-151.65	-345.86	223.59	441.46	415.00	26.46	16.685	
3,862.00	3,771.63	3,807.34	3,789.52	15.93	13.31	-152.24	-352.93	228.05	455.91	428.76	27.15	16.793	
3,956.00	3,863.70	3,899.29	3,881.10	16.35	13.66	-152.09	-359.66	232.84	469.30	441.45	27.85	16.849	
4,052.00	3,957.54	3,997.86	3,979.23	16.79	14.04	-153.31	-367.25	238.19	483.61	454.99	28.62	16.900	
4,146.00	4,048.88	4,092.59	4,073.53	17.24	14.40	-153.54	-375.10	242.44	498.97	469.62	29.35	17.001	
4,241.00	4,140.47	4,185.90	4,166.48	17.71	14.75	-151.21	-382.46	246.34	516.96	486.89	30.07	17.192	
4,336.00	4,231.25	4,285.04	4,265.10	18.21	15.13	-148.35	-391.38	251.06	536.17	505.32	30.84	17.384	
4,430.00	4,320.59	4,379.99	4,359.39	18.71	15.50	-150.67	-401.45	256.01	555.30	523.71	31.59	17.576	
4,524.00	4,409.51	4,470.21	4,448.94	19.22	15.86	-154.76	-411.13	261.09	576.37	544.05	32.32	17.832	
4,619.00	4,498.98	4,567.79	4,545.75	19.75	16.24	-155.85	-421.88	266.91	599.19	566.08	33.11	18.096	
4,713.00	4,587.83	4,664.63	4,641.56	20.27	16.63	-156.09	-434.42	273.28	619.62	585.72	33.90	18.277	
4,807.00	4,676.97	4,751.14	4,727.16	20.78	16.98	-154.81	-445.51	279.05	639.30	604.67	34.62	18.464	
4,870.00	4,736.65	4,806.51	4,782.05	21.12	17.20	-154.57	-451.91	282.63	653.15	618.07	35.08	18.616	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Plan #4

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS, 6235-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,861.78	4,836.91	21.46	17.42	-154.88	-457.67	286.10	666.86	631.32	35.54	18.765	
5,027.00	4,886.13	4,943.64	4,918.28	21.96	17.74	-154.30	-465.00	290.98	687.97	651.78	36.20	19.006	
5,121.00	4,976.11	5,039.50	5,013.69	22.45	18.10	-154.52	-472.78	296.24	708.20	671.25	36.95	19.166	
5,216.00	5,068.11	5,129.95	5,103.70	22.91	18.45	-154.84	-480.23	301.03	724.94	687.28	37.66	19.251	
5,341.00	5,190.11	5,254.96	5,228.14	23.49	18.93	-155.47	-490.33	307.32	743.40	704.78	38.62	19.248	
5,436.00	5,283.20	5,347.40	5,320.20	23.91	19.28	-155.45	-497.55	311.71	756.01	716.68	39.33	19.222	
5,499.00	5,345.03	5,408.42	5,380.96	24.19	19.51	-155.57	-502.20	314.66	764.06	724.27	39.80	19.200	
5,561.00	5,405.97	5,470.04	5,442.35	24.45	19.74	-154.60	-506.77	317.49	771.58	731.31	40.26	19.163	
5,624.00	5,467.97	5,533.73	5,505.81	24.72	19.98	-155.71	-511.46	320.22	778.72	737.98	40.75	19.112	
5,687.00	5,530.05	5,597.07	5,568.92	24.99	20.22	-154.81	-516.21	322.91	785.42	744.20	41.22	19.053	
5,750.00	5,592.20	5,657.70	5,629.34	25.25	20.45	-154.59	-520.57	325.28	791.76	750.08	41.68	18.997	
5,813.00	5,654.42	5,722.00	5,693.45	25.51	20.69	-153.63	-524.98	327.35	797.67	755.51	42.15	18.923	
5,876.00	5,716.68	5,785.32	5,756.59	25.76	20.92	-153.47	-529.41	329.38	803.19	760.57	42.62	18.845	
5,939.00	5,778.99	5,847.54	5,818.62	26.01	21.15	-153.72	-533.79	331.36	808.41	765.33	43.08	18.765	
6,065.00	5,903.86	5,962.98	5,933.79	26.51	21.58	-153.92	-540.86	335.08	818.34	774.41	43.92	18.632	
6,128.00	5,966.41	6,023.86	5,994.55	26.74	21.80	-155.40	-544.11	336.92	822.84	778.48	44.36	18.549	
6,191.00	6,029.04	6,082.26	6,052.86	26.97	22.01	-154.77	-546.92	338.51	827.07	782.29	44.78	18.471	
6,254.00	6,091.75	6,141.06	6,111.59	27.20	22.23	-153.91	-549.41	340.16	830.85	785.66	45.19	18.385	
6,348.00	6,185.46	6,230.21	6,200.64	27.52	22.55	-151.10	-552.62	342.59	835.45	789.64	45.81	18.236	
6,390.00	6,227.36	6,271.93	6,242.33	27.61	22.69	-151.09	-553.91	343.55	837.26	791.24	46.02	18.192	
6,400.00	6,237.33	6,281.92	6,252.31	27.61	22.73	-151.09	-554.22	343.78	837.69	791.63	46.06	18.186	
6,490.00	6,327.12	6,366.23	6,336.55	27.66	23.03	-151.08	-556.82	345.84	841.63	795.28	46.35	18.159	
6,500.00	6,337.09	6,372.88	6,343.20	27.66	23.05	-163.52	-557.04	346.14	842.19	795.83	46.36	18.168	
6,550.00	6,386.85	6,400.00	6,370.23	27.70	23.15	159.71	-557.95	348.11	847.05	800.72	46.33	18.281	
6,600.00	6,436.20	6,437.54	6,407.45	27.74	23.29	146.79	-559.31	352.72	855.23	808.78	46.44	18.415	
6,650.00	6,484.82	6,467.48	6,436.90	27.79	23.41	140.72	-560.49	357.97	866.83	820.35	46.48	18.650	
6,700.00	6,532.40	6,500.00	6,468.57	27.85	23.53	137.24	-561.84	365.24	881.89	835.32	46.57	18.938	
6,750.00	6,578.63	6,519.96	6,487.80	27.92	23.61	134.42	-562.71	370.50	900.34	853.84	46.51	19.360	
6,800.00	6,623.24	6,550.00	6,516.42	28.00	23.73	132.44	-564.08	379.54	922.28	875.67	46.61	19.786	
6,850.00	6,665.93	6,560.82	6,526.61	28.09	23.78	129.74	-564.58	383.13	947.40	900.94	46.45	20.395	
6,900.00	6,706.42	6,576.74	6,541.49	28.19	23.84	127.15	-565.34	388.72	975.71	929.30	46.40	21.027	
6,950.00	6,744.48	6,600.00	6,562.98	28.30	23.94	124.79	-566.49	397.55	1,007.01	960.50	46.51	21.651	
7,000.00	6,779.84	6,600.00	6,562.98	28.43	23.94	120.62	-566.49	397.55	1,040.72	994.45	46.27	22.492	
7,050.00	6,812.30	6,600.00	6,562.98	28.57	23.94	115.87	-566.49	397.55	1,076.87	1,030.80	46.07	23.375	
7,100.00	6,841.63	6,600.00	6,562.98	28.73	23.94	110.47	-566.49	397.55	1,115.01	1,069.09	45.92	24.283	
7,150.00	6,867.66	6,616.23	6,577.78	28.90	24.00	105.77	-567.31	404.18	1,154.46	1,108.36	46.09	25.045	
