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

Sundry Print Report

03/13/2024

Well Name: ROSA UNIT	**Well Location:** T31N / R5W / SEC 7 / SWNE /	**County or Parish/State:**
Well Number: 701H	**Type of Well:** CONVENTIONAL GAS WELL	**Allottee or Tribe Name:**
Lease Number: NMSF78767	**Unit or CA Name:** ROSA UNIT	**Unit or CA Number:** NMNM78407E
US Well Number: 3003931440	**Well Status:** Approved Application for Permit to Drill	**Operator:** LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2779138

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 03/11/2024

Time Sundry Submitted: 01:40

Date proposed operation will begin: 04/01/2024

Procedure Description: LOGOS Operating request a change in plans for subject well. See attached C102, Operations and Directional Drilling plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_005_Rosa_Unit_701H_Change_in_Plan_2__20240311_20240311133625.pdf

CONFIDENTIAL

Well Name: ROSA UNIT	**Well Location:** T31N / R5W / SEC 7 / SWNE /	**County or Parish/State:**
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Lease Number: NMSF78767	**Unit or CA Name:** ROSA UNIT	**Unit or CA Number:** NMNM78407E
US Well Number: 3003931440	**Well Status:** Approved Application for Permit to Drill	**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: MAR 11, 2024 01:37 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: 03/12/2024

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 701H

2. Name of Operator: LOGOS OPERATING, LLC

9. API Well No.: 30-039-31440

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 2633' FSL 1337' 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 surface-hole location from 2617' FNL & 1351' FEL to **new surface-hole location 2633' FSL & 1337' FEL**
Original bottom-hole location from 2163' FSL & 1119' FWL to **new bottom-hole location 2384' FSL & 1114' FWL**
Original TD @ 18,060' (MD) 7,157' (TVD) to **new TD @ 17,760' (MD) 6,919' (TVD)**.

Geology tops have been updated per changes.
Original KOP @ 6,563' MD 6,546' TVD to **new KOP @ 6,315' MD 6,309' TVD**
Original Landing point @ 7,566' MD 7,182' TVD to **new Landing point @ 7,310' MD 6,939' TVD**

Original 13.375" Surface casing @ 320' MD to **new 20" Surface casing @ 320' MD**
Original 9,625" casing Intermediate @ 6,409' MD to **new 9.625" Intermediate casing @ 6,244' MD & additional 13.375" casing @ 3,377' MD**
Original 5.5" casing Production casing @ 18,366' MD to **new 5.5" Production casing @ 17,760' MD**

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: 3/11/2024

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: 3/13/2024 7:13:07 AM

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
30-039-31440	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	701H

[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		2633	SOUTH	1337	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
L	11	31N	6W		2384	SOUTH	1114	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 — 3/7/2024 — 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: MARCH 7, 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)
2384' FSL 1114' FWL
SECTION 11, T31N, R6W
LAT 36.913433 °N
LONG -107.436815 °W
DATUM: NAD1927

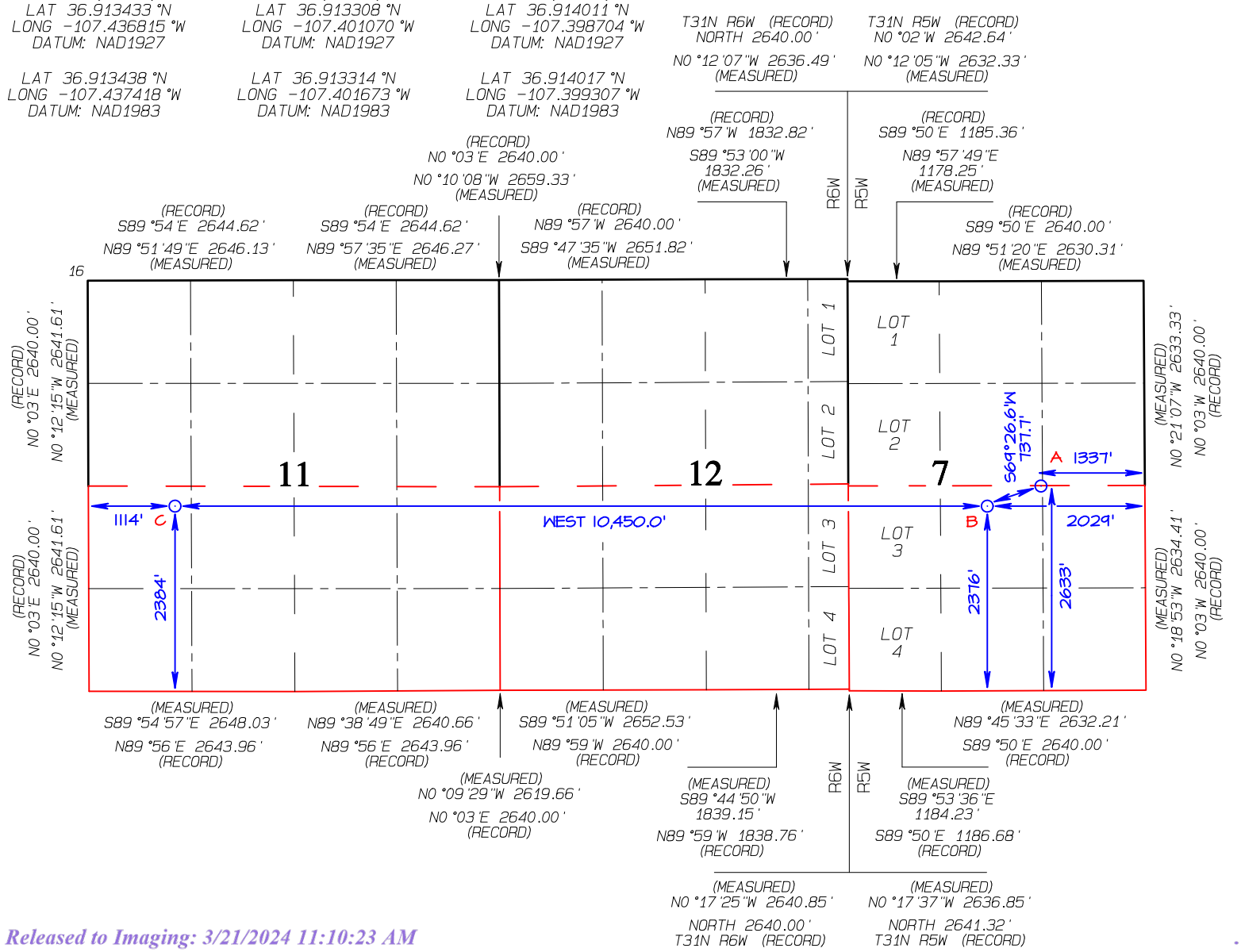
LAT 36.913438 °N
LONG -107.437418 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
2376' FSL 2029' FEL
SECTION 7, T31N, R5W
LAT 36.913308 °N
LONG -107.401070 °W
DATUM: NAD1927

LAT 36.913314 °N
LONG -107.401673 °W
DATUM: NAD1983

SURFACE LOCATION (A)
2633' FSL 1337' FEL
SECTION 7, T31N, R5W
LAT 36.914011 °N
LONG -107.398704 °W
DATUM: NAD1927

LAT 36.914017 °N
LONG -107.399307 °W
DATUM: NAD1983



Released to Imaging: 3/21/2024 11:10:23 AM

LOGOS Operating, LLC
Operations Plan

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

Date:	March 6, 2024	Pool:	Basin Mancos
Well Name:	**Rosa Unit 701H**	GL Elevation:	6,295’
Surface Location:	Sec 7, T31N, R5W 2633’ FSL, 1337’ FEL (36.914017º N, 107.399307º W – NAD83)	KB:	30’
Bottom Hole Location:	Sec 11, T31N, R6W 2384’ FSL,1114’ FWL (36.913438º N, 107.437418º W – NAD83)	Measured Depth:	17,760’ (KB)
Lease Serial CA Serial	**#NMSF078767 #NMNM78407E**	County:	Rio Arriba

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,406'	2,405'	*POINT LOOKOUT	5,625'	5,620'
KIRTLAND	2,520'	2,518'	*MANCOS	6,169'	6,164'
*FRUITLAND	2,889'	2,887'	KICKOFF POINT	6,315'	6,309'
*PICTURED CLIFFS	3,327'	3,325'	LANDING POINT	7,310'	6,939'
LEWIS	3,453'	3,451'	TD	17,760'	6,919'
CHACRA	4,591'	4,587'			
*CLIFF HOUSE	5,358'	5,354'			
MENEFEE	5,408'	5,404'			

* 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, 17-1/2" intermediate 1 and 12-1/4” intermediate hole 2 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:** 6,939' TVD x 0.43 = 2984 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" or 24"	320' or greater	20"	94 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE 1	17.5"	3,377'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE 2	12.25"	6,244'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	17,760'	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 1: 13-3/8" cement guide 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., 2,000ft., 1,500 ft., 1,000 ft, and 500ft.
    - Casing will be kept fluid filled during drilling
3. INTERMEDIATE CASING 2: 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.
4. PRODUCTION CASING: Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at

least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)

1. SURFACE: Casing shall be set at ~ 350' and cemented to surface. TOC at Surface.

Surface - 20"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	350	0.9599	1.3	487	87	1.15	423	15.8
Type III		350	0.9599	1.3	487	87	1.39	350	14.6
			24" hole						
Set Depth	350								

2. INTERMEDIATE 1: Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 1 stage. If cement does not circulate to the surface, a CBL will be run to determine TOC.

Intermediate 1 -13-3/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	2,777	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	350	2,427	0.6947	1.3	2,192	390	1.90	1154	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,124	**556**		**1864**	
Set Depth	3377								
			For Regulatory only						

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

3. INTERMEDIATE 2: Intermediate casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools and optional ICP's above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine TOC.

Intermediate 2 -9-5/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,744	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,666	1,078	0.3132	1.3	439	78	1.90	231	12.4
					659	117		431	
Stage 2 Tail	4,066	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,277	789	0.3132	1.3	321	57	1.90	169	12.4
Stage 2 Lead - Cased	3,177	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					602	107		343	
Int 2 Totals					1,261	225		774	
Contingency									
Stage 3 Tail	3,377	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,877	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,877	0.3490	1	1,004	179	1.90	528	12.4
Contingency Stage 3 Totals					1,209	215		658	

Set Depth 6244

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

4. PRODUCTION: Production casing will be cemented in 1 stage with 100' of cement overlap above intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Tail	6,144	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Tail	6,244	11,516	0.2291	1.15	3,039	541	1.59	1,912	13.2
					3,065	546		1,927	

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 * 6,936' TVD = 1526 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.

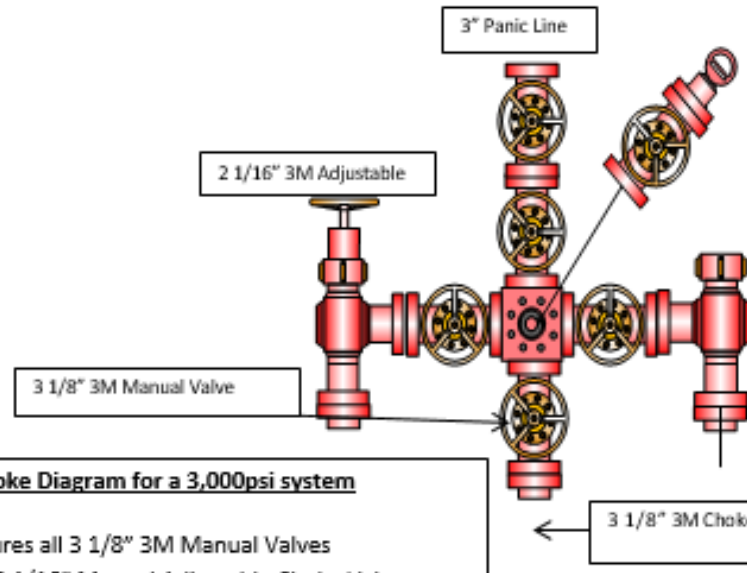
E. PRODUCTION TUBING

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.

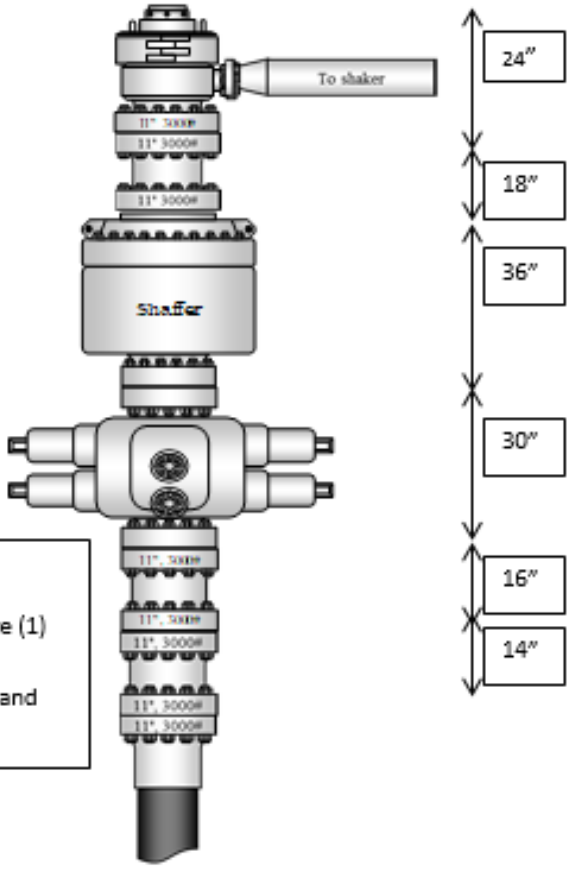
LOGOS RESOURCES II, LLC

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



Choke Diagram for a 3,000psi system

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



11" 3,000psi BOP

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

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 24
Rosa Unit 701H

OH

Plan: Prelim #2

Standard Planning Report

02 March, 2024

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

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 701H

Well Position	**+N/-S**	0.00 usft	**Northing:**	2,152,318.01 usft	**Latitude:**	36.914017
	+E/-W	0.00 usft	**Easting:**	2,849,973.79 usft	**Longitude:**	-107.399307
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)
	IGRF2015	1/29/2024	8.45	63.46	49,468.42729537

Design Prelim #2

Audit Notes:

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

Plan Survey Tool Program **Date** 3/2/2024

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,759.55	Prelim #2 (OH)	MWD+HRGM+MS	
				MWD + HRGM + Multi-Station	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,129.54	2.59	193.11	1,129.49	-2.85	-0.66	2.00	2.00	0.00	193.11	
6,314.74	2.59	193.11	6,309.40	-231.12	-53.84	0.00	0.00	0.00	0.00	
7,309.56	90.11	270.26	6,939.00	-256.04	-691.76	9.00	8.80	7.76	77.16	RU 701H POE
17,759.55	90.11	270.26	6,919.00	-208.45	-11,141.63	0.00	0.00	0.00	0.00	RU 701H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	2.00	193.11	1,099.98	-1.70	-0.40	0.39	2.00	2.00	0.00
1,129.54	2.59	193.11	1,129.49	-2.85	-0.66	0.65	2.00	2.00	0.00
Start 5185.20 hold at 1129.54 MD									
1,200.00	2.59	193.11	1,199.88	-5.95	-1.39	1.36	0.00	0.00	0.00
1,300.00	2.59	193.11	1,299.78	-10.36	-2.41	2.37	0.00	0.00	0.00
1,400.00	2.59	193.11	1,399.68	-14.76	-3.44	3.37	0.00	0.00	0.00
1,500.00	2.59	193.11	1,499.58	-19.16	-4.46	4.38	0.00	0.00	0.00
1,600.00	2.59	193.11	1,599.48	-23.56	-5.49	5.38	0.00	0.00	0.00
1,700.00	2.59	193.11	1,699.37	-27.96	-6.51	6.39	0.00	0.00	0.00
1,800.00	2.59	193.11	1,799.27	-32.37	-7.54	7.39	0.00	0.00	0.00
1,900.00	2.59	193.11	1,899.17	-36.77	-8.56	8.40	0.00	0.00	0.00
2,000.00	2.59	193.11	1,999.07	-41.17	-9.59	9.40	0.00	0.00	0.00
2,100.00	2.59	193.11	2,098.96	-45.57	-10.62	10.41	0.00	0.00	0.00
2,200.00	2.59	193.11	2,198.86	-49.98	-11.64	11.41	0.00	0.00	0.00
2,300.00	2.59	193.11	2,298.76	-54.38	-12.67	12.42	0.00	0.00	0.00
2,400.00	2.59	193.11	2,398.66	-58.78	-13.69	13.43	0.00	0.00	0.00
2,406.35	2.59	193.11	2,405.00	-59.06	-13.76	13.49	0.00	0.00	0.00
Ojo Alamo									
2,500.00	2.59	193.11	2,498.56	-63.18	-14.72	14.43	0.00	0.00	0.00
2,519.46	2.59	193.11	2,518.00	-64.04	-14.92	14.63	0.00	0.00	0.00
Kirtland									
2,600.00	2.59	193.11	2,598.45	-67.59	-15.74	15.44	0.00	0.00	0.00
2,700.00	2.59	193.11	2,698.35	-71.99	-16.77	16.44	0.00	0.00	0.00
2,800.00	2.59	193.11	2,798.25	-76.39	-17.79	17.45	0.00	0.00	0.00
2,888.84	2.59	193.11	2,887.00	-80.30	-18.70	18.34	0.00	0.00	0.00
Fruitland									
2,900.00	2.59	193.11	2,898.15	-80.79	-18.82	18.45	0.00	0.00	0.00
2,984.94	2.59	193.11	2,983.00	-84.53	-19.69	19.31	0.00	0.00	0.00
Top of Coals									
3,000.00	2.59	193.11	2,998.04	-85.19	-19.84	19.46	0.00	0.00	0.00
3,100.00	2.59	193.11	3,097.94	-89.60	-20.87	20.46	0.00	0.00	0.00
3,158.12	2.59	193.11	3,156.00	-92.15	-21.47	21.05	0.00	0.00	0.00
Base of Coals									
3,200.00	2.59	193.11	3,197.84	-94.00	-21.90	21.47	0.00	0.00	0.00
3,300.00	2.59	193.11	3,297.74	-98.40	-22.92	22.47	0.00	0.00	0.00
3,327.29	2.59	193.11	3,325.00	-99.60	-23.20	22.75	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	2.59	193.11	3,397.64	-102.80	-23.95	23.48	0.00	0.00	0.00
3,453.42	2.59	193.11	3,451.00	-105.15	-24.49	24.02	0.00	0.00	0.00
Lewis									
3,500.00	2.59	193.11	3,497.53	-107.21	-24.97	24.49	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,600.00	2.59	193.11	3,597.43	-111.61	-26.00	25.49	0.00	0.00	0.00
3,700.00	2.59	193.11	3,697.33	-116.01	-27.02	26.50	0.00	0.00	0.00
3,800.00	2.59	193.11	3,797.23	-120.41	-28.05	27.50	0.00	0.00	0.00
3,900.00	2.59	193.11	3,897.12	-124.81	-29.07	28.51	0.00	0.00	0.00
4,000.00	2.59	193.11	3,997.02	-129.22	-30.10	29.51	0.00	0.00	0.00
4,100.00	2.59	193.11	4,096.92	-133.62	-31.12	30.52	0.00	0.00	0.00
4,200.00	2.59	193.11	4,196.82	-138.02	-32.15	31.52	0.00	0.00	0.00
4,300.00	2.59	193.11	4,296.72	-142.42	-33.18	32.53	0.00	0.00	0.00
4,400.00	2.59	193.11	4,396.61	-146.83	-34.20	33.53	0.00	0.00	0.00
4,500.00	2.59	193.11	4,496.51	-151.23	-35.23	34.54	0.00	0.00	0.00
4,590.58	2.59	193.11	4,587.00	-155.22	-36.15	35.45	0.00	0.00	0.00
Chacra									
4,600.00	2.59	193.11	4,596.41	-155.63	-36.25	35.54	0.00	0.00	0.00
4,700.00	2.59	193.11	4,696.31	-160.03	-37.28	36.55	0.00	0.00	0.00
4,800.00	2.59	193.11	4,796.20	-164.43	-38.30	37.56	0.00	0.00	0.00
4,900.00	2.59	193.11	4,896.10	-168.84	-39.33	38.56	0.00	0.00	0.00
5,000.00	2.59	193.11	4,996.00	-173.24	-40.35	39.57	0.00	0.00	0.00
5,076.08	2.59	193.11	5,072.00	-176.59	-41.13	40.33	0.00	0.00	0.00
Upper Cliff House									
5,100.00	2.59	193.11	5,095.90	-177.64	-41.38	40.57	0.00	0.00	0.00
5,200.00	2.59	193.11	5,195.80	-182.04	-42.40	41.58	0.00	0.00	0.00
5,300.00	2.59	193.11	5,295.69	-186.45	-43.43	42.58	0.00	0.00	0.00
5,358.37	2.59	193.11	5,354.00	-189.02	-44.03	43.17	0.00	0.00	0.00
Cliff House									
5,400.00	2.59	193.11	5,395.59	-190.85	-44.46	43.59	0.00	0.00	0.00
5,408.42	2.59	193.11	5,404.00	-191.22	-44.54	43.67	0.00	0.00	0.00
Menefee									
5,500.00	2.59	193.11	5,495.49	-195.25	-45.48	44.59	0.00	0.00	0.00
5,600.00	2.59	193.11	5,595.39	-199.65	-46.51	45.60	0.00	0.00	0.00
5,624.64	2.59	193.11	5,620.00	-200.74	-46.76	45.85	0.00	0.00	0.00
Point Lookout									
5,700.00	2.59	193.11	5,695.28	-204.05	-47.53	46.60	0.00	0.00	0.00
5,800.00	2.59	193.11	5,795.18	-208.46	-48.56	47.61	0.00	0.00	0.00
5,900.00	2.59	193.11	5,895.08	-212.86	-49.58	48.62	0.00	0.00	0.00
6,000.00	2.59	193.11	5,994.98	-217.26	-50.61	49.62	0.00	0.00	0.00
6,100.00	2.59	193.11	6,094.88	-221.66	-51.63	50.63	0.00	0.00	0.00
6,169.20	2.59	193.11	6,164.00	-224.71	-52.34	51.32	0.00	0.00	0.00
Mancos									
6,200.00	2.59	193.11	6,194.77	-226.07	-52.66	51.63	0.00	0.00	0.00
6,300.00	2.59	193.11	6,294.67	-230.47	-53.68	52.64	0.00	0.00	0.00
6,314.74	2.59	193.11	6,309.40	-231.12	-53.84	52.79	0.00	0.00	0.00
Start DLS 9.00 TFO 77.16									
6,350.00	4.52	236.34	6,344.59	-232.66	-55.17	54.12	9.00	5.47	122.59
6,400.00	8.63	253.35	6,394.26	-234.83	-60.41	59.34	9.00	8.21	34.02
6,450.00	12.99	259.23	6,443.36	-236.96	-69.53	68.45	9.00	8.74	11.77
6,500.00	17.43	262.18	6,491.60	-239.03	-82.47	81.39	9.00	8.87	5.89
6,550.00	21.89	263.95	6,538.67	-241.03	-99.17	98.07	9.00	8.92	3.55
6,600.00	26.36	265.15	6,584.29	-242.95	-119.51	118.40	9.00	8.95	2.39
6,650.00	30.84	266.02	6,628.18	-244.78	-143.37	142.26	9.00	8.96	1.74
6,700.00	35.33	266.69	6,670.06	-246.51	-170.60	169.48	9.00	8.97	1.34
6,750.00	39.82	267.22	6,709.68	-248.12	-201.04	199.91	9.00	8.98	1.07
6,800.00	44.31	267.67	6,746.79	-249.60	-234.49	233.36	9.00	8.98	0.89
6,818.73	45.99	267.81	6,760.00	-250.13	-247.76	246.62	9.00	8.98	0.79

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

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)
Black Top									
6,850.00	48.80	268.04	6,781.17	-250.96	-270.76	269.62	9.00	8.98	0.73
6,900.00	53.29	268.37	6,812.60	-252.17	-309.61	308.46	9.00	8.99	0.66
6,950.00	57.78	268.66	6,840.88	-253.24	-350.81	349.66	9.00	8.99	0.58
7,000.00	62.28	268.93	6,865.85	-254.14	-394.11	392.95	9.00	8.99	0.53
7,050.00	66.77	269.17	6,887.35	-254.89	-439.23	438.07	9.00	8.99	0.49
7,100.00	71.27	269.40	6,905.25	-255.47	-485.90	484.73	9.00	8.99	0.46
7,150.00	75.76	269.61	6,919.43	-255.88	-533.83	532.66	9.00	8.99	0.43
7,200.00	80.26	269.82	6,929.81	-256.12	-582.72	581.56	9.00	8.99	0.41
7,250.00	84.75	270.02	6,936.33	-256.19	-632.28	631.12	9.00	8.99	0.40
7,300.00	89.25	270.22	6,938.95	-256.08	-682.20	681.03	9.00	8.99	0.40
7,309.56	90.11	270.26	6,939.00	-256.04	-691.76	690.59	9.00	8.99	0.40
Start 10450.00 hold at 7309.56 MD									
7,400.00	90.11	270.26	6,938.83	-255.63	-782.20	781.03	0.00	0.00	0.00
7,500.00	90.11	270.26	6,938.64	-255.17	-882.20	881.03	0.00	0.00	0.00
7,600.00	90.11	270.26	6,938.44	-254.72	-982.20	981.03	0.00	0.00	0.00
7,700.00	90.11	270.26	6,938.25	-254.26	-1,082.20	1,081.03	0.00	0.00	0.00
7,800.00	90.11	270.26	6,938.06	-253.81	-1,182.20	1,181.03	0.00	0.00	0.00
7,900.00	90.11	270.26	6,937.87	-253.35	-1,282.20	1,281.03	0.00	0.00	0.00
8,000.00	90.11	270.26	6,937.68	-252.90	-1,382.19	1,381.03	0.00	0.00	0.00
8,100.00	90.11	270.26	6,937.49	-252.44	-1,482.19	1,481.03	0.00	0.00	0.00
8,200.00	90.11	270.26	6,937.30	-251.98	-1,582.19	1,581.03	0.00	0.00	0.00
8,300.00	90.11	270.26	6,937.10	-251.53	-1,682.19	1,681.03	0.00	0.00	0.00
8,400.00	90.11	270.26	6,936.91	-251.07	-1,782.19	1,781.03	0.00	0.00	0.00
8,500.00	90.11	270.26	6,936.72	-250.62	-1,882.19	1,881.03	0.00	0.00	0.00
8,600.00	90.11	270.26	6,936.53	-250.16	-1,982.19	1,981.03	0.00	0.00	0.00
8,700.00	90.11	270.26	6,936.34	-249.71	-2,082.19	2,081.03	0.00	0.00	0.00
8,800.00	90.11	270.26	6,936.15	-249.25	-2,182.18	2,181.03	0.00	0.00	0.00
8,900.00	90.11	270.26	6,935.96	-248.80	-2,282.18	2,281.03	0.00	0.00	0.00
9,000.00	90.11	270.26	6,935.76	-248.34	-2,382.18	2,381.03	0.00	0.00	0.00
9,100.00	90.11	270.26	6,935.57	-247.89	-2,482.18	2,481.03	0.00	0.00	0.00
9,200.00	90.11	270.26	6,935.38	-247.43	-2,582.18	2,581.03	0.00	0.00	0.00
9,300.00	90.11	270.26	6,935.19	-246.98	-2,682.18	2,681.03	0.00	0.00	0.00
9,400.00	90.11	270.26	6,935.00	-246.52	-2,782.18	2,781.03	0.00	0.00	0.00
9,500.00	90.11	270.26	6,934.81	-246.06	-2,882.18	2,881.03	0.00	0.00	0.00
9,600.00	90.11	270.26	6,934.62	-245.61	-2,982.18	2,981.03	0.00	0.00	0.00
9,700.00	90.11	270.26	6,934.43	-245.15	-3,082.17	3,081.03	0.00	0.00	0.00
9,800.00	90.11	270.26	6,934.23	-244.70	-3,182.17	3,181.03	0.00	0.00	0.00
9,900.00	90.11	270.26	6,934.04	-244.24	-3,282.17	3,281.03	0.00	0.00	0.00
10,000.00	90.11	270.26	6,933.85	-243.79	-3,382.17	3,381.03	0.00	0.00	0.00
10,100.00	90.11	270.26	6,933.66	-243.33	-3,482.17	3,481.03	0.00	0.00	0.00
10,200.00	90.11	270.26	6,933.47	-242.88	-3,582.17	3,581.03	0.00	0.00	0.00
10,300.00	90.11	270.26	6,933.28	-242.42	-3,682.17	3,681.03	0.00	0.00	0.00
10,400.00	90.11	270.26	6,933.09	-241.97	-3,782.17	3,781.03	0.00	0.00	0.00
10,500.00	90.11	270.26	6,932.89	-241.51	-3,882.16	3,881.03	0.00	0.00	0.00
10,600.00	90.11	270.26	6,932.70	-241.06	-3,982.16	3,981.03	0.00	0.00	0.00
10,700.00	90.11	270.26	6,932.51	-240.60	-4,082.16	4,081.03	0.00	0.00	0.00
10,800.00	90.11	270.26	6,932.32	-240.14	-4,182.16	4,181.03	0.00	0.00	0.00
10,900.00	90.11	270.26	6,932.13	-239.69	-4,282.16	4,281.03	0.00	0.00	0.00
11,000.00	90.11	270.26	6,931.94	-239.23	-4,382.16	4,381.03	0.00	0.00	0.00
11,100.00	90.11	270.26	6,931.75	-238.78	-4,482.16	4,481.03	0.00	0.00	0.00
11,200.00	90.11	270.26	6,931.55	-238.32	-4,582.16	4,581.03	0.00	0.00	0.00
11,300.00	90.11	270.26	6,931.36	-237.87	-4,682.15	4,681.03	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,400.00	90.11	270.26	6,931.17	-237.41	-4,782.15	4,781.03	0.00	0.00	0.00
11,500.00	90.11	270.26	6,930.98	-236.96	-4,882.15	4,881.03	0.00	0.00	0.00
11,600.00	90.11	270.26	6,930.79	-236.50	-4,982.15	4,981.03	0.00	0.00	0.00
11,700.00	90.11	270.26	6,930.60	-236.05	-5,082.15	5,081.03	0.00	0.00	0.00
11,800.00	90.11	270.26	6,930.41	-235.59	-5,182.15	5,181.03	0.00	0.00	0.00
11,900.00	90.11	270.26	6,930.21	-235.13	-5,282.15	5,281.03	0.00	0.00	0.00
12,000.00	90.11	270.26	6,930.02	-234.68	-5,382.15	5,381.03	0.00	0.00	0.00
12,100.00	90.11	270.26	6,929.83	-234.22	-5,482.14	5,481.03	0.00	0.00	0.00
12,200.00	90.11	270.26	6,929.64	-233.77	-5,582.14	5,581.03	0.00	0.00	0.00
12,300.00	90.11	270.26	6,929.45	-233.31	-5,682.14	5,681.03	0.00	0.00	0.00
12,400.00	90.11	270.26	6,929.26	-232.86	-5,782.14	5,781.02	0.00	0.00	0.00
12,500.00	90.11	270.26	6,929.07	-232.40	-5,882.14	5,881.02	0.00	0.00	0.00
12,600.00	90.11	270.26	6,928.88	-231.95	-5,982.14	5,981.02	0.00	0.00	0.00
12,700.00	90.11	270.26	6,928.68	-231.49	-6,082.14	6,081.02	0.00	0.00	0.00
12,800.00	90.11	270.26	6,928.49	-231.04	-6,182.14	6,181.02	0.00	0.00	0.00
12,900.00	90.11	270.26	6,928.30	-230.58	-6,282.13	6,281.02	0.00	0.00	0.00
13,000.00	90.11	270.26	6,928.11	-230.13	-6,382.13	6,381.02	0.00	0.00	0.00
13,100.00	90.11	270.26	6,927.92	-229.67	-6,482.13	6,481.02	0.00	0.00	0.00
13,200.00	90.11	270.26	6,927.73	-229.21	-6,582.13	6,581.02	0.00	0.00	0.00
13,300.00	90.11	270.26	6,927.54	-228.76	-6,682.13	6,681.02	0.00	0.00	0.00
13,400.00	90.11	270.26	6,927.34	-228.30	-6,782.13	6,781.02	0.00	0.00	0.00
13,500.00	90.11	270.26	6,927.15	-227.85	-6,882.13	6,881.02	0.00	0.00	0.00
13,600.00	90.11	270.26	6,926.96	-227.39	-6,982.13	6,981.02	0.00	0.00	0.00
13,700.00	90.11	270.26	6,926.77	-226.94	-7,082.13	7,081.02	0.00	0.00	0.00
13,800.00	90.11	270.26	6,926.58	-226.48	-7,182.12	7,181.02	0.00	0.00	0.00
13,900.00	90.11	270.26	6,926.39	-226.03	-7,282.12	7,281.02	0.00	0.00	0.00
14,000.00	90.11	270.26	6,926.20	-225.57	-7,382.12	7,381.02	0.00	0.00	0.00
14,100.00	90.11	270.26	6,926.00	-225.12	-7,482.12	7,481.02	0.00	0.00	0.00
14,200.00	90.11	270.26	6,925.81	-224.66	-7,582.12	7,581.02	0.00	0.00	0.00
14,300.00	90.11	270.26	6,925.62	-224.21	-7,682.12	7,681.02	0.00	0.00	0.00
14,400.00	90.11	270.26	6,925.43	-223.75	-7,782.12	7,781.02	0.00	0.00	0.00
14,500.00	90.11	270.26	6,925.24	-223.29	-7,882.12	7,881.02	0.00	0.00	0.00
14,600.00	90.11	270.26	6,925.05	-222.84	-7,982.11	7,981.02	0.00	0.00	0.00
14,700.00	90.11	270.26	6,924.86	-222.38	-8,082.11	8,081.02	0.00	0.00	0.00
14,800.00	90.11	270.26	6,924.66	-221.93	-8,182.11	8,181.02	0.00	0.00	0.00
14,900.00	90.11	270.26	6,924.47	-221.47	-8,282.11	8,281.02	0.00	0.00	0.00
15,000.00	90.11	270.26	6,924.28	-221.02	-8,382.11	8,381.02	0.00	0.00	0.00
15,100.00	90.11	270.26	6,924.09	-220.56	-8,482.11	8,481.02	0.00	0.00	0.00
15,200.00	90.11	270.26	6,923.90	-220.11	-8,582.11	8,581.02	0.00	0.00	0.00
15,300.00	90.11	270.26	6,923.71	-219.65	-8,682.11	8,681.02	0.00	0.00	0.00
15,400.00	90.11	270.26	6,923.52	-219.20	-8,782.10	8,781.02	0.00	0.00	0.00
15,500.00	90.11	270.26	6,923.33	-218.74	-8,882.10	8,881.02	0.00	0.00	0.00
15,600.00	90.11	270.26	6,923.13	-218.28	-8,982.10	8,981.02	0.00	0.00	0.00
15,700.00	90.11	270.26	6,922.94	-217.83	-9,082.10	9,081.02	0.00	0.00	0.00
15,800.00	90.11	270.26	6,922.75	-217.37	-9,182.10	9,181.02	0.00	0.00	0.00
15,900.00	90.11	270.26	6,922.56	-216.92	-9,282.10	9,281.02	0.00	0.00	0.00
16,000.00	90.11	270.26	6,922.37	-216.46	-9,382.10	9,381.02	0.00	0.00	0.00
16,100.00	90.11	270.26	6,922.18	-216.01	-9,482.10	9,481.02	0.00	0.00	0.00
16,200.00	90.11	270.26	6,921.99	-215.55	-9,582.09	9,581.02	0.00	0.00	0.00
16,300.00	90.11	270.26	6,921.79	-215.10	-9,682.09	9,681.02	0.00	0.00	0.00
16,400.00	90.11	270.26	6,921.60	-214.64	-9,782.09	9,781.02	0.00	0.00	0.00
16,500.00	90.11	270.26	6,921.41	-214.19	-9,882.09	9,881.02	0.00	0.00	0.00
16,600.00	90.11	270.26	6,921.22	-213.73	-9,982.09	9,981.02	0.00	0.00	0.00
16,700.00	90.11	270.26	6,921.03	-213.28	-10,082.09	10,081.02	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,800.00	90.11	270.26	6,920.84	-212.82	-10,182.09	10,181.02	0.00	0.00	0.00
16,900.00	90.11	270.26	6,920.65	-212.36	-10,282.09	10,281.02	0.00	0.00	0.00
17,000.00	90.11	270.26	6,920.45	-211.91	-10,382.09	10,381.02	0.00	0.00	0.00
17,100.00	90.11	270.26	6,920.26	-211.45	-10,482.08	10,481.02	0.00	0.00	0.00
17,200.00	90.11	270.26	6,920.07	-211.00	-10,582.08	10,581.02	0.00	0.00	0.00
17,300.00	90.11	270.26	6,919.88	-210.54	-10,682.08	10,681.02	0.00	0.00	0.00
17,400.00	90.11	270.26	6,919.69	-210.09	-10,782.08	10,781.02	0.00	0.00	0.00
17,500.00	90.11	270.26	6,919.50	-209.63	-10,882.08	10,881.02	0.00	0.00	0.00
17,600.00	90.11	270.26	6,919.31	-209.18	-10,982.08	10,981.02	0.00	0.00	0.00
17,700.00	90.11	270.26	6,919.11	-208.72	-11,082.08	11,081.02	0.00	0.00	0.00
17,759.55	90.11	270.26	6,919.00	-208.45	-11,141.63	11,140.57	0.00	0.00	0.00
TD at 17759.55									

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 701H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,152,318.01	2,849,973.79	36.914017	-107.399307
RU 701H PBHL - plan hits target center - Point	0.00	0.00	6,919.00	-208.45	-11,141.63	2,152,058.87	2,838,833.23	36.913438	-107.437419
RU 701H POE - plan hits target center - Point	0.00	0.00	6,939.00	-256.04	-691.76	2,152,058.83	2,849,283.21	36.913314	-107.401674