7,200.00	6,890.22	6,617.43	6,578.86	29.08	24.01	99.30	-567.37	404.68	1,195.28	1,149.22	46.06	25.950	
7,250.00	6,909.17	6,616.85	6,578.33	29.28	24.01	92.22	-567.34	404.44	1,236.96	1,190.91	46.04	26.866	
7,300.00	6,924.38	6,614.65	6,576.34	29.49	24.00	84.79	-567.23	403.52	1,279.15	1,233.11	46.04	27.783	
7,350.00	6,935.77	6,600.00	6,562.98	29.72	23.94	76.49	-566.49	397.55	1,321.66	1,275.78	45.88	28.805	
7,400.00	6,943.25	6,600.00	6,562.98	29.97	23.94	69.73	-566.49	397.55	1,363.86	1,317.87	46.00	29.652	
7,450.00	6,946.78	6,600.00	6,562.98	30.22	23.94	63.51	-566.49	397.55	1,405.72	1,359.58	46.14	30.468	
7,471.54	6,947.08	6,600.00	6,562.98	30.34	23.94	61.02	-566.49	397.55	1,423.58	1,377.38	46.20	30.811	
7,500.00	6,946.98	6,600.00	6,562.98	30.49	23.94	61.42	-566.49	397.55	1,447.14	1,400.84	46.30	31.258	
7,600.00	6,946.65	6,579.68	6,544.23	31.07	23.85	61.78	-565.49	389.79	1,529.76	1,483.44	46.33	33.022	
7,700.00	6,946.32	6,567.58	6,532.95	31.69	23.80	62.55	-564.90	385.46	1,612.48	1,566.03	46.45	34.711	
7,800.00	6,945.99	6,550.00	6,516.42	32.35	23.73	63.03	-564.08	379.54	1,695.21	1,648.70	46.50	36.453	
7,900.00	6,945.67	6,550.00	6,516.42	33.05	23.73	64.34	-564.08	379.54	1,777.77	1,731.03	46.75	38.030	
8,000.00	6,945.34	6,550.00	6,516.42	33.79	23.73	65.59	-564.08	379.54	1,860.36	1,813.39	46.96	39.613	
8,034.58	6,945.23	6,550.00	6,516.42	34.05	23.73	66.00	-564.08	379.54	1,888.90	1,841.87	47.03	40.162	
8,100.00	6,945.02	6,528.42	6,495.91	34.57	23.65	65.03	-563.09	372.91	1,942.81	1,895.86	46.95	41.382	
8,200.00	6,944.69	6,520.52	6,488.34	35.41	23.62	64.67	-562.73	370.65	2,026.77	1,979.70	47.06	43.064	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Plan #4

Offset Site Error: 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS, 6235-MWD+HRGM+MS

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,300.00	6,944.37	6,500.00	6,468.57	36.30	23.53	63.75	-561.84	365.24	2,112.18	2,065.12	47.06	44.885	
8,400.00	6,944.05	6,500.00	6,468.57	37.25	23.53	63.75	-561.84	365.24	2,198.47	2,151.24	47.23	46.552	
8,500.00	6,943.73	6,500.00	6,468.57	38.25	23.53	63.75	-561.84	365.24	2,285.87	2,238.49	47.38	48.247	
8,600.00	6,943.40	6,500.00	6,468.57	39.29	23.53	63.75	-561.84	365.24	2,374.27	2,326.75	47.52	49.966	
8,700.00	6,943.08	6,500.00	6,468.57	40.37	23.53	63.75	-561.84	365.24	2,463.56	2,415.91	47.64	51.707	
8,800.00	6,942.76	6,500.00	6,468.57	41.49	23.53	63.75	-561.84	365.24	2,553.64	2,505.88	47.76	53.466	
8,900.00	6,942.43	6,479.19	6,448.35	42.64	23.45	62.83	-560.96	360.40	2,644.04	2,596.31	47.73	55.394	
9,000.00	6,942.11	6,474.74	6,444.00	43.82	23.44	62.63	-560.78	359.46	2,735.29	2,687.48	47.81	57.213	
9,100.00	6,941.79	6,470.56	6,439.92	45.03	23.42	62.45	-560.61	358.59	2,827.10	2,779.22	47.88	59.042	
9,200.00	6,941.46	6,450.00	6,419.74	46.27	23.34	61.54	-559.79	354.74	2,919.67	2,871.82	47.85	61.012	
9,300.00	6,941.14	6,450.00	6,419.74	47.53	23.34	61.54	-559.79	354.74	3,012.36	2,964.41	47.95	62.827	
9,400.00	6,940.82	6,450.00	6,419.74	48.81	23.34	61.54	-559.79	354.74	3,105.50	3,057.46	48.03	64.652	
9,500.00	6,940.50	6,450.00	6,419.74	50.11	23.34	61.54	-559.79	354.74	3,199.05	3,150.93	48.12	66.485	
9,600.00	6,940.17	6,450.00	6,419.74	51.43	23.34	61.54	-559.79	354.74	3,292.98	3,244.79	48.20	68.325	
9,700.00	6,939.85	6,450.00	6,419.74	52.76	23.34	61.54	-559.79	354.74	3,387.27	3,338.99	48.27	70.172	
9,800.00	6,939.53	6,450.00	6,419.74	54.11	23.34	61.54	-559.79	354.74	3,481.87	3,433.52	48.34	72.024	
9,900.00	6,939.20	6,450.00	6,419.74	55.48	23.34	61.54	-559.79	354.74	3,576.76	3,528.35	48.41	73.881	
10,000.00	6,938.88	6,450.00	6,419.74	56.86	23.34	61.54	-559.79	354.74	3,671.92	3,623.44	48.48	75.741	
10,100.00	6,938.56	6,450.00	6,419.74	58.25	23.34	61.54	-559.79	354.74	3,767.34	3,718.79	48.55	77.605	
10,200.00	6,938.23	6,450.00	6,419.74	59.65	23.34	61.54	-559.79	354.74	3,862.99	3,814.38	48.61	79.472	
10,300.00	6,937.91	6,450.00	6,419.74	61.06	23.34	61.54	-559.79	354.74	3,958.85	3,910.18	48.67	81.340	
10,400.00	6,937.59	6,450.00	6,419.74	62.48	23.34	61.54	-559.79	354.74	4,054.91	4,006.18	48.73	83.210	
10,500.00	6,937.27	6,450.00	6,419.74	63.91	23.34	61.54	-559.79	354.74	4,151.16	4,102.37	48.79	85.082	
10,600.00	6,936.94	6,450.00	6,419.74	65.34	23.34	61.54	-559.79	354.74	4,247.58	4,198.73	48.85	86.954	
10,700.00	6,936.62	6,426.89	6,396.92	66.79	23.25	60.54	-558.91	351.19	4,343.70	4,294.88	48.81	88.986	
10,800.00	6,936.30	6,425.09	6,395.14	68.24	23.25	60.47	-558.85	350.95	4,440.36	4,391.49	48.86	90.870	
10,900.00	6,935.97	6,423.36	6,393.43	69.70	23.24	60.39	-558.78	350.72	4,537.16	4,488.24	48.92	92.754	
11,000.00	6,935.65	6,400.00	6,370.23	71.17	23.15	59.40	-557.95	348.11	4,634.50	4,585.61	48.88	94.806	
11,100.00	6,935.33	6,400.00	6,370.23	72.64	23.15	59.40	-557.95	348.11	4,731.49	4,682.55	48.94	96.674	
11,200.00	6,935.00	6,400.00	6,370.23	74.11	23.15	59.40	-557.95	348.11	4,828.61	4,779.61	49.00	98.541	
11,300.00	6,934.68	6,400.00	6,370.23	75.60	23.15	59.40	-557.95	348.11	4,925.84	4,876.78	49.06	100.407	