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,406.35	2,405.00	Ojo Alamo		0.00	
2,519.46	2,518.00	Kirtland		0.00	
2,888.84	2,887.00	Fruitland		0.00	
2,984.94	2,983.00	Top of Coals		0.00	
3,158.12	3,156.00	Base of Coals		0.00	
3,327.29	3,325.00	Pictured Cliffs		0.00	
3,453.42	3,451.00	Lewis		0.00	
4,590.58	4,587.00	Chacra		0.00	
5,076.08	5,072.00	Upper Cliff House		0.00	
5,358.37	5,354.00	Cliff House		0.00	
5,408.42	5,404.00	Menefee		0.00	
5,624.64	5,620.00	Point Lookout		0.00	
6,169.20	6,164.00	Mancos		0.00	
6,818.73	6,760.00	Black Top		0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Plan Annotations

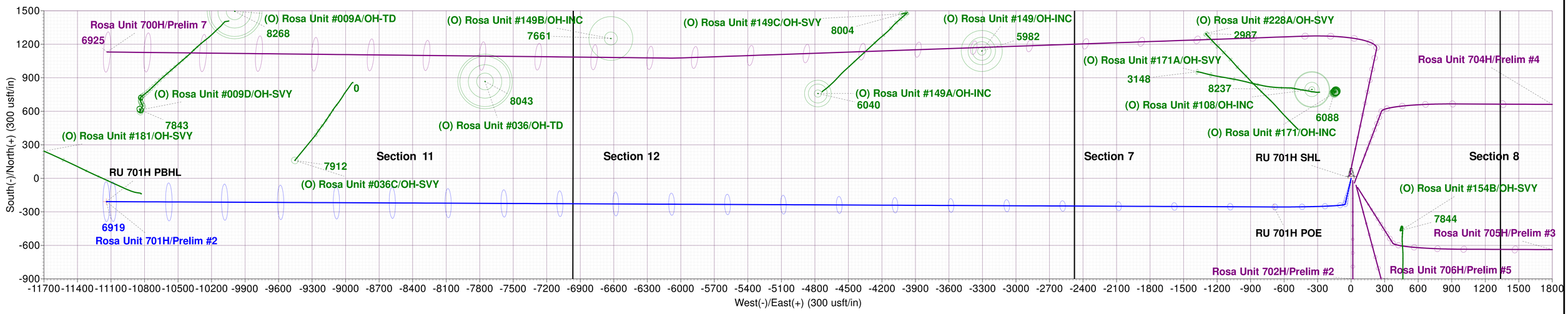
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,000.00	1,000.00	0.00	0.00	Start Build 2.00
1,129.54	1,129.49	-2.85	-0.66	Start 5185.20 hold at 1129.54 MD
6,314.74	6,309.40	-231.12	-53.84	Start DLS 9.00 TFO 77.16
7,309.56	6,939.00	-256.04	-691.76	Start 10450.00 hold at 7309.56 MD
17,759.55	6,919.00	-208.45	-11,141.63	TD at 17759.55

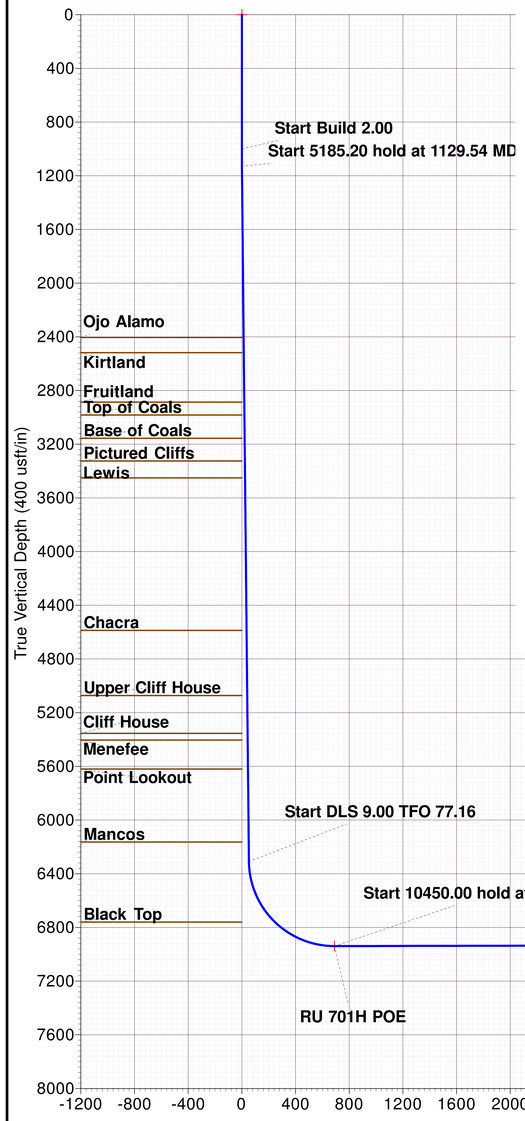
Received by OCD: 3/13/2024 7:13:07 AM

LOGOS ENERGY

County: Rio Arriba, NM (NAD83)
Site: Rosa Unit 24
Well: Rosa Unit 701H
Depth Reference: 6295+30 @ 6325.00usft (H&P 530)
Rig: H&P 530
Plan: Prelim #2
Job #: Permit

SCOUT DRILLING TECHNOLOGIES



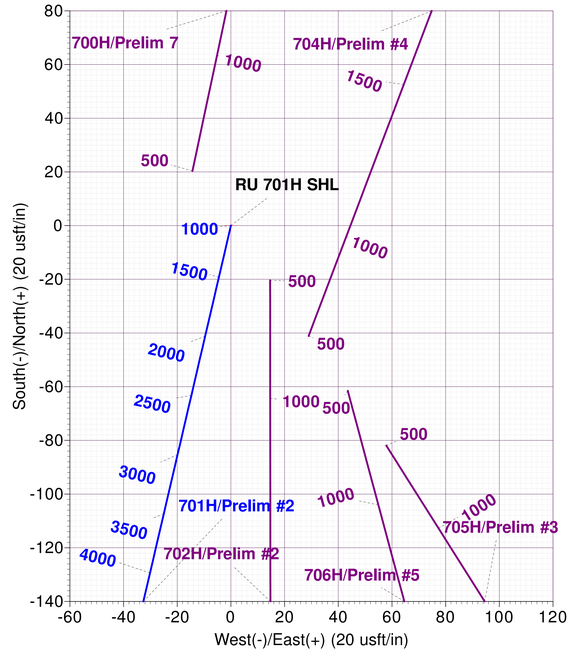


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
3	1129.54	2.59	193.11	1129.49	-2.85	-0.66	2.00	193.11	0.65	Start 5185.20 hold at 1129.54 MD
4	6314.74	2.59	193.11	6309.40	-231.12	-53.84	0.00	0.00	52.79	Start DLS 9.00 TFO 77.16
5	7309.56	90.11	270.26	6939.00	-256.04	-691.76	9.00	77.16	690.59	Start 10450.00 hold at 7309.56 MD
6	17759.55	90.11	270.26	6919.00	-208.45	-11141.63	0.00	0.00	11140.57	TD at 17759.55

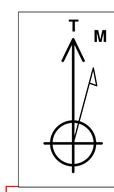
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
RU 701H SHL	0.00	0.00	0.00	2152318.02	2849973.79	36.914017	-107.399307
RU 701H PBHL	6919.00	-208.45	-11141.63	2152058.87	2838833.22	36.913438	-107.437418
RU 701H POE	6939.00	-256.04	-691.76	2152058.83	2849283.20	36.913314	-107.401673



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2405.00	2406.35	Ojo Alamo
2518.00	2519.46	Kirtland
2887.00	2888.84	Fruitland
2983.00	2984.94	Top of Coals
3156.00	3158.12	Base of Coals
3325.00	3327.29	Pictured Cliffs
3451.00	3453.42	Lewis
4587.00	4590.58	Chacra
5072.00	5076.08	Upper Cliff House
5354.00	5358.37	Cliff House
5404.00	5408.42	Menefee
5620.00	5624.64	Point Lookout
6164.00	6169.20	Mancos
6760.00	6818.73	Black Top



Azimuths to True North
Magnetic North: 8.45°

Magnetic Field
Strength: 49468.4nT
Dip Angle: 63.46°
Date: 1/29/2024
Model: IGRF2015

TOTAL CORRECTION: 8.45°

Released to Imaging: 3/13/2024 11:18:23 AM

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 24
Rosa Unit 701H

OH
Prelim #2

Anticollision Report

02 March, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Reference	Prelim #2		
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 100,000.00usft or Max. SF of 100,000	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 3/2/2024

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,759.55	Prelim #2 (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 #001E - OH - OH-SVY	14,482.99	6,883.60	1,658.46	1,507.09	10.956	CC
(O) Rosa Unit #001E - OH - OH-SVY	14,500.00	6,883.93	1,658.55	1,506.89	10.936	ES
(O) Rosa Unit #001E - OH - OH-SVY	14,700.00	6,887.88	1,672.59	1,518.49	10.854	SF
(O) Rosa Unit #009A - OH - OH-TD	16,618.83	6,860.19	1,710.25	1,343.46	4.663	CC, ES
(O) Rosa Unit #009A - OH - OH-TD	16,700.00	6,860.01	1,712.17	1,344.41	4.656	SF
(O) Rosa Unit #009C - OH - OH-TD	17,759.55	6,955.29	2,129.04	1,752.72	5.658	CC, ES, SF
(O) Rosa Unit #009D - OH - OH-SVY	17,463.18	7,273.31	828.65	626.07	4.090	CC, ES, SF
(O) Rosa Unit #030 - OH - OH-SVY	10,110.32	7,069.94	1,565.48	1,480.67	18.459	CC, ES
(O) Rosa Unit #030 - OH - OH-SVY	10,400.00	7,073.94	1,592.05	1,503.40	17.960	SF
(O) Rosa Unit #030B - OH - OH-TD	11,216.23	7,096.58	2,353.62	2,064.24	8.133	CC, ES
(O) Rosa Unit #030B - OH - OH-TD	11,500.00	7,096.04	2,370.66	2,077.18	8.078	SF
(O) Rosa Unit #030C - OH - OH-TD	9,596.16	6,317.00	2,426.39	2,196.77	10.567	CC
(O) Rosa Unit #030C - OH - OH-TD	9,600.00	6,317.00	2,426.39	2,196.71	10.564	ES
(O) Rosa Unit #030C - OH - OH-TD	9,900.00	6,317.00	2,445.34	2,211.43	10.454	SF
(O) Rosa Unit #036 - OH - OH-TD	14,375.22	7,029.54	1,091.08	754.65	3.243	CC
(O) Rosa Unit #036 - OH - OH-TD	14,400.00	7,029.49	1,091.36	754.63	3.241	ES, SF
--(O) Rosa Unit #036B - OH - OH-TD	15,826.82	6,100.00	1,297.10	1,036.35	4.975	CC, ES
--(O) Rosa Unit #036B - OH - OH-TD	15,900.00	6,100.00	1,299.16	1,037.35	4.962	SF
(O) Rosa Unit #036C - OH - OH-SVY	16,048.70	7,095.37	408.37	230.11	2.291	CC, ES, SF
(O) Rosa Unit #040 - OH - OH-TD	511.40	1,016.20	18,142.97	18,110.80	563.871	CC
(O) Rosa Unit #040 - OH - OH-TD	6,314.74	6,805.53	18,209.71	17,983.32	80.436	ES
(O) Rosa Unit #040 - OH - OH-TD	7,100.00	7,410.20	18,642.41	18,395.94	75.640	SF
(O) Rosa Unit #041C - OH - OH-TD	1,000.00	1,023.41	4,946.99	4,912.84	144.890	CC
(O) Rosa Unit #041C - OH - OH-TD	6,314.74	6,350.01	5,085.05	4,872.37	23.910	ES
(O) Rosa Unit #041C - OH - OH-TD	6,750.00	6,736.44	5,226.37	5,000.76	23.165	SF
(O) Rosa Unit #045 - OH - OH-TD	3,040.39	3,270.53	7,638.35	7,529.73	70.326	CC
(O) Rosa Unit #045 - OH - OH-TD	5,900.00	6,117.00	7,640.04	7,435.77	37.403	ES
(O) Rosa Unit #045 - OH - OH-TD	6,314.74	6,117.00	7,652.41	7,446.95	37.246	SF
(O) Rosa Unit #046A - OH - OH-SVY	724.32	591.00	4,894.03	4,890.56	1,409.037	CC
(O) Rosa Unit #046A - OH - OH-SVY	1,400.00	1,198.29	4,894.78	4,886.25	574.089	ES
(O) Rosa Unit #046A - OH - OH-SVY	6,600.00	6,455.64	5,186.99	5,138.59	107.178	SF
(O) Rosa Unit #070 - OH - OH	800.00	1,034.11	13,324.25	13,290.50	394.830	CC
(O) Rosa Unit #070 - OH - OH	6,300.00	6,537.20	13,414.68	13,196.40	61.457	ES, SF
(O) Rosa Unit #080 - OH - OH-TD	6,316.33	6,250.41	3,243.95	3,034.18	15.464	CC
(O) Rosa Unit #080 - OH - OH-TD	6,350.00	6,282.38	3,244.91	3,034.05	15.389	ES
(O) Rosa Unit #080 - OH - OH-TD	6,600.00	6,524.05	3,305.78	3,086.81	15.097	SF
(O) Rosa Unit #080A - OH - OH-TD	700.00	658.10	3,051.03	3,028.91	137.922	CC

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 #080A - OH - OH-TD	6,000.00	5,975.41	3,175.50	2,975.18	15.852	ES
(O) Rosa Unit #080A - OH - OH-TD	6,100.00	6,011.00	3,178.24	2,976.52	15.756	SF
(O) Rosa Unit #080B - OH - OH-TD	700.00	673.10	2,418.67	2,396.10	107.159	CC
(O) Rosa Unit #080B - OH - OH-TD	6,200.00	6,171.23	2,572.11	2,365.23	12.433	ES
(O) Rosa Unit #080B - OH - OH-TD	6,500.00	6,490.24	2,604.58	2,387.09	11.976	SF
(O) Rosa Unit #095 - OH - OH-TD	515.00	1,025.44	10,852.61	10,820.14	334.285	CC
(O) Rosa Unit #095 - OH - OH-TD	5,800.00	6,279.63	10,931.62	10,722.87	52.368	ES
(O) Rosa Unit #095 - OH - OH-TD	6,350.00	6,300.00	10,954.78	10,743.68	51.894	SF
(O) Rosa Unit #108 - OH - OH-INC	1,000.00	950.06	869.65	847.88	39.960	CC
(O) Rosa Unit #108 - OH - OH-INC	1,100.00	1,050.04	871.04	847.03	36.283	ES
(O) Rosa Unit #108 - OH - OH-INC	7,050.00	6,837.80	1,054.05	896.44	6.688	SF
(O) Rosa Unit #109 - OH - OH-TD	454.75	749.85	7,745.50	7,721.51	322.843	CC
(O) Rosa Unit #109 - OH - OH-TD	6,350.00	6,643.35	7,760.40	7,538.73	35.009	ES
(O) Rosa Unit #109 - OH - OH-TD	6,850.00	7,080.23	7,970.66	7,734.33	33.727	SF
(O) Rosa Unit #149 - OH - OH-INC	9,932.35	5,949.00	1,679.54	1,478.29	8.346	CC, ES
(O) Rosa Unit #149 - OH - OH-INC	10,100.00	5,949.00	1,687.88	1,484.61	8.304	SF
(O) Rosa Unit #149A - OH - OH-INC	11,397.53	6,000.00	1,336.71	1,182.87	8.689	CC
(O) Rosa Unit #149A - OH - OH-INC	11,400.00	6,000.00	1,336.71	1,182.85	8.688	ES
(O) Rosa Unit #149A - OH - OH-INC	11,500.00	6,000.00	1,340.63	1,185.69	8.653	SF
(O) Rosa Unit #149B - OH - OH-INC	13,250.53	7,025.20	1,480.73	1,198.15	5.240	CC, ES
(O) Rosa Unit #149B - OH - OH-INC	13,300.00	7,025.11	1,481.56	1,198.35	5.231	SF
(O) Rosa Unit #149C - OH - OH-SVY	10,631.52	7,111.75	1,716.52	1,628.25	19.447	CC, ES
(O) Rosa Unit #149C - OH - OH-SVY	10,800.00	7,113.81	1,724.77	1,635.26	19.269	SF
(O) Rosa Unit #154 - OH - OH-TD	7,994.34	6,341.00	1,710.48	1,509.73	8.521	CC
(O) Rosa Unit #154 - OH - OH-TD	8,000.00	6,341.00	1,710.49	1,509.68	8.518	ES
(O) Rosa Unit #154 - OH - OH-TD	8,200.00	6,341.00	1,722.80	1,519.60	8.478	SF
(O) Rosa Unit #154A - OH - OH-SVY	6,162.49	6,125.00	1,568.57	1,542.33	59.769	CC, ES
(O) Rosa Unit #154A - OH - OH-SVY	6,400.00	6,125.00	1,588.15	1,561.07	58.631	SF
(O) Rosa Unit #154B - OH - OH-SVY	6,317.21	6,604.17	550.05	520.02	18.311	CC, ES
(O) Rosa Unit #154B - OH - OH-SVY	6,350.00	6,638.25	550.80	520.63	18.255	SF
(O) Rosa Unit #171 - OH - OH-INC	1,020.08	965.17	791.18	772.96	43.414	CC
(O) Rosa Unit #171 - OH - OH-INC	1,100.00	1,045.72	792.17	772.37	40.015	ES
(O) Rosa Unit #171 - OH - OH-INC	6,100.00	6,028.00	990.42	927.48	15.735	SF
(O) Rosa Unit #171A - OH - OH-SVY	100.00	38.48	806.95	806.62	2,437.326	CC, ES
(O) Rosa Unit #171A - OH - OH-SVY	3,600.00	3,343.68	1,780.22	1,753.44	66.489	SF
(O) Rosa Unit #181 - OH - OH-SVY	17,759.55	6,896.00	2,333.40	2,215.41	19.776	CC, ES, SF
(O) Rosa Unit #228A - OH - OH-SVY	457.05	395.06	644.69	642.68	320.722	CC, ES
(O) Rosa Unit #228A - OH - OH-SVY	3,500.00	3,253.00	1,965.07	1,943.08	89.358	SF
Rosa Unit 700H - OH - Prelim 7	500.00	500.00	24.92	21.55	7.395	CC, ES
Rosa Unit 700H - OH - Prelim 7	17,759.55	18,151.86	1,339.11	978.86	3.717	SF
Rosa Unit 702H - OH - Prelim #2	500.00	500.00	25.09	21.72	7.445	CC, ES
Rosa Unit 702H - OH - Prelim #2	17,759.55	18,023.72	1,298.11	938.67	3.611	SF
Rosa Unit 704H - OH - Prelim #4	905.91	907.19	41.63	35.34	6.618	CC, ES
Rosa Unit 704H - OH - Prelim #4	1,000.00	1,000.60	43.14	36.17	6.189	SF
Rosa Unit 705H - OH - Prelim #3	500.00	500.00	100.30	96.93	29.767	CC, ES
Rosa Unit 705H - OH - Prelim #3	6,314.74	6,285.95	544.73	499.59	12.068	SF
Rosa Unit 706H - OH - Prelim #5	500.00	500.00	75.39	72.02	22.372	CC, ES
Rosa Unit 706H - OH - Prelim #5	800.00	791.76	89.88	84.46	16.576	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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	17.15	17.15	0.00	0.03	-102.77	-1,767.56	-7,797.84	7,995.66				
100.00	100.00	105.94	105.94	0.25	0.28	-102.77	-1,767.65	-7,797.95	7,995.80	7,995.26	0.53	N/A	
200.00	200.00	206.52	206.51	0.61	0.64	-102.77	-1,767.94	-7,798.03	7,995.94	7,994.70	1.24	6,425.871	
300.00	300.00	297.16	297.16	0.97	0.95	-102.78	-1,768.32	-7,798.13	7,996.14	7,994.22	1.92	4,165.631	
400.00	400.00	376.93	376.93	1.33	1.23	-102.78	-1,768.73	-7,798.36	7,996.54	7,993.99	2.56	3,127.221	
500.00	500.00	479.36	479.36	1.68	1.59	-102.78	-1,769.08	-7,798.80	7,997.04	7,993.76	3.27	2,442.375	
600.00	600.00	631.52	631.51	2.04	2.12	-102.78	-1,769.32	-7,799.04	7,997.23	7,993.07	4.16	1,920.503	
700.00	700.00	742.10	742.09	2.40	2.51	-102.79	-1,769.68	-7,798.68	7,996.98	7,992.07	4.91	1,629.660	
800.00	800.00	843.21	843.20	2.76	2.86	-102.79	-1,769.73	-7,798.42	7,996.74	7,991.12	5.62	1,423.580	
900.00	900.00	948.90	948.89	3.12	3.23	-102.78	-1,769.48	-7,798.13	7,996.42	7,990.07	6.34	1,260.458	
1,000.00	1,000.00	1,075.00	1,074.99	3.48	3.67	-102.78	-1,769.08	-7,797.44	7,995.79	7,988.65	7.14	1,119.500	
1,100.00	1,099.98	1,170.56	1,170.55	3.82	4.00	64.14	-1,768.84	-7,796.78	7,994.31	7,986.49	7.82	1,022.752	
1,129.54	1,129.49	1,204.81	1,204.79	3.92	4.12	64.16	-1,768.77	-7,796.56	7,993.60	7,985.56	8.03	995.176	
1,200.00	1,199.88	1,270.96	1,270.95	4.15	4.35	64.18	-1,768.62	-7,796.14	7,991.73	7,983.24	8.49	940.798	
1,300.00	1,299.78	1,375.00	1,374.98	4.48	4.71	64.22	-1,768.08	-7,795.49	7,989.03	7,979.84	9.19	869.233	
1,400.00	1,399.68	1,468.20	1,468.18	4.82	5.04	64.25	-1,767.43	-7,795.06	7,986.46	7,976.61	9.85	810.492	
1,500.00	1,499.58	1,557.43	1,557.41	5.16	5.35	64.28	-1,766.68	-7,794.70	7,983.93	7,973.42	10.51	759.900	
1,600.00	1,599.48	1,680.65	1,680.62	5.50	5.78	64.32	-1,765.84	-7,794.17	7,981.41	7,970.13	11.28	707.516	
1,700.00	1,699.37	1,808.63	1,808.59	5.85	6.23	64.36	-1,764.62	-7,793.15	7,978.45	7,966.38	12.07	660.779	
1,800.00	1,799.27	1,888.18	1,888.13	6.20	6.51	64.39	-1,763.41	-7,792.55	7,975.44	7,962.74	12.70	627.942	
1,900.00	1,899.17	1,961.41	1,961.34	6.55	6.76	64.43	-1,762.02	-7,792.34	7,972.79	7,959.49	13.31	599.139	
2,000.00	1,999.07	2,034.06	2,033.98	6.90	7.02	64.46	-1,760.49	-7,792.44	7,970.51	7,956.60	13.91	572.904	
2,100.00	2,098.96	2,146.48	2,146.38	7.25	7.41	64.51	-1,758.45	-7,792.67	7,968.38	7,953.72	14.66	543.635	
2,200.00	2,198.86	2,254.12	2,254.00	7.61	7.79	64.55	-1,756.39	-7,792.63	7,965.99	7,950.60	15.39	517.701	
2,300.00	2,298.76	2,325.00	2,324.86	7.96	8.03	64.58	-1,754.85	-7,792.76	7,963.76	7,947.77	15.99	498.057	
2,400.00	2,398.66	2,410.87	2,410.72	8.32	8.33	64.62	-1,753.33	-7,793.11	7,961.84	7,945.20	16.64	478.335	
2,500.00	2,498.56	2,547.38	2,547.21	8.68	8.81	64.67	-1,751.44	-7,793.38	7,959.81	7,942.33	17.48	455.439	
2,600.00	2,598.45	2,625.00	2,624.82	9.03	9.08	64.71	-1,750.09	-7,793.44	7,957.60	7,939.50	18.11	439.519	
2,700.00	2,698.35	2,688.04	2,687.85	9.39	9.30	64.73	-1,748.97	-7,793.74	7,955.79	7,937.10	18.68	425.836	
2,800.00	2,798.25	2,740.74	2,740.54	9.75	9.49	64.75	-1,748.27	-7,794.23	7,954.50	7,935.28	19.22	413.778	
2,900.00	2,898.15	2,833.38	2,833.17	10.11	9.81	64.79	-1,747.30	-7,795.52	7,953.71	7,933.81	19.91	399.582	
3,000.00	2,998.04	2,907.79	2,907.57	10.47	10.07	64.82	-1,746.33	-7,796.64	7,953.00	7,932.47	20.52	387.521	
3,100.00	3,097.94	2,988.83	2,988.58	10.83	10.35	64.85	-1,745.68	-7,798.19	7,952.74	7,931.57	21.16	375.772	
3,200.00	3,197.84	3,100.00	3,099.75	11.19	10.74	64.89	-1,745.45	-7,799.80	7,952.18	7,930.26	21.91	362.936	
3,300.00	3,297.74	3,170.15	3,169.88	11.55	10.99	64.91	-1,745.31	-7,801.08	7,951.98	7,929.47	22.51	353.200	
3,400.00	3,397.64	3,300.00	3,299.72	11.91	11.44	64.95	-1,745.33	-7,802.94	7,951.38	7,928.06	23.33	340.858	
3,500.00	3,497.53	3,418.13	3,417.83	12.27	11.85	64.99	-1,745.42	-7,804.68	7,950.95	7,926.85	24.10	329.914	
3,600.00	3,597.43	3,523.85	3,523.55	12.63	12.22	65.02	-1,745.50	-7,806.20	7,950.47	7,925.64	24.83	320.203	
3,700.00	3,697.33	3,615.15	3,614.83	12.99	12.54	65.05	-1,745.49	-7,807.58	7,950.02	7,924.51	25.51	311.660	
3,800.00	3,797.23	3,709.94	3,709.61	13.35	12.87	65.08	-1,745.40	-7,808.99	7,949.54	7,923.34	26.20	303.415	
3,900.00	3,897.12	3,800.00	3,799.66	13.72	13.18	65.11	-1,745.36	-7,810.34	7,949.10	7,922.22	26.88	295.775	
4,000.00	3,997.02	3,875.00	3,874.65	14.08	13.45	65.13	-1,745.72	-7,811.52	7,948.83	7,921.33	27.50	289.070	
4,100.00	4,096.92	3,970.78	3,970.42	14.44	13.78	65.16	-1,746.71	-7,813.13	7,948.78	7,920.59	28.19	281.935	
4,117.71	4,114.61	3,984.04	3,983.67	14.50	13.83	65.16	-1,746.90	-7,813.34	7,948.77	7,920.47	28.30	280.837	
4,200.00	4,196.82	4,061.69	4,061.29	14.80	14.10	65.17	-1,748.43	-7,814.57	7,948.81	7,919.94	28.87	275.309	
4,300.00	4,296.72	4,135.52	4,135.09	15.16	14.36	65.18	-1,750.37	-7,815.82	7,949.09	7,919.60	29.49	269.545	
4,400.00	4,396.61	4,216.23	4,215.74	15.53	14.64	65.19	-1,752.95	-7,817.27	7,949.60	7,919.46	30.13	263.812	
4,500.00	4,496.51	4,308.73	4,308.17	15.89	14.96	65.20	-1,756.24	-7,819.07	7,950.32	7,919.50	30.82	257.975	
4,600.00	4,596.41	4,375.00	4,374.38	16.25	15.19	65.20	-1,758.76	-7,820.50	7,951.30	7,919.89	31.41	253.148	
4,700.00	4,696.31	4,450.00	4,449.29	16.61	15.45	65.20	-1,761.78	-7,822.31	7,952.59	7,920.56	32.03	248.271	
4,800.00	4,796.20	4,560.53	4,559.69	16.98	15.84	65.21	-1,766.43	-7,825.01	7,953.93	7,921.15	32.78	242.637	
4,900.00	4,896.10	4,640.95	4,640.01	17.34	16.12	65.21	-1,769.87	-7,827.02	7,955.36	7,921.93	33.42	238.021	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
5,000.00	4,996.00	4,739.81	4,738.75	17.70	16.47	65.21	-1,774.15	-7,829.55	7,956.85	7,922.71	34.13	233.128	
5,100.00	5,095.90	4,859.97	4,858.76	18.07	16.89	65.22	-1,779.36	-7,832.63	7,958.35	7,923.43	34.92	227.934	
5,200.00	5,195.80	4,939.96	4,938.65	18.43	17.17	65.22	-1,782.84	-7,834.68	7,959.83	7,924.27	35.56	223.870	
5,300.00	5,295.69	5,044.21	5,042.76	18.79	17.53	65.22	-1,787.39	-7,837.38	7,961.35	7,925.07	36.28	219.423	
5,400.00	5,395.59	5,163.12	5,161.51	19.16	17.95	65.22	-1,792.66	-7,840.60	7,963.06	7,926.00	37.06	214.851	
5,500.00	5,495.49	5,286.70	5,284.92	19.52	18.38	65.22	-1,798.45	-7,843.40	7,964.36	7,926.50	37.86	210.364	
5,600.00	5,595.39	5,414.24	5,412.29	19.88	18.82	65.22	-1,804.59	-7,845.72	7,965.22	7,926.55	38.67	205.978	
5,700.00	5,695.28	5,543.00	5,540.88	20.25	19.27	65.22	-1,811.00	-7,847.49	7,965.68	7,926.19	39.48	201.741	
5,800.00	5,795.18	5,686.11	5,683.78	20.61	19.77	65.21	-1,818.69	-7,848.76	7,965.76	7,925.41	40.35	197.421	
5,900.00	5,895.08	5,810.06	5,807.54	20.97	20.21	65.20	-1,825.42	-7,849.13	7,965.23	7,924.08	41.15	193.587	
6,000.00	5,994.98	5,875.00	5,872.39	21.34	20.43	65.19	-1,828.93	-7,849.52	7,964.98	7,923.24	41.73	190.847	
6,058.47	6,053.39	5,925.00	5,922.32	21.55	20.61	65.19	-1,831.55	-7,849.91	7,964.93	7,922.81	42.12	189.093	
6,100.00	6,094.88	5,950.00	5,947.28	21.70	20.70	65.19	-1,832.88	-7,850.14	7,964.98	7,922.62	42.36	188.034	
6,200.00	6,194.77	6,035.89	6,033.04	22.06	21.00	65.18	-1,837.50	-7,851.13	7,965.29	7,922.27	43.02	185.144	
6,300.00	6,294.67	6,100.00	6,097.05	22.43	21.22	65.18	-1,840.94	-7,852.04	7,965.88	7,922.28	43.61	182.673	
6,314.74	6,309.40	6,125.00	6,122.01	22.48	21.31	65.18	-1,842.24	-7,852.44	7,965.99	7,922.24	43.75	182.084	
6,350.00	6,344.59	6,139.73	6,136.72	22.61	21.36	22.01	-1,843.02	-7,852.68	7,965.32	7,921.39	43.93	181.333	
6,400.00	6,394.26	6,185.42	6,182.34	22.79	21.52	5.01	-1,845.45	-7,853.51	7,961.17	7,916.91	44.26	179.858	
6,450.00	6,443.36	6,212.23	6,209.10	22.97	21.61	-0.94	-1,846.92	-7,854.07	7,953.35	7,908.82	44.53	178.607	
6,500.00	6,491.60	6,250.00	6,246.81	23.15	21.75	-4.02	-1,848.97	-7,854.90	7,941.83	7,897.00	44.83	177.151	
6,550.00	6,538.67	6,286.60	6,283.35	23.32	21.87	-6.03	-1,850.96	-7,855.74	7,926.67	7,881.55	45.12	175.674	
6,600.00	6,584.29	6,323.70	6,320.37	23.49	22.00	-7.56	-1,853.04	-7,856.68	7,908.02	7,862.61	45.41	174.161	
6,650.00	6,628.18	6,338.41	6,335.06	23.66	22.05	-8.86	-1,853.87	-7,857.05	7,885.95	7,840.34	45.60	172.928	
6,700.00	6,670.06	6,350.00	6,346.62	23.83	22.10	-10.08	-1,854.60	-7,857.40	7,860.71	7,814.94	45.78	171.716	
6,750.00	6,709.68	6,359.05	6,355.64	24.00	22.13	-11.31	-1,855.21	-7,857.70	7,832.44	7,786.51	45.93	170.521	
6,800.00	6,746.79	6,375.00	6,371.54	24.17	22.18	-12.64	-1,856.34	-7,858.28	7,801.28	7,755.18	46.10	169.219	
6,850.00	6,781.17	6,486.55	6,482.86	24.35	22.57	-14.37	-1,862.21	-7,862.12	7,767.00	7,720.39	46.60	166.657	