11,400.00	6,934.36	6,400.00	6,370.23	77.08	23.15	59.40	-557.95	348.11	5,023.19	4,974.07	49.12	102.271	
11,500.00	6,934.03	6,400.00	6,370.23	78.57	23.15	59.40	-557.95	348.11	5,120.63	5,071.46	49.17	104.133	
11,600.00	6,933.71	6,400.00	6,370.23	80.07	23.15	59.40	-557.95	348.11	5,218.17	5,168.94	49.23	105.993	
11,700.00	6,933.39	6,400.00	6,370.23	81.57	23.15	59.40	-557.95	348.11	5,315.80	5,266.52	49.29	107.851	
11,800.00	6,933.07	6,400.00	6,370.23	83.07	23.15	59.40	-557.95	348.11	5,413.52	5,364.18	49.35	109.705	
11,900.00	6,932.74	6,400.00	6,370.23	84.58	23.15	59.40	-557.95	348.11	5,511.32	5,461.92	49.40	111.557	
12,000.00	6,932.42	6,400.00	6,370.23	86.09	23.15	59.40	-557.95	348.11	5,609.20	5,559.74	49.46	113.406	
12,100.00	6,932.10	6,400.00	6,370.23	87.60	23.15	59.40	-557.95	348.11	5,707.15	5,657.63	49.52	115.252	
12,200.00	6,931.77	6,400.00	6,370.23	89.12	23.15	59.40	-557.95	348.11	5,805.18	5,755.60	49.58	117.094	
12,300.00	6,931.45	6,400.00	6,370.23	90.64	23.15	59.40	-557.95	348.11	5,903.26	5,853.63	49.64	118.933	
12,400.00	6,931.13	6,400.00	6,370.23	92.16	23.15	59.40	-557.95	348.11	6,001.41	5,951.72	49.69	120.768	
12,500.00	6,930.80	6,400.00	6,370.23	93.69	23.15	59.40	-557.95	348.11	6,099.63	6,049.87	49.75	122.600	
12,600.00	6,930.48	6,400.00	6,370.23	95.22	23.15	59.40	-557.95	348.11	6,197.89	6,148.08	49.81	124.427	
12,700.00	6,930.16	6,400.00	6,370.23	96.75	23.15	59.40	-557.95	348.11	6,296.22	6,246.35	49.87	126.250	
12,800.00	6,929.84	6,400.00	6,370.23	98.28	23.15	59.40	-557.95	348.11	6,394.59	6,344.66	49.93	128.069	
12,900.00	6,929.51	6,400.00	6,370.23	99.82	23.15	59.40	-557.95	348.11	6,493.02	6,443.03	49.99	129.883	
13,000.00	6,929.19	6,400.00	6,370.23	101.35	23.15	59.40	-557.95	348.11	6,591.49	6,541.44	50.05	131.693	
13,100.00	6,928.87	6,400.00	6,370.23	102.89	23.15	59.40	-557.95	348.11	6,690.01	6,639.89	50.11	133.499	
13,200.00	6,928.54	6,400.00	6,370.23	104.43	23.15	59.40	-557.95	348.11	6,788.57	6,738.39	50.17	135.299	
13,300.00	6,928.22	6,400.00	6,370.23	105.97	23.15	59.40	-557.95	348.11	6,887.17	6,836.93	50.24	137.095	
13,400.00	6,927.90	6,400.00	6,370.23	107.52	23.15	59.40	-557.95	348.11	6,985.81	6,935.51	50.30	138.886	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Plan #4 — **Offset Site Error:** 0.00 usft

Survey Program: 21-Standard Keeper 104, 365-MWD+HRGM+MS, 6235-MWD+HRGM+MS — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,400.00	6,370.23	109.06	23.15	59.40	-557.95	348.11	7,084.49	7,034.13	50.36	140.672	
13,600.00	6,927.25	6,400.00	6,370.23	110.61	23.15	59.40	-557.95	348.11	7,183.21	7,132.78	50.43	142.453	
13,700.00	6,926.93	6,400.00	6,370.23	112.16	23.15	59.40	-557.95	348.11	7,281.96	7,231.47	50.49	144.228	
13,800.00	6,926.61	6,400.00	6,370.23	113.71	23.15	59.40	-557.95	348.11	7,380.74	7,330.19	50.55	145.999	
13,900.00	6,926.28	6,400.00	6,370.23	115.26	23.15	59.40	-557.95	348.11	7,479.56	7,428.94	50.62	147.763	
14,000.00	6,925.96	6,400.00	6,370.23	116.82	23.15	59.40	-557.95	348.11	7,578.41	7,527.73	50.68	149.523	
14,100.00	6,925.64	6,400.00	6,370.23	118.37	23.15	59.40	-557.95	348.11	7,677.29	7,626.54	50.75	151.277	
14,200.00	6,925.31	6,400.00	6,370.23	119.93	23.15	59.40	-557.95	348.11	7,776.20	7,725.38	50.82	153.026	
14,300.00	6,924.99	6,400.00	6,370.23	121.48	23.15	59.40	-557.95	348.11	7,875.13	7,824.25	50.88	154.768	
14,400.00	6,924.67	6,400.00	6,370.23	123.04	23.15	59.40	-557.95	348.11	7,974.09	7,923.14	50.95	156.505	
14,500.00	6,924.34	6,400.00	6,370.23	124.60	23.15	59.40	-557.95	348.11	8,073.08	8,022.06	51.02	158.237	
14,600.00	6,924.02	6,400.00	6,370.23	126.16	23.15	59.40	-557.95	348.11	8,172.09	8,121.00	51.09	159.962	
14,700.00	6,923.70	6,400.00	6,370.23	127.72	23.15	59.40	-557.95	348.11	8,271.13	8,219.97	51.16	161.682	
14,800.00	6,923.38	6,400.00	6,370.23	129.28	23.15	59.40	-557.95	348.11	8,370.18	8,318.96	51.23	163.396	
14,900.00	6,923.05	6,400.00	6,370.23	130.85	23.15	59.40	-557.95	348.11	8,469.26	8,417.97	51.30	165.104	
15,000.00	6,922.73	6,400.00	6,370.23	132.41	23.15	59.40	-557.95	348.11	8,568.37	8,517.00	51.37	166.805	
15,100.00	6,922.41	6,400.00	6,370.23	133.97	23.15	59.40	-557.95	348.11	8,667.49	8,616.05	51.44	168.501	
15,200.00	6,922.08	6,400.00	6,370.23	135.54	23.15	59.40	-557.95	348.11	8,766.63	8,715.12	51.51	170.191	
15,300.00	6,921.76	6,400.00	6,370.23	137.11	23.15	59.40	-557.95	348.11	8,865.79	8,814.21	51.58	171.874	
15,400.00	6,921.44	6,400.00	6,370.23	138.67	23.15	59.40	-557.95	348.11	8,964.97	8,913.32	51.66	173.551	
15,500.00	6,921.11	6,400.00	6,370.23	140.24	23.15	59.40	-557.95	348.11	9,064.17	9,012.44	51.73	175.222	
15,600.00	6,920.79	6,400.00	6,370.23	141.81	23.15	59.40	-557.95	348.11	9,163.39	9,111.58	51.80	176.887	
15,700.00	6,920.47	6,400.00	6,370.23	143.38	23.15	59.40	-557.95	348.11	9,262.62	9,210.74	51.88	178.545	
15,800.00	6,920.14	6,400.00	6,370.23	144.95	23.15	59.40	-557.95	348.11	9,361.87	9,309.91	51.95	180.197	