6,900.00	6,812.60	6,533.21	6,529.45	24.54	22.74	-16.28	-1,864.49	-7,863.55	7,730.04	7,683.18	46.86	164.959	
6,950.00	6,840.88	6,565.46	6,561.65	24.74	22.85	-18.57	-1,866.04	-7,864.53	7,690.69	7,643.64	47.05	163.450	
7,000.00	6,865.85	6,600.00	6,596.13	24.96	22.97	-21.47	-1,867.67	-7,865.53	7,649.15	7,601.91	47.24	161.923	
7,050.00	6,887.35	6,633.54	6,629.63	25.19	23.09	-25.26	-1,869.23	-7,866.46	7,605.72	7,558.31	47.41	160.421	
7,100.00	6,905.25	6,641.12	6,637.19	25.43	23.11	-30.12	-1,869.58	-7,866.67	7,560.70	7,513.22	47.48	159.241	
7,150.00	6,919.43	6,665.31	6,661.35	25.69	23.20	-37.03	-1,870.74	-7,867.35	7,514.36	7,466.77	47.60	157.880	
7,200.00	6,929.81	6,685.07	6,681.08	25.96	23.27	-46.75	-1,871.67	-7,867.87	7,466.97	7,419.28	47.69	156.587	
7,250.00	6,936.33	6,688.36	6,684.36	26.25	23.28	-60.06	-1,871.83	-7,867.96	7,418.84	7,371.13	47.71	155.499	
7,300.00	6,938.95	6,690.02	6,686.02	26.55	23.29	-77.42	-1,871.91	-7,868.00	7,370.28	7,322.56	47.72	154.444	
7,309.56	6,939.00	6,690.15	6,686.15	26.60	23.29	-81.07	-1,871.91	-7,868.01	7,360.98	7,313.26	47.72	154.244	
7,400.00	6,938.83	6,691.12	6,687.11	27.19	23.29	-81.10	-1,871.96	-7,868.03	7,272.92	7,225.19	47.73	152.374	
7,500.00	6,938.64	6,692.20	6,688.19	27.91	23.29	-81.14	-1,872.01	-7,868.06	7,175.62	7,127.88	47.75	150.285	
7,600.00	6,938.44	6,709.07	6,705.04	28.70	23.35	-81.71	-1,872.81	-7,868.52	7,078.40	7,030.58	47.83	148.006	
7,700.00	6,938.25	6,711.45	6,707.42	29.55	23.36	-81.79	-1,872.91	-7,868.58	6,981.26	6,933.39	47.86	145.862	
7,800.00	6,938.06	6,713.83	6,709.80	30.47	23.37	-81.88	-1,873.02	-7,868.64	6,884.19	6,836.28	47.91	143.696	
7,900.00	6,937.87	6,732.39	6,728.33	31.44	23.43	-82.51	-1,873.86	-7,869.10	6,787.20	6,739.18	48.02	141.344	
8,000.00	6,937.68	6,733.46	6,729.40	32.46	23.44	-82.55	-1,873.91	-7,869.13	6,690.30	6,642.22	48.08	139.147	
8,100.00	6,937.49	6,734.55	6,730.49	33.53	23.44	-82.59	-1,873.96	-7,869.16	6,593.49	6,545.34	48.15	136.925	
8,200.00	6,937.30	6,735.65	6,731.58	34.64	23.44	-82.62	-1,874.01	-7,869.18	6,496.78	6,448.54	48.24	134.678	
8,300.00	6,937.10	6,736.76	6,732.69	35.78	23.45	-82.66	-1,874.06	-7,869.21	6,400.17	6,351.83	48.34	132.406	
8,400.00	6,936.91	6,737.88	6,733.81	36.96	23.45	-82.70	-1,874.11	-7,869.24	6,303.66	6,255.21	48.45	130.108	
8,500.00	6,936.72	6,739.02	6,734.95	38.17	23.46	-82.74	-1,874.16	-7,869.26	6,207.27	6,158.69	48.58	127.784	
8,600.00	6,936.53	6,740.16	6,736.09	39.41	23.46	-82.78	-1,874.22	-7,869.29	6,110.99	6,062.27	48.72	125.435	
8,700.00	6,936.34	6,741.33	6,737.25	40.68	23.46	-82.82	-1,874.27	-7,869.32	6,014.83	5,965.95	48.88	123.059	
8,800.00	6,936.15	6,742.50	6,738.43	41.97	23.47	-82.86	-1,874.32	-7,869.35	5,918.79	5,869.74	49.05	120.657	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,900.00	6,935.96	6,743.69	6,739.61	43.27	23.47	-82.90	-1,874.38	-7,869.38	5,822.89	5,773.64	49.25	118.229	
9,000.00	6,935.76	6,750.00	6,745.92	44.60	23.49	-83.12	-1,874.68	-7,869.54	5,727.14	5,677.65	49.48	115.736	
9,100.00	6,935.57	6,750.00	6,745.92	45.95	23.49	-83.12	-1,874.68	-7,869.54	5,631.52	5,581.80	49.72	113.269	
9,200.00	6,935.38	6,760.19	6,756.09	47.31	23.53	-83.47	-1,875.15	-7,869.78	5,536.05	5,486.04	50.01	110.700	
9,300.00	6,935.19	6,762.31	6,758.21	48.69	23.54	-83.54	-1,875.25	-7,869.83	5,440.75	5,390.45	50.30	108.171	
9,400.00	6,935.00	6,764.44	6,760.34	50.08	23.55	-83.61	-1,875.35	-7,869.88	5,345.62	5,295.01	50.61	105.620	
9,500.00	6,934.81	6,766.57	6,762.46	51.48	23.55	-83.69	-1,875.44	-7,869.93	5,250.67	5,199.72	50.95	103.048	
9,600.00	6,934.62	6,768.70	6,764.59	52.89	23.56	-83.76	-1,875.54	-7,869.98	5,155.91	5,104.59	51.32	100.456	
9,700.00	6,934.43	6,770.82	6,766.71	54.32	23.57	-83.83	-1,875.64	-7,870.03	5,061.35	5,009.62	51.73	97.847	
9,800.00	6,934.23	6,772.95	6,768.84	55.75	23.58	-83.91	-1,875.74	-7,870.08	4,967.00	4,914.84	52.16	95.223	
9,900.00	6,934.04	6,775.00	6,770.88	57.19	23.58	-83.98	-1,875.84	-7,870.13	4,872.88	4,820.25	52.63	92.585	
10,000.00	6,933.85	6,782.45	6,778.32	58.65	23.61	-84.23	-1,876.17	-7,870.29	4,778.98	4,725.83	53.16	89.904	
10,100.00	6,933.66	6,783.44	6,779.31	60.10	23.61	-84.27	-1,876.21	-7,870.31	4,685.35	4,631.65	53.70	87.253	
10,200.00	6,933.47	6,784.45	6,780.32	61.57	23.62	-84.30	-1,876.26	-7,870.33	4,591.98	4,537.70	54.28	84.595	
10,300.00	6,933.28	6,785.48	6,781.35	63.04	23.62	-84.34	-1,876.31	-7,870.36	4,498.90	4,443.99	54.91	81.933	
10,400.00	6,933.09	6,786.53	6,782.40	64.52	23.62	-84.37	-1,876.36	-7,870.38	4,406.12	4,350.53	55.58	79.270	
10,500.00	6,932.89	6,787.60	6,783.47	66.01	23.63	-84.41	-1,876.40	-7,870.41	4,313.66	4,257.35	56.31	76.610	
10,600.00	6,932.70	6,788.70	6,784.56	67.50	23.63	-84.45	-1,876.46	-7,870.43	4,221.55	4,164.46	57.08	73.956	
10,700.00	6,932.51	6,789.81	6,785.68	68.99	23.63	-84.49	-1,876.51	-7,870.46	4,129.80	4,071.89	57.91	71.312	
10,800.00	6,932.32	6,790.96	6,786.82	70.50	23.64	-84.52	-1,876.56	-7,870.49	4,038.44	3,979.64	58.80	68.681	
10,900.00	6,932.13	6,792.12	6,787.98	72.00	23.64	-84.57	-1,876.61	-7,870.52	3,947.50	3,887.75	59.75	66.068	
11,000.00	6,931.94	6,793.31	6,789.17	73.51	23.65	-84.61	-1,876.67	-7,870.55	3,857.01	3,796.25	60.76	63.476	
11,100.00	6,931.75	6,800.00	6,795.85	75.02	23.67	-84.84	-1,876.98	-7,870.72	3,767.01	3,705.14	61.87	60.890	
11,200.00	6,931.55	6,809.45	6,805.29	76.54	23.70	-85.16	-1,877.40	-7,870.93	3,677.50	3,614.45	63.05	58.326	
11,300.00	6,931.36	6,811.49	6,807.33	78.06	23.71	-85.23	-1,877.49	-7,870.97	3,588.55	3,524.26	64.29	55.822	
11,400.00	6,931.17	6,813.54	6,809.37	79.58	23.72	-85.30	-1,877.58	-7,871.02	3,500.19	3,434.59	65.60	53.355	
11,500.00	6,930.98	6,815.58	6,811.41	81.11	23.72	-85.37	-1,877.67	-7,871.07	3,412.48	3,345.48	67.00	50.930	
11,600.00	6,930.79	6,817.62	6,813.45	82.64	23.73	-85.44	-1,877.75	-7,871.11	3,325.46	3,256.97	68.49	48.551	
11,700.00	6,930.60	6,830.68	6,826.49	84.17	23.78	-85.89	-1,878.31	-7,871.39	3,239.18	3,169.06	70.12	46.194	
11,800.00	6,930.41	6,831.71	6,827.52	85.70	23.78	-85.93	-1,878.35	-7,871.41	3,153.71	3,081.91	71.80	43.921	
11,900.00	6,930.21	6,832.76	6,828.57	87.24	23.78	-85.97	-1,878.40	-7,871.43	3,069.12	2,995.53	73.59	41.704	
12,000.00	6,930.02	6,833.85	6,829.66	88.78	23.79	-86.00	-1,878.44	-7,871.46	2,985.48	2,909.99	75.49	39.547	
12,100.00	6,929.83	6,834.96	6,830.77	90.32	23.79	-86.04	-1,878.49	-7,871.48	2,902.88	2,825.37	77.51	37.452	
12,200.00	6,929.64	6,836.10	6,831.91	91.87	23.80	-86.08	-1,878.54	-7,871.50	2,821.40	2,741.75	79.65	35.424	
12,300.00	6,929.45	6,837.27	6,833.08	93.41	23.80	-86.12	-1,878.58	-7,871.53	2,741.14	2,659.23	81.91	33.464	
12,400.00	6,929.26	6,838.48	6,834.28	94.96	23.80	-86.16	-1,878.64	-7,871.55	2,662.23	2,577.92	84.31	31.576	
12,500.00	6,929.07	6,839.72	6,835.52	96.51	23.81	-86.21	-1,878.69	-7,871.58	2,584.77	2,497.92	86.85	29.762	
12,600.00	6,928.88	6,840.99	6,836.79	98.06	23.81	-86.25	-1,878.74	-7,871.61	2,508.90	2,419.38	89.52	28.025	
12,700.00	6,928.68	6,842.30	6,838.10	99.62	23.82	-86.30	-1,878.80	-7,871.64	2,434.78	2,342.44	92.35	26.366	
12,800.00	6,928.49	6,843.65	6,839.44	101.17	23.82	-86.34	-1,878.85	-7,871.67	2,362.57	2,267.25	95.31	24.787	
12,900.00	6,928.30	6,845.03	6,840.83	102.73	23.83	-86.39	-1,878.91	-7,871.70	2,292.44	2,194.01	98.43	23.291	
13,000.00	6,928.11	6,850.00	6,845.79	104.28	23.84	-86.56	-1,879.12	-7,871.82	2,224.60	2,122.90	101.70	21.875	
13,100.00	6,927.92	6,850.00	6,845.79	105.84	23.84	-86.56	-1,879.12	-7,871.82	2,159.25	2,054.17	105.08	20.548	
13,200.00	6,927.73	6,850.00	6,845.79	107.40	23.84	-86.56	-1,879.12	-7,871.82	2,096.64	1,988.04	108.60	19.307	
13,300.00	6,927.54	6,852.72	6,848.50	108.97	23.85	-86.66	-1,879.24	-7,871.89	2,037.01	1,924.78	112.24	18.149	
13,400.00	6,927.34	6,856.66	6,852.45	110.53	23.87	-86.79	-1,879.41	-7,871.98	1,980.64	1,864.66	115.97	17.078	
13,500.00	6,927.15	6,860.30	6,856.08	112.09	23.88	-86.92	-1,879.56	-7,872.06	1,927.80	1,808.02	119.78	16.094	
13,600.00	6,926.96	6,863.67	6,859.44	113.66	23.89	-87.03	-1,879.70	-7,872.14	1,878.80	1,755.18	123.62	15.198	
13,700.00	6,926.77	6,866.79	6,862.56	115.22	23.90	-87.14	-1,879.83	-7,872.20	1,833.95	1,706.49	127.46	14.389	
13,800.00	6,926.58	6,869.69	6,865.46	116.79	23.91	-87.24	-1,879.95	-7,872.26	1,793.55	1,662.31	131.24	13.666	
13,900.00	6,926.39	6,872.39	6,868.16	118.36	23.92	-87.34	-1,880.06	-7,872.31	1,757.92	1,622.99	134.93	13.029	
14,000.00	6,926.20	6,874.92	6,870.68	119.93	23.93	-87.42	-1,880.16	-7,872.36	1,727.34	1,588.89	138.45	12.476	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,100.00	6,926.00	6,877.29	6,873.05	121.50	23.94	-87.50	-1,880.25	-7,872.41	1,702.10	1,560.34	141.75	12.008	
14,200.00	6,925.81	6,879.51	6,875.27	123.07	23.95	-87.58	-1,880.34	-7,872.45	1,682.42	1,537.65	144.78	11.621	
14,300.00	6,925.62	6,880.19	6,875.95	124.64	23.95	-87.60	-1,880.37	-7,872.46	1,668.52	1,521.06	147.46	11.315	
14,400.00	6,925.43	6,882.03	6,877.79	126.21	23.96	-87.67	-1,880.44	-7,872.50	1,660.54	1,510.77	149.77	11.087	
14,482.99	6,925.27	6,883.60	6,879.36	127.52	23.96	-87.72	-1,880.51	-7,872.53	1,658.46	1,507.09	151.37	10.956	CC
14,500.00	6,925.24	6,883.93	6,879.68	127.79	23.96	-87.73	-1,880.52	-7,872.54	1,658.55	1,506.89	151.66	10.936	ES
14,600.00	6,925.05	6,885.88	6,881.63	129.36	23.97	-87.80	-1,880.60	-7,872.58	1,662.58	1,509.47	153.11	10.859	
14,700.00	6,924.86	6,887.88	6,883.63	130.93	23.98	-87.87	-1,880.67	-7,872.62	1,672.59	1,518.49	154.10	10.854	SF
14,800.00	6,924.66	6,889.94	6,885.69	132.51	23.98	-87.94	-1,880.76	-7,872.66	1,688.48	1,533.82	154.65	10.918	
14,900.00	6,924.47	6,892.06	6,887.81	134.09	23.99	-88.01	-1,880.84	-7,872.70	1,710.07	1,555.29	154.78	11.049	
15,000.00	6,924.28	6,894.25	6,889.99	135.66	24.00	-88.09	-1,880.93	-7,872.75	1,737.15	1,582.65	154.50	11.243	
15,100.00	6,924.09	6,896.50	6,892.24	137.24	24.01	-88.17	-1,881.01	-7,872.80	1,769.48	1,615.61	153.87	11.500	
15,200.00	6,923.90	6,898.82	6,894.56	138.82	24.02	-88.25	-1,881.10	-7,872.85	1,806.76	1,653.84	152.92	11.815	
15,300.00	6,923.71	6,901.22	6,896.95	140.40	24.02	-88.33	-1,881.20	-7,872.90	1,848.71	1,697.00	151.71	12.186	
15,400.00	6,923.52	6,902.97	6,898.71	141.97	24.03	-88.39	-1,881.27	-7,872.94	1,895.01	1,744.74	150.28	12.610	
15,500.00	6,923.33	6,904.86	6,900.60	143.55	24.04	-88.46	-1,881.34	-7,872.98	1,945.35	1,796.69	148.66	13.086	
15,600.00	6,923.13	6,906.69	6,902.42	145.13	24.04	-88.52	-1,881.41	-7,873.02	1,999.43	1,852.51	146.92	13.609	
15,700.00	6,922.94	6,908.46	6,904.19	146.72	24.05	-88.58	-1,881.48	-7,873.06	2,056.94	1,911.87	145.08	14.178	
15,800.00	6,922.75	6,910.17	6,905.90	148.30	24.06	-88.64	-1,881.54	-7,873.09	2,117.62	1,974.45	143.17	14.791	
15,900.00	6,922.56	6,911.83	6,907.55	149.88	24.06	-88.70	-1,881.61	-7,873.12	2,181.20	2,039.97	141.23	15.445	
16,000.00	6,922.37	6,913.43	6,909.16	151.46	24.07	-88.75	-1,881.67	-7,873.16	2,247.42	2,108.15	139.27	16.137	
16,100.00	6,922.18	6,914.98	6,910.71	153.04	24.07	-88.81	-1,881.72	-7,873.19	2,316.07	2,178.75	137.32	16.866	
16,200.00	6,921.99	6,916.49	6,912.21	154.63	24.08	-88.86	-1,881.78	-7,873.22	2,386.94	2,251.55	135.39	17.630	
16,300.00	6,921.79	6,917.95	6,913.67	156.21	24.08	-88.91	-1,881.84	-7,873.24	2,459.83	2,326.34	133.49	18.427	
16,400.00	6,921.60	6,919.37	6,915.09	157.79	24.09	-88.96	-1,881.89	-7,873.27	2,534.56	2,402.94	131.63	19.255	
16,500.00	6,921.41	6,920.75	6,916.46	159.38	24.09	-89.01	-1,881.94	-7,873.30	2,610.99	2,481.18	129.82	20.113	
16,600.00	6,921.22	6,922.08	6,917.80	160.96	24.10	-89.05	-1,881.99	-7,873.32	2,688.97	2,560.91	128.06	20.998	
16,700.00	6,921.03	6,925.00	6,920.72	162.55	24.11	-89.15	-1,882.10	-7,873.37	2,768.36	2,641.99	126.36	21.908	
16,800.00	6,920.84	6,925.00	6,920.72	164.13	24.11	-89.15	-1,882.10	-7,873.37	2,849.05	2,724.33	124.71	22.845	
16,900.00	6,920.65	6,927.48	6,923.20	165.72	24.12	-89.24	-1,882.19	-7,873.42	2,930.92	2,807.79	123.13	23.803	
17,000.00	6,920.45	6,931.32	6,927.03	167.30	24.13	-89.37	-1,882.33	-7,873.49	3,013.89	2,892.27	121.62	24.781	
17,100.00	6,920.26	6,935.66	6,931.36	168.89	24.14	-89.52	-1,882.49	-7,873.57	3,097.86	2,977.70	120.17	25.780	
17,200.00	6,920.07	6,940.58	6,936.28	170.48	24.16	-89.69	-1,882.67	-7,873.68	3,182.76	3,063.98	118.78	26.796	
17,300.00	6,919.88	6,946.22	6,941.92	172.06	24.18	-89.88	-1,882.88	-7,873.80	3,268.51	3,151.06	117.45	27.830	
17,400.00	6,919.69	6,952.76	6,948.45	173.65	24.20	-90.11	-1,883.13	-7,873.96	3,355.04	3,238.87	116.17	28.879	
17,500.00	6,919.50	6,944.27	6,939.97	175.24	24.17	-89.82	-1,882.81	-7,873.77	3,442.30	3,327.43	114.87	29.966	
17,600.00	6,919.31	6,946.15	6,941.84	176.83	24.18	-89.88	-1,882.88	-7,873.81	3,530.24	3,416.56	113.68	31.054	
17,700.00	6,919.11	6,948.02	6,943.72	178.41	24.19	-89.95	-1,882.95	-7,873.85	3,618.81	3,506.27	112.54	32.157	
17,759.55	6,919.00	6,955.43	6,951.12	179.36	24.21	-90.20	-1,883.23	-7,874.02	3,671.83	3,559.91	111.91	32.810	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - 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	-81.49	1,494.78	-9,993.16	10,104.64				
100.00	100.00	22.00	22.00	0.25	0.66	-81.49	1,494.78	-9,993.16	10,104.34	10,103.43	0.91	N/A	
200.00	200.00	122.00	122.00	0.61	3.66	-81.49	1,494.78	-9,993.16	10,104.34	10,100.07	4.27	2,369.005	
300.00	300.00	222.00	222.00	0.97	6.65	-81.49	1,494.78	-9,993.16	10,104.34	10,096.72	7.62	1,326.010	
400.00	400.00	322.00	322.00	1.33	9.65	-81.49	1,494.78	-9,993.16	10,104.34	10,093.36	10.97	920.669	
500.00	500.00	422.00	422.00	1.68	12.65	-81.49	1,494.78	-9,993.16	10,104.34	10,090.01	14.33	705.124	
600.00	600.00	522.10	522.00	2.04	15.64	-81.49	1,494.78	-9,993.16	10,104.34	10,086.65	17.69	571.260	
700.00	700.00	622.10	622.00	2.40	18.64	-81.49	1,494.78	-9,993.16	10,104.34	10,083.30	21.04	480.182	
800.00	800.00	722.10	722.00	2.76	21.64	-81.49	1,494.78	-9,993.16	10,104.34	10,079.94	24.40	414.152	
900.00	900.00	830.57	830.41	3.12	24.89	-81.48	1,496.73	-9,993.16	10,104.63	10,076.62	28.01	360.799	
1,000.00	1,000.00	942.32	942.14	3.48	28.24	-81.49	1,495.67	-9,993.16	10,104.49	10,072.78	31.71	318.621	
1,100.00	1,099.98	1,022.39	1,021.98	3.82	30.64	85.41	1,494.78	-9,993.16	10,104.20	10,069.74	34.45	293.276	
1,129.54	1,129.49	1,051.90	1,051.49	3.92	31.52	85.42	1,494.78	-9,993.16	10,104.10	10,068.67	35.43	285.160	
1,200.00	1,199.88	1,122.29	1,121.88	4.15	33.63	85.43	1,494.78	-9,993.16	10,103.85	10,066.08	37.77	267.484	
1,300.00	1,299.78	1,222.19	1,221.78	4.48	36.62	85.46	1,494.78	-9,993.16	10,103.49	10,062.39	41.10	245.827	
1,400.00	1,399.68	1,330.64	1,330.18	4.82	39.87	85.50	1,496.73	-9,993.16	10,103.43	10,058.74	44.69	226.092	
1,500.00	1,499.58	1,442.47	1,441.99	5.16	43.22	85.52	1,495.67	-9,993.16	10,102.93	10,054.55	48.38	208.827	
1,600.00	1,599.48	1,522.19	1,521.48	5.50	45.61	85.54	1,494.78	-9,993.16	10,102.42	10,051.31	51.11	197.651	
1,700.00	1,699.37	1,622.08	1,621.37	5.85	48.60	85.56	1,494.78	-9,993.16	10,102.07	10,047.62	54.45	185.521	
1,800.00	1,799.27	1,721.98	1,721.27	6.20	51.60	85.59	1,494.78	-9,993.16	10,101.72	10,043.93	57.79	174.786	
1,900.00	1,899.17	1,830.55	1,829.79	6.55	54.85	85.63	1,496.73	-9,993.16	10,101.68	10,040.28	61.40	164.526	
2,000.00	1,999.07	1,942.57	1,941.78	6.90	58.21	85.65	1,495.66	-9,993.16	10,101.19	10,036.08	65.11	155.147	
2,100.00	2,098.96	2,021.98	2,020.96	7.25	60.59	85.66	1,494.78	-9,993.16	10,100.69	10,032.85	67.84	148.890	
2,200.00	2,198.86	2,121.88	2,120.86	7.61	63.58	85.69	1,494.78	-9,993.16	10,100.35	10,029.16	71.19	141.883	
2,300.00	2,298.76	2,221.77	2,220.76	7.96	66.57	85.72	1,494.78	-9,993.16	10,100.01	10,025.47	74.54	135.504	
2,324.00	2,322.74	2,245.75	2,244.74	8.05	67.29	85.72	1,494.78	-9,993.16	10,099.93	10,024.59	75.34	134.057	
2,400.00	2,398.66	2,330.46	2,329.39	8.32	69.83	85.75	1,496.73	-9,993.16	10,099.98	10,021.83	78.15	129.240	
2,500.00	2,498.56	2,442.68	2,441.58	8.68	73.19	85.78	1,495.66	-9,993.16	10,099.49	10,017.63	81.87	123.362	
2,600.00	2,598.45	2,521.77	2,520.45	9.03	75.56	85.79	1,494.78	-9,993.16	10,099.00	10,014.41	84.60	119.379	
2,700.00	2,698.35	2,621.67	2,620.35	9.39	78.56	85.82	1,494.78	-9,993.16	10,098.67	10,010.72	87.95	114.826	
2,800.00	2,798.25	2,721.57	2,720.25	9.75	81.55	85.84	1,494.78	-9,993.16	10,098.34	10,007.04	91.30	110.606	
2,824.00	2,822.22	2,745.54	2,744.22	9.84	82.27	85.85	1,494.78	-9,993.16	10,098.26	10,006.16	92.10	109.639	
2,900.00	2,898.15	2,830.36	2,828.99	10.11	84.81	85.88	1,496.73	-9,993.16	10,098.32	10,003.41	94.92	106.389	
3,000.00	2,998.04	2,942.78	2,941.38	10.47	88.18	85.90	1,495.66	-9,993.16	10,097.85	9,999.20	98.65	102.364	
3,100.00	3,097.94	3,021.57	3,019.94	10.83	90.54	85.92	1,494.78	-9,993.16	10,097.37	9,996.00	101.37	99.612	
3,200.00	3,197.84	3,121.46	3,119.84	11.19	93.53	85.94	1,494.78	-9,993.16	10,097.05	9,992.33	104.72	96.419	
3,300.00	3,297.74	3,221.36	3,219.74	11.55	96.53	85.97	1,494.78	-9,993.16	10,096.73	9,988.65	108.07	93.424	
3,324.00	3,321.71	3,245.34	3,243.71	11.63	97.24	85.98	1,494.78	-9,993.16	10,096.65	9,987.77	108.88	92.732	
3,400.00	3,397.64	3,330.27	3,328.60	11.91	99.79	86.01	1,496.73	-9,993.16	10,096.72	9,985.03	111.70	90.393	
3,500.00	3,497.53	3,442.88	3,441.17	12.27	103.16	86.03	1,495.66	-9,993.16	10,096.26	9,980.83	115.43	87.464	
3,600.00	3,597.43	3,521.36	3,519.43	12.63	105.52	86.05	1,494.78	-9,993.16	10,095.78	9,977.64	118.15	85.451	
3,700.00	3,697.33	3,621.26	3,619.33	12.99	108.51	86.07	1,494.78	-9,993.16	10,095.47	9,973.97	121.50	83.090	
3,800.00	3,797.23	3,721.16	3,719.23	13.35	111.50	86.10	1,494.78	-9,993.16	10,095.16	9,970.31	124.86	80.854	
3,824.00	3,821.20	3,745.13	3,743.20	13.44	112.22	86.10	1,494.78	-9,993.16	10,095.09	9,969.43	125.66	80.336	
3,900.00	3,897.12	3,830.18	3,828.20	13.72	114.77	86.14	1,496.74	-9,993.16	10,095.17	9,966.69	128.48	78.571	
4,000.00	3,997.02	3,942.98	3,940.97	14.08	118.15	86.16	1,495.66	-9,993.16	10,094.72	9,962.49	132.23	76.344	
4,100.00	4,096.92	4,021.15	4,018.92	14.44	120.49	86.18	1,494.78	-9,993.16	10,094.25	9,959.32	134.93	74.811	
4,200.00	4,196.82	4,121.05	4,118.82	14.80	123.49	86.20	1,494.78	-9,993.16	10,093.95	9,955.66	138.29	72.993	
4,300.00	4,296.72	4,220.95	4,218.72	15.16	126.48	86.23	1,494.78	-9,993.16	10,093.65	9,952.01	141.64	71.262	
4,325.00	4,321.69	4,245.92	4,243.69	15.25	127.23	86.23	1,494.78	-9,993.16	10,093.58	9,951.09	142.48	70.842	
4,400.00	4,396.61	4,330.08	4,327.80	15.53	129.75	86.27	1,496.74	-9,993.16	10,093.67	9,948.40	145.27	69.480	
4,500.00	4,496.51	4,443.08	4,440.77	15.89	133.13	86.29	1,495.66	-9,993.16	10,093.23	9,944.20	149.02	67.730	

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

SDT

Anticollision Report

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Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - 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
4,600.00	4,596.41	4,520.95	4,518.41	16.25	135.47	86.30	1,494.78	-9,993.16	10,092.77	9,941.05	151.72	66.523	
4,700.00	4,696.31	4,620.84	4,618.31	16.61	138.46	86.33	1,494.78	-9,993.16	10,092.47	9,937.40	155.07	65.081	
4,800.00	4,796.20	4,720.74	4,718.20	16.98	141.45	86.35	1,494.78	-9,993.16	10,092.19	9,933.75	158.43	63.701	
4,825.00	4,821.18	4,745.72	4,743.18	17.07	142.20	86.36	1,494.78	-9,993.16	10,092.11	9,932.84	159.27	63.365	
4,900.00	4,896.10	4,829.99	4,827.40	17.34	144.73	86.39	1,496.74	-9,993.16	10,092.23	9,930.16	162.07	62.272	
5,000.00	4,996.00	4,943.18	4,940.57	17.70	148.12	86.42	1,495.66	-9,993.16	10,091.78	9,925.96	165.82	60.859	
5,100.00	5,095.90	5,020.74	5,017.90	18.07	150.44	86.43	1,494.78	-9,993.16	10,091.33	9,922.82	168.51	59.886	
5,200.00	5,195.80	5,120.64	5,117.80	18.43	153.44	86.46	1,494.78	-9,993.16	10,091.05	9,919.19	171.87	58.715	
5,300.00	5,295.69	5,220.54	5,217.69	18.79	156.43	86.48	1,494.78	-9,993.16	10,090.77	9,915.55	175.22	57.588	
5,325.00	5,320.67	5,245.51	5,242.67	18.88	157.18	86.49	1,494.78	-9,993.16	10,090.70	9,914.64	176.06	57.314	
5,400.00	5,395.59	5,329.90	5,327.00	19.16	159.71	86.52	1,496.74	-9,993.16	10,090.83	9,911.96	178.86	56.417	
5,500.00	5,495.49	5,443.29	5,440.36	19.52	163.11	86.54	1,495.65	-9,993.16	10,090.39	9,907.77	182.62	55.253	
5,600.00	5,595.39	5,520.53	5,517.39	19.88	165.42	86.56	1,494.78	-9,993.16	10,089.95	9,904.65	185.30	54.452	
5,700.00	5,695.28	5,620.43	5,617.28	20.25	168.41	86.58	1,494.78	-9,993.16	10,089.68	9,901.02	188.66	53.481	
5,800.00	5,795.18	5,720.33	5,717.18	20.61	171.41	86.61	1,494.78	-9,993.16	10,089.41	9,897.39	192.01	52.545	
5,825.00	5,820.16	5,745.30	5,742.16	20.70	172.16	86.62	1,494.78	-9,993.16	10,089.34	9,896.49	192.85	52.316	
5,900.00	5,895.08	5,829.80	5,826.60	20.97	174.69	86.65	1,496.74	-9,993.16	10,089.48	9,893.82	195.66	51.567	
6,000.00	5,994.98	5,943.39	5,940.16	21.34	178.09	86.67	1,495.65	-9,993.16	10,089.05	9,889.63	199.43	50.591	
6,100.00	6,094.88	6,020.33	6,016.88	21.70	180.40	86.69	1,494.78	-9,993.16	10,088.62	9,886.52	202.09	49.920	
6,200.00	6,194.77	6,120.23	6,116.77	22.06	183.39	86.71	1,494.78	-9,993.16	10,088.36	9,882.90	205.45	49.103	
6,300.00	6,294.67	6,220.12	6,216.67	22.43	186.38	86.74	1,494.78	-9,993.16	10,088.10	9,879.29	208.81	48.313	
6,314.74	6,309.40	6,234.85	6,231.40	22.48	186.82	86.74	1,494.78	-9,993.16	10,088.06	9,878.76	209.30	48.198	
6,350.00	6,344.59	6,272.83	6,269.33	22.61	187.96	43.63	1,496.94	-9,993.16	10,087.38	9,876.81	210.57	47.905	
6,400.00	6,394.26	6,329.35	6,325.85	22.79	189.66	26.81	1,496.74	-9,993.16	10,082.56	9,870.12	212.44	47.460	
6,450.00	6,443.36	6,385.27	6,381.75	22.97	191.33	21.18	1,496.32	-9,993.16	10,073.88	9,859.58	214.30	47.009	
6,500.00	6,491.60	6,440.22	6,436.69	23.15	192.98	18.56	1,495.70	-9,993.16	10,061.39	9,845.27	216.12	46.555	
6,550.00	6,538.67	6,493.88	6,490.33	23.32	194.59	17.19	1,494.88	-9,993.16	10,045.17	9,827.27	217.90	46.100	
6,600.00	6,584.29	6,510.05	6,506.29	23.49	195.07	16.47	1,494.78	-9,993.16	10,025.41	9,806.86	218.55	45.873	
6,650.00	6,628.18	6,553.94	6,550.18	23.66	196.39	16.19	1,494.78	-9,993.16	10,002.23	9,782.20	220.02	45.460	
6,700.00	6,670.06	6,595.82	6,592.06	23.83	197.64	16.24	1,494.78	-9,993.16	9,975.71	9,754.28	221.43	45.052	
6,750.00	6,709.68	6,635.44	6,631.68	24.00	198.83	16.57	1,494.78	-9,993.16	9,946.02	9,723.27	222.76	44.650	
6,800.00	6,746.79	6,672.55	6,668.79	24.17	199.94	17.17	1,494.78	-9,993.16	9,913.35	9,689.35	224.00	44.256	
6,850.00	6,781.17	6,706.93	6,703.17	24.35	200.97	18.08	1,494.78	-9,993.16	9,877.89	9,652.74	225.15	43.872	
6,900.00	6,812.60	6,738.35	6,734.60	24.54	201.91	19.35	1,494.78	-9,993.16	9,839.87	9,613.66	226.20	43.500	
6,950.00	6,840.88	6,768.98	6,765.18	24.74	202.83	21.11	1,496.95	-9,993.16	9,799.90	9,572.68	227.22	43.129	
7,000.00	6,865.85	6,797.44	6,793.64	24.96	203.68	23.48	1,496.88	-9,993.16	9,757.46	9,529.29	228.16	42.765	
7,050.00	6,887.35	6,821.95	6,818.15	25.19	204.42	26.75	1,496.78	-9,993.16	9,713.19	9,484.21	228.98	42.420	
7,100.00	6,905.25	6,842.36	6,838.55	25.43	205.03	31.38	1,496.66	-9,993.16	9,667.38	9,437.72	229.66	42.095	
7,150.00	6,919.43	6,858.53	6,854.72	25.69	205.51	38.17	1,496.55	-9,993.16	9,620.30	9,390.10	230.20	41.791	
7,200.00	6,929.81	6,870.38	6,866.56	25.96	205.87	48.49	1,496.45	-9,993.16	9,572.25	9,341.65	230.60	41.510	
7,250.00	6,936.33	6,877.81	6,873.99	26.25	206.09	64.34	1,496.39	-9,993.16	9,523.54	9,292.67	230.87	41.251	
7,300.00	6,938.95	6,880.79	6,876.97	26.55	206.18	86.47	1,496.36	-9,993.16	9,474.45	9,243.46	230.99	41.016	
7,309.56	6,939.00	6,880.85	6,877.03	26.60	206.18	91.13	1,496.36	-9,993.16	9,465.05	9,234.05	231.00	40.974	
7,400.00	6,938.83	6,880.65	6,876.83	27.19	206.18	91.13	1,496.36	-9,993.16	9,376.11	9,145.06	231.06	40.579	
7,500.00	6,938.64	6,880.43	6,876.61	27.91	206.17	91.12	1,496.37	-9,993.16	9,277.81	9,046.69	231.12	40.142	
7,600.00	6,938.44	6,880.20	6,876.38	28.70	206.16	91.11	1,496.37	-9,993.16	9,179.54	8,948.35	231.20	39.705	
7,700.00	6,938.25	6,879.98	6,876.16	29.55	206.16	91.10	1,496.37	-9,993.16	9,081.31	8,850.04	231.27	39.266	
7,800.00	6,938.06	6,879.76	6,875.94	30.47	206.15	91.10	1,496.37	-9,993.16	8,983.12	8,751.76	231.36	38.828	
7,900.00	6,937.87	6,879.54	6,875.72	31.44	206.14	91.09	1,496.37	-9,993.16	8,884.97	8,653.52	231.45	38.388	
8,000.00	6,937.68	6,879.31	6,875.49	32.46	206.14	91.08	1,496.38	-9,993.16	8,786.86	8,555.31	231.55	37.948	
8,100.00	6,937.49	6,879.09	6,875.27	33.53	206.13	91.07	1,496.38	-9,993.16	8,688.80	8,457.14	231.66	37.507	
8,200.00	6,937.30	6,878.87	6,875.05	34.64	206.12	91.07	1,496.38	-9,993.16	8,590.78	8,359.00	231.77	37.065	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - 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	6,937.10	6,878.65	6,874.83	35.78	206.12	91.06	1,496.38	-9,993.16	8,492.80	8,260.90	231.90	36.623	
8,400.00	6,936.91	6,878.42	6,874.60	36.96	206.11	91.05	1,496.38	-9,993.16	8,394.87	8,162.85	232.03	36.180	
8,500.00	6,936.72	6,878.20	6,874.38	38.17	206.10	91.05	1,496.39	-9,993.16	8,297.00	8,064.83	232.17	35.737	
8,600.00	6,936.53	6,877.98	6,874.16	39.41	206.10	91.04	1,496.39	-9,993.16	8,199.17	7,966.85	232.32	35.293	
8,700.00	6,936.34	6,877.76	6,873.94	40.68	206.09	91.03	1,496.39	-9,993.16	8,101.40	7,868.92	232.48	34.848	
8,800.00	6,936.15	6,877.53	6,873.71	41.97	206.08	91.02	1,496.39	-9,993.16	8,003.68	7,771.03	232.65	34.403	
8,900.00	6,935.96	6,877.31	6,873.49	43.27	206.08	91.02	1,496.39	-9,993.16	7,906.02	7,673.19	232.83	33.957	
9,000.00	6,935.76	6,877.09	6,873.27	44.60	206.07	91.01	1,496.40	-9,993.16	7,808.41	7,575.40	233.02	33.510	
9,100.00	6,935.57	6,876.87	6,873.05	45.95	206.06	91.00	1,496.40	-9,993.16	7,710.87	7,477.65	233.22	33.063	
9,200.00	6,935.38	6,876.64	6,872.83	47.31	206.06	90.99	1,496.40	-9,993.16	7,613.40	7,379.96	233.43	32.615	
9,300.00	6,935.19	6,876.42	6,872.60	48.69	206.05	90.99	1,496.40	-9,993.16	7,515.99	7,282.33	233.66	32.166	
9,400.00	6,935.00	6,876.20	6,872.38	50.08	206.04	90.98	1,496.40	-9,993.16	7,418.65	7,184.75	233.90	31.717	
9,500.00	6,934.81	6,875.98	6,872.16	51.48	206.04	90.97	1,496.41	-9,993.16	7,321.38	7,087.22	234.15	31.268	
9,600.00	6,934.62	6,875.76	6,871.94	52.89	206.03	90.96	1,496.41	-9,993.16	7,224.18	6,989.76	234.42	30.818	
9,700.00	6,934.43	6,875.53	6,871.71	54.32	206.02	90.96	1,496.41	-9,993.16	7,127.06	6,892.36	234.70	30.367	
9,800.00	6,934.23	6,875.31	6,871.49	55.75	206.02	90.95	1,496.41	-9,993.16	7,030.03	6,795.03	234.99	29.916	
9,900.00	6,934.04	6,875.09	6,871.27	57.19	206.01	90.94	1,496.41	-9,993.16	6,933.07	6,697.77	235.30	29.464	
10,000.00	6,933.85	6,874.87	6,871.05	58.65	206.00	90.93	1,496.41	-9,993.16	6,836.21	6,600.57	235.63	29.012	
10,100.00	6,933.66	6,874.64	6,870.83	60.10	206.00	90.93	1,496.42	-9,993.16	6,739.43	6,503.46	235.98	28.560	
10,200.00	6,933.47	6,874.42	6,870.60	61.57	205.99	90.92	1,496.42	-9,993.16	6,642.76	6,406.41	236.34	28.107	
10,300.00	6,933.28	6,874.20	6,870.38	63.04	205.98	90.91	1,496.42	-9,993.16	6,546.18	6,309.45	236.72	27.653	
10,400.00	6,933.09	6,873.98	6,870.16	64.52	205.98	90.90	1,496.42	-9,993.16	6,449.70	6,212.58	237.12	27.200	
10,500.00	6,932.89	6,873.76	6,869.94	66.01	205.97	90.90	1,496.42	-9,993.16	6,353.34	6,115.79	237.55	26.746	
10,600.00	6,932.70	6,873.53	6,869.72	67.50	205.96	90.89	1,496.43	-9,993.16	6,257.09	6,019.10	237.99	26.291	
10,700.00	6,932.51	6,873.31	6,869.49	68.99	205.96	90.88	1,496.43	-9,993.16	6,160.96	5,922.50	238.45	25.837	
10,800.00	6,932.32	6,873.09	6,869.27	70.50	205.95	90.87	1,496.43	-9,993.16	6,064.95	5,826.01	238.94	25.382	
10,900.00	6,932.13	6,872.87	6,869.05	72.00	205.94	90.87	1,496.43	-9,993.16	5,969.08	5,729.62	239.46	24.928	
11,000.00	6,931.94	6,872.64	6,868.83	73.51	205.94	90.86	1,496.43	-9,993.16	5,873.34	5,633.35	239.99	24.473	
11,100.00	6,931.75	6,872.42	6,868.60	75.02	205.93	90.85	1,496.44	-9,993.16	5,777.75	5,537.19	240.56	24.018	
11,200.00	6,931.55	6,872.20	6,868.38	76.54	205.92	90.84	1,496.44	-9,993.16	5,682.31	5,441.15	241.15	23.563	
11,300.00	6,931.36	6,871.98	6,868.16	78.06	205.92	90.84	1,496.44	-9,993.16	5,587.02	5,345.25	241.77	23.109	
11,400.00	6,931.17	6,871.76	6,867.94	79.58	205.91	90.83	1,496.44	-9,993.16	5,491.91	5,249.48	242.42	22.654	
11,500.00	6,930.98	6,871.53	6,867.72	81.11	205.90	90.82	1,496.44	-9,993.16	5,396.97	5,153.86	243.11	22.200	
11,600.00	6,930.79	6,871.31	6,867.50	82.64	205.90	90.81	1,496.45	-9,993.16	5,302.22	5,058.39	243.83	21.746	
11,700.00	6,930.60	6,871.09	6,867.27	84.17	205.89	90.81	1,496.45	-9,993.16	5,207.67	4,963.09	244.58	21.292	
11,800.00	6,930.41	6,870.87	6,867.05	85.70	205.88	90.80	1,496.45	-9,993.16	5,113.32	4,867.95	245.37	20.839	
11,900.00	6,930.21	6,870.65	6,866.83	87.24	205.88	90.79	1,496.45	-9,993.16	5,019.19	4,772.99	246.19	20.387	
12,000.00	6,930.02	6,870.43	6,866.61	88.78	205.87	90.78	1,496.45	-9,993.16	4,925.29	4,678.23	247.06	19.935	
12,100.00	6,929.83	6,870.20	6,866.39	90.32	205.86	90.78	1,496.45	-9,993.16	4,831.64	4,583.66	247.97	19.484	
12,200.00	6,929.64	6,869.98	6,866.16	91.87	205.86	90.77	1,496.46	-9,993.16	4,738.24	4,489.31	248.93	19.034	
12,300.00	6,929.45	6,869.76	6,865.94	93.41	205.85	90.76	1,496.46	-9,993.16	4,645.13	4,395.19	249.93	18.585	
12,400.00	6,929.26	6,869.54	6,865.72	94.96	205.84	90.76	1,496.46	-9,993.16	4,552.30	4,301.31	250.99	18.138	
12,500.00	6,929.07	6,869.32	6,865.50	96.51	205.84	90.75	1,496.46	-9,993.16	4,459.78	4,207.69	252.09	17.691	
12,600.00	6,928.88	6,869.09	6,865.28	98.06	205.83	90.74	1,496.46	-9,993.16	4,367.60	4,114.35	253.25	17.246	
12,700.00	6,928.68	6,868.87	6,865.06	99.62	205.82	90.73	1,496.47	-9,993.16	4,275.76	4,021.30	254.47	16.803	
12,800.00	6,928.49	6,868.65	6,864.83	101.17	205.82	90.73	1,496.47	-9,993.16	4,184.30	3,928.56	255.74	16.361	
12,900.00	6,928.30	6,868.43	6,864.61	102.73	205.81	90.72	1,496.47	-9,993.16	4,093.24	3,836.15	257.09	15.922	
13,000.00	6,928.11	6,868.21	6,864.39	104.28	205.80	90.71	1,496.47	-9,993.16	4,002.61	3,744.11	258.50	15.484	
13,100.00	6,927.92	6,867.98	6,864.17	105.84	205.80	90.70	1,496.47	-9,993.16	3,912.43	3,652.45	259.98	15.049	
13,200.00	6,927.73	6,867.76	6,863.95	107.40	205.79	90.70	1,496.48	-9,993.16	3,822.74	3,561.20	261.54	14.617	
13,300.00	6,927.54	6,867.54	6,863.72	108.97	205.78	90.69	1,496.48	-9,993.16	3,733.57	3,470.40	263.17	14.187	
13,400.00	6,927.34	6,867.32	6,863.50	110.53	205.78	90.68	1,496.48	-9,993.16	3,644.97	3,380.08	264.89	13.760	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #009A - 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	6,927.15	6,867.10	6,863.28	112.09	205.77	90.67	1,496.48	-9,993.16	3,556.97	3,290.27	266.70	13.337	
13,600.00	6,926.96	6,866.88	6,863.06	113.66	205.76	90.67	1,496.48	-9,993.16	3,469.62	3,201.02	268.60	12.917	
13,700.00	6,926.77	6,866.65	6,862.84	115.22	205.76	90.66	1,496.48	-9,993.16	3,382.97	3,112.37	270.60	12.502	
13,800.00	6,926.58	6,866.43	6,862.62	116.79	205.75	90.65	1,496.49	-9,993.16	3,297.08	3,024.37	272.71	12.090	
13,900.00	6,926.39	6,866.21	6,862.40	118.36	205.74	90.64	1,496.49	-9,993.16	3,212.01	2,937.09	274.92	11.683	
14,000.00	6,926.20	6,865.99	6,862.17	119.93	205.74	90.64	1,496.49	-9,993.16	3,127.81	2,850.57	277.24	11.282	
14,100.00	6,926.00	6,865.77	6,861.95	121.50	205.73	90.63	1,496.49	-9,993.16	3,044.58	2,764.89	279.69	10.886	
14,200.00	6,925.81	6,865.55	6,861.73	123.07	205.72	90.62	1,496.49	-9,993.16	2,962.38	2,680.12	282.26	10.495	
14,300.00	6,925.62	6,865.33	6,861.51	124.64	205.72	90.61	1,496.49	-9,993.16	2,881.31	2,596.34	284.96	10.111	
14,400.00	6,925.43	6,865.10	6,861.29	126.21	205.71	90.61	1,496.50	-9,993.16	2,801.46	2,513.66	287.80	9.734	
14,500.00	6,925.24	6,864.88	6,861.07	127.79	205.70	90.60	1,496.50	-9,993.16	2,722.94	2,432.16	290.78	9.364	
14,600.00	6,925.05	6,864.66	6,860.84	129.36	205.70	90.59	1,496.50	-9,993.16	2,645.87	2,351.97	293.90	9.003	
14,700.00	6,924.86	6,864.44	6,860.62	130.93	205.69	90.58	1,496.50	-9,993.16	2,570.38	2,273.22	297.16	8.650	
14,800.00	6,924.66	6,864.22	6,860.40	132.51	205.68	90.58	1,496.50	-9,993.16	2,496.62	2,196.04	300.58	8.306	
14,900.00	6,924.47	6,864.00	6,860.18	134.09	205.68	90.57	1,496.51	-9,993.16	2,424.73	2,120.59	304.14	7.972	
15,000.00	6,924.28	6,863.77	6,859.96	135.66	205.67	90.56	1,496.51	-9,993.16	2,354.90	2,047.05	307.85	7.650	
15,100.00	6,924.09	6,863.55	6,859.74	137.24	205.66	90.55	1,496.51	-9,993.16	2,287.31	1,975.62	311.69	7.338	
15,200.00	6,923.90	6,863.33	6,859.52	138.82	205.66	90.55	1,496.51	-9,993.16	2,222.17	1,906.50	315.67	7.040	
15,300.00	6,923.71	6,863.11	6,859.29	140.40	205.65	90.54	1,496.51	-9,993.16	2,159.69	1,839.93	319.76	6.754	
15,400.00	6,923.52	6,862.89	6,859.07	141.97	205.64	90.53	1,496.51	-9,993.16	2,100.12	1,776.17	323.95	6.483	
15,500.00	6,923.33	6,862.67	6,858.85	143.55	205.64	90.52	1,496.52	-9,993.16	2,043.71	1,715.49	328.22	6.227	
15,600.00	6,923.13	6,862.45	6,858.63	145.13	205.63	90.52	1,496.52	-9,993.16	1,990.72	1,658.20	332.52	5.987	
15,700.00	6,922.94	6,862.22	6,858.41	146.72	205.62	90.51	1,496.52	-9,993.16	1,941.44	1,604.62	336.82	5.764	
15,800.00	6,922.75	6,862.00	6,858.19	148.30	205.62	90.50	1,496.52	-9,993.16	1,896.16	1,555.08	341.09	5.559	
15,900.00	6,922.56	6,861.78	6,857.97	149.88	205.61	90.50	1,496.52	-9,993.16	1,855.17	1,509.92	345.25	5.373	
16,000.00	6,922.37	6,861.56	6,857.75	151.46	205.60	90.49	1,496.52	-9,993.16	1,818.76	1,469.50	349.26	5.207	
16,100.00	6,922.18	6,861.34	6,857.52	153.04	205.60	90.48	1,496.53	-9,993.16	1,787.22	1,434.16	353.05	5.062	
16,200.00	6,921.99	6,861.12	6,857.30	154.63	205.59	90.47	1,496.53	-9,993.16	1,760.79	1,404.23	356.56	4.938	
16,300.00	6,921.79	6,860.90	6,857.08	156.21	205.58	90.47	1,496.53	-9,993.16	1,739.71	1,380.00	359.71	4.836	
16,400.00	6,921.60	6,860.68	6,856.86	157.79	205.58	90.46	1,496.53	-9,993.16	1,724.19	1,361.74	362.45	4.757	
16,500.00	6,921.41	6,860.45	6,856.64	159.38	205.57	90.45	1,496.53	-9,993.16	1,714.37	1,349.64	364.74	4.700	
16,600.00	6,921.22	6,860.23	6,856.42	160.96	205.56	90.44	1,496.54	-9,993.16	1,710.35	1,343.84	366.51	4.667	
16,618.83	6,921.18	6,860.19	6,856.38	161.26	205.56	90.44	1,496.54	-9,993.16	1,710.25	1,343.46	366.79	4.663	CC, ES
16,700.00	6,921.03	6,860.01	6,856.20	162.55	205.56	90.44	1,496.54	-9,993.16	1,712.17	1,344.41	367.76	4.656	SF
16,800.00	6,920.84	6,859.79	6,855.98	164.13	205.55	90.43	1,496.54	-9,993.16	1,719.82	1,351.34	368.47	4.667	
16,900.00	6,920.65	6,859.57	6,855.75	165.72	205.54	90.42	1,496.54	-9,993.16	1,733.21	1,364.55	368.65	4.701	
17,000.00	6,920.45	6,859.35	6,855.53	167.30	205.54	90.41	1,496.54	-9,993.16	1,752.21	1,383.88	368.33	4.757	
17,100.00	6,920.26	6,859.13	6,855.31	168.89	205.53	90.41	1,496.54	-9,993.16	1,776.65	1,409.12	367.52	4.834	
17,200.00	6,920.07	6,858.91	6,855.09	170.48	205.52	90.40	1,496.55	-9,993.16	1,806.30	1,440.00	366.29	4.931	
17,300.00	6,919.88	6,858.68	6,854.87	172.06	205.52	90.39	1,496.55	-9,993.16	1,840.91	1,476.22	364.69	5.048	
17,400.00	6,919.69	6,858.46	6,854.65	173.65	205.51	90.38	1,496.55	-9,993.16	1,880.20	1,517.44	362.77	5.183	
17,500.00	6,919.50	6,858.24	6,854.43	175.24	205.50	90.38	1,496.55	-9,993.16	1,923.90	1,563.32	360.58	5.336	
17,600.00	6,919.31	6,858.02	6,854.21	176.83	205.50	90.37	1,496.55	-9,993.16	1,971.71	1,613.52	358.19	5.505	
17,700.00	6,919.11	6,857.80	6,853.99	178.41	205.49	90.36	1,496.55	-9,993.16	2,023.33	1,667.69	355.64	5.689	
17,759.55	6,919.00	6,857.67	6,853.85	179.36	205.49	90.36	1,496.55	-9,993.16	2,055.77	1,701.70	354.07	5.806	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-100.53	-2,206.82	-11,877.38	12,080.66				
100.00	100.00	161.00	161.00	0.25	4.82	-100.53	-2,206.82	-11,877.38	12,080.66	12,075.58	5.08	2,380.258	
200.00	200.00	261.00	261.00	0.61	7.82	-100.53	-2,206.82	-11,877.38	12,080.66	12,072.22	8.43	1,433.015	
300.00	300.00	361.00	361.00	0.97	10.82	-100.53	-2,206.82	-11,877.38	12,080.66	12,068.87	11.79	1,025.077	
400.00	400.00	461.00	461.00	1.33	13.81	-100.53	-2,206.82	-11,877.38	12,080.66	12,065.52	15.14	797.929	
500.00	500.00	561.10	561.00	1.68	16.81	-100.53	-2,206.82	-11,877.38	12,080.66	12,062.16	18.50	653.081	
600.00	600.00	661.10	661.00	2.04	19.81	-100.53	-2,206.82	-11,877.38	12,080.66	12,058.80	21.85	552.818	
688.92	688.92	750.00	749.86	2.36	22.47	-100.52	-2,204.64	-11,877.38	12,080.26	12,055.42	24.84	486.410	
700.00	700.00	759.60	759.46	2.40	22.76	-100.52	-2,204.64	-11,877.38	12,080.26	12,055.09	25.16	480.083	
800.00	800.00	846.28	846.13	2.76	25.36	-100.52	-2,204.96	-11,877.38	12,080.32	12,052.21	28.12	429.618	
900.00	900.00	932.99	932.81	3.12	27.96	-100.52	-2,205.81	-11,877.38	12,080.50	12,049.43	31.08	388.750	
1,000.00	1,000.00	1,061.41	1,061.00	3.48	31.80	-100.53	-2,206.82	-11,877.38	12,080.66	12,045.37	35.28	342.406	
1,100.00	1,099.98	1,161.39	1,160.98	3.82	34.80	66.38	-2,206.82	-11,877.38	12,079.96	12,041.34	38.62	312.806	
1,129.54	1,129.49	1,190.90	1,190.49	3.92	35.68	66.40	-2,206.82	-11,877.38	12,079.48	12,039.88	39.60	305.049	
1,200.00	1,199.88	1,259.77	1,259.32	4.15	37.75	66.42	-2,204.64	-11,877.38	12,077.81	12,035.91	41.89	288.299	
1,300.00	1,299.78	1,346.42	1,345.96	4.48	40.34	66.44	-2,204.96	-11,877.38	12,076.07	12,031.24	44.82	269.420	
1,400.00	1,399.68	1,433.14	1,432.66	4.82	42.94	66.45	-2,205.81	-11,877.38	12,074.44	12,026.68	47.76	252.824	
1,500.00	1,499.58	1,561.29	1,560.58	5.16	46.78	66.47	-2,206.82	-11,877.38	12,072.78	12,020.84	51.94	232.441	
1,600.00	1,599.48	1,661.19	1,660.48	5.50	49.78	66.49	-2,206.82	-11,877.38	12,070.97	12,015.70	55.28	218.375	
1,700.00	1,699.37	1,759.60	1,758.85	5.85	52.73	66.52	-2,204.64	-11,877.38	12,068.78	12,010.21	58.57	206.052	
1,800.00	1,799.27	1,846.37	1,845.60	6.20	55.33	66.53	-2,204.96	-11,877.38	12,067.04	12,005.52	61.52	196.149	
1,900.00	1,899.17	1,933.21	1,932.42	6.55	57.93	66.55	-2,205.81	-11,877.38	12,065.42	12,000.95	64.47	187.142	
2,000.00	1,999.07	2,061.08	2,060.07	6.90	61.76	66.57	-2,206.82	-11,877.38	12,063.77	11,995.11	68.66	175.715	
2,100.00	2,098.96	2,160.98	2,159.96	7.25	64.75	66.59	-2,206.82	-11,877.38	12,061.97	11,989.97	72.00	167.524	
2,200.00	2,198.86	2,259.44	2,258.38	7.61	67.70	66.62	-2,204.64	-11,877.38	12,059.78	11,984.48	75.31	160.145	
2,300.00	2,298.76	2,346.32	2,345.25	7.96	70.31	66.63	-2,204.96	-11,877.38	12,058.05	11,979.79	78.26	154.070	
2,400.00	2,398.66	2,433.27	2,432.18	8.32	72.91	66.65	-2,205.81	-11,877.38	12,056.43	11,975.21	81.22	148.433	
2,500.00	2,498.56	2,560.88	2,559.56	8.68	76.74	66.67	-2,206.82	-11,877.38	12,054.79	11,969.39	85.40	141.150	
2,600.00	2,598.45	2,660.77	2,659.45	9.03	79.73	66.69	-2,206.82	-11,877.38	12,053.00	11,964.24	88.75	135.801	
2,700.00	2,698.35	2,759.27	2,757.91	9.39	82.68	66.72	-2,204.64	-11,877.38	12,050.82	11,958.76	92.06	130.897	
2,800.00	2,798.25	2,846.27	2,844.89	9.75	85.29	66.73	-2,204.96	-11,877.38	12,049.10	11,954.07	95.03	126.795	
2,900.00	2,898.15	2,933.34	2,931.94	10.11	87.90	66.74	-2,205.81	-11,877.38	12,047.49	11,949.49	98.00	122.939	
3,000.00	2,998.04	3,060.67	3,059.04	10.47	91.71	66.76	-2,206.82	-11,877.38	12,045.85	11,943.68	102.17	117.900	
3,100.00	3,097.94	3,160.57	3,158.94	10.83	94.70	66.78	-2,206.82	-11,877.38	12,044.06	11,938.54	105.52	114.138	
3,200.00	3,197.84	3,259.10	3,257.44	11.19	97.66	66.81	-2,204.64	-11,877.38	12,041.90	11,933.06	108.83	110.644	
3,300.00	3,297.74	3,346.22	3,344.54	11.55	100.27	66.83	-2,204.96	-11,877.38	12,040.18	11,928.38	111.80	107.690	
3,400.00	3,397.64	3,433.40	3,431.70	11.91	102.88	66.84	-2,205.81	-11,877.38	12,038.57	11,923.80	114.78	104.887	
3,500.00	3,497.53	3,560.46	3,558.53	12.27	106.69	66.86	-2,206.82	-11,877.38	12,036.94	11,918.00	118.94	101.198	
3,600.00	3,597.43	3,660.36	3,658.43	12.63	109.68	66.88	-2,206.82	-11,877.38	12,035.17	11,912.87	122.30	98.408	
3,700.00	3,697.33	3,758.93	3,756.97	12.99	112.63	66.91	-2,204.64	-11,877.38	12,033.01	11,907.40	125.61	95.795	
3,800.00	3,797.23	3,846.17	3,844.18	13.35	115.25	66.93	-2,204.96	-11,877.38	12,031.30	11,902.71	128.59	93.565	
3,900.00	3,897.12	3,933.47	3,931.46	13.72	117.86	66.94	-2,205.82	-11,877.38	12,029.70	11,898.13	131.56	91.436	
4,000.00	3,997.02	4,060.26	4,058.02	14.08	121.66	66.96	-2,206.82	-11,877.38	12,028.07	11,892.35	135.72	88.621	
4,100.00	4,096.92	4,160.15	4,157.92	14.44	124.66	66.98	-2,206.82	-11,877.38	12,026.30	11,887.22	139.08	86.471	
4,200.00	4,196.82	4,258.77	4,256.49	14.80	127.61	67.01	-2,204.64	-11,877.38	12,024.16	11,881.76	142.40	84.442	
4,300.00	4,296.72	4,346.12	4,343.83	15.16	130.23	67.03	-2,204.96	-11,877.38	12,022.46	11,877.08	145.37	82.700	
4,400.00	4,396.61	4,433.54	4,431.23	15.53	132.85	67.04	-2,205.82	-11,877.38	12,020.86	11,872.50	148.36	81.027	
4,500.00	4,496.51	4,560.05	4,557.51	15.89	136.64	67.06	-2,206.82	-11,877.38	12,019.24	11,866.73	152.51	78.810	
4,600.00	4,596.41	4,659.95	4,657.41	16.25	139.63	67.08	-2,206.82	-11,877.38	12,017.48	11,861.61	155.86	77.102	
4,700.00	4,696.31	4,758.60	4,756.02	16.61	142.59	67.11	-2,204.64	-11,877.38	12,015.34	11,856.16	159.18	75.482	
4,800.00	4,796.20	4,846.06	4,843.47	16.98	145.21	67.13	-2,204.96	-11,877.38	12,013.65	11,851.48	162.16	74.083	
4,900.00	4,896.10	4,933.60	4,930.99	17.34	147.83	67.14	-2,205.82	-11,877.38	12,012.05	11,846.90	165.15	72.734	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
5,000.00	4,996.00	5,059.84	5,057.00	17.70	151.62	67.16	-2,206.82	-11,877.38	12,010.44	11,841.14	169.30	70.944	
5,100.00	5,095.90	5,159.74	5,156.90	18.07	154.61	67.18	-2,206.82	-11,877.38	12,008.68	11,836.03	172.65	69.555	
5,200.00	5,195.80	5,258.43	5,255.55	18.43	157.57	67.21	-2,204.64	-11,877.38	12,006.56	11,830.59	175.97	68.231	
5,300.00	5,295.69	5,346.01	5,343.12	18.79	160.19	67.23	-2,204.96	-11,877.38	12,004.87	11,825.92	178.96	67.082	
5,400.00	5,395.59	5,433.67	5,430.75	19.16	162.82	67.24	-2,205.82	-11,877.38	12,003.29	11,821.34	181.95	65.971	
5,500.00	5,495.49	5,559.64	5,556.49	19.52	166.59	67.26	-2,206.82	-11,877.38	12,001.68	11,815.59	186.08	64.496	
5,600.00	5,595.39	5,659.53	5,656.39	19.88	169.59	67.28	-2,206.82	-11,877.38	11,999.93	11,810.49	189.44	63.344	
5,700.00	5,695.28	5,758.26	5,755.07	20.25	172.54	67.31	-2,204.64	-11,877.38	11,997.82	11,805.06	192.76	62.242	
5,800.00	5,795.18	5,845.96	5,842.76	20.61	175.17	67.33	-2,204.96	-11,877.38	11,996.14	11,800.38	195.75	61.282	
5,900.00	5,895.08	5,933.74	5,930.51	20.97	177.80	67.34	-2,205.82	-11,877.38	11,994.56	11,795.81	198.74	60.352	
6,000.00	5,994.98	6,059.43	6,055.98	21.34	181.57	67.36	-2,206.82	-11,877.38	11,992.95	11,790.08	202.87	59.115	
6,100.00	6,094.88	6,159.33	6,155.88	21.70	184.56	67.38	-2,206.82	-11,877.38	11,991.21	11,784.98	206.23	58.145	
6,200.00	6,194.77	6,258.09	6,254.60	22.06	187.52	67.41	-2,204.64	-11,877.38	11,989.11	11,779.56	209.55	57.213	
6,300.00	6,294.67	6,345.91	6,342.40	22.43	190.15	67.43	-2,204.96	-11,877.38	11,987.43	11,774.89	212.55	56.399	
6,314.74	6,309.40	6,358.86	6,355.35	22.48	190.54	67.43	-2,205.05	-11,877.38	11,987.20	11,774.21	212.99	56.281	
6,350.00	6,344.59	6,389.82	6,386.31	22.61	191.47	24.25	-2,205.32	-11,877.38	11,985.67	11,771.63	214.04	55.996	
6,400.00	6,394.26	6,433.53	6,430.00	22.79	192.78	7.26	-2,205.82	-11,877.38	11,980.25	11,764.71	215.53	55.585	
6,450.00	6,443.36	6,508.12	6,504.36	22.97	195.01	1.33	-2,206.82	-11,877.38	11,971.04	11,753.10	217.94	54.928	
6,500.00	6,491.60	6,556.35	6,552.60	23.15	196.46	-1.73	-2,206.82	-11,877.38	11,957.93	11,738.37	219.56	54.464	
6,550.00	6,538.67	6,603.43	6,599.67	23.32	197.87	-3.69	-2,206.82	-11,877.38	11,941.13	11,720.00	221.13	54.001	
6,600.00	6,584.29	6,649.05	6,645.29	23.49	199.24	-5.17	-2,206.82	-11,877.38	11,920.75	11,698.10	222.65	53.540	
6,650.00	6,628.18	6,692.94	6,689.18	23.66	200.55	-6.41	-2,206.82	-11,877.38	11,896.92	11,672.80	224.11	53.084	
6,700.00	6,670.06	6,734.82	6,731.06	23.83	201.81	-7.58	-2,206.82	-11,877.38	11,869.77	11,644.27	225.51	52.636	
6,750.00	6,709.68	6,771.48	6,767.69	24.00	202.90	-8.74	-2,204.66	-11,877.38	11,839.13	11,612.40	226.73	52.217	
6,800.00	6,746.79	6,804.15	6,800.34	24.17	203.88	-10.00	-2,204.74	-11,877.38	11,805.91	11,578.08	227.82	51.821	
6,850.00	6,781.17	6,834.41	6,830.60	24.35	204.79	-11.44	-2,204.89	-11,877.38	11,769.95	11,541.12	228.83	51.435	
6,900.00	6,812.60	6,862.09	6,858.27	24.54	205.62	-13.13	-2,205.08	-11,877.38	11,731.47	11,501.72	229.75	51.062	
6,950.00	6,840.88	6,887.00	6,883.18	24.74	206.37	-15.22	-2,205.30	-11,877.38	11,690.71	11,460.14	230.57	50.703	
7,000.00	6,865.85	6,909.00	6,905.17	24.96	207.02	-17.89	-2,205.52	-11,877.38	11,647.92	11,416.62	231.30	50.359	
7,050.00	6,887.35	6,927.94	6,924.11	25.19	207.59	-21.45	-2,205.75	-11,877.38	11,603.35	11,371.44	231.91	50.033	
7,100.00	6,905.25	6,943.71	6,939.88	25.43	208.07	-26.39	-2,205.95	-11,877.38	11,557.29	11,324.86	232.43	49.724	
7,150.00	6,919.43	6,956.21	6,952.37	25.69	208.44	-33.61	-2,206.13	-11,877.38	11,510.01	11,277.18	232.83	49.435	
7,200.00	6,929.81	6,965.36	6,961.52	25.96	208.71	-44.62	-2,206.26	-11,877.38	11,461.81	11,228.69	233.12	49.167	
7,250.00	6,936.33	7,001.39	6,997.33	26.25	209.79	-62.27	-2,206.82	-11,877.38	11,413.03	11,178.82	234.21	48.730	
7,300.00	6,938.95	7,004.01	6,999.95	26.55	209.87	-85.80	-2,206.82	-11,877.38	11,363.86	11,129.57	234.29	48.504	
7,309.56	6,939.00	7,004.06	7,000.00	26.60	209.87	-90.61	-2,206.82	-11,877.38	11,354.46	11,120.17	234.29	48.463	
7,400.00	6,938.83	7,003.89	6,999.83	27.19	209.87	-90.61	-2,206.82	-11,877.38	11,265.44	11,031.16	234.28	48.085	