15,900.00	6,919.82	6,400.00	6,370.23	146.52	23.15	59.40	-557.95	348.11	9,461.13	9,409.10	52.03	181.843	
16,000.00	6,919.50	6,400.00	6,370.23	148.09	23.15	59.40	-557.95	348.11	9,560.41	9,508.31	52.11	183.482	
16,100.00	6,919.18	6,400.00	6,370.23	149.66	23.15	59.40	-557.95	348.11	9,659.71	9,607.52	52.18	185.115	
16,200.00	6,918.85	6,400.00	6,370.23	151.24	23.15	59.40	-557.95	348.11	9,759.02	9,706.76	52.26	186.742	
16,300.00	6,918.53	6,400.00	6,370.23	152.81	23.15	59.40	-557.95	348.11	9,858.34	9,806.00	52.34	188.362	
16,400.00	6,918.21	6,378.78	6,349.09	154.38	23.08	58.51	-557.23	346.47	9,957.30	9,904.95	52.36	190.179	
16,500.00	6,917.88	6,378.40	6,348.71	155.96	23.07	58.50	-557.22	346.45	10,056.64	10,004.20	52.44	191.791	
16,600.00	6,917.56	6,378.02	6,348.33	157.53	23.07	58.48	-557.21	346.43	10,155.99	10,103.48	52.51	193.396	
16,700.00	6,917.24	6,377.65	6,347.96	159.11	23.07	58.46	-557.19	346.41	10,255.35	10,202.76	52.59	194.995	
16,800.00	6,916.91	6,377.29	6,347.60	160.68	23.07	58.45	-557.18	346.38	10,354.72	10,302.05	52.67	196.587	
16,900.00	6,916.59	6,376.94	6,347.25	162.26	23.07	58.43	-557.17	346.36	10,454.11	10,401.36	52.75	198.172	
17,000.00	6,916.27	6,376.59	6,346.90	163.84	23.07	58.42	-557.16	346.34	10,553.51	10,500.67	52.83	199.751	
17,100.00	6,915.95	6,376.24	6,346.55	165.41	23.07	58.41	-557.15	346.32	10,652.91	10,600.00	52.91	201.323	
17,200.00	6,915.62	6,355.00	6,325.34	166.99	22.99	57.53	-556.47	345.48	10,752.69	10,699.75	52.94	203.110	
17,300.00	6,915.30	6,355.00	6,325.34	168.57	22.99	57.53	-556.47	345.48	10,852.11	10,799.09	53.02	204.666	
17,400.00	6,914.98	6,355.00	6,325.34	170.15	22.99	57.53	-556.47	345.48	10,951.54	10,898.43	53.11	206.216	
17,500.00	6,914.65	6,355.00	6,325.34	171.73	22.99	57.53	-556.47	345.48	11,050.98	10,997.79	53.19	207.760	
17,600.00	6,914.33	6,355.00	6,325.34	173.31	22.99	57.53	-556.47	345.48	11,150.43	11,097.15	53.28	209.296	
17,700.00	6,914.01	6,355.00	6,325.34	174.89	22.99	57.53	-556.47	345.48	11,249.89	11,196.53	53.36	210.826	
17,800.00	6,913.68	6,355.00	6,325.34	176.47	22.99	57.53	-556.47	345.48	11,349.35	11,295.91	53.45	212.349	
17,900.00	6,913.36	6,355.00	6,325.34	178.05	22.99	57.53	-556.47	345.48	11,448.83	11,395.30	53.53	213.866	
18,000.00	6,913.04	6,355.00	6,325.34	179.63	22.99	57.53	-556.47	345.48	11,548.32	11,494.70	53.62	215.376	
18,100.00	6,912.72	6,355.00	6,325.34	181.21	22.99	57.53	-556.47	345.48	11,647.81	11,594.11	53.71	216.879	
18,111.83	6,912.68	6,355.00	6,325.34	181.40	22.99	57.53	-556.47	345.48	11,659.59	11,605.87	53.72	217.057	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 26-Standard Keeper 104, 322-MWD+HRGM+MS, 20962-A026Ua_BLIND — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	144.87	-41.14	28.94	50.30				
54.25	54.25	54.41	54.40	0.02	0.02	83.81	-41.20	28.60	50.14	50.12	0.02	2,698.686	
130.42	130.42	130.49	130.49	0.11	0.07	57.67	-41.39	28.04	49.86	49.75	0.11	454.612	
219.69	219.69	219.83	219.82	0.23	0.19	84.83	-41.49	27.52	49.52	49.27	0.25	198.646	
308.67	308.67	308.80	308.79	0.35	0.30	76.97	-41.50	27.07	49.20	48.81	0.39	126.817	
454.00	453.99	453.80	453.79	0.51	0.50	-56.90	-41.88	26.12	48.38	47.62	0.75	64.110	
544.00	543.93	542.76	542.72	0.74	0.73	-57.28	-43.86	25.00	47.84	46.54	1.30	36.734	
554.06	553.98	552.64	552.59	0.77	0.76	-59.08	-44.24	24.90	47.82	46.45	1.37	34.852	CC, ES
667.00	666.63	663.38	663.11	1.13	1.12	-74.23	-51.01	24.57	50.40	48.24	2.16	23.381	
756.00	755.27	751.15	750.49	1.44	1.43	-62.47	-59.29	25.14	54.45	51.65	2.80	19.467	
850.00	848.62	843.76	842.42	1.79	1.77	-63.84	-70.45	25.85	58.63	55.14	3.49	16.794	
942.00	939.50	932.56	930.13	2.14	2.12	-61.34	-84.14	27.77	63.66	59.47	4.19	15.195	
1,033.00	1,028.89	1,022.24	1,018.22	2.52	2.49	-56.20	-100.50	31.42	68.75	63.84	4.91	14.006	
1,123.00	1,117.00	1,111.70	1,106.01	2.90	2.86	-53.97	-117.11	35.91	72.17	66.52	5.64	12.787	
1,214.00	1,206.00	1,201.58	1,194.07	3.29	3.24	-57.90	-134.38	40.95	75.73	69.34	6.40	11.839	
1,309.00	1,298.75	1,295.72	1,285.94	3.71	3.66	-57.32	-154.22	46.33	79.95	72.75	7.20	11.102	
1,403.00	1,390.39	1,390.29	1,378.27	4.13	4.08	-56.73	-173.90	51.99	83.11	75.09	8.02	10.357	
1,498.00	1,482.88	1,484.80	1,470.73	4.56	4.49	-63.05	-192.63	57.74	85.89	77.03	8.86	9.689	
1,592.00	1,573.82	1,578.33	1,562.30	5.00	4.91	-68.40	-210.51	64.11	88.99	79.25	9.74	9.136	
1,687.00	1,665.32	1,672.94	1,654.89	5.46	5.33	-70.88	-228.89	70.53	91.81	81.16	10.65	8.619	
1,876.00	1,847.35	1,861.14	1,838.12	6.38	6.19	-74.78	-270.13	82.40	96.82	84.35	12.47	7.763	
1,970.00	1,937.87	1,954.72	1,929.21	6.84	6.62	-77.48	-290.68	88.61	99.42	86.04	13.38	7.430	
2,064.00	2,028.42	2,048.00	2,020.04	7.30	7.06	-79.79	-310.89	95.19	102.50	88.21	14.28	7.175	
2,159.00	2,119.97	2,142.21	2,111.75	7.77	7.49	-81.20	-331.23	102.37	106.01	90.81	15.20	6.976	
2,348.00	2,302.44	2,332.42	2,296.87	8.69	8.38	-90.01	-372.25	117.35	115.65	98.62	17.02	6.793	
2,443.00	2,394.41	2,429.48	2,391.68	9.15	8.82	-92.58	-392.29	122.64	119.65	101.71	17.93	6.672	
2,537.00	2,485.45	2,523.72	2,483.87	9.61	9.24	-94.69	-411.47	126.67	122.83	104.02	18.81	6.530	
2,632.00	2,577.48	2,618.29	2,576.28	10.07	9.67	-95.98	-431.12	130.79	126.18	106.48	19.69	6.407	
2,727.00	2,669.50	2,713.21	2,669.00	10.53	10.11	-97.35	-451.00	135.09	129.67	109.10	20.57	6.302	
2,821.00	2,760.56	2,807.64	2,761.28	10.98	10.53	-99.02	-470.61	139.13	133.05	111.60	21.45	6.204	
2,916.00	2,852.68	2,901.73	2,853.20	11.44	10.96	-100.25	-490.26	143.19	136.54	114.22	22.31	6.119	
3,011.00	2,945.03	2,995.45	2,944.83	11.89	11.39	-100.97	-509.40	147.87	140.62	117.45	23.17	6.069	SF
3,105.00	3,036.57	3,088.97	3,036.47	12.33	11.80	-107.38	-527.37	152.80	146.12	122.11	24.01	6.086	
3,200.00	3,128.81	3,184.62	3,130.42	12.78	12.22	-111.92	-544.74	157.36	153.57	128.72	24.85	6.180	
3,294.00	3,219.76	3,279.64	3,223.45	13.24	12.65	-113.36	-563.59	161.56	161.37	135.67	25.70	6.278	
3,389.00	3,311.82	3,372.40	3,313.71	13.69	13.08	-112.35	-584.41	166.43	168.97	142.39	26.58	6.357	
3,483.00	3,403.03	3,465.95	3,404.59	14.14	13.53	-111.56	-605.84	172.32	176.81	149.34	27.47	6.437	
3,578.00	3,495.31	3,558.95	3,495.00	14.60	13.96	-110.69	-626.76	178.35	184.73	156.38	28.35	6.516	
3,672.00	3,586.65	3,651.61	3,585.26	15.04	14.40	-109.44	-646.65	184.90	193.02	163.80	29.21	6.607	
3,767.00	3,678.95	3,745.95	3,677.36	15.49	14.83	-109.16	-665.98	191.59	201.39	171.31	30.08	6.695	
3,862.00	3,771.63	3,841.59	3,771.07	15.93	15.25	-109.72	-684.05	197.77	209.05	178.11	30.94	6.757	
3,956.00	3,863.70	3,936.03	3,863.95	16.35	15.66	-109.67	-700.33	202.92	215.61	183.86	31.76	6.789	
4,052.00	3,957.54	4,030.12	3,956.55	16.79	16.06	-111.23	-716.18	208.07	222.91	190.34	32.56	6.845	
4,146.00	4,048.88	4,127.54	4,052.52	17.24	16.48	-112.37	-732.12	213.13	231.08	197.68	33.40	6.919	
4,241.00	4,140.47	4,226.81	4,149.87	17.71	16.92	-110.98	-751.17	217.03	237.93	203.67	34.26	6.945	
4,336.00	4,231.25	4,322.12	4,242.51	18.21	17.37	-108.74	-773.17	220.96	243.48	208.33	35.15	6.927	
4,430.00	4,320.59	4,415.37	4,332.80	18.71	17.82	-111.42	-796.02	225.37	249.30	213.26	36.04	6.918	
4,524.00	4,409.51	4,506.59	4,421.24	19.22	18.26	-116.09	-817.90	230.01	257.53	220.63	36.90	6.979	
4,619.00	4,498.98	4,602.62	4,513.55	19.75	18.74	-117.41	-843.56	236.39	267.80	229.95	37.86	7.074	
4,713.00	4,587.83	4,695.91	4,602.55	20.27	19.23	-117.40	-870.72	243.14	277.25	238.42	38.83	7.140	
4,807.00	4,676.97	4,787.56	4,690.33	20.78	19.70	-116.09	-896.24	249.60	286.34	246.56	39.78	7.198	
4,870.00	4,736.65	4,847.65	4,748.10	21.12	20.00	-115.92	-912.16	254.04	292.77	252.38	40.39	7.249	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 26-Standard Keeper 104, 322-MWD+HRGM+MS, 20962-A026Ua_BLIND — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,933.00	4,796.58	4,907.65	4,805.70	21.46	20.31	-116.07	-928.19	259.12	299.36	258.36	41.00	7.301	
5,027.00	4,886.13	5,001.57	4,895.36	21.96	20.79	-114.87	-954.58	268.33	309.46	267.47	41.99	7.369	
5,121.00	4,976.11	5,098.50	4,987.99	22.45	21.30	-114.20	-981.94	276.44	317.43	274.42	43.01	7.380	
5,216.00	5,068.11	5,193.67	5,079.69	22.91	21.77	-113.67	-1,006.44	283.29	323.80	279.82	43.98	7.363	
5,341.00	5,190.11	5,316.95	5,198.73	23.49	22.38	-112.87	-1,037.23	292.13	331.07	285.85	45.22	7.321	
5,436.00	5,283.20	5,411.43	5,289.50	23.91	22.86	-111.27	-1,062.36	299.66	336.30	290.10	46.20	7.279	
5,499.00	5,345.03	5,473.60	5,349.29	24.19	23.17	-110.35	-1,078.70	304.41	339.61	292.77	46.84	7.250	
5,561.00	5,405.97	5,534.93	5,408.27	24.45	23.48	-108.32	-1,094.82	309.29	342.91	295.44	47.47	7.224	
5,624.00	5,467.97	5,599.63	5,470.55	24.72	23.81	-108.27	-1,111.65	314.11	345.97	297.85	48.12	7.190	
5,687.00	5,530.05	5,661.71	5,530.34	24.99	24.12	-106.26	-1,127.75	318.58	348.92	300.19	48.74	7.159	
5,750.00	5,592.20	5,723.17	5,589.52	25.25	24.43	-104.88	-1,143.68	323.21	352.00	302.65	49.34	7.134	
5,813.00	5,654.42	5,788.75	5,652.70	25.51	24.76	-102.63	-1,160.63	327.81	354.71	304.73	49.98	7.097	
5,876.00	5,716.68	5,850.17	5,711.82	25.76	25.07	-101.21	-1,176.70	332.07	357.31	306.74	50.58	7.065	
5,939.00	5,778.99	5,911.87	5,771.21	26.01	25.38	-100.16	-1,192.89	336.46	360.14	308.98	51.16	7.039	
6,065.00	5,903.86	6,034.56	5,889.60	26.51	25.99	-97.82	-1,223.65	345.92	367.09	314.80	52.29	7.021	
6,128.00	5,966.41	6,098.77	5,951.91	26.74	26.29	-98.07	-1,238.44	350.46	370.57	317.73	52.85	7.012	
6,191.00	6,029.04	6,160.58	6,012.06	26.97	26.59	-96.32	-1,252.04	354.68	374.13	320.76	53.37	7.010	
6,254.00	6,091.75	6,224.07	6,074.08	27.20	26.88	-94.38	-1,264.97	358.88	377.62	323.73	53.88	7.008	
6,348.00	6,185.46	6,320.05	6,168.33	27.52	27.29	-90.10	-1,282.14	364.69	382.38	327.76	54.62	7.001	
6,390.00	6,227.36	6,363.63	6,211.28	27.61	27.48	-89.50	-1,289.09	366.95	384.18	329.30	54.88	7.000	
6,400.00	6,237.33	6,373.80	6,221.33	27.61	27.52	-89.37	-1,290.65	367.45	384.59	329.66	54.93	7.002	
6,490.00	6,327.12	6,465.43	6,311.91	27.66	27.89	-88.33	-1,303.79	371.67	388.10	332.77	55.33	7.014	
6,500.00	6,337.09	6,475.39	6,321.76	27.66	27.93	-100.63	-1,305.13	372.10	388.55	333.18	55.38	7.017	