7,500.00	6,938.64	7,003.70	6,999.64	27.91	209.86	-90.60	-2,206.82	-11,877.38	11,167.05	10,932.77	234.28	47.666	
7,600.00	6,938.44	7,003.51	6,999.44	28.70	209.86	-90.60	-2,206.82	-11,877.38	11,068.68	10,834.40	234.28	47.246	
7,700.00	6,938.25	7,003.31	6,999.25	29.55	209.85	-90.59	-2,206.82	-11,877.38	10,970.34	10,736.06	234.29	46.825	
7,800.00	6,938.06	7,003.12	6,999.06	30.47	209.85	-90.59	-2,206.82	-11,877.38	10,872.04	10,637.74	234.30	46.403	
7,900.00	6,937.87	7,002.93	6,998.87	31.44	209.84	-90.58	-2,206.82	-11,877.38	10,773.76	10,539.45	234.31	45.980	
8,000.00	6,937.68	7,002.74	6,998.68	32.46	209.83	-90.57	-2,206.82	-11,877.38	10,675.52	10,441.19	234.33	45.557	
8,100.00	6,937.49	7,002.55	6,998.49	33.53	209.83	-90.57	-2,206.82	-11,877.38	10,577.31	10,342.95	234.36	45.132	
8,200.00	6,937.30	7,002.36	6,998.30	34.64	209.82	-90.56	-2,206.82	-11,877.38	10,479.14	10,244.74	234.40	44.707	
8,300.00	6,937.10	7,002.17	6,998.10	35.78	209.82	-90.56	-2,206.82	-11,877.38	10,380.99	10,146.56	234.44	44.280	
8,400.00	6,936.91	7,001.97	6,997.91	36.96	209.81	-90.55	-2,206.82	-11,877.38	10,282.89	10,048.41	234.48	43.853	
8,500.00	6,936.72	7,001.78	6,997.72	38.17	209.81	-90.55	-2,206.82	-11,877.38	10,184.82	9,950.28	234.54	43.425	
8,600.00	6,936.53	7,001.59	6,997.53	39.41	209.80	-90.54	-2,206.82	-11,877.38	10,086.79	9,852.19	234.60	42.996	
8,700.00	6,936.34	7,001.40	6,997.34	40.68	209.79	-90.54	-2,206.82	-11,877.38	9,988.80	9,754.13	234.67	42.566	
8,800.00	6,936.15	7,001.21	6,997.15	41.97	209.79	-90.53	-2,206.82	-11,877.38	9,890.85	9,656.11	234.74	42.135	
8,900.00	6,935.96	7,001.02	6,996.96	43.27	209.78	-90.53	-2,206.82	-11,877.38	9,792.94	9,558.11	234.83	41.703	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
9,000.00	6,935.76	7,000.83	6,996.76	44.60	209.78	-90.52	-2,206.82	-11,877.38	9,695.07	9,460.15	234.92	41.270	
9,100.00	6,935.57	7,000.63	6,996.57	45.95	209.77	-90.51	-2,206.82	-11,877.38	9,597.25	9,362.23	235.02	40.835	
9,200.00	6,935.38	7,000.44	6,996.38	47.31	209.76	-90.51	-2,206.82	-11,877.38	9,499.47	9,264.34	235.13	40.400	
9,300.00	6,935.19	7,000.25	6,996.19	48.69	209.76	-90.50	-2,206.82	-11,877.38	9,401.74	9,166.49	235.25	39.964	
9,400.00	6,935.00	7,000.06	6,996.00	50.08	209.75	-90.50	-2,206.82	-11,877.38	9,304.06	9,068.68	235.38	39.527	
9,500.00	6,934.81	6,969.64	6,965.79	51.48	208.84	-89.63	-2,206.32	-11,877.38	9,206.37	8,971.75	234.62	39.239	
9,600.00	6,934.62	6,969.46	6,965.62	52.89	208.84	-89.63	-2,206.32	-11,877.38	9,108.79	8,874.01	234.77	38.798	
9,700.00	6,934.43	6,969.29	6,965.44	54.32	208.83	-89.62	-2,206.32	-11,877.38	9,011.26	8,776.32	234.93	38.356	
9,800.00	6,934.23	6,969.12	6,965.27	55.75	208.83	-89.62	-2,206.32	-11,877.38	8,913.78	8,678.67	235.11	37.914	
9,900.00	6,934.04	6,968.94	6,965.10	57.19	208.82	-89.61	-2,206.31	-11,877.38	8,816.36	8,581.07	235.29	37.470	
10,000.00	6,933.85	6,968.77	6,964.92	58.65	208.82	-89.61	-2,206.31	-11,877.38	8,719.00	8,483.51	235.49	37.025	
10,100.00	6,933.66	6,968.59	6,964.75	60.10	208.81	-89.60	-2,206.31	-11,877.38	8,621.70	8,386.00	235.70	36.579	
10,200.00	6,933.47	6,968.42	6,964.57	61.57	208.81	-89.60	-2,206.31	-11,877.38	8,524.47	8,288.54	235.92	36.132	
10,300.00	6,933.28	6,968.25	6,964.40	63.04	208.80	-89.59	-2,206.30	-11,877.38	8,427.29	8,191.13	236.16	35.684	
10,400.00	6,933.09	6,968.07	6,964.23	64.52	208.79	-89.59	-2,206.30	-11,877.38	8,330.19	8,093.77	236.41	35.236	
10,500.00	6,932.89	6,967.90	6,964.05	66.01	208.79	-89.58	-2,206.30	-11,877.38	8,233.15	7,996.47	236.68	34.786	
10,600.00	6,932.70	6,967.72	6,963.88	67.50	208.78	-89.58	-2,206.30	-11,877.38	8,136.19	7,899.23	236.96	34.336	
10,700.00	6,932.51	6,967.55	6,963.70	68.99	208.78	-89.57	-2,206.29	-11,877.38	8,039.30	7,802.04	237.26	33.884	
10,800.00	6,932.32	6,967.38	6,963.53	70.50	208.77	-89.57	-2,206.29	-11,877.38	7,942.48	7,704.91	237.57	33.432	
10,900.00	6,932.13	6,967.20	6,963.36	72.00	208.77	-89.56	-2,206.29	-11,877.38	7,845.75	7,607.85	237.90	32.979	
11,000.00	6,931.94	6,967.03	6,963.18	73.51	208.76	-89.56	-2,206.29	-11,877.38	7,749.10	7,510.85	238.25	32.525	
11,100.00	6,931.75	6,966.85	6,963.01	75.02	208.76	-89.55	-2,206.28	-11,877.38	7,652.54	7,413.92	238.61	32.071	
11,200.00	6,931.55	6,966.68	6,962.83	76.54	208.75	-89.55	-2,206.28	-11,877.38	7,556.06	7,317.06	239.00	31.616	
11,300.00	6,931.36	6,966.51	6,962.66	78.06	208.75	-89.54	-2,206.28	-11,877.38	7,459.68	7,220.28	239.40	31.160	
11,400.00	6,931.17	6,966.33	6,962.49	79.58	208.74	-89.54	-2,206.27	-11,877.38	7,363.39	7,123.57	239.83	30.703	
11,500.00	6,930.98	6,966.16	6,962.31	81.11	208.74	-89.53	-2,206.27	-11,877.38	7,267.21	7,026.94	240.27	30.246	
11,600.00	6,930.79	6,965.98	6,962.14	82.64	208.73	-89.53	-2,206.27	-11,877.38	7,171.13	6,930.39	240.74	29.788	
11,700.00	6,930.60	6,965.81	6,961.96	84.17	208.73	-89.52	-2,206.27	-11,877.38	7,075.15	6,833.93	241.23	29.330	
11,800.00	6,930.41	6,965.64	6,961.79	85.70	208.72	-89.52	-2,206.26	-11,877.38	6,979.30	6,737.56	241.74	28.871	
11,900.00	6,930.21	6,965.46	6,961.62	87.24	208.72	-89.51	-2,206.26	-11,877.38	6,883.55	6,641.28	242.28	28.412	
12,000.00	6,930.02	6,965.29	6,961.44	88.78	208.71	-89.51	-2,206.26	-11,877.38	6,787.94	6,545.10	242.84	27.953	
12,100.00	6,929.83	6,965.11	6,961.27	90.32	208.71	-89.50	-2,206.26	-11,877.38	6,692.45	6,449.02	243.42	27.493	
12,200.00	6,929.64	6,964.94	6,961.10	91.87	208.70	-89.50	-2,206.25	-11,877.38	6,597.09	6,353.05	244.04	27.033	
12,300.00	6,929.45	6,964.77	6,960.92	93.41	208.70	-89.49	-2,206.25	-11,877.38	6,501.87	6,257.19	244.68	26.573	
12,400.00	6,929.26	6,964.59	6,960.75	94.96	208.69	-89.49	-2,206.25	-11,877.38	6,406.80	6,161.45	245.35	26.113	
12,500.00	6,929.07	6,964.42	6,960.57	96.51	208.69	-89.48	-2,206.25	-11,877.38	6,311.88	6,065.83	246.05	25.653	
12,600.00	6,928.88	6,964.25	6,960.40	98.06	208.68	-89.48	-2,206.24	-11,877.38	6,217.12	5,970.34	246.78	25.193	
12,700.00	6,928.68	6,964.07	6,960.23	99.62	208.68	-89.47	-2,206.24	-11,877.38	6,122.53	5,874.98	247.55	24.733	
12,800.00	6,928.49	6,963.90	6,960.05	101.17	208.67	-89.47	-2,206.24	-11,877.38	6,028.11	5,779.77	248.34	24.273	
12,900.00	6,928.30	6,963.72	6,959.88	102.73	208.66	-89.46	-2,206.24	-11,877.38	5,933.87	5,684.70	249.17	23.814	
13,000.00	6,928.11	6,963.55	6,959.71	104.28	208.66	-89.46	-2,206.23	-11,877.38	5,839.83	5,589.79	250.04	23.355	
13,100.00	6,927.92	6,963.38	6,959.53	105.84	208.65	-89.45	-2,206.23	-11,877.38	5,745.99	5,495.04	250.95	22.897	
13,200.00	6,927.73	6,963.20	6,959.36	107.40	208.65	-89.45	-2,206.23	-11,877.38	5,652.35	5,400.46	251.89	22.439	
13,300.00	6,927.54	6,963.03	6,959.19	108.97	208.64	-89.44	-2,206.22	-11,877.38	5,558.94	5,306.06	252.88	21.983	
13,400.00	6,927.34	6,962.86	6,959.01	110.53	208.64	-89.44	-2,206.22	-11,877.38	5,465.77	5,211.86	253.91	21.526	
13,500.00	6,927.15	6,962.68	6,958.84	112.09	208.63	-89.43	-2,206.22	-11,877.38	5,372.84	5,117.85	254.98	21.071	
13,600.00	6,926.96	6,962.51	6,958.66	113.66	208.63	-89.43	-2,206.22	-11,877.38	5,280.16	5,024.06	256.10	20.617	
13,700.00	6,926.77	6,962.33	6,958.49	115.22	208.62	-89.42	-2,206.21	-11,877.38	5,187.76	4,930.49	257.27	20.165	
13,800.00	6,926.58	6,962.16	6,958.32	116.79	208.62	-89.42	-2,206.21	-11,877.38	5,095.65	4,837.16	258.49	19.713	
13,900.00	6,926.39	6,961.99	6,958.14	118.36	208.61	-89.41	-2,206.21	-11,877.38	5,003.84	4,744.08	259.76	19.264	
14,000.00	6,926.20	6,961.81	6,957.97	119.93	208.61	-89.41	-2,206.21	-11,877.38	4,912.34	4,651.26	261.08	18.815	
14,100.00	6,926.00	6,961.64	6,957.80	121.50	208.60	-89.40	-2,206.20	-11,877.38	4,821.19	4,558.73	262.46	18.369	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,961.47	6,957.62	123.07	208.60	-89.40	-2,206.20	-11,877.38	4,730.39	4,466.49	263.91	17.924	
14,300.00	6,925.62	6,961.29	6,957.45	124.64	208.59	-89.39	-2,206.20	-11,877.38	4,639.98	4,374.56	265.41	17.482	
14,400.00	6,925.43	6,961.12	6,957.28	126.21	208.59	-89.39	-2,206.20	-11,877.38	4,549.96	4,282.98	266.98	17.042	
14,500.00	6,925.24	6,960.95	6,957.10	127.79	208.58	-89.38	-2,206.19	-11,877.38	4,460.37	4,191.75	268.62	16.605	
14,600.00	6,925.05	6,960.77	6,956.93	129.36	208.58	-89.38	-2,206.19	-11,877.38	4,371.23	4,100.90	270.33	16.170	
14,700.00	6,924.86	6,960.60	6,956.75	130.93	208.57	-89.37	-2,206.19	-11,877.38	4,282.57	4,010.45	272.12	15.738	
14,800.00	6,924.66	6,960.42	6,956.58	132.51	208.57	-89.37	-2,206.19	-11,877.38	4,194.42	3,920.44	273.98	15.309	
14,900.00	6,924.47	6,960.25	6,956.41	134.09	208.56	-89.36	-2,206.18	-11,877.38	4,106.81	3,830.88	275.93	14.884	
15,000.00	6,924.28	6,960.08	6,956.23	135.66	208.56	-89.36	-2,206.18	-11,877.38	4,019.78	3,741.82	277.96	14.462	
15,100.00	6,924.09	6,959.90	6,956.06	137.24	208.55	-89.35	-2,206.18	-11,877.38	3,933.37	3,653.29	280.08	14.044	
15,200.00	6,923.90	6,959.73	6,955.89	138.82	208.54	-89.35	-2,206.18	-11,877.38	3,847.62	3,565.32	282.30	13.630	
15,300.00	6,923.71	6,959.56	6,955.71	140.40	208.54	-89.34	-2,206.17	-11,877.38	3,762.56	3,477.95	284.61	13.220	
15,400.00	6,923.52	6,959.38	6,955.54	141.97	208.53	-89.34	-2,206.17	-11,877.38	3,678.27	3,391.24	287.03	12.815	
15,500.00	6,923.33	6,959.21	6,955.37	143.55	208.53	-89.33	-2,206.17	-11,877.38	3,594.77	3,305.23	289.55	12.415	
15,600.00	6,923.13	6,959.04	6,955.19	145.13	208.52	-89.33	-2,206.17	-11,877.38	3,512.14	3,219.96	292.18	12.020	
15,700.00	6,922.94	6,958.86	6,955.02	146.72	208.52	-89.32	-2,206.16	-11,877.38	3,430.44	3,135.51	294.93	11.631	
15,800.00	6,922.75	6,958.69	6,954.85	148.30	208.51	-89.32	-2,206.16	-11,877.38	3,349.72	3,051.93	297.79	11.249	
15,900.00	6,922.56	6,958.52	6,954.67	149.88	208.51	-89.31	-2,206.16	-11,877.38	3,270.08	2,969.30	300.78	10.872	
16,000.00	6,922.37	6,958.34	6,954.50	151.46	208.50	-89.31	-2,206.16	-11,877.38	3,191.57	2,887.68	303.90	10.502	
16,100.00	6,922.18	6,958.17	6,954.33	153.04	208.50	-89.30	-2,206.15	-11,877.38	3,114.31	2,807.17	307.14	10.140	
16,200.00	6,921.99	6,957.99	6,954.15	154.63	208.49	-89.30	-2,206.15	-11,877.38	3,038.36	2,727.85	310.52	9.785	
16,300.00	6,921.79	6,957.82	6,953.98	156.21	208.49	-89.29	-2,206.15	-11,877.38	2,963.85	2,649.82	314.03	9.438	
16,400.00	6,921.60	6,957.65	6,953.81	157.79	208.48	-89.29	-2,206.15	-11,877.38	2,890.87	2,573.20	317.67	9.100	
16,500.00	6,921.41	6,957.47	6,953.63	159.38	208.48	-89.28	-2,206.14	-11,877.38	2,819.56	2,498.10	321.45	8.771	
16,600.00	6,921.22	6,957.30	6,953.46	160.96	208.47	-89.28	-2,206.14	-11,877.38	2,750.03	2,424.66	325.36	8.452	
16,700.00	6,921.03	6,957.13	6,953.29	162.55	208.47	-89.27	-2,206.14	-11,877.38	2,682.42	2,353.02	329.40	8.143	
16,800.00	6,920.84	6,956.95	6,953.11	164.13	208.46	-89.27	-2,206.14	-11,877.38	2,616.90	2,283.33	333.57	7.845	
16,900.00	6,920.65	6,956.78	6,952.94	165.72	208.46	-89.26	-2,206.13	-11,877.38	2,553.61	2,215.77	337.84	7.559	
17,000.00	6,920.45	6,956.61	6,952.77	167.30	208.45	-89.26	-2,206.13	-11,877.38	2,492.72	2,150.50	342.21	7.284	
17,100.00	6,920.26	6,956.43	6,952.59	168.89	208.45	-89.26	-2,206.13	-11,877.38	2,434.42	2,087.75	346.67	7.022	
17,200.00	6,920.07	6,956.26	6,952.42	170.48	208.44	-89.25	-2,206.13	-11,877.38	2,378.90	2,027.70	351.20	6.774	
17,300.00	6,919.88	6,956.09	6,952.25	172.06	208.44	-89.25	-2,206.12	-11,877.38	2,326.35	1,970.59	355.76	6.539	
17,400.00	6,919.69	6,955.91	6,952.07	173.65	208.43	-89.24	-2,206.12	-11,877.38	2,276.98	1,916.64	360.34	6.319	
17,500.00	6,919.50	6,955.74	6,951.90	175.24	208.43	-89.24	-2,206.12	-11,877.38	2,231.01	1,866.12	364.89	6.114	
17,600.00	6,919.31	6,955.57	6,951.73	176.83	208.42	-89.23	-2,206.12	-11,877.38	2,188.64	1,819.26	369.38	5.925	
17,700.00	6,919.11	6,955.39	6,951.55	178.41	208.42	-89.23	-2,206.11	-11,877.38	2,150.09	1,776.32	373.77	5.752	
17,759.55	6,919.00	6,955.29	6,951.45	179.36	208.41	-89.22	-2,206.11	-11,877.38	2,129.04	1,752.72	376.32	5.658	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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-82.02	1,408.21	-10,045.23	10,143.97				
100.00	100.00	0.00	0.00	0.25	0.00	-82.02	1,408.21	-10,045.23	10,145.46	10,145.21	0.26	N/A	
200.00	200.00	0.00	0.00	0.61	0.00	-82.02	1,408.21	-10,045.23	10,147.95	10,147.33	0.61	N/A	
300.00	300.00	0.00	0.00	0.97	0.00	-82.02	1,408.21	-10,045.23	10,151.42	10,150.44	0.97	N/A	
400.00	400.00	0.00	0.00	1.33	0.00	-82.02	1,408.21	-10,045.23	10,155.87	10,154.54	1.33	7,636.201	
500.00	500.00	0.00	0.00	1.68	0.00	-82.02	1,408.21	-10,045.23	10,161.30	10,159.61	1.69	6,020.160	
600.00	600.00	0.00	0.00	2.04	0.00	-82.02	1,408.21	-10,045.23	10,167.72	10,165.67	2.05	4,971.260	
700.00	700.00	0.00	0.00	2.40	0.00	-82.02	1,408.21	-10,045.23	10,175.11	10,172.71	2.40	4,235.883	
800.00	800.00	0.00	0.00	2.76	0.00	-82.02	1,408.21	-10,045.23	10,183.48	10,180.72	2.76	3,692.005	
900.00	900.00	0.00	0.00	3.12	0.00	-82.02	1,408.21	-10,045.23	10,192.82	10,189.71	3.11	3,273.648	
1,000.00	1,000.00	550.00	533.60	3.48	2.16	-82.14	1,393.23	-10,089.51	10,201.09	10,195.44	5.65	1,805.607	
1,100.00	1,099.98	550.00	533.60	3.82	2.16	84.63	1,393.23	-10,089.51	10,206.99	10,201.00	5.99	1,703.276	
1,129.54	1,129.49	563.12	546.64	3.92	2.20	84.59	1,392.20	-10,090.50	10,208.82	10,202.69	6.13	1,665.103	
1,200.00	1,199.88	575.00	558.44	4.15	2.24	84.59	1,391.23	-10,091.46	10,213.44	10,207.04	6.40	1,595.488	
1,300.00	1,299.78	600.00	583.25	4.48	2.32	84.58	1,389.02	-10,093.66	10,220.64	10,213.82	6.82	1,499.209	
1,400.00	1,399.68	650.00	632.73	4.82	2.49	84.56	1,383.75	-10,098.54	10,228.49	10,221.17	7.32	1,396.424	
1,500.00	1,499.58	700.00	682.04	5.16	2.67	84.53	1,377.41	-10,103.83	10,236.85	10,229.01	7.84	1,305.286	
1,600.00	1,599.48	713.03	694.86	5.50	2.72	84.53	1,375.60	-10,105.30	10,245.84	10,237.61	8.23	1,244.520	
1,700.00	1,699.37	725.00	706.61	5.85	2.77	84.52	1,373.87	-10,106.76	10,255.66	10,247.04	8.62	1,189.686	
1,800.00	1,799.27	750.00	731.10	6.20	2.87	84.50	1,370.09	-10,110.08	10,266.33	10,257.27	9.06	1,133.215	
1,900.00	1,899.17	759.85	740.73	6.55	2.91	84.49	1,368.55	-10,111.48	10,277.77	10,268.32	9.44	1,088.466	
2,000.00	1,999.07	784.16	764.46	6.90	3.01	84.48	1,364.70	-10,115.07	10,289.98	10,280.10	9.88	1,041.268	
2,100.00	2,098.96	800.00	779.91	7.25	3.08	84.46	1,362.17	-10,117.49	10,302.92	10,292.63	10.29	1,001.303	
2,200.00	2,198.86	825.00	804.25	7.61	3.19	84.44	1,358.14	-10,121.52	10,316.60	10,305.87	10.73	961.087	
2,300.00	2,298.76	837.41	816.30	7.96	3.24	84.43	1,356.10	-10,123.64	10,331.11	10,319.98	11.13	928.298	
2,400.00	2,398.66	850.00	828.51	8.32	3.30	84.42	1,354.00	-10,125.90	10,346.44	10,334.91	11.52	897.820	
2,500.00	2,498.56	875.00	852.70	8.68	3.41	84.40	1,349.74	-10,130.59	10,362.54	10,350.57	11.97	865.642	
2,600.00	2,598.45	900.00	876.81	9.03	3.53	84.38	1,345.36	-10,135.54	10,379.42	10,367.00	12.42	835.767	
2,700.00	2,698.35	900.00	876.81	9.39	3.53	84.38	1,345.36	-10,135.54	10,397.04	10,384.28	12.76	814.877	
2,800.00	2,798.25	925.00	900.76	9.75	3.66	84.36	1,340.63	-10,140.91	10,415.53	10,402.32	13.21	788.566	
2,900.00	2,898.15	925.00	900.76	10.11	3.66	84.36	1,340.63	-10,140.91	10,434.78	10,421.23	13.55	770.357	
3,000.00	2,998.04	975.00	948.29	10.47	3.92	84.30	1,330.16	-10,152.34	10,454.70	10,440.59	14.11	740.832	
3,100.00	3,097.94	1,000.00	971.91	10.83	4.05	84.27	1,324.46	-10,158.23	10,475.20	10,460.63	14.57	719.132	
3,200.00	3,197.84	1,025.00	995.44	11.19	4.19	84.24	1,318.54	-10,164.25	10,496.33	10,481.31	15.02	698.727	
3,300.00	3,297.74	1,050.00	1,018.87	11.55	4.34	84.21	1,312.43	-10,170.47	10,518.16	10,502.68	15.48	679.516	
3,400.00	3,397.64	1,088.07	1,054.41	11.91	4.56	84.16	1,302.89	-10,180.23	10,540.65	10,524.64	16.00	658.602	
3,500.00	3,497.53	1,125.00	1,088.80	12.27	4.78	84.11	1,293.52	-10,189.92	10,563.71	10,547.19	16.53	639.195	
3,600.00	3,597.43	1,175.00	1,135.30	12.63	5.08	84.04	1,280.88	-10,203.23	10,587.25	10,570.13	17.12	618.402	
3,700.00	3,697.33	1,211.22	1,169.03	12.99	5.30	83.99	1,272.01	-10,213.03	10,611.30	10,593.66	17.64	601.543	
3,800.00	3,797.23	1,237.08	1,193.11	13.35	5.46	83.96	1,265.88	-10,220.18	10,635.99	10,617.89	18.10	587.531	
3,900.00	3,897.12	1,304.76	1,256.23	13.72	5.88	83.88	1,250.58	-10,239.20	10,661.24	10,642.45	18.79	567.383	
4,000.00	3,997.02	1,656.45	1,585.03	14.08	8.06	83.46	1,170.29	-10,334.70	10,686.14	10,665.08	21.06	507.458	
4,100.00	4,096.92	1,732.92	1,656.56	14.44	8.54	83.36	1,152.02	-10,354.61	10,709.38	10,687.57	21.81	490.938	
4,200.00	4,196.82	1,880.54	1,794.60	14.80	9.47	83.18	1,116.10	-10,392.64	10,732.37	10,709.39	22.98	467.016	
4,300.00	4,296.72	1,925.00	1,836.17	15.16	9.75	83.12	1,105.27	-10,404.11	10,755.45	10,731.89	23.56	456.550	
4,400.00	4,396.61	1,950.00	1,859.53	15.53	9.91	83.09	1,099.30	-10,410.73	10,779.15	10,755.12	24.02	448.722	
4,500.00	4,496.51	1,992.62	1,899.32	15.89	10.18	83.04	1,089.25	-10,422.21	10,803.41	10,778.83	24.59	439.420	
4,600.00	4,596.41	2,097.60	1,997.29	16.25	10.85	82.91	1,064.48	-10,450.66	10,827.95	10,802.44	25.51	424.451	
4,700.00	4,696.31	4,950.00	4,769.69	16.61	23.46	81.54	719.03	-10,835.26	10,833.74	10,795.94	37.80	286.580	
4,800.00	4,796.20	5,475.00	5,284.23	16.98	24.99	81.46	680.07	-10,831.50	10,833.07	10,793.35	39.72	272.728	
4,900.00	4,896.10	5,475.00	5,284.23	17.34	24.99	81.46	680.07	-10,831.50	10,829.29	10,789.17	40.12	269.936	
5,000.00	4,996.00	5,900.00	5,692.98	17.70	26.14	81.41	649.99	-10,815.93	10,823.35	10,781.71	41.64	259.917	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,095.90	5,900.00	5,692.98	18.07	26.14	81.41	649.99	-10,815.93	10,817.63	10,775.59	42.05	257.286	
5,200.00	5,195.80	5,900.00	5,692.98	18.43	26.14	81.41	649.99	-10,815.93	10,812.84	10,770.39	42.45	254.742	
5,300.00	5,295.69	5,900.00	5,692.98	18.79	26.14	81.41	649.99	-10,815.93	10,808.96	10,766.12	42.84	252.284	
5,400.00	5,395.59	5,900.00	5,692.98	19.16	26.14	81.41	649.99	-10,815.93	10,806.01	10,762.78	43.24	249.909	
5,500.00	5,495.49	5,900.00	5,692.98	19.52	26.14	81.41	649.99	-10,815.93	10,803.99	10,760.36	43.63	247.615	
5,600.00	5,595.39	5,964.22	5,757.19	19.88	26.31	81.42	649.34	-10,815.56	10,802.64	10,758.44	44.19	244.433	
5,700.00	5,695.28	6,000.00	5,792.98	20.25	26.41	81.43	649.28	-10,815.46	10,801.69	10,757.01	44.68	241.779	
5,800.00	5,795.18	6,086.96	5,879.94	20.61	26.65	81.44	648.89	-10,815.50	10,801.04	10,755.74	45.30	238.416	
5,900.00	5,895.08	6,152.88	5,945.86	20.97	26.84	81.46	648.42	-10,815.77	10,800.70	10,754.82	45.88	235.417	
5,993.43	5,988.41	6,225.00	6,017.97	21.31	27.05	81.47	647.79	-10,816.23	10,800.61	10,754.16	46.45	232.526	
6,000.00	5,994.98	6,225.00	6,017.97	21.34	27.05	81.47	647.79	-10,816.23	10,800.61	10,754.14	46.47	232.400	
6,100.00	6,094.88	6,225.00	6,017.97	21.70	27.05	81.47	647.79	-10,816.23	10,801.14	10,754.28	46.86	230.510	
6,200.00	6,194.77	6,225.00	6,017.97	22.06	27.05	81.47	647.79	-10,816.23	10,802.59	10,755.35	47.24	228.686	
6,300.00	6,294.67	6,225.00	6,017.97	22.43	27.05	81.47	647.79	-10,816.23	10,804.96	10,757.35	47.61	226.928	
6,314.74	6,309.40	6,225.00	6,017.97	22.48	27.05	81.47	647.79	-10,816.23	10,805.39	10,757.72	47.67	226.674	
6,350.00	6,344.59	6,225.00	6,017.97	22.61	27.05	38.32	647.79	-10,816.23	10,805.52	10,757.72	47.80	226.055	
6,400.00	6,394.26	6,225.00	6,017.97	22.79	27.05	21.42	647.79	-10,816.23	10,802.57	10,754.59	47.98	225.127	
6,450.00	6,443.36	6,225.00	6,017.97	22.97	27.05	15.68	647.79	-10,816.23	10,795.95	10,747.79	48.17	224.142	
6,500.00	6,491.60	6,225.00	6,017.97	23.15	27.05	12.91	647.79	-10,816.23	10,785.70	10,737.36	48.34	223.106	
6,550.00	6,538.67	6,225.00	6,017.97	23.32	27.05	11.34	647.79	-10,816.23	10,771.87	10,723.36	48.52	222.028	
6,600.00	6,584.29	6,225.00	6,017.97	23.49	27.05	10.38	647.79	-10,816.23	10,754.53	10,705.85	48.68	220.915	
6,650.00	6,628.18	6,994.76	6,744.21	23.66	29.40	9.99	619.22	-10,842.06	10,733.53	10,682.41	51.12	209.956	
6,700.00	6,670.06	7,050.00	6,799.45	23.83	29.55	9.73	619.16	-10,841.94	10,706.43	10,655.00	51.43	208.182	
6,750.00	6,709.68	7,075.18	6,824.64	24.00	29.62	9.65	619.13	-10,841.88	10,676.14	10,624.49	51.64	206.727	
6,800.00	6,746.79	7,125.00	6,874.45	24.17	29.76	9.78	619.06	-10,841.79	10,642.84	10,590.92	51.91	205.008	
6,850.00	6,781.17	7,150.00	6,899.45	24.35	29.83	10.07	619.05	-10,841.74	10,606.74	10,554.63	52.11	203.559	
6,900.00	6,812.60	7,189.99	6,939.44	24.54	29.94	10.59	618.98	-10,841.68	10,568.07	10,515.74	52.33	201.955	
6,950.00	6,840.88	7,220.19	6,969.64	24.74	30.02	11.36	618.93	-10,841.60	10,527.02	10,474.51	52.51	200.477	
7,000.00	6,865.85	7,248.17	6,997.62	24.96	30.10	12.49	618.89	-10,841.54	10,483.89	10,431.21	52.67	199.041	
7,050.00	6,887.35	7,263.27	7,012.73	25.19	30.14	14.11	618.86	-10,841.50	10,438.93	10,386.14	52.79	197.754	
7,100.00	6,905.25	7,275.48	7,024.93	25.43	30.18	16.56	618.84	-10,841.48	10,392.44	10,339.56	52.88	196.519	
7,150.00	6,919.43	7,304.00	7,053.45	25.69	30.26	20.67	618.79	-10,841.41	10,344.67	10,291.66	53.01	195.148	
7,200.00	6,929.81	7,311.94	7,061.39	25.96	30.28	27.99	618.77	-10,841.39	10,295.94	10,242.87	53.07	194.007	
7,250.00	6,936.33	7,316.89	7,066.35	26.25	30.29	43.88	618.76	-10,841.37	10,246.55	10,193.44	53.11	192.920	
7,300.00	6,938.95	7,318.82	7,068.28	26.55	30.30	82.79	618.76	-10,841.37	10,196.80	10,143.66	53.14	191.888	
7,309.56	6,939.00	7,318.85	7,068.30	26.60	30.30	93.23	618.76	-10,841.37	10,187.27	10,134.13	53.14	191.696	
7,400.00	6,938.83	7,318.53	7,067.98	27.19	30.30	93.21	618.76	-10,841.37	10,097.13	10,043.96	53.17	189.898	
7,500.00	6,938.64	7,318.18	7,067.63	27.91	30.30	93.18	618.76	-10,841.37	9,997.48	9,944.27	53.20	187.905	
7,600.00	6,938.44	7,317.83	7,067.28	28.70	30.29	93.16	618.76	-10,841.37	9,897.82	9,844.58	53.24	185.907	
7,700.00	6,938.25	7,317.48	7,066.93	29.55	30.29	93.13	618.76	-10,841.37	9,798.18	9,744.90	53.28	183.903	
7,800.00	6,938.06	7,317.13	7,066.58	30.47	30.29	93.11	618.76	-10,841.37	9,698.54	9,645.22	53.32	181.895	
7,900.00	6,937.87	7,316.77	7,066.22	31.44	30.29	93.09	618.76	-10,841.37	9,598.91	9,545.55	53.36	179.881	
8,000.00	6,937.68	7,316.42	7,065.87	32.46	30.29	93.06	618.76	-10,841.37	9,499.29	9,445.88	53.41	177.863	
8,100.00	6,937.49	7,316.06	7,065.51	33.53	30.29	93.04	618.76	-10,841.38	9,399.68	9,346.22	53.46	175.840	
8,200.00	6,937.30	7,315.70	7,065.15	34.64	30.29	93.01	618.76	-10,841.38	9,300.07	9,246.57	53.51	173.812	
8,300.00	6,937.10	7,315.34	7,064.79	35.78	30.29	92.99	618.76	-10,841.38	9,200.48	9,146.92	53.56	171.779	
8,400.00	6,936.91	7,314.98	7,064.43	36.96	30.29	92.96	618.76	-10,841.38	9,100.89	9,047.27	53.62	169.741	
8,500.00	6,936.72	7,314.61	7,064.07	38.17	30.29	92.94	618.76	-10,841.38	9,001.31	8,947.63	53.68	167.699	
8,600.00	6,936.53	7,314.25	7,063.70	39.41	30.28	92.91	618.77	-10,841.38	8,901.74	8,848.00	53.74	165.652	
8,700.00	6,936.34	7,313.88	7,063.34	40.68	30.28	92.89	618.77	-10,841.38	8,802.18	8,748.38	53.80	163.601	
8,800.00	6,936.15	7,313.52	7,062.97	41.97	30.28	92.86	618.77	-10,841.38	8,702.63	8,648.76	53.87	161.545	
8,900.00	6,935.96	7,313.15	7,062.60	43.27	30.28	92.84	618.77	-10,841.38	8,603.09	8,549.15	53.94	159.485	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	6,935.76	7,312.78	7,062.23	44.60	30.28	92.81	618.77	-10,841.38	8,503.56	8,449.54	54.02	157.421	
9,100.00	6,935.57	7,312.40	7,061.86	45.95	30.28	92.78	618.77	-10,841.38	8,404.04	8,349.95	54.10	155.353	
9,200.00	6,935.38	7,312.03	7,061.48	47.31	30.28	92.76	618.77	-10,841.39	8,304.54	8,250.36	54.18	153.280	
9,300.00	6,935.19	7,311.66	7,061.11	48.69	30.28	92.73	618.77	-10,841.39	8,205.05	8,150.78	54.26	151.204	
9,400.00	6,935.00	7,311.28	7,060.73	50.08	30.28	92.71	618.77	-10,841.39	8,105.56	8,051.21	54.35	149.123	
9,500.00	6,934.81	7,310.90	7,060.35	51.48	30.27	92.68	618.77	-10,841.39	8,006.10	7,951.65	54.45	147.039	
9,600.00	6,934.62	7,310.52	7,059.97	52.89	30.27	92.65	618.77	-10,841.39	7,906.64	7,852.09	54.55	144.951	
9,700.00	6,934.43	7,310.14	7,059.59	54.32	30.27	92.63	618.77	-10,841.39	7,807.20	7,752.55	54.65	142.859	
9,800.00	6,934.23	7,309.76	7,059.21	55.75	30.27	92.60	618.77	-10,841.39	7,707.77	7,653.02	54.76	140.764	
9,900.00	6,934.04	7,309.37	7,058.83	57.19	30.27	92.57	618.77	-10,841.39	7,608.36	7,553.49	54.87	138.665	
10,000.00	6,933.85	7,308.99	7,058.44	58.65	30.27	92.55	618.78	-10,841.39	7,508.96	7,453.98	54.99	136.562	
10,100.00	6,933.66	7,308.60	7,058.05	60.10	30.27	92.52	618.78	-10,841.40	7,409.58	7,354.48	55.11	134.456	
10,200.00	6,933.47	7,308.21	7,057.66	61.57	30.27	92.49	618.78	-10,841.40	7,310.22	7,254.99	55.24	132.347	
10,300.00	6,933.28	7,307.82	7,057.27	63.04	30.27	92.47	618.78	-10,841.40	7,210.88	7,155.51	55.37	130.234	
10,400.00	6,933.09	7,307.43	7,056.88	64.52	30.27	92.44	618.78	-10,841.40	7,111.55	7,056.04	55.51	128.119	
10,500.00	6,932.89	7,307.03	7,056.48	66.01	30.26	92.41	618.78	-10,841.40	7,012.24	6,956.59	55.65	126.000	
10,600.00	6,932.70	7,306.64	7,056.09	67.50	30.26	92.39	618.78	-10,841.40	6,912.95	6,857.15	55.80	123.878	
10,700.00	6,932.51	7,306.24	7,055.69	68.99	30.26	92.36	618.78	-10,841.40	6,813.69	6,757.72	55.96	121.754	
10,800.00	6,932.32	7,305.84	7,055.29	70.50	30.26	92.33	618.78	-10,841.40	6,714.44	6,658.31	56.13	119.626	
10,900.00	6,932.13	7,305.44	7,054.89	72.00	30.26	92.30	618.78	-10,841.40	6,615.22	6,558.92	56.30	117.496	
11,000.00	6,931.94	7,305.04	7,054.49	73.51	30.26	92.28	618.78	-10,841.41	6,516.02	6,459.54	56.48	115.364	
11,100.00	6,931.75	7,304.63	7,054.09	75.02	30.26	92.25	618.78	-10,841.41	6,416.84	6,360.17	56.67	113.229	
11,200.00	6,931.55	7,304.23	7,053.68	76.54	30.26	92.22	618.79	-10,841.41	6,317.70	6,260.83	56.87	111.092	
11,300.00	6,931.36	7,303.82	7,053.27	78.06	30.25	92.19	618.79	-10,841.41	6,218.57	6,161.50	57.08	108.952	
11,400.00	6,931.17	7,303.41	7,052.86	79.58	30.25	92.16	618.79	-10,841.41	6,119.48	6,062.19	57.29	106.811	
11,500.00	6,930.98	7,303.00	7,052.45	81.11	30.25	92.13	618.79	-10,841.41	6,020.42	5,962.90	57.52	104.668	
11,600.00	6,930.79	7,304.88	7,054.33	82.64	30.26	92.26	618.78	-10,841.41	5,921.39	5,863.63	57.76	102.514	
11,700.00	6,930.60	7,304.05	7,053.50	84.17	30.26	92.21	618.79	-10,841.41	5,822.39	5,764.38	58.01	100.370	
11,800.00	6,930.41	7,303.23	7,052.69	85.70	30.25	92.15	618.79	-10,841.41	5,723.43	5,665.16	58.27	98.224	
11,900.00	6,930.21	7,302.44	7,051.89	87.24	30.25	92.10	618.79	-10,841.41	5,624.50	5,565.96	58.54	96.077	
12,000.00	6,930.02	7,301.65	7,051.10	88.78	30.25	92.04	618.79	-10,841.42	5,525.61	5,466.79	58.83	93.929	
12,100.00	6,929.83	7,300.88	7,050.33	90.32	30.25	91.99	618.79	-10,841.42	5,426.77	5,367.64	59.13	91.780	
12,200.00	6,929.64	7,300.12	7,049.58	91.87	30.24	91.94	618.80	-10,841.42	5,327.96	5,268.52	59.44	89.631	
12,300.00	6,929.45	7,299.38	7,048.83	93.41	30.24	91.88	618.80	-10,841.42	5,229.20	5,169.43	59.77	87.482	