6,550.00	6,386.85	6,504.00	6,350.09	27.70	28.05	-136.87	-1,308.98	373.34	393.75	338.35	55.39	7.108	
6,600.00	6,436.20	6,546.54	6,392.04	27.74	28.23	-149.14	-1,315.20	376.65	404.13	348.59	55.54	7.276	
6,650.00	6,484.82	6,574.74	6,419.58	27.79	28.35	-154.41	-1,319.87	380.46	420.89	365.43	55.46	7.589	
6,700.00	6,532.40	6,599.00	6,443.05	27.85	28.45	-156.99	-1,324.24	384.75	443.30	388.04	55.26	8.022	
6,750.00	6,578.63	6,625.92	6,468.80	27.92	28.59	-158.18	-1,329.53	390.55	470.79	415.65	55.14	8.538	
6,800.00	6,623.24	6,648.18	6,489.81	28.00	28.70	-158.54	-1,334.34	396.12	502.83	447.88	54.95	9.151	
6,850.00	6,665.93	6,667.71	6,508.00	28.09	28.80	-158.26	-1,338.86	401.59	538.83	484.08	54.75	9.842	
6,900.00	6,706.42	6,693.00	6,531.20	28.19	28.92	-157.34	-1,345.14	409.45	578.37	523.56	54.81	10.553	
6,950.00	6,744.48	6,693.00	6,531.20	28.30	28.92	-155.76	-1,345.14	409.45	620.58	566.34	54.23	11.443	
7,000.00	6,779.84	6,693.00	6,531.20	28.43	28.92	-152.96	-1,345.14	409.45	665.58	611.82	53.76	12.381	
7,050.00	6,812.30	6,718.14	6,553.83	28.57	29.06	-149.18	-1,351.77	418.18	711.63	657.48	54.15	13.142	
7,100.00	6,841.63	6,724.63	6,559.59	28.73	29.10	-142.39	-1,353.53	420.58	759.48	705.40	54.08	14.043	
7,150.00	6,867.66	6,729.07	6,563.51	28.90	29.12	-130.06	-1,354.74	422.26	808.30	754.25	54.06	14.953	
7,200.00	6,890.22	6,731.63	6,565.78	29.08	29.14	-106.39	-1,355.45	423.25	857.70	803.64	54.06	15.864	
7,250.00	6,909.17	6,732.49	6,566.53	29.28	29.14	-70.32	-1,355.68	423.58	907.33	853.22	54.11	16.769	
7,300.00	6,924.38	6,731.77	6,565.90	29.49	29.14	-41.38	-1,355.49	423.30	956.87	902.69	54.18	17.662	
7,350.00	6,935.77	6,729.63	6,564.01	29.72	29.13	-25.80	-1,354.90	422.48	1,006.04	951.77	54.27	18.537	
7,400.00	6,943.25	6,726.18	6,560.96	29.97	29.11	-17.35	-1,353.95	421.17	1,054.58	1,000.19	54.39	19.390	
7,450.00	6,946.78	6,693.00	6,531.20	30.22	28.92	-10.12	-1,345.14	409.45	1,103.26	1,049.36	53.90	20.470	
7,471.54	6,947.08	6,693.00	6,531.20	30.34	28.92	-8.96	-1,345.14	409.45	1,123.30	1,069.29	54.02	20.795	
7,500.00	6,946.98	6,693.00	6,531.20	30.49	28.92	-7.55	-1,345.14	409.45	1,149.71	1,095.53	54.18	21.221	
7,600.00	6,946.65	6,693.00	6,531.20	31.07	28.92	-2.25	-1,345.14	409.45	1,243.30	1,188.63	54.67	22.740	
7,700.00	6,946.32	6,693.00	6,531.20	31.69	28.92	3.57	-1,345.14	409.45	1,337.86	1,282.79	55.07	24.293	
7,800.00	6,945.99	6,693.00	6,531.20	32.35	28.92	9.78	-1,345.14	409.45	1,433.10	1,377.70	55.39	25.871	
7,900.00	6,945.67	6,693.00	6,531.20	33.05	28.92	16.20	-1,345.14	409.45	1,528.78	1,473.12	55.66	27.468	
8,000.00	6,945.34	6,693.00	6,531.20	33.79	28.92	22.62	-1,345.14	409.45	1,624.71	1,568.84	55.87	29.079	
8,034.58	6,945.23	6,693.00	6,531.20	34.05	28.92	24.80	-1,345.14	409.45	1,657.92	1,601.98	55.94	29.639	
8,100.00	6,945.02	6,657.67	6,498.68	34.57	28.75	24.13	-1,336.50	398.71	1,719.60	1,664.00	55.60	30.929	
8,200.00	6,944.69	6,649.74	6,491.27	35.41	28.71	23.97	-1,334.69	396.54	1,815.54	1,759.86	55.68	32.607	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 26-Standard Keeper 104, 322-MWD+HRGM+MS, 20962-A026Ua_BLIND — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
8,300.00	6,944.37	6,642.41	6,484.38	36.30	28.67	23.82	-1,333.05	394.61	1,911.78	1,856.03	55.75	34.291	
8,400.00	6,944.05	6,635.61	6,477.98	37.25	28.64	23.68	-1,331.58	392.89	2,008.30	1,952.48	55.82	35.980	
8,500.00	6,943.73	6,599.00	6,443.05	38.25	28.45	22.92	-1,324.24	384.75	2,105.94	2,050.38	55.56	37.906	
8,600.00	6,943.40	6,599.00	6,443.05	39.29	28.45	22.92	-1,324.24	384.75	2,202.61	2,146.93	55.69	39.554	
8,700.00	6,943.08	6,599.00	6,443.05	40.37	28.45	22.92	-1,324.24	384.75	2,299.57	2,243.77	55.80	41.211	
8,800.00	6,942.76	6,599.00	6,443.05	41.49	28.45	22.92	-1,324.24	384.75	2,396.78	2,340.88	55.90	42.875	
8,900.00	6,942.43	6,599.00	6,443.05	42.64	28.45	22.92	-1,324.24	384.75	2,494.21	2,438.22	55.99	44.544	
9,000.00	6,942.11	6,599.00	6,443.05	43.82	28.45	22.92	-1,324.24	384.75	2,591.84	2,535.76	56.08	46.218	
9,100.00	6,941.79	6,599.00	6,443.05	45.03	28.45	22.92	-1,324.24	384.75	2,689.64	2,633.48	56.16	47.896	
9,200.00	6,941.46	6,599.00	6,443.05	46.27	28.45	22.92	-1,324.24	384.75	2,787.59	2,731.37	56.23	49.577	
9,300.00	6,941.14	6,599.00	6,443.05	47.53	28.45	22.92	-1,324.24	384.75	2,885.69	2,829.40	56.29	51.262	
9,400.00	6,940.82	6,599.00	6,443.05	48.81	28.45	22.92	-1,324.24	384.75	2,983.91	2,927.56	56.36	52.948	
9,500.00	6,940.50	6,599.00	6,443.05	50.11	28.45	22.92	-1,324.24	384.75	3,082.25	3,025.84	56.41	54.636	
9,600.00	6,940.17	6,599.00	6,443.05	51.43	28.45	22.92	-1,324.24	384.75	3,180.69	3,124.22	56.47	56.325	
9,700.00	6,939.85	6,599.00	6,443.05	52.76	28.45	22.92	-1,324.24	384.75	3,279.23	3,222.70	56.52	58.015	
9,800.00	6,939.53	6,599.00	6,443.05	54.11	28.45	22.92	-1,324.24	384.75	3,377.85	3,321.27	56.57	59.706	
9,900.00	6,939.20	6,599.00	6,443.05	55.48	28.45	22.92	-1,324.24	384.75	3,476.55	3,419.93	56.62	61.397	