12,400.00	6,929.26	7,298.65	7,048.10	94.96	30.24	91.83	618.80	-10,841.42	5,130.49	5,070.37	60.12	85.332	
12,500.00	6,929.07	7,297.93	7,047.39	96.51	30.24	91.78	618.80	-10,841.43	5,031.83	4,971.34	60.49	83.184	
12,600.00	6,928.88	7,297.23	7,046.68	98.06	30.24	91.74	618.80	-10,841.43	4,933.23	4,872.35	60.88	81.036	
12,700.00	6,928.68	7,296.53	7,045.99	99.62	30.23	91.69	618.80	-10,841.43	4,834.68	4,773.39	61.28	78.889	
12,800.00	6,928.49	7,295.85	7,045.31	101.17	30.23	91.64	618.80	-10,841.43	4,736.19	4,674.48	61.71	76.745	
12,900.00	6,928.30	7,295.18	7,044.63	102.73	30.23	91.59	618.81	-10,841.43	4,637.77	4,575.60	62.17	74.602	
13,000.00	6,928.11	7,294.52	7,043.98	104.28	30.23	91.55	618.81	-10,841.44	4,539.41	4,476.77	62.64	72.463	
13,100.00	6,927.92	7,293.87	7,043.33	105.84	30.23	91.50	618.81	-10,841.44	4,441.13	4,377.98	63.15	70.326	
13,200.00	6,927.73	7,293.24	7,042.69	107.40	30.23	91.46	618.81	-10,841.44	4,342.93	4,279.24	63.69	68.194	
13,300.00	6,927.54	7,292.61	7,042.06	108.97	30.22	91.42	618.81	-10,841.44	4,244.81	4,180.56	64.25	66.066	
13,400.00	6,927.34	7,291.99	7,041.44	110.53	30.22	91.37	618.81	-10,841.44	4,146.78	4,081.93	64.85	63.944	
13,500.00	6,927.15	7,291.38	7,040.84	112.09	30.22	91.33	618.81	-10,841.44	4,048.85	3,983.36	65.49	61.827	
13,600.00	6,926.96	7,290.79	7,040.24	113.66	30.22	91.29	618.82	-10,841.45	3,951.02	3,884.86	66.16	59.718	
13,700.00	6,926.77	7,290.20	7,039.65	115.22	30.22	91.25	618.82	-10,841.45	3,853.30	3,786.42	66.88	57.617	
13,800.00	6,926.58	7,289.62	7,039.07	116.79	30.22	91.21	618.82	-10,841.45	3,755.70	3,688.06	67.64	55.525	
13,900.00	6,926.39	7,289.05	7,038.50	118.36	30.21	91.17	618.82	-10,841.45	3,658.23	3,589.78	68.45	53.443	
14,000.00	6,926.20	7,288.48	7,037.94	119.93	30.21	91.13	618.82	-10,841.45	3,560.91	3,491.59	69.32	51.372	
14,100.00	6,926.00	7,287.93	7,037.38	121.50	30.21	91.09	618.82	-10,841.45	3,463.73	3,393.49	70.24	49.314	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	7,287.39	7,036.84	123.07	30.21	91.06	618.82	-10,841.45	3,366.72	3,295.50	71.22	47.270	
14,300.00	6,925.62	7,286.85	7,036.30	124.64	30.21	91.02	618.82	-10,841.46	3,269.89	3,197.61	72.28	45.241	
14,400.00	6,925.43	7,286.32	7,035.77	126.21	30.21	90.98	618.82	-10,841.46	3,173.26	3,099.85	73.40	43.230	
14,500.00	6,925.24	7,285.80	7,035.25	127.79	30.20	90.95	618.83	-10,841.46	3,076.84	3,002.22	74.61	41.237	
14,600.00	6,925.05	7,285.28	7,034.74	129.36	30.20	90.91	618.83	-10,841.46	2,980.66	2,904.74	75.91	39.265	
14,700.00	6,924.86	7,284.78	7,034.23	130.93	30.20	90.88	618.83	-10,841.46	2,884.73	2,807.42	77.31	37.315	
14,800.00	6,924.66	7,284.28	7,033.73	132.51	30.20	90.84	618.83	-10,841.46	2,789.10	2,710.29	78.81	35.390	
14,900.00	6,924.47	7,283.79	7,033.24	134.09	30.20	90.81	618.83	-10,841.46	2,693.78	2,613.35	80.43	33.492	
15,000.00	6,924.28	7,283.30	7,032.76	135.66	30.20	90.77	618.83	-10,841.46	2,598.81	2,516.63	82.18	31.623	
15,100.00	6,924.09	7,282.82	7,032.28	137.24	30.20	90.74	618.83	-10,841.46	2,504.23	2,420.16	84.07	29.786	
15,200.00	6,923.90	7,282.35	7,031.81	138.82	30.19	90.71	618.83	-10,841.46	2,410.09	2,323.97	86.13	27.984	
15,300.00	6,923.71	7,281.89	7,031.34	140.40	30.19	90.68	618.83	-10,841.47	2,316.45	2,228.09	88.35	26.218	
15,400.00	6,923.52	7,281.43	7,030.88	141.97	30.19	90.64	618.83	-10,841.47	2,223.35	2,132.58	90.77	24.494	
15,500.00	6,923.33	7,280.98	7,030.43	143.55	30.19	90.61	618.83	-10,841.47	2,130.88	2,037.47	93.41	22.812	
15,600.00	6,923.13	7,280.53	7,029.98	145.13	30.19	90.58	618.83	-10,841.47	2,039.13	1,942.84	96.29	21.178	
15,700.00	6,922.94	7,280.09	7,029.54	146.72	30.19	90.55	618.83	-10,841.47	1,948.18	1,848.75	99.43	19.593	
15,800.00	6,922.75	7,279.66	7,029.11	148.30	30.19	90.52	618.84	-10,841.47	1,858.16	1,755.29	102.88	18.062	
15,900.00	6,922.56	7,279.23	7,028.68	149.88	30.19	90.49	618.84	-10,841.47	1,769.22	1,662.57	106.65	16.589	
16,000.00	6,922.37	7,278.81	7,028.26	151.46	30.18	90.46	618.84	-10,841.47	1,681.52	1,570.73	110.79	15.177	
16,100.00	6,922.18	7,278.39	7,027.84	153.04	30.18	90.43	618.84	-10,841.47	1,595.27	1,479.92	115.34	13.830	
16,200.00	6,921.99	7,277.98	7,027.43	154.63	30.18	90.41	618.84	-10,841.47	1,510.71	1,390.37	120.35	12.553	
16,300.00	6,921.79	7,277.57	7,027.03	156.21	30.18	90.38	618.84	-10,841.47	1,428.15	1,302.32	125.83	11.349	
16,400.00	6,921.60	7,277.17	7,026.62	157.79	30.18	90.35	618.84	-10,841.47	1,347.96	1,216.11	131.85	10.223	
16,500.00	6,921.41	7,276.78	7,026.23	159.38	30.18	90.32	618.84	-10,841.47	1,270.57	1,132.16	138.41	9.180	
16,600.00	6,921.22	7,276.39	7,025.84	160.96	30.18	90.30	618.84	-10,841.48	1,196.55	1,051.02	145.53	8.222	
16,700.00	6,921.03	7,276.00	7,025.45	162.55	30.18	90.27	618.84	-10,841.48	1,126.54	973.37	153.17	7.355	
16,800.00	6,920.84	7,275.62	7,025.07	164.13	30.18	90.24	618.84	-10,841.48	1,061.35	900.10	161.25	6.582	
16,900.00	6,920.65	7,275.24	7,024.70	165.72	30.17	90.22	618.84	-10,841.48	1,001.91	832.33	169.59	5.908	
17,000.00	6,920.45	7,275.00	7,024.45	167.30	30.17	90.20	618.84	-10,841.48	949.31	771.40	177.91	5.336	
17,100.00	6,920.26	7,275.00	7,024.45	168.89	30.17	90.20	618.84	-10,841.48	904.74	718.92	185.82	4.869	
17,200.00	6,920.07	7,274.21	7,023.67	170.48	30.17	90.15	618.84	-10,841.48	869.44	676.65	192.79	4.510	
17,300.00	6,919.88	7,273.87	7,023.33	172.06	30.17	90.12	618.84	-10,841.48	844.57	646.32	198.24	4.260	
17,400.00	6,919.69	7,273.53	7,022.98	173.65	30.17	90.10	618.84	-10,841.48	831.06	629.41	201.65	4.121	
17,463.18	6,919.57	7,273.31	7,022.76	174.65	30.17	90.08	618.84	-10,841.48	828.65	626.07	202.59	4.090	CC, ES, SF
17,500.00	6,919.50	7,273.18	7,022.64	175.24	30.17	90.07	618.85	-10,841.48	829.47	626.80	202.68	4.093	
17,600.00	6,919.31	7,272.83	7,022.29	176.83	30.17	90.05	618.85	-10,841.48	839.87	638.61	201.27	4.173	
17,700.00	6,919.11	7,272.48	7,021.94	178.41	30.17	90.03	618.85	-10,841.48	861.83	664.16	197.68	4.360	
17,759.55	6,919.00	7,272.27	7,021.72	179.36	30.17	90.01	618.85	-10,841.48	880.06	685.37	194.69	4.520	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	161.18	161.18	0.00	0.48	-116.70	-1,709.33	-3,398.09	3,803.79				
100.00	100.00	257.23	257.23	0.25	0.81	-116.70	-1,709.31	-3,398.10	3,803.79	3,802.73	1.06	3,579.582	
200.00	200.00	362.73	362.73	0.61	1.18	-116.70	-1,709.40	-3,398.37	3,804.07	3,802.28	1.79	2,124.800	
300.00	300.00	440.40	440.39	0.97	1.45	-116.70	-1,709.39	-3,398.58	3,804.33	3,801.91	2.42	1,571.771	
400.00	400.00	550.00	550.00	1.33	1.84	-116.70	-1,709.77	-3,398.82	3,804.67	3,801.51	3.16	1,203.106	
500.00	500.00	650.00	649.99	1.68	2.19	-116.71	-1,710.33	-3,399.03	3,805.11	3,801.24	3.87	983.043	
600.00	600.00	755.97	755.96	2.04	2.56	-116.72	-1,711.05	-3,399.23	3,805.60	3,801.00	4.60	827.318	
700.00	700.00	845.74	845.74	2.40	2.87	-116.72	-1,711.38	-3,399.52	3,806.04	3,800.77	5.27	721.826	
800.00	800.00	951.60	951.59	2.76	3.24	-116.72	-1,711.26	-3,399.89	3,806.29	3,800.29	6.00	634.239	
900.00	900.00	1,071.85	1,071.84	3.12	3.66	-116.71	-1,710.72	-3,400.27	3,806.37	3,799.59	6.78	561.468	
1,000.00	1,000.00	1,179.52	1,179.50	3.48	4.04	-116.69	-1,709.58	-3,400.70	3,806.26	3,798.75	7.51	506.624	
1,100.00	1,099.98	1,264.96	1,264.93	3.82	4.33	50.25	-1,708.35	-3,401.10	3,804.93	3,796.77	8.15	466.773	
1,129.54	1,129.49	1,290.01	1,289.98	3.92	4.42	50.28	-1,708.05	-3,401.27	3,804.19	3,795.85	8.34	456.389	
1,200.00	1,199.88	1,372.59	1,372.55	4.15	4.71	50.34	-1,707.08	-3,401.66	3,802.08	3,793.22	8.85	429.389	
1,300.00	1,299.78	1,457.94	1,457.89	4.48	5.01	50.41	-1,705.88	-3,402.30	3,799.22	3,789.73	9.48	400.552	
1,400.00	1,399.68	1,567.03	1,566.97	4.82	5.39	50.49	-1,704.39	-3,402.96	3,796.26	3,786.06	10.20	372.091	
1,500.00	1,499.58	1,679.28	1,679.20	5.16	5.78	50.57	-1,702.94	-3,403.57	3,793.32	3,782.38	10.93	346.917	
1,600.00	1,599.48	1,787.71	1,787.63	5.50	6.16	50.65	-1,701.62	-3,403.84	3,790.14	3,778.49	11.66	325.181	
1,700.00	1,699.37	1,887.34	1,887.25	5.85	6.51	50.72	-1,700.31	-3,403.89	3,786.75	3,774.40	12.35	306.662	
1,800.00	1,799.27	1,983.40	1,983.30	6.20	6.84	50.79	-1,699.22	-3,403.94	3,783.42	3,770.39	13.03	290.345	
1,900.00	1,899.17	2,078.72	2,078.62	6.55	7.18	50.85	-1,698.50	-3,403.95	3,780.24	3,766.52	13.71	275.679	
2,000.00	1,999.07	2,179.70	2,179.60	6.90	7.53	50.91	-1,697.82	-3,403.96	3,777.10	3,762.69	14.42	262.023	
2,100.00	2,098.96	2,268.13	2,268.02	7.25	7.84	50.96	-1,697.23	-3,404.00	3,773.99	3,758.92	15.08	250.337	
2,200.00	2,198.86	2,356.97	2,356.86	7.61	8.15	51.02	-1,696.87	-3,404.19	3,771.16	3,755.42	15.74	239.609	
2,300.00	2,298.76	2,439.09	2,438.98	7.96	8.44	51.07	-1,696.69	-3,404.55	3,768.64	3,752.26	16.38	230.081	
2,400.00	2,398.66	2,549.88	2,549.77	8.32	8.83	51.13	-1,696.72	-3,405.28	3,766.42	3,749.30	17.12	219.983	
2,500.00	2,498.56	2,650.00	2,649.89	8.68	9.18	51.19	-1,696.38	-3,405.96	3,764.04	3,746.22	17.83	211.149	
2,600.00	2,598.45	2,762.15	2,762.03	9.03	9.57	51.27	-1,695.71	-3,406.51	3,761.40	3,742.83	18.57	202.512	
2,700.00	2,698.35	2,863.76	2,863.64	9.39	9.93	51.33	-1,695.18	-3,406.80	3,758.59	3,739.31	19.28	194.900	
2,800.00	2,798.25	2,959.84	2,959.72	9.75	10.26	51.39	-1,694.71	-3,406.98	3,755.74	3,735.76	19.98	188.003	
2,900.00	2,898.15	3,056.73	3,056.61	10.11	10.60	51.44	-1,694.66	-3,407.08	3,752.99	3,732.31	20.67	181.544	
3,000.00	2,998.04	3,139.84	3,139.71	10.47	10.89	51.49	-1,694.84	-3,407.41	3,750.62	3,729.29	21.32	175.910	
3,100.00	3,097.94	3,216.90	3,216.77	10.83	11.16	51.53	-1,695.30	-3,407.93	3,748.68	3,726.73	21.95	170.792	
3,200.00	3,197.84	3,315.08	3,314.94	11.19	11.50	51.56	-1,696.73	-3,408.50	3,747.01	3,724.36	22.65	165.428	
3,300.00	3,297.74	3,437.92	3,437.76	11.55	11.93	51.60	-1,699.16	-3,408.60	3,745.11	3,721.67	23.44	159.786	
3,400.00	3,397.64	3,536.29	3,536.11	11.91	12.27	51.63	-1,700.75	-3,408.74	3,743.12	3,718.98	24.14	155.052	
3,500.00	3,497.53	3,644.31	3,644.13	12.27	12.65	51.67	-1,702.14	-3,408.60	3,740.74	3,715.86	24.88	150.367	
3,600.00	3,597.43	3,744.97	3,744.78	12.63	13.00	51.71	-1,703.18	-3,408.76	3,738.51	3,712.92	25.59	146.101	
3,700.00	3,697.33	3,858.29	3,858.09	12.99	13.39	51.75	-1,704.32	-3,408.51	3,735.94	3,709.59	26.34	141.818	
3,800.00	3,797.23	3,944.75	3,944.55	13.35	13.69	51.79	-1,705.03	-3,408.50	3,733.47	3,706.46	27.01	138.248	
3,900.00	3,897.12	4,029.95	4,029.74	13.72	13.99	51.82	-1,706.24	-3,408.63	3,731.41	3,703.74	27.66	134.884	
4,000.00	3,997.02	4,132.93	4,132.70	14.08	14.35	51.85	-1,708.10	-3,408.71	3,729.44	3,701.06	28.38	131.394	
4,100.00	4,096.92	4,218.53	4,218.29	14.44	14.65	51.88	-1,709.58	-3,408.87	3,727.56	3,698.52	29.04	128.345	
4,200.00	4,196.82	4,291.17	4,290.91	14.80	14.90	51.90	-1,711.14	-3,409.40	3,726.33	3,696.67	29.66	125.648	
4,300.00	4,296.72	4,375.00	4,374.70	15.16	15.19	51.92	-1,713.67	-3,410.24	3,725.72	3,695.41	30.31	122.922	
4,400.00	4,396.61	4,459.72	4,459.36	15.53	15.49	51.93	-1,716.58	-3,411.25	3,725.46	3,694.49	30.97	120.311	
4,405.82	4,402.43	4,463.95	4,463.59	15.55	15.50	51.93	-1,716.73	-3,411.31	3,725.46	3,694.46	31.00	120.172	
4,500.00	4,496.51	4,542.30	4,541.88	15.89	15.78	51.94	-1,719.55	-3,412.56	3,725.64	3,694.02	31.61	117.852	
4,600.00	4,596.41	4,617.29	4,616.81	16.25	16.04	51.95	-1,722.31	-3,414.16	3,726.34	3,694.11	32.23	115.610	
4,700.00	4,696.31	4,719.45	4,718.85	16.61	16.40	51.97	-1,726.43	-3,416.57	3,727.40	3,694.45	32.95	113.120	
4,800.00	4,796.20	4,800.00	4,799.31	16.98	16.68	51.99	-1,729.39	-3,418.85	3,728.73	3,695.14	33.59	111.007	
4,900.00	4,896.10	4,903.84	4,903.02	17.34	17.04	52.01	-1,733.49	-3,422.18	3,730.52	3,696.21	34.32	108.713	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	4,995.86	4,994.93	17.70	17.37	52.03	-1,736.80	-3,425.29	3,732.30	3,697.30	35.00	106.646	
5,100.00	5,095.90	5,094.77	5,093.71	18.07	17.71	52.06	-1,740.29	-3,428.71	3,734.15	3,698.44	35.70	104.585	
5,200.00	5,195.80	5,187.90	5,186.73	18.43	18.04	52.09	-1,743.62	-3,432.05	3,736.11	3,699.72	36.39	102.668	
5,300.00	5,295.69	5,282.63	5,281.33	18.79	18.37	52.11	-1,747.16	-3,435.50	3,738.20	3,701.12	37.08	100.808	
5,400.00	5,395.59	5,368.86	5,367.44	19.16	18.67	52.14	-1,750.19	-3,438.79	3,740.37	3,702.63	37.74	99.103	
5,500.00	5,495.49	5,482.22	5,480.65	19.52	19.07	52.17	-1,754.21	-3,443.06	3,742.49	3,703.98	38.50	97.196	
5,600.00	5,595.39	5,584.50	5,582.79	19.88	19.43	52.20	-1,757.71	-3,446.85	3,744.51	3,705.29	39.23	95.461	
5,700.00	5,695.28	5,683.73	5,681.91	20.25	19.77	52.23	-1,761.01	-3,450.50	3,746.48	3,706.54	39.93	93.815	
5,800.00	5,795.18	5,778.08	5,776.13	20.61	20.10	52.26	-1,764.22	-3,453.99	3,748.50	3,707.88	40.63	92.269	
5,900.00	5,895.08	5,880.59	5,878.51	20.97	20.46	52.29	-1,767.90	-3,457.79	3,750.60	3,709.25	41.35	90.708	
6,000.00	5,994.98	5,986.01	5,983.79	21.34	20.83	52.32	-1,771.69	-3,461.57	3,752.59	3,710.51	42.08	89.176	
6,100.00	6,094.88	6,071.30	6,068.97	21.70	21.13	52.34	-1,774.98	-3,464.60	3,754.68	3,711.94	42.74	87.854	
6,200.00	6,194.77	6,167.92	6,165.45	22.06	21.47	52.37	-1,778.60	-3,468.23	3,756.90	3,713.46	43.44	86.490	
6,300.00	6,294.67	6,258.97	6,256.36	22.43	21.79	52.39	-1,782.12	-3,471.85	3,759.36	3,715.25	44.12	85.215	
6,314.74	6,309.40	6,280.04	6,277.39	22.48	21.86	52.40	-1,782.90	-3,472.73	3,759.74	3,715.50	44.25	84.975	
6,350.00	6,344.59	6,310.35	6,307.66	22.61	21.97	9.24	-1,784.04	-3,473.94	3,759.72	3,715.25	44.48	84.532	
6,400.00	6,394.26	6,365.33	6,362.55	22.79	22.16	-7.80	-1,786.04	-3,476.26	3,756.73	3,711.88	44.85	83.767	
6,450.00	6,443.36	6,400.00	6,397.17	22.97	22.28	-13.86	-1,787.35	-3,477.77	3,750.26	3,705.12	45.14	83.088	
6,500.00	6,491.60	6,444.74	6,441.84	23.15	22.44	-17.15	-1,788.92	-3,479.82	3,740.36	3,694.90	45.46	82.281	
6,550.00	6,538.67	6,500.00	6,497.00	23.32	22.63	-19.48	-1,790.88	-3,482.35	3,727.02	3,681.20	45.82	81.348	
6,600.00	6,584.29	6,539.72	6,536.65	23.49	22.77	-21.39	-1,792.35	-3,484.12	3,710.32	3,664.22	46.11	80.475	
6,650.00	6,628.18	6,594.38	6,591.23	23.66	22.96	-23.24	-1,794.30	-3,486.50	3,690.31	3,643.86	46.45	79.455	
6,700.00	6,670.06	6,656.83	6,653.58	23.83	23.18	-25.20	-1,796.59	-3,489.06	3,667.13	3,620.33	46.80	78.349	
6,750.00	6,709.68	6,690.40	6,687.10	24.00	23.30	-27.20	-1,797.83	-3,490.32	3,640.90	3,593.86	47.05	77.390	
6,800.00	6,746.79	6,754.54	6,751.17	24.17	23.52	-29.66	-1,800.00	-3,492.64	3,611.79	3,564.40	47.39	76.212	
6,850.00	6,781.17	6,824.72	6,821.28	24.35	23.77	-32.61	-1,802.16	-3,494.80	3,579.98	3,532.23	47.75	74.980	
6,900.00	6,812.60	6,853.90	6,850.43	24.54	23.87	-35.69	-1,803.04	-3,495.52	3,545.62	3,497.68	47.94	73.957	
6,950.00	6,840.88	6,907.93	6,904.43	24.74	24.06	-39.67	-1,804.50	-3,496.72	3,509.06	3,460.84	48.21	72.779	
7,000.00	6,865.85	6,929.55	6,926.04	24.96	24.14	-43.93	-1,805.11	-3,497.14	3,470.63	3,422.27	48.37	71.758	
7,050.00	6,887.35	6,956.57	6,953.04	25.19	24.23	-49.08	-1,805.84	-3,497.67	3,430.66	3,382.13	48.53	70.695	
7,100.00	6,905.25	6,988.64	6,985.10	25.43	24.35	-55.27	-1,806.59	-3,498.25	3,389.32	3,340.62	48.70	69.598	
7,150.00	6,919.43	7,006.51	7,002.96	25.69	24.41	-62.10	-1,807.00	-3,498.53	3,346.95	3,298.14	48.82	68.563	
7,200.00	6,929.81	7,018.01	7,014.46	25.96	24.45	-69.60	-1,807.26	-3,498.71	3,303.86	3,254.95	48.91	67.553	
7,250.00	6,936.33	7,025.00	7,021.45	26.25	24.47	-77.59	-1,807.42	-3,498.82	3,260.33	3,211.35	48.98	66.562	
7,300.00	6,938.95	7,028.16	7,024.60	26.55	24.48	-85.75	-1,807.49	-3,498.87	3,216.64	3,167.60	49.04	65.588	
7,309.56	6,939.00	7,028.32	7,024.77	26.60	24.48	-87.30	-1,807.49	-3,498.87	3,208.30	3,159.24	49.05	65.403	
7,400.00	6,938.83	7,029.35	7,025.79	27.19	24.49	-87.33	-1,807.52	-3,498.89	3,129.67	3,080.50	49.17	63.653	
7,500.00	6,938.64	7,030.49	7,026.93	27.91	24.49	-87.38	-1,807.54	-3,498.91	3,043.50	2,994.16	49.34	61.688	
7,600.00	6,938.44	7,031.64	7,028.09	28.70	24.50	-87.42	-1,807.57	-3,498.93	2,958.20	2,908.64	49.56	59.689	
7,700.00	6,938.25	7,032.81	7,029.26	29.55	24.50	-87.46	-1,807.59	-3,498.95	2,873.85	2,824.00	49.84	57.659	
7,800.00	6,938.06	7,034.00	7,030.44	30.47	24.50	-87.50	-1,807.62	-3,498.97	2,790.52	2,740.33	50.19	55.599	
7,900.00	6,937.87	7,035.19	7,031.64	31.44	24.51	-87.55	-1,807.65	-3,498.99	2,708.33	2,657.72	50.61	53.510	
8,000.00	6,937.68	7,036.41	7,032.85	32.46	24.51	-87.59	-1,807.67	-3,499.01	2,627.38	2,576.26	51.12	51.396	
8,100.00	6,937.49	7,037.63	7,034.08	33.53	24.52	-87.64	-1,807.70	-3,499.03	2,547.77	2,496.05	51.72	49.264	
8,200.00	6,937.30	7,038.87	7,035.32	34.64	24.52	-87.68	-1,807.73	-3,499.05	2,469.65	2,417.24	52.41	47.120	
8,300.00	6,937.10	7,040.13	7,036.57	35.78	24.53	-87.73	-1,807.76	-3,499.07	2,393.15	2,339.94	53.22	44.971	
8,400.00	6,936.91	7,041.40	7,037.84	36.96	24.53	-87.77	-1,807.79	-3,499.09	2,318.45	2,264.31	54.13	42.828	
8,500.00	6,936.72	7,042.69	7,039.13	38.17	24.53	-87.82	-1,807.82	-3,499.11	2,245.71	2,190.54	55.17	40.702	
8,600.00	6,936.53	7,043.99	7,040.43	39.41	24.54	-87.87	-1,807.84	-3,499.13	2,175.14	2,118.80	56.34	38.606	
8,700.00	6,936.34	7,045.31	7,041.75	40.68	24.54	-87.92	-1,807.87	-3,499.16	2,106.95	2,049.31	57.64	36.552	
8,800.00	6,936.15	7,046.65	7,043.09	41.97	24.55	-87.97	-1,807.90	-3,499.18	2,041.38	1,982.31	59.08	34.555	
8,900.00	6,935.96	7,048.00	7,044.44	43.27	24.55	-88.02	-1,807.94	-3,499.20	1,978.70	1,918.05	60.65	32.627	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
9,000.00	6,935.76	7,050.00	7,046.44	44.60	24.56	-88.09	-1,807.98	-3,499.24	1,919.18	1,856.83	62.35	30.781	
9,100.00	6,935.57	7,051.29	7,047.73	45.95	24.56	-88.14	-1,808.01	-3,499.26	1,863.12	1,798.95	64.18	29.031	
9,200.00	6,935.38	7,053.56	7,049.99	47.31	24.57	-88.22	-1,808.06	-3,499.30	1,810.86	1,744.74	66.12	27.387	
9,300.00	6,935.19	7,055.71	7,052.15	48.69	24.58	-88.30	-1,808.11	-3,499.33	1,762.72	1,694.56	68.16	25.860	
9,400.00	6,935.00	7,057.77	7,054.20	50.08	24.59	-88.37	-1,808.15	-3,499.37	1,719.06	1,648.77	70.28	24.459	
9,500.00	6,934.81	7,059.73	7,056.16	51.48	24.59	-88.45	-1,808.20	-3,499.40	1,680.22	1,607.76	72.46	23.190	
9,600.00	6,934.62	7,061.59	7,058.03	52.89	24.60	-88.51	-1,808.24	-3,499.43	1,646.54	1,571.89	74.65	22.057	
9,700.00	6,934.43	7,063.38	7,059.81	54.32	24.61	-88.58	-1,808.28	-3,499.46	1,618.35	1,541.52	76.83	21.065	
9,800.00	6,934.23	7,065.09	7,061.52	55.75	24.61	-88.64	-1,808.31	-3,499.48	1,595.93	1,516.98	78.95	20.213	
9,900.00	6,934.04	7,066.72	7,063.15	57.19	24.62	-88.70	-1,808.35	-3,499.51	1,579.54	1,498.55	80.99	19.503	
10,000.00	6,933.85	7,068.29	7,064.72	58.65	24.62	-88.76	-1,808.38	-3,499.53	1,569.36	1,486.46	82.89	18.932	
10,100.00	6,933.66	7,069.79	7,066.22	60.10	24.63	-88.81	-1,808.41	-3,499.55	1,565.51	1,480.87	84.64	18.497	
10,110.32	6,933.64	7,069.94	7,066.37	60.26	24.63	-88.82	-1,808.41	-3,499.55	1,565.48	1,480.67	84.81	18.459	CC, ES
10,200.00	6,933.47	7,071.23	7,067.66	61.57	24.63	-88.87	-1,808.44	-3,499.57	1,568.04	1,481.85	86.19	18.193	
10,300.00	6,933.28	7,072.61	7,069.04	63.04	24.64	-88.92	-1,808.47	-3,499.59	1,576.92	1,489.39	87.53	18.016	
10,400.00	6,933.09	7,073.94	7,070.37	64.52	24.64	-88.97	-1,808.49	-3,499.61	1,592.05	1,503.40	88.65	17.960	SF
10,500.00	6,932.89	7,075.22	7,071.65	66.01	24.65	-89.01	-1,808.52	-3,499.62	1,613.24	1,523.70	89.54	18.018	
10,600.00	6,932.70	7,075.00	7,071.43	67.50	24.65	-89.00	-1,808.52	-3,499.62	1,640.26	1,550.06	90.20	18.184	
10,700.00	6,932.51	7,077.10	7,073.53	68.99	24.66	-89.08	-1,808.56	-3,499.65	1,672.84	1,582.17	90.67	18.450	
10,800.00	6,932.32	7,078.05	7,074.48	70.50	24.66	-89.12	-1,808.58	-3,499.66	1,710.65	1,619.70	90.94	18.810	
10,900.00	6,932.13	7,078.99	7,075.42	72.00	24.66	-89.15	-1,808.60	-3,499.67	1,753.35	1,662.30	91.05	19.258	
11,000.00	6,931.94	7,079.92	7,076.35	73.51	24.66	-89.18	-1,808.61	-3,499.69	1,800.59	1,709.59	91.00	19.786	
11,100.00	6,931.75	7,080.84	7,077.27	75.02	24.67	-89.22	-1,808.63	-3,499.70	1,852.04	1,761.20	90.83	20.389	
11,200.00	6,931.55	7,081.75	7,078.18	76.54	24.67	-89.25	-1,808.65	-3,499.71	1,907.34	1,816.78	90.56	21.061	
11,300.00	6,931.36	7,082.65	7,079.07	78.06	24.67	-89.28	-1,808.67	-3,499.72	1,966.18	1,875.97	90.21	21.796	
11,400.00	6,931.17	7,083.54	7,079.96	79.58	24.68	-89.32	-1,808.69	-3,499.73	2,028.25	1,938.45	89.79	22.589	
11,500.00	6,930.98	7,084.42	7,080.84	81.11	24.68	-89.35	-1,808.71	-3,499.74	2,093.25	2,003.92	89.32	23.435	
11,600.00	6,930.79	7,085.29	7,081.71	82.64	24.68	-89.38	-1,808.72	-3,499.75	2,160.92	2,072.10	88.82	24.330	
11,700.00	6,930.60	7,086.15	7,082.57	84.17	24.69	-89.41	-1,808.74	-3,499.76	2,231.03	2,142.74	88.29	25.270	
11,800.00	6,930.41	7,087.00	7,083.42	85.70	24.69	-89.44	-1,808.76	-3,499.78	2,303.34	2,215.60	87.74	26.251	
11,900.00	6,930.21	7,087.84	7,084.27	87.24	24.69	-89.47	-1,808.78	-3,499.79	2,377.66	2,290.47	87.19	27.269	
12,000.00	6,930.02	7,088.68	7,085.10	88.78	24.70	-89.50	-1,808.80	-3,499.80	2,453.81	2,367.17	86.64	28.322	
12,100.00	6,929.83	7,089.50	7,085.93	90.32	24.70	-89.53	-1,808.81	-3,499.81	2,531.62	2,445.53	86.09	29.407	
12,200.00	6,929.64	7,090.32	7,086.74	91.87	24.70	-89.56	-1,808.83	-3,499.82	2,610.93	2,525.39	85.55	30.521	
12,300.00	6,929.45	7,091.13	7,087.55	93.41	24.70	-89.59	-1,808.85	-3,499.83	2,691.63	2,606.61	85.01	31.661	
12,400.00	6,929.26	7,091.93	7,088.35	94.96	24.71	-89.62	-1,808.86	-3,499.84	2,773.58	2,689.09	84.49	32.826	
12,500.00	6,929.07	7,092.72	7,089.15	96.51	24.71	-89.65	-1,808.88	-3,499.85	2,856.68	2,772.70	83.99	34.013	
12,600.00	6,928.88	7,093.51	7,089.93	98.06	24.71	-89.68	-1,808.90	-3,499.85	2,940.84	2,857.34	83.50	35.221	
12,700.00	6,928.68	7,094.28	7,090.71	99.62	24.72	-89.71	-1,808.92	-3,499.86	3,025.96	2,942.94	83.02	36.448	
12,800.00	6,928.49	7,095.05	7,091.48	101.17	24.72	-89.74	-1,808.93	-3,499.87	3,111.96	3,029.40	82.56	37.693	
12,900.00	6,928.30	7,095.81	7,092.24	102.73	24.72	-89.77	-1,808.95	-3,499.88	3,198.78	3,116.66	82.12	38.953	
13,000.00	6,928.11	7,096.57	7,092.99	104.28	24.72	-89.79	-1,808.96	-3,499.89	3,286.34	3,204.65	81.69	40.228	
13,100.00	6,927.92	7,100.00	7,096.42	105.84	24.74	-89.92	-1,809.04	-3,499.93	3,374.60	3,293.31	81.29	41.511	
13,200.00	6,927.73	7,100.00	7,096.42	107.40	24.74	-89.92	-1,809.04	-3,499.93	3,463.50	3,382.60	80.90	42.814	
13,300.00	6,927.54	7,100.00	7,096.42	108.97	24.74	-89.92	-1,809.04	-3,499.93	3,552.98	3,472.47	80.52	44.128	
13,400.00	6,927.34	7,100.00	7,096.42	110.53	24.74	-89.92	-1,809.04	-3,499.93	3,643.02	3,562.87	80.15	45.453	
13,500.00	6,927.15	7,100.59	7,097.01	112.09	24.74	-89.94	-1,809.05	-3,499.94	3,733.55	3,653.75	79.80	46.786	
13,600.00	6,926.96	7,102.50	7,098.92	113.66	24.74	-90.01	-1,809.09	-3,499.96	3,824.57	3,745.09	79.47	48.124	
13,700.00	6,926.77	7,104.51	7,100.93	115.22	24.75	-90.08	-1,809.14	-3,499.99	3,916.01	3,836.86	79.16	49.470	
13,800.00	6,926.58	7,106.61	7,103.02	116.79	24.76	-90.16	-1,809.18	-3,500.01	4,007.87	3,929.01	78.86	50.823	
13,900.00	6,926.39	7,108.81	7,105.23	118.36	24.77	-90.24	-1,809.23	-3,500.04	4,100.11	4,021.54	78.57	52.183	
14,000.00	6,926.20	7,111.12	7,107.54	119.93	24.77	-90.33	-1,809.28	-3,500.07	4,192.70	4,114.40	78.30	53.548	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,100.00	6,926.00	7,113.56	7,109.97	121.50	24.78	-90.41	-1,809.33	-3,500.10	4,285.63	4,207.59	78.04	54.918	
14,200.00	6,925.81	7,116.12	7,112.54	123.07	24.79	-90.51	-1,809.39	-3,500.13	4,378.86	4,301.07	77.79	56.292	
14,300.00	6,925.62	7,118.82	7,115.24	124.64	24.80	-90.61	-1,809.44	-3,500.17	4,472.39	4,394.84	77.55	57.671	
14,400.00	6,925.43	7,121.68	7,118.09	126.21	24.81	-90.71	-1,809.50	-3,500.21	4,566.19	4,488.87	77.32	59.052	
14,500.00	6,925.24	7,124.70	7,121.11	127.79	24.82	-90.82	-1,809.57	-3,500.25	4,660.25	4,583.14	77.11	60.437	
14,600.00	6,925.05	7,127.90	7,124.31	129.36	24.83	-90.94	-1,809.63	-3,500.30	4,754.55	4,677.64	76.90	61.824	
14,700.00	6,924.86	7,119.61	7,116.03	130.93	24.80	-90.64	-1,809.46	-3,500.19	4,849.07	4,772.41	76.66	63.254	
14,800.00	6,924.66	7,132.63	7,129.04	132.51	24.85	-91.11	-1,809.72	-3,500.37	4,943.82	4,867.30	76.52	64.612	
14,900.00	6,924.47	7,135.41	7,131.82	134.09	24.86	-91.21	-1,809.78	-3,500.41	5,038.76	4,962.43	76.34	66.008	
15,000.00	6,924.28	7,138.29	7,134.70	135.66	24.87	-91.32	-1,809.83	-3,500.46	5,133.90	5,057.73	76.16	67.405	
15,100.00	6,924.09	7,141.26	7,137.67	137.24	24.88	-91.43	-1,809.89	-3,500.50	5,229.22	5,153.21	76.00	68.804	
15,200.00	6,923.90	7,144.32	7,140.73	138.82	24.89	-91.54	-1,809.95	-3,500.55	5,324.70	5,248.86	75.85	70.203	
15,300.00	6,923.71	7,147.49	7,143.90	140.40	24.90	-91.65	-1,810.00	-3,500.60	5,420.35	5,344.65	75.70	71.603	
15,400.00	6,923.52	7,150.77	7,147.18	141.97	24.91	-91.77	-1,810.06	-3,500.66	5,516.16	5,440.60	75.56	73.003	
15,500.00	6,923.33	7,154.16	7,150.56	143.55	24.92	-91.90	-1,810.12	-3,500.71	5,612.11	5,536.68	75.43	74.403	
15,600.00	6,923.13	7,145.93	7,142.33	145.13	24.90	-91.60	-1,809.97	-3,500.58	5,708.19	5,632.94	75.25	75.852	
15,700.00	6,922.94	7,147.27	7,143.68	146.72	24.90	-91.65	-1,810.00	-3,500.60	5,804.41	5,729.29	75.13	77.262	
15,800.00	6,922.75	7,148.61	7,145.02	148.30	24.91	-91.70	-1,810.02	-3,500.62	5,900.76	5,825.76	75.00	78.672	
15,900.00	6,922.56	7,149.96	7,146.36	149.88	24.91	-91.74	-1,810.05	-3,500.64	5,997.23	5,922.34	74.89	80.082	
16,000.00	6,922.37	7,150.00	7,146.41	151.46	24.91	-91.75	-1,810.05	-3,500.64	6,093.81	6,019.03	74.77	81.498	
16,100.00	6,922.18	7,150.00	7,146.41	153.04	24.91	-91.75	-1,810.05	-3,500.64	6,190.50	6,115.83	74.66	82.914	
16,200.00	6,921.99	7,150.00	7,146.41	154.63	24.91	-91.75	-1,810.05	-3,500.64	6,287.29	6,212.73	74.56	84.330	
16,300.00	6,921.79	7,150.00	7,146.41	156.21	24.91	-91.75	-1,810.05	-3,500.64	6,384.18	6,309.72	74.46	85.745	
16,400.00	6,921.60	7,150.00	7,146.41	157.79	24.91	-91.75	-1,810.05	-3,500.64	6,481.16	6,406.80	74.36	87.160	
16,500.00	6,921.41	7,150.00	7,146.41	159.38	24.91	-91.75	-1,810.05	-3,500.64	6,578.24	6,503.97	74.27	88.574	
16,600.00	6,921.22	7,150.00	7,146.41	160.96	24.91	-91.75	-1,810.05	-3,500.64	6,675.40	6,601.22	74.18	89.987	
16,700.00	6,921.03	7,157.54	7,153.95	162.55	24.94	-92.02	-1,810.18	-3,500.76	6,772.64	6,698.50	74.13	91.360	
16,800.00	6,920.84	7,158.04	7,154.44	164.13	24.94	-92.04	-1,810.19	-3,500.77	6,869.96	6,795.90	74.06	92.768	
16,900.00	6,920.65	7,158.52	7,154.92	165.72	24.94	-92.06	-1,810.20	-3,500.77	6,967.36	6,893.37	73.98	94.175	
17,000.00	6,920.45	7,158.99	7,155.39	167.30	24.94	-92.07	-1,810.21	-3,500.78	7,064.83	6,990.91	73.92	95.580	
17,100.00	6,920.26	7,159.46	7,155.86	168.89	24.94	-92.09	-1,810.21	-3,500.79	7,162.37	7,088.52	73.85	96.984	
17,200.00	6,920.07	7,159.91	7,156.31	170.48	24.95	-92.11	-1,810.22	-3,500.79	7,259.97	7,186.18	73.79	98.387	
17,300.00	6,919.88	7,160.36	7,156.76	172.06	24.95	-92.12	-1,810.23	-3,500.80	7,357.65	7,283.91	73.73	99.788	
17,400.00	6,919.69	7,160.80	7,157.20	173.65	24.95	-92.14	-1,810.24	-3,500.81	7,455.38	7,381.70	73.68	101.187	
17,500.00	6,919.50	7,161.23	7,157.63	175.24	24.95	-92.16	-1,810.24	-3,500.81	7,553.17	7,479.54	73.63	102.584	
17,600.00	6,919.31	7,161.65	7,158.05	176.83	24.95	-92.17	-1,810.25	-3,500.82	7,651.02	7,577.44	73.58	103.980	
17,700.00	6,919.11	7,162.07	7,158.47	178.41	24.95	-92.19	-1,810.26	-3,500.82	7,748.92	7,675.39	73.54	105.374	
17,759.55	6,919.00	7,162.31	7,158.71	179.36	24.95	-92.20	-1,810.26	-3,500.83	7,807.26	7,733.74	73.51	106.203	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-119.35	-2,591.84	-4,609.11	5,287.86				
100.00	100.00	261.00	261.00	0.25	7.82	-119.35	-2,591.84	-4,609.11	5,287.86	5,279.79	8.07	655.106	
200.00	200.00	361.00	361.00	0.61	10.82	-119.35	-2,591.84	-4,609.11	5,287.86	5,276.44	11.43	462.766	
300.00	300.00	461.00	461.00	0.97	13.81	-119.35	-2,591.84	-4,609.11	5,287.86	5,273.08	14.78	357.734	
400.00	400.00	561.10	561.00	1.33	16.81	-119.35	-2,591.84	-4,609.11	5,287.86	5,269.72	18.14	291.511	
500.00	500.00	661.10	661.00	1.68	19.81	-119.35	-2,591.84	-4,609.11	5,287.86	5,266.37	21.49	246.011	
588.94	588.94	750.01	749.87	2.00	22.47	-119.33	-2,589.66	-4,609.11	5,286.79	5,262.32	24.48	215.987	
600.00	600.00	759.38	759.24	2.04	22.75	-119.33	-2,589.66	-4,609.11	5,286.80	5,262.00	24.80	213.196	
700.00	700.00	844.11	843.96	2.40	25.29	-119.33	-2,589.97	-4,609.11	5,286.97	5,259.28	27.70	190.899	
800.00	800.00	928.87	928.69	2.76	27.83	-119.34	-2,590.78	-4,609.11	5,287.44	5,256.85	30.59	172.833	
900.00	900.00	1,061.41	1,061.00	3.12	31.80	-119.35	-2,591.84	-4,609.11	5,287.86	5,252.94	34.92	151.414	
1,000.00	1,000.00	1,161.41	1,161.00	3.48	34.80	-119.35	-2,591.84	-4,609.11	5,287.86	5,249.58	38.28	138.143	
1,100.00	1,099.98	1,259.62	1,259.18	3.82	37.74	47.59	-2,589.66	-4,609.11	5,285.62	5,244.06	41.56	127.175	
1,129.54	1,129.49	1,284.63	1,284.18	3.92	38.49	47.61	-2,589.70	-4,609.11	5,284.84	5,242.44	42.41	124.620	
1,200.00	1,199.88	1,344.31	1,343.84	4.15	40.28	47.63	-2,589.97	-4,609.11	5,282.85	5,238.42	44.43	118.911	
1,300.00	1,299.78	1,429.05	1,428.57	4.48	42.82	47.65	-2,590.78	-4,609.11	5,280.27	5,232.97	47.30	111.639	
1,400.00	1,399.68	1,561.39	1,560.68	4.82	46.79	47.69	-2,591.84	-4,609.11	5,277.64	5,226.04	51.60	102.278	
1,500.00	1,499.58	1,661.29	1,660.58	5.16	49.78	47.72	-2,591.84	-4,609.11	5,274.60	5,219.67	54.93	96.016	
1,600.00	1,599.48	1,759.47	1,758.72	5.50	52.72	47.78	-2,589.66	-4,609.11	5,270.50	5,212.28	58.22	90.528	
1,700.00	1,699.37	1,844.25	1,843.49	5.85	55.26	47.81	-2,589.97	-4,609.11	5,267.64	5,206.53	61.11	86.205	
1,800.00	1,799.27	1,929.11	1,928.32	6.20	57.80	47.83	-2,590.78	-4,609.11	5,265.07	5,201.07	64.00	82.273	
1,900.00	1,899.17	2,061.18	2,060.17	6.55	61.76	47.87	-2,591.84	-4,609.11	5,262.45	5,194.15	68.30	77.046	
2,000.00	1,999.07	2,161.08	2,160.07	6.90	64.76	47.91	-2,591.84	-4,609.11	5,259.42	5,187.77	71.65	73.408	
2,100.00	2,098.96	2,259.30	2,258.25	7.25	67.70	47.96	-2,589.66	-4,609.11	5,255.33	5,180.39	74.94	70.126	
2,200.00	2,198.86	2,344.20	2,343.13	7.61	70.24	47.99	-2,589.97	-4,609.11	5,252.48	5,174.64	77.84	67.480	
2,300.00	2,298.76	2,429.17	2,428.07	7.96	72.79	48.01	-2,590.78	-4,609.11	5,249.91	5,169.18	80.74	65.025	
2,400.00	2,398.66	2,560.98	2,559.66	8.32	76.74	48.05	-2,591.84	-4,609.11	5,247.31	5,162.26	85.04	61.703	
2,500.00	2,498.56	2,660.88	2,659.56	8.68	79.73	48.09	-2,591.84	-4,609.11	5,244.28	5,155.89	88.39	59.331	
2,600.00	2,598.45	2,759.14	2,757.78	9.03	82.68	48.15	-2,589.66	-4,609.11	5,240.22	5,148.53	91.69	57.151	
2,700.00	2,698.35	2,844.15	2,842.77	9.39	85.22	48.17	-2,589.97	-4,609.11	5,237.37	5,142.78	94.59	55.367	
2,800.00	2,798.25	2,929.23	2,927.83	9.75	87.77	48.20	-2,590.78	-4,609.11	5,234.82	5,137.32	97.50	53.691	
2,900.00	2,898.15	3,060.77	3,059.15	10.11	91.71	48.24	-2,591.84	-4,609.11	5,232.22	5,130.42	101.80	51.398	
3,000.00	2,998.04	3,160.67	3,159.04	10.47	94.71	48.27	-2,591.84	-4,609.11	5,229.21	5,124.06	105.15	49.731	
3,100.00	3,097.94	3,258.98	3,257.31	10.83	97.65	48.33	-2,589.66	-4,609.11	5,225.15	5,116.70	108.45	48.179	
3,200.00	3,197.84	3,344.10	3,342.42	11.19	100.20	48.36	-2,589.97	-4,609.11	5,222.32	5,110.96	111.36	46.895	
3,300.00	3,297.74	3,429.28	3,427.58	11.55	102.76	48.38	-2,590.78	-4,609.11	5,219.77	5,105.50	114.27	45.679	
3,400.00	3,397.64	3,560.56	3,558.64	11.91	106.69	48.42	-2,591.84	-4,609.11	5,217.18	5,098.62	118.56	44.003	
3,500.00	3,497.53	3,660.46	3,658.53	12.27	109.68	48.46	-2,591.84	-4,609.11	5,214.18	5,092.26	121.92	42.768	
3,600.00	3,597.43	3,758.81	3,756.84	12.63	112.63	48.52	-2,589.66	-4,609.11	5,210.15	5,084.92	125.22	41.607	
3,700.00	3,697.33	3,844.04	3,842.06	12.99	115.18	48.55	-2,589.97	-4,609.11	5,207.32	5,079.19	128.14	40.639	
3,800.00	3,797.23	3,929.34	3,927.34	13.35	117.74	48.57	-2,590.78	-4,609.11	5,204.78	5,073.73	131.05	39.716	
3,900.00	3,897.12	4,060.36	4,058.12	13.72	121.67	48.61	-2,591.84	-4,609.11	5,202.20	5,066.86	135.34	38.439	
4,000.00	3,997.02	4,160.26	4,158.02	14.08	124.66	48.65	-2,591.84	-4,609.11	5,199.21	5,060.52	138.69	37.488	
4,100.00	4,096.92	4,258.65	4,256.37	14.44	127.61	48.70	-2,589.66	-4,609.11	5,195.20	5,053.20	142.00	36.586	
4,200.00	4,196.82	4,343.99	4,341.70	14.80	130.17	48.73	-2,589.97	-4,609.11	5,192.38	5,047.47	144.92	35.830	
4,300.00	4,296.72	4,429.40	4,427.09	15.16	132.72	48.76	-2,590.79	-4,609.11	5,189.85	5,042.02	147.84	35.106	
4,400.00	4,396.61	4,560.15	4,557.61	15.53	136.64	48.79	-2,591.84	-4,609.11	5,187.28	5,035.16	152.11	34.101	
4,500.00	4,496.51	4,660.05	4,657.51	15.89	139.64	48.83	-2,591.84	-4,609.11	5,184.30	5,028.83	155.47	33.346	
4,600.00	4,596.41	4,758.48	4,755.91	16.25	142.59	48.89	-2,589.66	-4,609.11	5,180.30	5,021.52	158.78	32.626	
4,700.00	4,696.31	4,843.94	4,841.35	16.61	145.15	48.92	-2,589.97	-4,609.11	5,177.50	5,015.80	161.70	32.019	
4,800.00	4,796.20	4,929.46	4,926.85	16.98	147.71	48.94	-2,590.79	-4,609.11	5,174.97	5,010.35	164.62	31.435	
4,900.00	4,896.10	5,059.95	5,057.10	17.34	151.62	48.98	-2,591.84	-4,609.11	5,172.41	5,003.51	168.89	30.625	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Rule Assigned: Warning
5,000.00	4,996.00	5,159.84	5,157.00	17.70	154.61	49.02	-2,591.84	-4,609.11	5,169.44	4,997.19	172.25	30.012	
5,100.00	5,095.90	5,258.32	5,255.44	18.07	157.56	49.08	-2,589.66	-4,609.11	5,165.46	4,989.90	175.56	29.423	
5,200.00	5,195.80	5,343.89	5,340.99	18.43	160.13	49.11	-2,589.97	-4,609.11	5,162.67	4,984.18	178.49	28.925	
5,300.00	5,295.69	5,429.52	5,426.60	18.79	162.69	49.13	-2,590.79	-4,609.11	5,160.15	4,978.74	181.41	28.444	
5,400.00	5,395.59	5,559.74	5,556.59	19.16	166.59	49.17	-2,591.84	-4,609.11	5,157.60	4,971.92	185.68	27.777	
5,500.00	5,495.49	5,659.64	5,656.49	19.52	169.59	49.21	-2,591.84	-4,609.11	5,154.64	4,965.61	189.03	27.269	
5,600.00	5,595.39	5,758.15	5,754.97	19.88	172.54	49.27	-2,589.66	-4,609.11	5,150.68	4,958.33	192.34	26.778	
5,700.00	5,695.28	5,843.83	5,840.63	20.25	175.11	49.30	-2,589.97	-4,609.11	5,147.89	4,952.62	195.27	26.363	
5,800.00	5,795.18	5,929.58	5,926.36	20.61	177.68	49.32	-2,590.79	-4,609.11	5,145.39	4,947.18	198.20	25.960	
5,900.00	5,895.08	6,059.53	6,056.08	20.97	181.57	49.36	-2,591.84	-4,609.11	5,142.84	4,940.38	202.46	25.402	
6,000.00	5,994.98	6,159.43	6,155.98	21.34	184.56	49.40	-2,591.84	-4,609.11	5,139.90	4,934.08	205.81	24.974	
6,100.00	6,094.88	6,257.99	6,254.49	21.70	187.52	49.46	-2,589.66	-4,609.11	5,135.95	4,926.82	209.13	24.559	
6,200.00	6,194.77	6,343.78	6,340.27	22.06	190.09	49.49	-2,589.97	-4,609.11	5,133.17	4,921.11	212.06	24.206	
6,300.00	6,294.67	6,429.64	6,426.11	22.43	192.66	49.52	-2,590.79	-4,609.11	5,130.68	4,915.68	214.99	23.864	
6,314.74	6,309.40	6,442.30	6,438.77	22.48	193.04	49.52	-2,590.95	-4,609.11	5,130.33	4,914.91	215.43	23.815	
6,350.00	6,344.59	6,509.35	6,505.59	22.61	195.05	6.30	-2,591.84	-4,609.11	5,128.74	4,911.18	217.56	23.573	
6,400.00	6,394.26	6,559.01	6,555.26	22.79	196.54	-10.86	-2,591.84	-4,609.11	5,123.10	4,903.87	219.23	23.369	
6,450.00	6,443.36	6,608.12	6,604.36	22.97	198.01	-17.06	-2,591.84	-4,609.11	5,114.03	4,893.16	220.87	23.154	
6,500.00	6,491.60	6,656.35	6,652.60	23.15	199.45	-20.51	-2,591.84	-4,609.11	5,101.58	4,879.10	222.48	22.930	
6,550.00	6,538.67	6,703.43	6,699.67	23.32	200.87	-22.98	-2,591.84	-4,609.11	5,085.85	4,861.80	224.05	22.700	
6,600.00	6,584.29	6,749.05	6,745.29	23.49	202.23	-25.10	-2,591.84	-4,609.11	5,066.93	4,841.36	225.57	22.463	
6,650.00	6,628.18	6,786.89	6,783.09	23.66	203.37	-27.09	-2,589.71	-4,609.11	5,043.96	4,817.12	226.84	22.235	
6,700.00	6,670.06	6,822.91	6,819.10	23.83	204.45	-29.16	-2,589.85	-4,609.11	5,019.14	4,791.08	228.06	22.008	
6,750.00	6,709.68	6,856.99	6,853.17	24.00	205.47	-31.42	-2,590.06	-4,609.11	4,991.60	4,762.40	229.20	21.778	
6,800.00	6,746.79	6,888.92	6,885.10	24.17	206.42	-33.93	-2,590.34	-4,609.11	4,961.53	4,731.26	230.27	21.547	
6,850.00	6,781.17	6,918.51	6,914.68	24.35	207.31	-36.78	-2,590.65	-4,609.11	4,929.12	4,697.86	231.26	21.314	
6,900.00	6,812.60	6,945.56	6,941.72	24.54	208.12	-40.07	-2,591.00	-4,609.11	4,894.57	4,662.40	232.16	21.082	
6,950.00	6,840.88	7,005.94	7,001.88	24.74	209.93	-44.24	-2,591.84	-4,609.11	4,858.20	4,624.15	234.06	20.757	
7,000.00	6,865.85	7,030.91	7,026.85	24.96	210.68	-48.75	-2,591.84	-4,609.11	4,819.86	4,584.98	234.88	20.520	
7,050.00	6,887.35	7,052.41	7,048.35	25.19	211.32	-53.94	-2,591.84	-4,609.11	4,780.09	4,544.49	235.59	20.289	
7,100.00	6,905.25	7,070.31	7,066.25	25.43	211.86	-59.85	-2,591.84	-4,609.11	4,739.14	4,502.95	236.19	20.065	
7,150.00	6,919.43	7,084.49	7,080.43	25.69	212.28	-66.45	-2,591.84	-4,609.11	4,697.30	4,460.62	236.68	19.847	
7,200.00	6,929.81	7,094.88	7,090.81	25.96	212.59	-73.63	-2,591.84	-4,609.11	4,654.82	4,417.77	237.05	19.637	
7,250.00	6,936.33	7,101.39	7,097.33	26.25	212.79	-81.16	-2,591.84	-4,609.11	4,611.98	4,374.69	237.30	19.436	
7,300.00	6,938.95	7,104.01	7,099.95	26.55	212.87	-88.75	-2,591.84	-4,609.11	4,569.06	4,331.63	237.43	19.244	
7,309.56	6,939.00	7,104.06	7,100.00	26.60	212.87	-90.18	-2,591.84	-4,609.11	4,560.87	4,323.43	237.44	19.208	
7,400.00	6,938.83	7,103.89	7,099.83	27.19	212.86	-90.18	-2,591.84	-4,609.11	4,483.65	4,246.09	237.56	18.874	
7,500.00	6,938.64	7,103.70	7,099.64	27.91	212.86	-90.17	-2,591.84	-4,609.11	4,398.84	4,161.12	237.72	18.504	
7,600.00	6,938.44	7,103.51	7,099.44	28.70	212.85	-90.17	-2,591.84	-4,609.11	4,314.69	4,076.76	237.94	18.134	
7,700.00	6,938.25	7,103.31	7,099.25	29.55	212.85	-90.16	-2,591.84	-4,609.11	4,231.23	3,993.03	238.21	17.763	
7,800.00	6,938.06	7,103.12	7,099.06	30.47	212.84	-90.16	-2,591.84	-4,609.11	4,148.51	3,909.98	238.53	17.392	
7,900.00	6,937.87	7,102.93	7,098.87	31.44	212.84	-90.15	-2,591.84	-4,609.11	4,066.55	3,827.65	238.91	17.021	
8,000.00	6,937.68	7,102.74	7,098.68	32.46	212.83	-90.15	-2,591.84	-4,609.11	3,985.43	3,746.08	239.35	16.651	
8,100.00	6,937.49	7,102.55	7,098.49	33.53	212.82	-90.15	-2,591.84	-4,609.11	3,905.17	3,665.31	239.86	16.281	
8,200.00	6,937.30	7,102.36	7,098.30	34.64	212.82	-90.14	-2,591.84	-4,609.11	3,825.85	3,585.41	240.44	15.912	
8,300.00	6,937.10	7,102.17	7,098.10	35.78	212.81	-90.14	-2,591.84	-4,609.11	3,747.52	3,506.43	241.09	15.544	
8,400.00	6,936.91	7,101.97	7,097.91	36.96	212.81	-90.13	-2,591.84	-4,609.11	3,670.24	3,428.42	241.82	15.178	
8,500.00	6,936.72	7,101.78	7,097.72	38.17	212.80	-90.13	-2,591.84	-4,609.11	3,594.08	3,351.45	242.62	14.813	
8,600.00	6,936.53	7,101.59	7,097.53	39.41	212.80	-90.12	-2,591.84	-4,609.11	3,519.11	3,275.60	243.51	14.451	
8,700.00	6,936.34	7,101.40	7,097.34	40.68	212.79	-90.12	-2,591.84	-4,609.11	3,445.42	3,200.93	244.49	14.093	
8,800.00	6,936.15	7,101.21	7,097.15	41.97	212.78	-90.11	-2,591.84	-4,609.11	3,373.08	3,127.53	245.54	13.737	
8,900.00	6,935.96	7,101.02	7,096.96	43.27	212.78	-90.11	-2,591.84	-4,609.11	3,302.18	3,055.49	246.69	13.386	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	7,100.83	7,096.76	44.60	212.77	-90.10	-2,591.84	-4,609.11	3,232.83	2,984.90	247.92	13.040	
9,100.00	6,935.57	7,100.63	7,096.57	45.95	212.77	-90.10	-2,591.84	-4,609.11	3,165.11	2,915.86	249.25	12.699	
9,200.00	6,935.38	7,100.44	7,096.38	47.31	212.76	-90.09	-2,591.84	-4,609.11	3,099.14	2,848.49	250.66	12.364	
9,300.00	6,935.19	7,100.25	7,096.19	48.69	212.76	-90.09	-2,591.84	-4,609.11	3,035.04	2,782.88	252.16	12.036	
9,400.00	6,935.00	7,100.06	7,096.00	50.08	212.75	-90.08	-2,591.84	-4,609.11	2,972.91	2,719.17	253.74	11.716	
9,500.00	6,934.81	7,099.87	7,095.81	51.48	212.74	-90.08	-2,591.84	-4,609.11	2,912.89	2,657.49	255.41	11.405	
9,600.00	6,934.62	7,099.68	7,095.62	52.89	212.74	-90.08	-2,591.84	-4,609.11	2,855.12	2,597.96	257.16	11.103	
9,700.00	6,934.43	7,099.49	7,095.43	54.32	212.73	-90.07	-2,591.84	-4,609.11	2,799.72	2,540.74	258.98	10.810	
9,800.00	6,934.23	7,099.30	7,095.23	55.75	212.73	-90.07	-2,591.84	-4,609.11	2,746.86	2,485.97	260.88	10.529	
9,900.00	6,934.04	7,099.10	7,095.04	57.19	212.72	-90.06	-2,591.84	-4,609.11	2,696.66	2,433.82	262.84	10.260	
10,000.00	6,933.85	7,098.91	7,094.85	58.65	212.72	-90.06	-2,591.84	-4,609.11	2,649.29	2,384.43	264.86	10.003	
10,100.00	6,933.66	7,098.72	7,094.66	60.10	212.71	-90.05	-2,591.84	-4,609.11	2,604.89	2,337.97	266.93	9.759	
10,200.00	6,933.47	7,098.53	7,094.47	61.57	212.70	-90.05	-2,591.84	-4,609.11	2,563.64	2,294.60	269.03	9.529	
10,300.00	6,933.28	7,098.34	7,094.28	63.04	212.70	-90.04	-2,591.84	-4,609.11	2,525.67	2,254.50	271.16	9.314	
10,400.00	6,933.09	7,098.15	7,094.09	64.52	212.69	-90.04	-2,591.84	-4,609.11	2,491.13	2,217.83	273.31	9.115	
10,500.00	6,932.89	7,097.96	7,093.89	66.01	212.69	-90.03	-2,591.84	-4,609.11	2,460.18	2,184.73	275.45	8.932	
10,600.00	6,932.70	7,097.76	7,093.70	67.50	212.68	-90.03	-2,591.84	-4,609.11	2,432.95	2,155.38	277.57	8.765	
10,700.00	6,932.51	7,097.57	7,093.51	68.99	212.68	-90.02	-2,591.84	-4,609.11	2,409.56	2,129.90	279.67	8.616	
10,800.00	6,932.32	7,097.38	7,093.32	70.50	212.67	-90.02	-2,591.84	-4,609.11	2,390.14	2,108.42	281.71	8.484	
10,900.00	6,932.13	7,097.19	7,093.13	72.00	212.66	-90.01	-2,591.84	-4,609.11	2,374.77	2,091.07	283.70	8.371	
11,000.00	6,931.94	7,097.00	7,092.94	73.51	212.66	-90.01	-2,591.84	-4,609.11	2,363.53	2,077.93	285.60	8.276	
11,100.00	6,931.75	7,096.81	7,092.75	75.02	212.65	-90.01	-2,591.84	-4,609.11	2,356.48	2,069.07	287.41	8.199	
11,200.00	6,931.55	7,096.62	7,092.55	76.54	212.65	-90.00	-2,591.84	-4,609.11	2,353.67	2,064.56	289.11	8.141	
11,216.23	6,931.52	7,096.58	7,092.52	76.79	212.65	-90.00	-2,591.84	-4,609.11	2,353.62	2,064.24	289.38	8.133	CC, ES
11,300.00	6,931.36	7,096.42	7,092.36	78.06	212.64	-90.00	-2,591.84	-4,609.11	2,355.11	2,064.41	290.70	8.102	
11,400.00	6,931.17	7,096.23	7,092.17	79.58	212.64	-89.99	-2,591.84	-4,609.11	2,360.78	2,068.62	292.16	8.080	
11,500.00	6,930.98	7,096.04	7,091.98	81.11	212.63	-89.99	-2,591.84	-4,609.11	2,370.66	2,077.18	293.48	8.078	SF
11,600.00	6,930.79	7,095.85	7,091.79	82.64	212.62	-89.98	-2,591.84	-4,609.11	2,384.70	2,090.03	294.67	8.093	
11,700.00	6,930.60	7,095.66	7,091.60	84.17	212.62	-89.98	-2,591.84	-4,609.11	2,402.82	2,107.10	295.72	8.125	
11,800.00	6,930.41	7,095.47	7,091.41	85.70	212.61	-89.97	-2,591.84	-4,609.11	2,424.93	2,128.30	296.63	8.175	
11,900.00	6,930.21	7,095.28	7,091.21	87.24	212.61	-89.97	-2,591.84	-4,609.11	2,450.93	2,153.53	297.40	8.241	
12,000.00	6,930.02	7,095.08	7,091.02	88.78	212.60	-89.96	-2,591.84	-4,609.11	2,480.69	2,182.65	298.04	8.323	
12,100.00	6,929.83	7,094.89	7,090.83	90.32	212.60	-89.96	-2,591.84	-4,609.11	2,514.07	2,215.53	298.54	8.421	
12,200.00	6,929.64	7,094.70	7,090.64	91.87	212.59	-89.95	-2,591.84	-4,609.11	2,550.94	2,252.01	298.93	8.533	
12,300.00	6,929.45	7,094.51	7,090.45	93.41	212.58	-89.95	-2,591.84	-4,609.11	2,591.15	2,291.94	299.21	8.660	
12,400.00	6,929.26	7,094.32	7,090.26	94.96	212.58	-89.94	-2,591.84	-4,609.11	2,634.54	2,335.16	299.39	8.800	
12,500.00	6,929.07	7,094.13	7,090.07	96.51	212.57	-89.94	-2,591.84	-4,609.11	2,680.96	2,381.50	299.46	8.953	
12,600.00	6,928.88	7,093.94	7,089.88	98.06	212.57	-89.94	-2,591.84	-4,609.11	2,730.26	2,430.80	299.46	9.117	
12,700.00	6,928.68	7,093.74	7,089.68	99.62	212.56	-89.93	-2,591.84	-4,609.11	2,782.28	2,482.90	299.38	9.294	
12,800.00	6,928.49	7,093.55	7,089.49	101.17	212.55	-89.93	-2,591.84	-4,609.11	2,836.87	2,537.64	299.23	9.481	
12,900.00	6,928.30	7,093.36	7,089.30	102.73	212.55	-89.92	-2,591.84	-4,609.11	2,893.89	2,594.87	299.02	9.678	
13,000.00	6,928.11	7,093.17	7,089.11	104.28	212.54	-89.92	-2,591.84	-4,609.11	2,953.19	2,654.43	298.75	9.885	
13,100.00	6,927.92	7,092.98	7,088.92	105.84	212.54	-89.91	-2,591.84	-4,609.11	3,014.64	2,716.20	298.45	10.101	
13,200.00	6,927.73	7,092.79	7,088.73	107.40	212.53	-89.91	-2,591.84	-4,609.11	3,078.12	2,780.02	298.11	10.326	
13,300.00	6,927.54	7,092.60	7,088.54	108.97	212.53	-89.90	-2,591.84	-4,609.11	3,143.50	2,845.77	297.73	10.558	
13,400.00	6,927.34	7,092.41	7,088.34	110.53	212.52	-89.90	-2,591.84	-4,609.11	3,210.66	2,913.33	297.33	10.798	
13,500.00	6,927.15	7,092.21	7,088.15	112.09	212.51	-89.89	-2,591.84	-4,609.11	3,279.50	2,982.59	296.91	11.045	
13,600.00	6,926.96	7,092.02	7,087.96	113.66	212.51	-89.89	-2,591.84	-4,609.11	3,349.90	3,053.43	296.47	11.299	
13,700.00	6,926.77	7,091.83	7,087.77	115.22	212.50	-89.88	-2,591.84	-4,609.11	3,421.78	3,125.76	296.02	11.559	
13,800.00	6,926.58	7,091.64	7,087.58	116.79	212.50	-89.88	-2,591.84	-4,609.11	3,495.05	3,199.49	295.56	11.825	
13,900.00	6,926.39	7,091.45	7,087.39	118.36	212.49	-89.87	-2,591.84	-4,609.11	3,569.61	3,274.52	295.09	12.097	
14,000.00	6,926.20	7,091.26	7,087.20	119.93	212.49	-89.87	-2,591.84	-4,609.11	3,645.39	3,350.77	294.62	12.373	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	6,926.00	7,091.07	7,087.00	121.50	212.48	-89.87	-2,591.84	-4,609.11	3,722.31	3,428.17	294.14	12.655	
14,200.00	6,925.81	7,090.87	7,086.81	123.07	212.47	-89.86	-2,591.84	-4,609.11	3,800.31	3,506.64	293.67	12.941	
14,300.00	6,925.62	7,090.68	7,086.62	124.64	212.47	-89.86	-2,591.84	-4,609.11	3,879.32	3,586.12	293.20	13.231	
14,400.00	6,925.43	7,090.49	7,086.43	126.21	212.46	-89.85	-2,591.84	-4,609.11	3,959.27	3,666.54	292.73	13.525	
14,500.00	6,925.24	7,090.30	7,086.24	127.79	212.46	-89.85	-2,591.84	-4,609.11	4,040.12	3,747.86	292.27	13.823	
14,600.00	6,925.05	7,090.11	7,086.05	129.36	212.45	-89.84	-2,591.84	-4,609.11	4,121.81	3,830.00	291.81	14.125	
14,700.00	6,924.86	7,089.92	7,085.86	130.93	212.45	-89.84	-2,591.84	-4,609.11	4,204.30	3,912.94	291.36	14.430	
14,800.00	6,924.66	7,089.73	7,085.66	132.51	212.44	-89.83	-2,591.84	-4,609.11	4,287.52	3,996.61	290.92	14.738	
14,900.00	6,924.47	7,089.53	7,085.47	134.09	212.43	-89.83	-2,591.84	-4,609.11	4,371.45	4,080.98	290.48	15.049	
15,000.00	6,924.28	7,089.34	7,085.28	135.66	212.43	-89.82	-2,591.84	-4,609.11	4,456.05	4,166.00	290.05	15.363	
15,100.00	6,924.09	7,089.15	7,085.09	137.24	212.42	-89.82	-2,591.84	-4,609.11	4,541.27	4,251.64	289.63	15.680	
15,200.00	6,923.90	7,088.96	7,084.90	138.82	212.42	-89.81	-2,591.84	-4,609.11	4,627.08	4,337.86	289.22	15.999	
15,300.00	6,923.71	7,088.77	7,084.71	140.40	212.41	-89.81	-2,591.84	-4,609.11	4,713.45	4,424.63	288.82	16.320	
15,400.00	6,923.52	7,088.58	7,084.52	141.97	212.41	-89.81	-2,591.84	-4,609.11	4,800.35	4,511.93	288.42	16.644	
15,500.00	6,923.33	7,088.39	7,084.33	143.55	212.40	-89.80	-2,591.84	-4,609.11	4,887.75	4,599.71	288.04	16.969	
15,600.00	6,923.13	7,088.19	7,084.13	145.13	212.39	-89.80	-2,591.84	-4,609.11	4,975.63	4,687.97	287.66	17.297	
15,700.00	6,922.94	7,088.00	7,083.94	146.72	212.39	-89.79	-2,591.84	-4,609.11	5,063.95	4,776.66	287.29	17.626	
15,800.00	6,922.75	7,087.81	7,083.75	148.30	212.38	-89.79	-2,591.84	-4,609.11	5,152.70	4,865.77	286.94	17.958	
15,900.00	6,922.56	7,087.62	7,083.56	149.88	212.38	-89.78	-2,591.84	-4,609.11	5,241.86	4,955.27	286.59	18.291	
16,000.00	6,922.37	7,087.43	7,083.37	151.46	212.37	-89.78	-2,591.84	-4,609.11	5,331.40	5,045.16	286.25	18.625	
16,100.00	6,922.18	7,087.24	7,083.18	153.04	212.37	-89.77	-2,591.84	-4,609.11	5,421.31	5,135.39	285.92	18.961	
16,200.00	6,921.99	7,087.05	7,082.99	154.63	212.36	-89.77	-2,591.84	-4,609.11	5,511.57	5,225.97	285.59	19.299	
16,300.00	6,921.79	7,086.86	7,082.79	156.21	212.35	-89.76	-2,591.84	-4,609.11	5,602.15	5,316.87	285.28	19.637	
16,400.00	6,921.60	7,086.66	7,082.60	157.79	212.35	-89.76	-2,591.84	-4,609.11	5,693.05	5,408.08	284.97	19.977	
16,500.00	6,921.41	7,086.47	7,082.41	159.38	212.34	-89.75	-2,591.84	-4,609.11	5,784.26	5,499.58	284.68	20.319	
16,600.00	6,921.22	7,086.28	7,082.22	160.96	212.34	-89.75	-2,591.84	-4,609.11	5,875.74	5,591.36	284.39	20.661	
16,700.00	6,921.03	7,086.09	7,082.03	162.55	212.33	-89.74	-2,591.84	-4,609.11	5,967.51	5,683.40	284.10	21.005	
16,800.00	6,920.84	7,085.90	7,081.84	164.13	212.33	-89.74	-2,591.84	-4,609.11	6,059.53	5,775.70	283.83	21.349	
16,900.00	6,920.65	7,085.71	7,081.65	165.72	212.32	-89.74	-2,591.84	-4,609.11	6,151.80	5,868.23	283.56	21.695	
17,000.00	6,920.45	7,085.52	7,081.45	167.30	212.31	-89.73	-2,591.84	-4,609.11	6,244.31	5,961.00	283.30	22.041	
17,100.00	6,920.26	7,085.32	7,081.26	168.89	212.31	-89.73	-2,591.84	-4,609.11	6,337.04	6,053.99	283.05	22.388	
17,200.00	6,920.07	7,085.13	7,081.07	170.48	212.30	-89.72	-2,591.84	-4,609.11	6,430.00	6,147.19	282.81	22.736	
17,300.00	6,919.88	7,084.94	7,080.88	172.06	212.30	-89.72	-2,591.84	-4,609.11	6,523.16	6,240.59	282.57	23.085	
17,400.00	6,919.69	7,084.75	7,080.69	173.65	212.29	-89.71	-2,591.84	-4,609.11	6,616.52	6,334.19	282.34	23.435	
17,500.00	6,919.50	7,084.56	7,080.50	175.24	212.29	-89.71	-2,591.84	-4,609.11	6,710.08	6,427.97	282.11	23.785	
17,600.00	6,919.31	7,084.37	7,080.31	176.83	212.28	-89.70	-2,591.84	-4,609.11	6,803.81	6,521.92	281.89	24.136	
17,700.00	6,919.11	7,084.18	7,080.11	178.41	212.27	-89.70	-2,591.84	-4,609.11	6,897.73	6,616.05	281.68	24.488	
17,759.55	6,919.00	7,084.06	7,080.00	179.36	212.27	-89.70	-2,591.84	-4,609.11	6,953.74	6,672.18	281.55	24.698	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: 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	-130.34	-2,536.58	-2,987.24	3,918.91				
100.00	100.00	278.00	278.00	0.25	8.33	-130.34	-2,536.58	-2,987.24	3,918.91	3,910.33	8.58	456.688	
200.00	200.00	378.00	378.00	0.61	11.33	-130.34	-2,536.58	-2,987.24	3,918.91	3,906.97	11.94	328.326	
300.00	300.00	478.00	478.00	0.97	14.32	-130.34	-2,536.58	-2,987.24	3,918.91	3,903.62	15.29	256.290	
400.00	400.00	578.10	578.00	1.33	17.32	-130.34	-2,536.58	-2,987.24	3,918.91	3,900.26	18.65	210.142	
500.00	500.00	678.10	678.00	1.68	20.32	-130.34	-2,536.58	-2,987.24	3,918.91	3,896.91	22.00	178.101	
573.19	573.19	751.08	750.94	1.95	22.51	-130.31	-2,534.40	-2,987.24	3,917.50	3,893.05	24.45	160.206	
600.00	600.00	773.86	773.72	2.04	23.19	-130.31	-2,534.42	-2,987.24	3,917.51	3,892.28	25.23	155.262	
700.00	700.00	858.88	858.72	2.40	25.74	-130.32	-2,534.81	-2,987.24	3,917.82	3,889.68	28.14	139.239	
800.00	800.00	943.92	943.73	2.76	28.28	-130.33	-2,535.71	-2,987.24	3,918.50	3,887.46	31.04	126.228	
900.00	900.00	1,078.41	1,078.00	3.12	32.31	-130.34	-2,536.58	-2,987.24	3,918.91	3,883.48	35.43	110.602	
1,000.00	1,000.00	1,178.41	1,178.00	3.48	35.31	-130.34	-2,536.58	-2,987.24	3,918.91	3,880.12	38.79	101.035	
1,100.00	1,099.98	1,274.11	1,273.66	3.82	38.18	36.61	-2,534.42	-2,987.24	3,916.11	3,874.12	42.00	93.250	
1,129.54	1,129.49	1,299.20	1,298.75	3.92	38.93	36.63	-2,534.48	-2,987.24	3,915.21	3,872.37	42.84	91.382	
1,200.00	1,199.88	1,359.08	1,358.61	4.15	40.72	36.65	-2,534.82	-2,987.24	3,912.91	3,868.04	44.87	87.206	
1,300.00	1,299.78	1,444.11	1,443.62	4.48	43.27	36.67	-2,535.72	-2,987.24	3,909.97	3,862.22	47.75	81.887	
1,400.00	1,399.68	1,578.39	1,577.68	4.82	47.30	36.71	-2,536.58	-2,987.24	3,906.75	3,854.64	52.11	74.970	
1,500.00	1,499.58	1,678.29	1,677.58	5.16	50.29	36.75	-2,536.58	-2,987.24	3,903.12	3,847.68	55.44	70.398	
1,600.00	1,599.48	1,773.97	1,773.22	5.50	53.16	36.81	-2,534.42	-2,987.24	3,898.11	3,839.46	58.65	66.460	
1,700.00	1,699.37	1,859.04	1,858.28	5.85	55.71	36.84	-2,534.82	-2,987.24	3,894.79	3,833.25	61.55	63.281	
1,800.00	1,799.27	1,944.19	1,943.40	6.20	58.26	36.87	-2,535.72	-2,987.24	3,891.86	3,827.41	64.44	60.391	
1,900.00	1,899.17	2,078.18	2,077.17	6.55	62.27	36.91	-2,536.58	-2,987.24	3,888.65	3,819.84	68.81	56.513	
2,000.00	1,999.07	2,178.08	2,177.07	6.90	65.27	36.95	-2,536.58	-2,987.24	3,885.03	3,812.88	72.15	53.845	
2,100.00	2,098.96	2,273.82	2,272.77	7.25	68.13	37.01	-2,534.42	-2,987.24	3,880.04	3,804.66	75.37	51.478	
2,200.00	2,198.86	2,359.01	2,357.94	7.61	70.69	37.04	-2,534.82	-2,987.24	3,876.72	3,798.45	78.28	49.526	
2,300.00	2,298.76	2,444.27	2,443.17	7.96	73.24	37.07	-2,535.72	-2,987.24	3,873.79	3,792.61	81.18	47.717	
2,400.00	2,398.66	2,577.98	2,576.66	8.32	77.25	37.11	-2,536.58	-2,987.24	3,870.59	3,785.05	85.54	45.246	
2,500.00	2,498.56	2,677.88	2,676.56	8.68	80.24	37.15	-2,536.58	-2,987.24	3,866.99	3,778.10	88.89	43.502	
2,600.00	2,598.45	2,773.68	2,772.32	9.03	83.11	37.22	-2,534.42	-2,987.24	3,862.01	3,769.89	92.12	41.925	
2,700.00	2,698.35	2,858.98	2,857.60	9.39	85.67	37.25	-2,534.82	-2,987.24	3,858.70	3,763.67	95.03	40.606	
2,800.00	2,798.25	2,944.34	2,942.94	9.75	88.23	37.27	-2,535.72	-2,987.24	3,855.78	3,757.84	97.94	39.368	
2,900.00	2,898.15	3,077.77	3,076.15	10.11	92.22	37.31	-2,536.58	-2,987.24	3,852.59	3,750.29	102.30	37.661	
3,000.00	2,998.04	3,177.67	3,176.04	10.47	95.22	37.36	-2,536.58	-2,987.24	3,848.99	3,743.35	105.65	36.432	
3,100.00	3,097.94	3,273.53	3,271.87	10.83	98.09	37.42	-2,534.42	-2,987.24	3,844.03	3,735.15	108.88	35.306	
3,200.00	3,197.84	3,358.95	3,357.26	11.19	100.65	37.45	-2,534.82	-2,987.24	3,840.73	3,728.94	111.79	34.356	
3,300.00	3,297.74	3,444.42	3,442.72	11.55	103.21	37.47	-2,535.72	-2,987.24	3,837.82	3,723.10	114.71	33.457	
3,400.00	3,397.64	3,577.56	3,575.64	11.91	107.20	37.52	-2,536.58	-2,987.24	3,834.63	3,715.57	119.06	32.208	
3,500.00	3,497.53	3,677.46	3,675.53	12.27	110.19	37.56	-2,536.58	-2,987.24	3,831.05	3,708.63	122.41	31.297	
3,600.00	3,597.43	3,773.39	3,771.42	12.63	113.07	37.63	-2,534.42	-2,987.24	3,826.10	3,700.45	125.64	30.452	
3,700.00	3,697.33	3,858.91	3,856.93	12.99	115.63	37.66	-2,534.81	-2,987.24	3,822.81	3,694.24	128.56	29.735	
3,800.00	3,797.23	3,944.50	3,942.49	13.35	118.20	37.68	-2,535.72	-2,987.24	3,819.90	3,688.41	131.49	29.052	
3,900.00	3,897.12	4,077.36	4,075.12	13.72	122.18	37.73	-2,536.58	-2,987.24	3,816.72	3,680.90	135.83	28.100	
4,000.00	3,997.02	4,177.26	4,175.02	14.08	125.17	37.77	-2,536.58	-2,987.24	3,813.15	3,673.97	139.18	27.397	
4,100.00	4,096.92	4,273.24	4,270.97	14.44	128.05	37.83	-2,534.42	-2,987.24	3,808.21	3,665.80	142.42	26.740	