10,000.00	6,938.88	6,599.00	6,443.05	56.86	28.45	22.92	-1,324.24	384.75	3,575.32	3,518.65	56.67	63.088	
10,100.00	6,938.56	6,599.00	6,443.05	58.25	28.45	22.92	-1,324.24	384.75	3,674.16	3,617.44	56.72	64.779	
10,200.00	6,938.23	6,599.00	6,443.05	59.65	28.45	22.92	-1,324.24	384.75	3,773.06	3,716.30	56.76	66.469	
10,300.00	6,937.91	6,599.00	6,443.05	61.06	28.45	22.92	-1,324.24	384.75	3,872.02	3,815.21	56.81	68.158	
10,400.00	6,937.59	6,599.00	6,443.05	62.48	28.45	22.92	-1,324.24	384.75	3,971.03	3,914.17	56.85	69.846	
10,500.00	6,937.27	6,599.00	6,443.05	63.91	28.45	22.92	-1,324.24	384.75	4,070.08	4,013.19	56.90	71.533	
10,600.00	6,936.94	6,599.00	6,443.05	65.34	28.45	22.92	-1,324.24	384.75	4,169.19	4,112.24	56.94	73.219	
10,700.00	6,936.62	6,599.00	6,443.05	66.79	28.45	22.92	-1,324.24	384.75	4,268.33	4,211.35	56.98	74.904	
10,800.00	6,936.30	6,556.62	6,401.91	68.24	28.27	22.03	-1,316.82	377.87	4,365.87	4,309.08	56.79	76.879	
10,900.00	6,935.97	6,555.00	6,400.32	69.70	28.26	21.99	-1,316.56	377.66	4,464.96	4,408.14	56.83	78.574	
11,000.00	6,935.65	6,553.44	6,398.80	71.17	28.26	21.96	-1,316.30	377.47	4,564.09	4,507.23	56.86	80.266	
11,100.00	6,935.33	6,551.95	6,397.33	72.64	28.25	21.93	-1,316.06	377.28	4,663.26	4,606.36	56.90	81.956	
11,200.00	6,935.00	6,550.50	6,395.92	74.11	28.25	21.90	-1,315.83	377.11	4,762.45	4,705.52	56.94	83.644	
11,300.00	6,934.68	6,549.11	6,394.56	75.60	28.24	21.87	-1,315.61	376.95	4,861.68	4,804.70	56.98	85.329	
11,400.00	6,934.36	6,547.77	6,393.24	77.08	28.23	21.84	-1,315.40	376.79	4,960.93	4,903.92	57.01	87.012	
11,500.00	6,934.03	6,546.48	6,391.98	78.57	28.23	21.82	-1,315.19	376.65	5,060.21	5,003.15	57.05	88.692	
11,600.00	6,933.71	6,504.00	6,350.09	80.07	28.05	20.94	-1,308.98	373.34	5,161.04	5,104.16	56.89	90.727	
11,700.00	6,933.39	6,504.00	6,350.09	81.57	28.05	20.94	-1,308.98	373.34	5,260.28	5,203.35	56.93	92.394	
11,800.00	6,933.07	6,504.00	6,350.09	83.07	28.05	20.94	-1,308.98	373.34	5,359.54	5,302.56	56.98	94.057	
11,900.00	6,932.74	6,504.00	6,350.09	84.58	28.05	20.94	-1,308.98	373.34	5,458.84	5,401.81	57.03	95.718	
12,000.00	6,932.42	6,504.00	6,350.09	86.09	28.05	20.94	-1,308.98	373.34	5,558.15	5,501.07	57.08	97.376	
12,100.00	6,932.10	6,504.00	6,350.09	87.60	28.05	20.94	-1,308.98	373.34	5,657.49	5,600.37	57.13	99.031	
12,200.00	6,931.77	6,504.00	6,350.09	89.12	28.05	20.94	-1,308.98	373.34	5,756.86	5,699.68	57.18	100.684	
12,300.00	6,931.45	6,504.00	6,350.09	90.64	28.05	20.94	-1,308.98	373.34	5,856.24	5,799.02	57.23	102.333	
12,400.00	6,931.13	6,504.00	6,350.09	92.16	28.05	20.94	-1,308.98	373.34	5,955.65	5,898.37	57.28	103.979	
12,500.00	6,930.80	6,504.00	6,350.09	93.69	28.05	20.94	-1,308.98	373.34	6,055.08	5,997.75	57.33	105.621	
12,600.00	6,930.48	6,504.00	6,350.09	95.22	28.05	20.94	-1,308.98	373.34	6,154.52	6,097.14	57.38	107.261	
12,700.00	6,930.16	6,504.00	6,350.09	96.75	28.05	20.94	-1,308.98	373.34	6,253.98	6,196.55	57.43	108.896	
12,800.00	6,929.84	6,504.00	6,350.09	98.28	28.05	20.94	-1,308.98	373.34	6,353.46	6,295.98	57.48	110.529	
12,900.00	6,929.51	6,504.00	6,350.09	99.82	28.05	20.94	-1,308.98	373.34	6,452.96	6,395.42	57.53	112.158	
13,000.00	6,929.19	6,504.00	6,350.09	101.35	28.05	20.94	-1,308.98	373.34	6,552.47	6,494.88	57.59	113.783	
13,100.00	6,928.87	6,504.00	6,350.09	102.89	28.05	20.94	-1,308.98	373.34	6,651.99	6,594.35	57.64	115.404	
13,200.00	6,928.54	6,504.00	6,350.09	104.43	28.05	20.94	-1,308.98	373.34	6,751.53	6,693.84	57.69	117.022	
13,300.00	6,928.22	6,504.00	6,350.09	105.97	28.05	20.94	-1,308.98	373.34	6,851.08	6,793.34	57.75	118.636	
13,400.00	6,927.90	6,504.00	6,350.09	107.52	28.05	20.94	-1,308.98	373.34	6,950.65	6,892.85	57.80	120.246	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 26-Standard Keeper 104, 322-MWD+HRGM+MS, 20962-A026Ua_BLIND — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	6,927.57	6,504.00	6,350.09	109.06	28.05	20.94	-1,308.98	373.34	7,050.23	6,992.37	57.86	121.852	
13,600.00	6,927.25	6,504.00	6,350.09	110.61	28.05	20.94	-1,308.98	373.34	7,149.82	7,091.90	57.91	123.454	
13,700.00	6,926.93	6,504.00	6,350.09	112.16	28.05	20.94	-1,308.98	373.34	7,249.42	7,191.45	57.97	125.052	
13,800.00	6,926.61	6,504.00	6,350.09	113.71	28.05	20.94	-1,308.98	373.34	7,349.03	7,291.00	58.03	126.646	
13,900.00	6,926.28	6,504.00	6,350.09	115.26	28.05	20.94	-1,308.98	373.34	7,448.65	7,390.57	58.09	128.236	
14,000.00	6,925.96	6,504.00	6,350.09	116.82	28.05	20.94	-1,308.98	373.34	7,548.28	7,490.14	58.14	129.822	
14,100.00	6,925.64	6,504.00	6,350.09	118.37	28.05	20.94	-1,308.98	373.34	7,647.93	7,589.72	58.20	131.403	
14,200.00	6,925.31	6,504.00	6,350.09	119.93	28.05	20.94	-1,308.98	373.34	7,747.58	7,689.32	58.26	132.980	
14,300.00	6,924.99	6,504.00	6,350.09	121.48	28.05	20.94	-1,308.98	373.34	7,847.24	7,788.92	58.32	134.553	
14,400.00	6,924.67	6,504.00	6,350.09	123.04	28.05	20.94	-1,308.98	373.34	7,946.90	7,888.52	58.38	136.121	
14,500.00	6,924.34	6,504.00	6,350.09	124.60	28.05	20.94	-1,308.98	373.34	8,046.58	7,988.14	58.44	137.685	
14,600.00	6,924.02	6,504.00	6,350.09	126.16	28.05	20.94	-1,308.98	373.34	8,146.27	8,087.76	58.50	139.245	
14,700.00	6,923.70	6,504.00	6,350.09	127.72	28.05	20.94	-1,308.98	373.34	8,245.96	8,187.39	58.57	140.800	
14,800.00	6,923.38	6,504.00	6,350.09	129.28	28.05	20.94	-1,308.98	373.34	8,345.66	8,287.03	58.63	142.350	
14,900.00	6,923.05	6,504.00	6,350.09	130.85	28.05	20.94	-1,308.98	373.34	8,445.36	8,386.67	58.69	143.896	
15,000.00	6,922.73	6,504.00	6,350.09	132.41	28.05	20.94	-1,308.98	373.34	8,545.08	8,486.32	58.75	145.437	
15,100.00	6,922.41	6,504.00	6,350.09	133.97	28.05	20.94	-1,308.98	373.34	8,644.80	8,585.98	58.82	146.974	
15,200.00	6,922.08	6,504.00	6,350.09	135.54	28.05	20.94	-1,308.98	373.34	8,744.52	8,685.64	58.88	148.506	
15,300.00	6,921.76	6,504.00	6,350.09	137.11	28.05	20.94	-1,308.98	373.34	8,844.26	8,785.31	58.95	150.033	
15,400.00	6,921.44	6,504.00	6,350.09	138.67	28.05	20.94	-1,308.98	373.34	8,944.00	8,884.98	59.01	151.556	
15,500.00	6,921.11	6,504.00	6,350.09	140.24	28.05	20.94	-1,308.98	373.34	9,043.74	8,984.66	59.08	153.074	
15,600.00	6,920.79	6,504.00	6,350.09	141.81	28.05	20.94	-1,308.98	373.34	9,143.49	9,084.34	59.15	154.587	
15,700.00	6,920.47	6,504.00	6,350.09	143.38	28.05	20.94	-1,308.98	373.34	9,243.25	9,184.03	59.22	156.095	
15,800.00	6,920.14	6,504.00	6,350.09	144.95	28.05	20.94	-1,308.98	373.34	9,343.01	9,283.72	59.28	157.598	
15,900.00	6,919.82	6,504.00	6,350.09	146.52	28.05	20.94	-1,308.98	373.34	9,442.77	9,383.42	59.35	159.097	
16,000.00	6,919.50	6,504.00	6,350.09	148.09	28.05	20.94	-1,308.98	373.34	9,542.54	9,483.12	59.42	160.591	
16,100.00	6,919.18	6,504.00	6,350.09	149.66	28.05	20.94	-1,308.98	373.34	9,642.32	9,582.83	59.49	162.079	
16,200.00	6,918.85	6,504.00	6,350.09	151.24	28.05	20.94	-1,308.98	373.34	9,742.10	9,682.54	59.56	163.563	
16,300.00	6,918.53	6,504.00	6,350.09	152.81	28.05	20.94	-1,308.98	373.34	9,841.88	9,782.25	59.63	165.042	
16,400.00	6,918.21	6,504.00	6,350.09	154.38	28.05	20.94	-1,308.98	373.34	9,941.67	9,881.97	59.70	166.516	
16,500.00	6,917.88	6,504.00	6,350.09	155.96	28.05	20.94	-1,308.98	373.34	10,041.46	9,981.69	59.78	167.985	
16,600.00	6,917.56	6,504.00	6,350.09	157.53	28.05	20.94	-1,308.98	373.34	10,141.26	10,081.41	59.85	169.449	
16,700.00	6,917.24	6,504.00	6,350.09	159.11	28.05	20.94	-1,308.98	373.34	10,241.06	10,181.14	59.92	170.908	
16,800.00	6,916.91	6,504.00	6,350.09	160.68	28.05	20.94	-1,308.98	373.34	10,340.87	10,280.87	60.00	172.362	
16,900.00	6,916.59	6,504.00	6,350.09	162.26	28.05	20.94	-1,308.98	373.34	10,440.67	10,380.61	60.07	173.811	
17,000.00	6,916.27	6,504.00	6,350.09	163.84	28.05	20.94	-1,308.98	373.34	10,540.49	10,480.34	60.14	175.255	
17,100.00	6,915.95	6,504.00	6,350.09	165.41	28.05	20.94	-1,308.98	373.34	10,640.30	10,580.08	60.22	176.693	
17,200.00	6,915.62	6,504.00	6,350.09	166.99	28.05	20.94	-1,308.98	373.34	10,740.12	10,679.83	60.29	178.127	
17,300.00	6,915.30	6,504.00	6,350.09	168.57	28.05	20.94	-1,308.98	373.34	10,839.94	10,779.57	60.37	179.556	
17,400.00	6,914.98	6,504.00	6,350.09	170.15	28.05	20.94	-1,308.98	373.34	10,939.77	10,879.32	60.45	180.979	
17,500.00	6,914.65	6,504.00	6,350.09	171.73	28.05	20.94	-1,308.98	373.34	11,039.60	10,979.07	60.52	182.398	
17,600.00	6,914.33	6,504.00	6,350.09	173.31	28.05	20.94	-1,308.98	373.34	11,139.43	11,078.83	60.60	183.811	
17,700.00	6,914.01	6,504.00	6,350.09	174.89	28.05	20.94	-1,308.98	373.34	11,239.27	11,178.59	60.68	185.219	
17,800.00	6,913.68	6,504.00	6,350.09	176.47	28.05	20.94	-1,308.98	373.34	11,339.10	11,278.34	60.76	186.622	
17,900.00	6,913.36	6,504.00	6,350.09	178.05	28.05	20.94	-1,308.98	373.34	11,438.94	11,378.11	60.84	188.020	
18,000.00	6,913.04	6,504.00	6,350.09	179.63	28.05	20.94	-1,308.98	373.34	11,538.79	11,477.87	60.92	189.413	
18,100.00	6,912.72	6,504.00	6,350.09	181.21	28.05	20.94	-1,308.98	373.34	11,638.63	11,577.64	61.00	190.800	
18,111.83	6,912.68	6,504.00	6,350.09	181.40	28.05	20.94	-1,308.98	373.34	11,650.45	11,589.44	61.01	190.964	

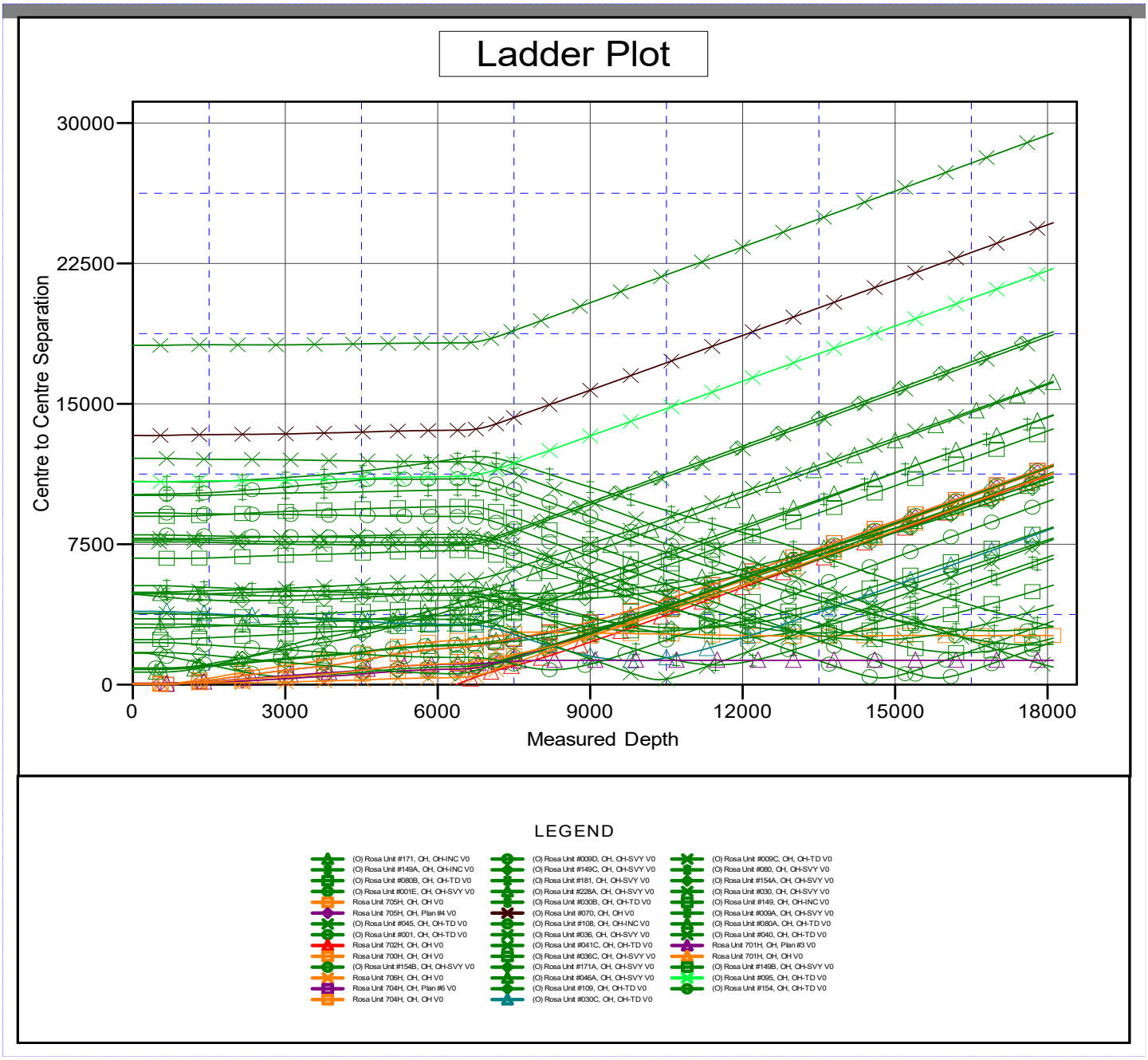
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6295+30 @ 6325.00usft (H&P 530)
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 702H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.26°



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

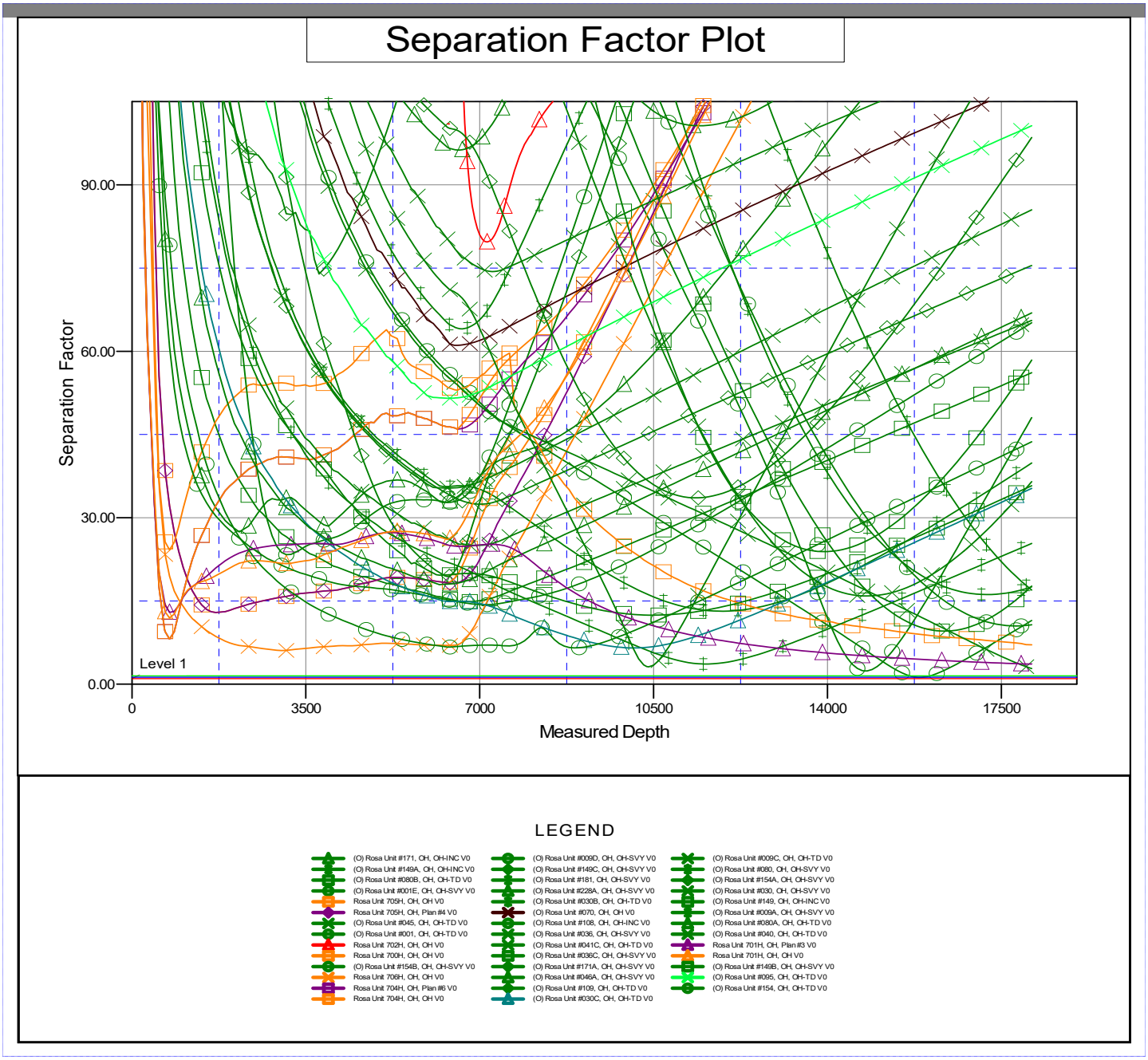
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 702H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 702H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6295+30 @ 6325.00usft (H&P 530)
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 702H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.26°



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 361336

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 361336
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	All original COA's still apply. Additionally, if cement is not circulated to surface during cementing operations, then a CBL is required.	7/8/2024