4,200.00	4,196.82	4,358.88	4,356.59	14.80	130.61	37.86	-2,534.81	-2,987.24	3,804.93	3,659.59	145.34	26.179	
4,300.00	4,296.72	4,444.58	4,442.27	15.16	133.18	37.89	-2,535.72	-2,987.24	3,802.03	3,653.77	148.27	25.643	
4,400.00	4,396.61	4,577.15	4,574.61	15.53	137.15	37.93	-2,536.58	-2,987.24	3,798.87	3,646.27	152.60	24.894	
4,500.00	4,496.51	4,677.05	4,674.51	15.89	140.15	37.98	-2,536.58	-2,987.24	3,795.30	3,639.35	155.95	24.336	
4,600.00	4,596.41	4,773.10	4,770.52	16.25	143.02	38.04	-2,534.42	-2,987.24	3,790.38	3,631.19	159.19	23.810	
4,700.00	4,696.31	4,858.85	4,856.25	16.61	145.59	38.07	-2,534.81	-2,987.24	3,787.11	3,624.99	162.12	23.360	
4,800.00	4,796.20	4,944.66	4,942.04	16.98	148.16	38.10	-2,535.72	-2,987.24	3,784.22	3,619.17	165.05	22.928	
4,900.00	4,896.10	5,076.95	5,074.10	17.34	152.13	38.14	-2,536.58	-2,987.24	3,781.06	3,611.68	169.37	22.324	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,996.00	5,176.84	5,174.00	17.70	155.12	38.19	-2,536.58	-2,987.24	3,777.50	3,604.78	172.73	21.870	
5,100.00	5,095.90	5,272.95	5,270.07	18.07	158.00	38.25	-2,534.42	-2,987.24	3,772.60	3,596.63	175.97	21.439	
5,200.00	5,195.80	5,358.81	5,355.91	18.43	160.57	38.29	-2,534.81	-2,987.24	3,769.34	3,590.44	178.90	21.069	
5,300.00	5,295.69	5,444.74	5,441.82	18.79	163.15	38.31	-2,535.73	-2,987.24	3,766.45	3,584.62	181.83	20.714	
5,400.00	5,395.59	5,576.74	5,573.59	19.16	167.10	38.36	-2,536.58	-2,987.24	3,763.30	3,577.15	186.15	20.216	
5,500.00	5,495.49	5,662.25	5,659.08	19.52	169.67	38.40	-2,535.66	-2,987.24	3,759.22	3,570.14	189.08	19.882	
5,600.00	5,595.39	5,776.68	5,773.39	19.88	173.10	38.44	-2,536.58	-2,987.24	3,756.22	3,563.35	192.86	19.476	
5,700.00	5,695.28	5,874.99	5,871.68	20.25	176.04	38.50	-2,535.45	-2,987.24	3,751.97	3,555.80	196.17	19.126	
5,800.00	5,795.18	5,951.15	5,947.82	20.61	178.32	38.53	-2,535.89	-2,987.24	3,748.79	3,549.98	198.81	18.856	
5,900.00	5,895.08	6,076.53	6,073.08	20.97	182.08	38.57	-2,536.58	-2,987.24	3,745.60	3,542.67	202.93	18.458	
6,000.00	5,994.98	6,176.43	6,172.98	21.34	185.07	38.62	-2,536.58	-2,987.24	3,742.07	3,535.78	206.28	18.140	
6,100.00	6,094.88	6,276.33	6,272.88	21.70	188.07	38.66	-2,536.58	-2,987.24	3,738.53	3,528.90	209.64	17.833	
6,200.00	6,194.77	6,317.00	6,313.36	22.06	189.29	38.68	-2,536.58	-2,987.24	3,735.48	3,524.28	211.20	17.687	
6,272.45	6,267.15	6,317.00	6,313.36	22.33	189.29	38.68	-2,536.58	-2,987.24	3,734.77	3,523.40	211.37	17.669	
6,300.00	6,294.67	6,317.00	6,313.36	22.43	189.29	38.68	-2,536.58	-2,987.24	3,734.88	3,523.46	211.42	17.666	
6,314.74	6,309.40	6,317.00	6,313.36	22.48	189.29	38.68	-2,536.58	-2,987.24	3,735.01	3,523.58	211.43	17.665	
6,350.00	6,344.59	6,317.00	6,313.36	22.61	189.29	-4.49	-2,536.58	-2,987.24	3,734.82	3,523.35	211.47	17.662	
6,400.00	6,394.26	6,317.00	6,313.36	22.79	189.29	-21.53	-2,536.58	-2,987.24	3,732.48	3,521.01	211.48	17.650	
6,450.00	6,443.36	6,317.00	6,313.36	22.97	189.29	-27.59	-2,536.58	-2,987.24	3,727.76	3,516.32	211.45	17.630	
6,500.00	6,491.60	6,317.00	6,313.36	23.15	189.29	-30.84	-2,536.58	-2,987.24	3,720.67	3,509.29	211.38	17.602	
6,550.00	6,538.67	6,317.00	6,313.36	23.32	189.29	-33.06	-2,536.58	-2,987.24	3,711.23	3,499.96	211.27	17.566	
6,600.00	6,584.29	6,317.00	6,313.36	23.49	189.29	-34.85	-2,536.58	-2,987.24	3,699.48	3,488.35	211.13	17.522	
6,650.00	6,628.18	6,317.00	6,313.36	23.66	189.29	-36.48	-2,536.58	-2,987.24	3,685.49	3,474.53	210.96	17.470	
6,700.00	6,670.06	6,317.00	6,313.36	23.83	189.29	-38.07	-2,536.58	-2,987.24	3,669.31	3,458.55	210.76	17.410	
6,750.00	6,709.68	6,317.00	6,313.36	24.00	189.29	-39.70	-2,536.58	-2,987.24	3,651.01	3,440.47	210.54	17.341	
6,800.00	6,746.79	6,317.00	6,313.36	24.17	189.29	-41.43	-2,536.58	-2,987.24	3,630.67	3,420.37	210.30	17.264	
6,850.00	6,781.17	6,317.00	6,313.36	24.35	189.29	-43.30	-2,536.58	-2,987.24	3,608.38	3,398.33	210.05	17.179	
6,900.00	6,812.60	6,317.00	6,313.36	24.54	189.29	-45.34	-2,536.58	-2,987.24	3,584.26	3,374.46	209.80	17.084	
6,950.00	6,840.88	6,317.00	6,313.36	24.74	189.29	-47.57	-2,536.58	-2,987.24	3,558.40	3,348.85	209.55	16.981	
7,000.00	6,865.85	6,317.00	6,313.36	24.96	189.29	-50.02	-2,536.58	-2,987.24	3,530.93	3,321.63	209.31	16.870	
7,050.00	6,887.35	6,317.00	6,313.36	25.19	189.29	-52.72	-2,536.58	-2,987.24	3,502.00	3,292.91	209.09	16.749	
7,100.00	6,905.25	6,317.00	6,313.36	25.43	189.29	-55.67	-2,536.58	-2,987.24	3,471.73	3,262.84	208.89	16.620	
7,150.00	6,919.43	6,317.00	6,313.36	25.69	189.29	-58.88	-2,536.58	-2,987.24	3,440.29	3,231.56	208.73	16.482	
7,200.00	6,929.81	6,317.00	6,313.36	25.96	189.29	-62.35	-2,536.58	-2,987.24	3,407.84	3,199.23	208.61	16.336	
7,250.00	6,936.33	6,317.00	6,313.36	26.25	189.29	-66.06	-2,536.58	-2,987.24	3,374.55	3,166.01	208.54	16.182	
7,300.00	6,938.95	6,317.00	6,313.36	26.55	189.29	-69.99	-2,536.58	-2,987.24	3,340.61	3,132.08	208.52	16.020	
7,309.56	6,939.00	6,317.00	6,313.36	26.60	189.29	-70.77	-2,536.58	-2,987.24	3,334.06	3,125.53	208.53	15.989	
7,400.00	6,938.83	6,317.00	6,313.36	27.19	189.29	-70.77	-2,536.58	-2,987.24	3,272.69	3,064.10	208.60	15.689	
7,500.00	6,938.64	6,317.00	6,313.36	27.91	189.29	-70.77	-2,536.58	-2,987.24	3,206.44	2,997.71	208.74	15.361	
7,600.00	6,938.44	6,317.00	6,313.36	28.70	189.29	-70.77	-2,536.58	-2,987.24	3,141.98	2,933.02	208.96	15.036	
7,700.00	6,938.25	6,317.00	6,313.36	29.55	189.29	-70.77	-2,536.58	-2,987.24	3,079.42	2,870.16	209.26	14.716	
7,800.00	6,938.06	6,317.00	6,313.36	30.47	189.29	-70.77	-2,536.58	-2,987.24	3,018.87	2,809.22	209.65	14.399	
7,900.00	6,937.87	6,317.00	6,313.36	31.44	189.29	-70.77	-2,536.58	-2,987.24	2,960.46	2,750.33	210.13	14.089	
8,000.00	6,937.68	6,317.00	6,313.36	32.46	189.29	-70.77	-2,536.58	-2,987.24	2,904.33	2,693.63	210.70	13.784	
8,100.00	6,937.49	6,317.00	6,313.36	33.53	189.29	-70.77	-2,536.58	-2,987.24	2,850.59	2,639.24	211.36	13.487	
8,200.00	6,937.30	6,317.00	6,313.36	34.64	189.29	-70.77	-2,536.58	-2,987.24	2,799.40	2,587.29	212.11	13.198	
8,300.00	6,937.10	6,317.00	6,313.36	35.78	189.29	-70.77	-2,536.58	-2,987.24	2,750.89	2,537.94	212.95	12.918	
8,400.00	6,936.91	6,317.00	6,313.36	36.96	189.29	-70.77	-2,536.58	-2,987.24	2,705.21	2,491.33	213.88	12.648	
8,500.00	6,936.72	6,317.00	6,313.36	38.17	189.29	-70.77	-2,536.58	-2,987.24	2,662.51	2,447.62	214.89	12.390	
8,600.00	6,936.53	6,317.00	6,313.36	39.41	189.29	-70.77	-2,536.58	-2,987.24	2,622.92	2,406.94	215.99	12.144	
8,700.00	6,936.34	6,317.00	6,313.36	40.68	189.29	-70.77	-2,536.58	-2,987.24	2,586.60	2,369.45	217.15	11.911	
8,800.00	6,936.15	6,317.00	6,313.36	41.97	189.29	-70.77	-2,536.58	-2,987.24	2,553.67	2,335.29	218.39	11.693	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,900.00	6,935.96	6,317.00	6,313.36	43.27	189.29	-70.77	-2,536.58	-2,987.24	2,524.29	2,304.60	219.68	11.491	
9,000.00	6,935.76	6,317.00	6,313.36	44.60	189.29	-70.77	-2,536.58	-2,987.24	2,498.56	2,277.53	221.03	11.304	
9,100.00	6,935.57	6,317.00	6,313.36	45.95	189.29	-70.77	-2,536.58	-2,987.24	2,476.60	2,254.18	222.42	11.135	
9,200.00	6,935.38	6,317.00	6,313.36	47.31	189.29	-70.77	-2,536.58	-2,987.24	2,458.52	2,234.68	223.84	10.983	
9,300.00	6,935.19	6,317.00	6,313.36	48.69	189.29	-70.77	-2,536.58	-2,987.24	2,444.40	2,219.11	225.29	10.850	
9,400.00	6,935.00	6,317.00	6,313.36	50.08	189.29	-70.77	-2,536.58	-2,987.24	2,434.31	2,207.55	226.76	10.735	
9,500.00	6,934.81	6,317.00	6,313.36	51.48	189.29	-70.77	-2,536.58	-2,987.24	2,428.30	2,200.07	228.22	10.640	
9,596.16	6,934.62	6,317.00	6,313.36	52.84	189.29	-70.77	-2,536.58	-2,987.24	2,426.39	2,196.77	229.63	10.567	CC
9,600.00	6,934.62	6,317.00	6,313.36	52.89	189.29	-70.77	-2,536.58	-2,987.24	2,426.39	2,196.71	229.68	10.564	ES
9,700.00	6,934.43	6,317.00	6,313.36	54.32	189.29	-70.77	-2,536.58	-2,987.24	2,428.61	2,197.49	231.12	10.508	
9,800.00	6,934.23	6,317.00	6,313.36	55.75	189.29	-70.77	-2,536.58	-2,987.24	2,434.94	2,202.40	232.53	10.471	
9,900.00	6,934.04	6,317.00	6,313.36	57.19	189.29	-70.77	-2,536.58	-2,987.24	2,445.34	2,211.43	233.91	10.454	SF
10,000.00	6,933.85	6,317.00	6,313.36	58.65	189.29	-70.77	-2,536.58	-2,987.24	2,459.77	2,224.52	235.24	10.456	
10,100.00	6,933.66	6,317.00	6,313.36	60.10	189.29	-70.77	-2,536.58	-2,987.24	2,478.15	2,241.62	236.53	10.477	
10,200.00	6,933.47	6,317.00	6,313.36	61.57	189.29	-70.77	-2,536.58	-2,987.24	2,500.40	2,262.65	237.75	10.517	
10,300.00	6,933.28	6,317.00	6,313.36	63.04	189.29	-70.77	-2,536.58	-2,987.24	2,526.41	2,287.50	238.91	10.575	
10,400.00	6,933.09	6,317.00	6,313.36	64.52	189.29	-70.77	-2,536.58	-2,987.24	2,556.08	2,316.08	240.00	10.650	
10,500.00	6,932.89	6,317.00	6,313.36	66.01	189.29	-70.77	-2,536.58	-2,987.24	2,589.27	2,348.24	241.03	10.743	
10,600.00	6,932.70	6,317.00	6,313.36	67.50	189.29	-70.77	-2,536.58	-2,987.24	2,625.85	2,383.86	241.98	10.851	
10,700.00	6,932.51	6,317.00	6,313.36	68.99	189.29	-70.77	-2,536.58	-2,987.24	2,665.68	2,422.81	242.87	10.976	
10,800.00	6,932.32	6,317.00	6,313.36	70.50	189.29	-70.77	-2,536.58	-2,987.24	2,708.62	2,464.94	243.68	11.115	
10,900.00	6,932.13	6,317.00	6,313.36	72.00	189.29	-70.77	-2,536.58	-2,987.24	2,754.52	2,510.09	244.43	11.269	
11,000.00	6,931.94	6,317.00	6,313.36	73.51	189.29	-70.77	-2,536.58	-2,987.24	2,803.24	2,558.13	245.11	11.437	
11,100.00	6,931.75	6,317.00	6,313.36	75.02	189.29	-70.77	-2,536.58	-2,987.24	2,854.63	2,608.90	245.72	11.617	
11,200.00	6,931.55	6,317.00	6,313.36	76.54	189.29	-70.77	-2,536.58	-2,987.24	2,908.55	2,662.27	246.28	11.810	
11,300.00	6,931.36	6,317.00	6,313.36	78.06	189.29	-70.77	-2,536.58	-2,987.24	2,964.87	2,718.09	246.78	12.014	
11,400.00	6,931.17	6,317.00	6,313.36	79.58	189.29	-70.77	-2,536.58	-2,987.24	3,023.44	2,776.22	247.22	12.230	
11,500.00	6,930.98	6,317.00	6,313.36	81.11	189.29	-70.77	-2,536.58	-2,987.24	3,084.15	2,836.53	247.62	12.455	
11,600.00	6,930.79	6,317.00	6,313.36	82.64	189.29	-70.77	-2,536.58	-2,987.24	3,146.86	2,898.90	247.96	12.691	
11,700.00	6,930.60	6,317.00	6,313.36	84.17	189.29	-70.77	-2,536.58	-2,987.24	3,211.46	2,963.20	248.27	12.935	
11,800.00	6,930.41	6,317.00	6,313.36	85.70	189.29	-70.77	-2,536.58	-2,987.24	3,277.85	3,029.31	248.53	13.189	
11,900.00	6,930.21	6,317.00	6,313.36	87.24	189.29	-70.77	-2,536.58	-2,987.24	3,345.90	3,097.14	248.76	13.450	
12,000.00	6,930.02	6,317.00	6,313.36	88.78	189.29	-70.77	-2,536.58	-2,987.24	3,415.52	3,166.57	248.96	13.719	
12,100.00	6,929.83	6,317.00	6,313.36	90.32	189.29	-70.77	-2,536.58	-2,987.24	3,486.63	3,237.50	249.12	13.996	
12,200.00	6,929.64	6,317.00	6,313.36	91.87	189.29	-70.77	-2,536.58	-2,987.24	3,559.12	3,309.86	249.26	14.279	
12,300.00	6,929.45	6,317.00	6,313.36	93.41	189.29	-70.77	-2,536.58	-2,987.24	3,632.92	3,383.54	249.38	14.568	
12,400.00	6,929.26	6,317.00	6,313.36	94.96	189.29	-70.77	-2,536.58	-2,987.24	3,707.95	3,458.48	249.47	14.863	
12,500.00	6,929.07	6,317.00	6,313.36	96.51	189.29	-70.77	-2,536.58	-2,987.24	3,784.13	3,534.59	249.54	15.165	
12,600.00	6,928.88	6,317.00	6,313.36	98.06	189.29	-70.77	-2,536.58	-2,987.24	3,861.40	3,611.81	249.59	15.471	
12,700.00	6,928.68	6,317.00	6,313.36	99.62	189.29	-70.77	-2,536.58	-2,987.24	3,939.69	3,690.06	249.63	15.782	
12,800.00	6,928.49	6,317.00	6,313.36	101.17	189.29	-70.77	-2,536.58	-2,987.24	4,018.95	3,769.30	249.65	16.098	
12,900.00	6,928.30	6,317.00	6,313.36	102.73	189.29	-70.77	-2,536.58	-2,987.24	4,099.11	3,849.45	249.66	16.419	
13,000.00	6,928.11	6,317.00	6,313.36	104.28	189.29	-70.77	-2,536.58	-2,987.24	4,180.13	3,930.47	249.66	16.743	
13,100.00	6,927.92	6,317.00	6,313.36	105.84	189.29	-70.77	-2,536.58	-2,987.24	4,261.95	4,012.30	249.65	17.072	
13,200.00	6,927.73	6,317.00	6,313.36	107.40	189.29	-70.77	-2,536.58	-2,987.24	4,344.54	4,094.91	249.63	17.404	
13,300.00	6,927.54	6,317.00	6,313.36	108.97	189.29	-70.77	-2,536.58	-2,987.24	4,427.84	4,178.24	249.60	17.739	
13,400.00	6,927.34	6,317.00	6,313.36	110.53	189.29	-70.77	-2,536.58	-2,987.24	4,511.82	4,262.25	249.57	18.078	
13,500.00	6,927.15	6,317.00	6,313.36	112.09	189.29	-70.77	-2,536.58	-2,987.24	4,596.45	4,346.91	249.53	18.420	
13,600.00	6,926.96	6,317.00	6,313.36	113.66	189.29	-70.77	-2,536.58	-2,987.24	4,681.67	4,432.19	249.49	18.765	
13,700.00	6,926.77	6,317.00	6,313.36	115.22	189.29	-70.77	-2,536.58	-2,987.24	4,767.48	4,518.04	249.44	19.113	
13,800.00	6,926.58	6,317.00	6,313.36	116.79	189.29	-70.77	-2,536.58	-2,987.24	4,853.82	4,604.44	249.38	19.463	
13,900.00	6,926.39	6,317.00	6,313.36	118.36	189.29	-70.77	-2,536.58	-2,987.24	4,940.69	4,691.36	249.33	19.816	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,000.00	6,926.20	6,317.00	6,313.36	119.93	189.29	-70.77	-2,536.58	-2,987.24	5,028.04	4,778.76	249.27	20.171	
14,100.00	6,926.00	6,317.00	6,313.36	121.50	189.29	-70.77	-2,536.58	-2,987.24	5,115.85	4,866.64	249.21	20.528	
14,200.00	6,925.81	6,317.00	6,313.36	123.07	189.29	-70.77	-2,536.58	-2,987.24	5,204.10	4,954.95	249.15	20.888	
14,300.00	6,925.62	6,317.00	6,313.36	124.64	189.29	-70.77	-2,536.58	-2,987.24	5,292.77	5,043.69	249.09	21.249	
14,400.00	6,925.43	6,317.00	6,313.36	126.21	189.29	-70.77	-2,536.58	-2,987.24	5,381.84	5,132.82	249.02	21.612	
14,500.00	6,925.24	6,317.00	6,313.36	127.79	189.29	-70.77	-2,536.58	-2,987.24	5,471.29	5,222.33	248.96	21.977	
14,600.00	6,925.05	6,317.00	6,313.36	129.36	189.29	-70.77	-2,536.58	-2,987.24	5,561.09	5,312.20	248.89	22.343	
14,700.00	6,924.86	6,317.00	6,313.36	130.93	189.29	-70.77	-2,536.58	-2,987.24	5,651.24	5,402.41	248.83	22.712	
14,800.00	6,924.66	6,317.00	6,313.36	132.51	189.29	-70.77	-2,536.58	-2,987.24	5,741.71	5,492.95	248.76	23.081	
14,900.00	6,924.47	6,317.00	6,313.36	134.09	189.29	-70.77	-2,536.58	-2,987.24	5,832.50	5,583.80	248.70	23.452	
15,000.00	6,924.28	6,317.00	6,313.36	135.66	189.29	-70.77	-2,536.58	-2,987.24	5,923.58	5,674.95	248.63	23.825	
15,100.00	6,924.09	6,317.00	6,313.36	137.24	189.29	-70.77	-2,536.58	-2,987.24	6,014.95	5,766.38	248.57	24.198	
15,200.00	6,923.90	6,317.00	6,313.36	138.82	189.29	-70.77	-2,536.58	-2,987.24	6,106.58	5,858.08	248.51	24.573	
15,300.00	6,923.71	6,317.00	6,313.36	140.40	189.29	-70.77	-2,536.58	-2,987.24	6,198.48	5,950.03	248.44	24.949	
15,400.00	6,923.52	6,317.00	6,313.36	141.97	189.29	-70.77	-2,536.58	-2,987.24	6,290.62	6,042.24	248.38	25.326	
15,500.00	6,923.33	6,317.00	6,313.36	143.55	189.29	-70.77	-2,536.58	-2,987.24	6,383.00	6,134.67	248.32	25.704	
15,600.00	6,923.13	6,317.00	6,313.36	145.13	189.29	-70.77	-2,536.58	-2,987.24	6,475.60	6,227.34	248.26	26.084	
15,700.00	6,922.94	6,317.00	6,313.36	146.72	189.29	-70.77	-2,536.58	-2,987.24	6,568.42	6,320.22	248.21	26.464	
15,800.00	6,922.75	6,317.00	6,313.36	148.30	189.29	-70.77	-2,536.58	-2,987.24	6,661.45	6,413.30	248.15	26.844	
15,900.00	6,922.56	6,317.00	6,313.36	149.88	189.29	-70.77	-2,536.58	-2,987.24	6,754.68	6,506.59	248.09	27.226	
16,000.00	6,922.37	6,317.00	6,313.36	151.46	189.29	-70.77	-2,536.58	-2,987.24	6,848.10	6,600.06	248.04	27.609	
16,100.00	6,922.18	6,317.00	6,313.36	153.04	189.29	-70.77	-2,536.58	-2,987.24	6,941.70	6,693.72	247.99	27.992	
16,200.00	6,921.99	6,317.00	6,313.36	154.63	189.29	-70.77	-2,536.58	-2,987.24	7,035.48	6,787.55	247.94	28.376	
16,300.00	6,921.79	6,317.00	6,313.36	156.21	189.29	-70.77	-2,536.58	-2,987.24	7,129.43	6,881.54	247.89	28.761	
16,400.00	6,921.60	6,317.00	6,313.36	157.79	189.29	-70.77	-2,536.58	-2,987.24	7,223.54	6,975.70	247.84	29.146	
16,500.00	6,921.41	6,317.00	6,313.36	159.38	189.29	-70.77	-2,536.58	-2,987.24	7,317.81	7,070.02	247.79	29.532	
16,600.00	6,921.22	6,317.00	6,313.36	160.96	189.29	-70.77	-2,536.58	-2,987.24	7,412.23	7,164.48	247.75	29.918	
16,700.00	6,921.03	6,317.00	6,313.36	162.55	189.29	-70.77	-2,536.58	-2,987.24	7,506.79	7,259.08	247.71	30.305	
16,800.00	6,920.84	6,317.00	6,313.36	164.13	189.29	-70.77	-2,536.58	-2,987.24	7,601.49	7,353.83	247.66	30.693	
16,900.00	6,920.65	6,317.00	6,313.36	165.72	189.29	-70.77	-2,536.58	-2,987.24	7,696.32	7,448.70	247.62	31.081	
17,000.00	6,920.45	6,317.00	6,313.36	167.30	189.29	-70.77	-2,536.58	-2,987.24	7,791.29	7,543.70	247.58	31.469	
17,100.00	6,920.26	6,317.00	6,313.36	168.89	189.29	-70.77	-2,536.58	-2,987.24	7,886.38	7,638.83	247.55	31.858	
17,200.00	6,920.07	6,317.00	6,313.36	170.48	189.29	-70.77	-2,536.58	-2,987.24	7,981.58	7,734.07	247.51	32.247	
17,300.00	6,919.88	6,317.00	6,313.36	172.06	189.29	-70.77	-2,536.58	-2,987.24	8,076.91	7,829.43	247.48	32.637	
17,400.00	6,919.69	6,317.00	6,313.36	173.65	189.29	-70.77	-2,536.58	-2,987.24	8,172.35	7,924.90	247.44	33.027	
17,500.00	6,919.50	6,317.00	6,313.36	175.24	189.29	-70.77	-2,536.58	-2,987.24	8,267.89	8,020.48	247.41	33.417	
17,600.00	6,919.31	6,317.00	6,313.36	176.83	189.29	-70.77	-2,536.58	-2,987.24	8,363.54	8,116.15	247.38	33.808	
17,700.00	6,919.11	6,317.00	6,313.36	178.41	189.29	-70.77	-2,536.58	-2,987.24	8,459.29	8,211.93	247.35	34.199	
17,759.55	6,919.00	6,317.00	6,313.36	179.36	189.29	-70.77	-2,536.58	-2,987.24	8,516.36	8,269.02	247.34	34.432	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - 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	100.00	100.00	0.00	3.00	-83.62	867.20	-7,752.37	7,800.72				
100.00	100.00	200.00	200.00	0.25	5.99	-83.62	867.20	-7,752.37	7,800.72	7,794.48	6.24	1,249.324	
200.00	200.00	300.00	300.00	0.61	8.99	-83.62	867.20	-7,752.37	7,800.72	7,791.12	9.60	812.673	
300.00	300.00	400.00	400.00	0.97	11.99	-83.62	867.20	-7,752.37	7,800.72	7,787.77	12.95	602.199	
400.00	400.00	500.10	500.00	1.33	14.99	-83.62	867.20	-7,752.37	7,800.72	7,784.41	16.31	478.230	
500.00	500.00	600.10	600.00	1.68	17.98	-83.62	867.20	-7,752.37	7,800.72	7,781.05	19.67	396.649	
600.00	600.00	700.10	700.00	2.04	20.98	-83.62	867.20	-7,752.37	7,800.72	7,777.70	23.02	338.845	
700.00	700.00	803.37	803.22	2.40	24.07	-83.60	869.28	-7,752.37	7,800.95	7,774.48	26.47	294.660	
800.00	800.00	909.91	909.74	2.76	27.27	-83.61	868.49	-7,752.37	7,800.87	7,770.84	30.03	259.810	
900.00	900.00	1,000.41	1,000.00	3.12	29.98	-83.62	867.20	-7,752.37	7,800.72	7,767.63	33.10	235.704	
1,000.00	1,000.00	1,100.41	1,100.00	3.48	32.97	-83.62	867.20	-7,752.37	7,800.72	7,764.27	36.45	214.010	
1,100.00	1,099.98	1,200.39	1,199.98	3.82	35.97	83.29	867.20	-7,752.37	7,800.52	7,760.73	39.79	196.059	
1,129.54	1,129.49	1,229.90	1,229.49	3.92	36.85	83.30	867.20	-7,752.37	7,800.38	7,759.61	40.77	191.341	
1,200.00	1,199.88	1,303.60	1,303.14	4.15	39.06	83.34	869.28	-7,752.37	7,800.24	7,757.03	43.21	180.534	
1,300.00	1,299.78	1,410.13	1,409.65	4.48	42.25	83.37	868.48	-7,752.37	7,799.63	7,752.90	46.73	166.904	
1,400.00	1,399.68	1,500.39	1,499.68	4.82	44.96	83.39	867.20	-7,752.37	7,798.96	7,749.19	49.77	156.688	
1,500.00	1,499.58	1,600.29	1,599.58	5.16	47.95	83.42	867.20	-7,752.37	7,798.44	7,745.33	53.11	146.840	
1,600.00	1,599.48	1,700.19	1,699.48	5.50	50.95	83.45	867.20	-7,752.37	7,797.92	7,741.48	56.45	138.148	
1,700.00	1,699.37	1,803.47	1,802.71	5.85	54.04	83.50	869.28	-7,752.37	7,797.65	7,737.76	59.89	130.205	
1,800.00	1,799.27	1,910.17	1,909.39	6.20	57.24	83.53	868.48	-7,752.37	7,797.05	7,733.62	63.43	122.917	
1,900.00	1,899.17	2,000.18	1,999.17	6.55	59.93	83.55	867.20	-7,752.37	7,796.39	7,729.91	66.48	117.272	
2,000.00	1,999.07	2,100.08	2,099.07	6.90	62.93	83.59	867.20	-7,752.37	7,795.88	7,726.05	69.83	111.646	
2,100.00	2,098.96	2,199.98	2,198.96	7.25	65.92	83.62	867.20	-7,752.37	7,795.38	7,722.20	73.17	106.533	
2,200.00	2,198.86	2,303.33	2,302.27	7.61	69.02	83.67	869.28	-7,752.37	7,795.12	7,718.49	76.62	101.731	
2,300.00	2,298.76	2,410.21	2,409.12	7.96	72.22	83.70	868.48	-7,752.37	7,794.53	7,714.35	80.18	97.210	
2,400.00	2,398.66	2,517.19	2,516.06	8.32	75.43	83.72	866.89	-7,752.37	7,793.86	7,710.12	83.74	93.068	
2,500.00	2,498.56	2,599.88	2,598.56	8.68	77.90	83.75	867.20	-7,752.37	7,793.38	7,706.81	86.58	90.015	
2,600.00	2,598.45	2,699.77	2,698.45	9.03	80.90	83.78	867.20	-7,752.37	7,792.89	7,702.96	89.93	86.655	
2,700.00	2,698.35	2,803.20	2,801.83	9.39	84.00	83.83	869.28	-7,752.37	7,792.66	7,699.27	93.39	83.445	
2,800.00	2,798.25	2,910.25	2,908.86	9.75	87.20	83.86	868.48	-7,752.37	7,792.08	7,695.13	96.95	80.370	
2,900.00	2,898.15	3,017.41	3,015.98	10.11	90.42	83.89	866.88	-7,752.37	7,791.42	7,690.89	100.52	77.509	
3,000.00	2,998.04	3,099.67	3,098.04	10.47	92.88	83.92	867.20	-7,752.37	7,790.95	7,687.61	103.35	75.386	
3,100.00	3,097.94	3,199.57	3,197.94	10.83	95.87	83.95	867.20	-7,752.37	7,790.48	7,683.78	106.70	73.013	
3,200.00	3,197.84	3,303.07	3,301.39	11.19	98.97	84.00	869.28	-7,752.37	7,790.26	7,680.10	110.16	70.717	
3,300.00	3,297.74	3,410.30	3,408.60	11.55	102.19	84.03	868.48	-7,752.37	7,789.69	7,675.96	113.74	68.490	
3,400.00	3,397.64	3,517.63	3,515.89	11.91	105.40	84.05	866.88	-7,752.37	7,789.04	7,671.73	117.31	66.396	
3,500.00	3,497.53	3,599.46	3,597.53	12.27	107.86	84.08	867.20	-7,752.37	7,788.59	7,668.46	120.13	64.837	
3,600.00	3,597.43	3,699.36	3,697.43	12.63	110.85	84.11	867.20	-7,752.37	7,788.12	7,664.64	123.48	63.072	
3,700.00	3,697.33	3,802.93	3,800.96	12.99	113.95	84.16	869.28	-7,752.37	7,787.92	7,660.98	126.94	61.349	
3,800.00	3,797.23	3,910.34	3,908.34	13.35	117.17	84.19	868.48	-7,752.37	7,787.37	7,656.85	130.52	59.662	
3,900.00	3,897.12	4,017.85	4,015.81	13.72	120.39	84.22	866.88	-7,752.37	7,786.72	7,652.62	134.11	58.064	
4,000.00	3,997.02	4,099.26	4,097.02	14.08	122.83	84.25	867.20	-7,752.37	7,786.29	7,649.38	136.91	56.872	
4,100.00	4,096.92	4,199.15	4,196.92	14.44	125.83	84.28	867.20	-7,752.37	7,785.84	7,645.57	140.26	55.508	
4,200.00	4,196.82	4,302.80	4,300.52	14.80	128.93	84.33	869.28	-7,752.37	7,785.66	7,641.92	143.73	54.168	
4,300.00	4,296.72	4,410.38	4,408.08	15.16	132.16	84.36	868.48	-7,752.37	7,785.11	7,637.80	147.32	52.846	
4,400.00	4,396.61	4,518.07	4,515.73	15.53	135.38	84.38	866.87	-7,752.37	7,784.47	7,633.57	150.91	51.585	
4,500.00	4,496.51	4,599.05	4,596.51	15.89	137.81	84.41	867.20	-7,752.37	7,784.05	7,630.36	153.70	50.646	
4,600.00	4,596.41	4,698.95	4,696.41	16.25	140.80	84.44	867.20	-7,752.37	7,783.61	7,626.56	157.05	49.561	
4,700.00	4,696.31	4,802.66	4,800.08	16.61	143.91	84.49	869.28	-7,752.37	7,783.45	7,622.93	160.52	48.488	
4,800.00	4,796.20	4,910.43	4,907.82	16.98	147.14	84.52	868.48	-7,752.37	7,782.92	7,618.81	164.11	47.424	
4,900.00	4,896.10	5,018.29	5,015.64	17.34	150.37	84.55	866.87	-7,752.37	7,782.29	7,614.58	167.71	46.404	
5,000.00	4,996.00	5,098.84	5,096.00	17.70	152.78	84.58	867.20	-7,752.37	7,781.88	7,611.40	170.49	45.645	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - 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
5,100.00	5,095.90	5,198.74	5,195.90	18.07	155.78	84.61	867.20	-7,752.37	7,781.46	7,607.61	173.84	44.762	
5,200.00	5,195.80	5,302.53	5,299.64	18.43	158.89	84.66	869.28	-7,752.37	7,781.31	7,604.00	177.32	43.884	
5,300.00	5,295.69	5,410.47	5,407.56	18.79	162.12	84.69	868.48	-7,752.37	7,780.79	7,599.88	180.91	43.009	
5,400.00	5,395.59	5,518.51	5,515.56	19.16	165.36	84.71	866.86	-7,752.37	7,780.17	7,595.66	184.51	42.166	
5,500.00	5,495.49	5,598.64	5,595.49	19.52	167.76	84.74	867.20	-7,752.37	7,779.78	7,592.50	187.28	41.541	
5,600.00	5,595.39	5,698.53	5,695.39	19.88	170.75	84.78	867.20	-7,752.37	7,779.36	7,588.73	190.63	40.808	
5,700.00	5,695.28	5,802.39	5,799.20	20.25	173.87	84.82	869.28	-7,752.37	7,779.24	7,585.13	194.11	40.077	
5,800.00	5,795.18	5,910.51	5,907.30	20.61	177.11	84.85	868.48	-7,752.37	7,778.73	7,581.02	197.71	39.344	
5,900.00	5,895.08	6,018.74	6,015.48	20.97	180.35	84.88	866.86	-7,752.37	7,778.12	7,576.80	201.32	38.636	
6,000.00	5,994.98	6,098.43	6,094.98	21.34	182.74	84.91	867.20	-7,752.37	7,777.74	7,573.66	204.07	38.113	
6,100.00	6,094.88	6,198.33	6,194.88	21.70	185.73	84.94	867.20	-7,752.37	7,777.34	7,569.91	207.43	37.494	
6,200.00	6,194.77	6,302.26	6,298.76	22.06	188.84	84.99	869.29	-7,752.37	7,777.23	7,566.33	210.91	36.875	
6,300.00	6,294.67	6,410.56	6,407.03	22.43	192.09	85.02	868.48	-7,752.37	7,776.73	7,562.22	214.51	36.253	
6,314.74	6,309.40	6,426.53	6,423.00	22.48	192.57	85.02	868.29	-7,752.37	7,776.65	7,561.60	215.05	36.163	
6,350.00	6,344.59	6,464.72	6,461.18	22.61	193.71	41.89	867.77	-7,752.37	7,775.48	7,559.16	216.32	35.945	
6,400.00	6,394.26	6,518.62	6,515.06	22.79	195.33	25.06	866.86	-7,752.37	7,770.48	7,552.37	218.11	35.626	
6,450.00	6,443.36	6,547.12	6,543.36	22.97	196.18	19.40	867.20	-7,752.37	7,761.78	7,542.63	219.15	35.418	
6,500.00	6,491.60	6,595.35	6,591.60	23.15	197.63	16.76	867.20	-7,752.37	7,749.26	7,528.49	220.77	35.102	
6,550.00	6,538.67	6,642.43	6,638.67	23.32	199.04	15.35	867.20	-7,752.37	7,733.02	7,510.68	222.35	34.779	
6,600.00	6,584.29	6,688.05	6,684.29	23.49	200.40	14.59	867.20	-7,752.37	7,713.17	7,489.29	223.88	34.452	
6,650.00	6,628.18	6,731.94	6,728.18	23.66	201.72	14.24	867.20	-7,752.37	7,689.82	7,464.47	225.35	34.124	
6,700.00	6,670.06	6,775.85	6,772.06	23.83	203.04	14.23	869.36	-7,752.37	7,663.44	7,436.63	226.82	33.787	
6,750.00	6,709.68	6,818.85	6,815.05	24.00	204.32	14.46	869.22	-7,752.37	7,633.55	7,405.30	228.24	33.445	
6,800.00	6,746.79	6,859.14	6,855.33	24.17	205.53	14.94	868.96	-7,752.37	7,600.64	7,371.06	229.58	33.107	
6,850.00	6,781.17	6,896.48	6,892.65	24.35	206.65	15.69	868.63	-7,752.37	7,564.93	7,334.11	230.82	32.774	
6,900.00	6,812.60	6,930.62	6,926.79	24.54	207.67	16.78	868.24	-7,752.37	7,526.63	7,294.68	231.95	32.450	
6,950.00	6,840.88	6,961.35	6,957.51	24.74	208.59	18.27	867.82	-7,752.37	7,485.99	7,253.03	232.97	32.133	
7,000.00	6,865.85	6,988.49	6,984.64	24.96	209.41	20.34	867.39	-7,752.37	7,443.27	7,209.40	233.86	31.827	
7,050.00	6,887.35	7,011.86	7,008.00	25.19	210.11	23.24	866.99	-7,752.37	7,398.72	7,164.08	234.64	31.532	
7,100.00	6,905.25	7,009.31	7,005.25	25.43	210.03	27.23	867.20	-7,752.37	7,352.69	7,118.06	234.63	31.337	
7,150.00	6,919.43	7,023.49	7,019.43	25.69	210.46	33.45	867.20	-7,752.37	7,305.38	7,070.27	235.11	31.072	
7,200.00	6,929.81	7,033.88	7,029.81	25.96	210.77	43.38	867.20	-7,752.37	7,257.11	7,021.64	235.47	30.820	
7,250.00	6,936.33	7,040.39	7,036.33	26.25	210.96	59.84	867.20	-7,752.37	7,208.16	6,972.46	235.70	30.582	
7,300.00	6,938.95	7,043.01	7,038.95	26.55	211.04	85.17	867.20	-7,752.37	7,158.84	6,923.03	235.81	30.359	
7,309.56	6,939.00	7,043.06	7,039.00	26.60	211.04	90.71	867.20	-7,752.37	7,149.40	6,913.58	235.82	30.318	
7,400.00	6,938.83	7,042.89	7,038.83	27.19	211.04	90.70	867.20	-7,752.37	7,060.03	6,824.16	235.86	29.933	
7,500.00	6,938.64	7,042.70	7,038.64	27.91	211.03	90.69	867.20	-7,752.37	6,961.24	6,725.33	235.92	29.507	
7,600.00	6,938.44	7,042.51	7,038.44	28.70	211.03	90.68	867.20	-7,752.37	6,862.50	6,626.52	235.98	29.081	
7,700.00	6,938.25	7,042.31	7,038.25	29.55	211.02	90.67	867.20	-7,752.37	6,763.79	6,527.74	236.04	28.655	
7,800.00	6,938.06	7,042.12	7,038.06	30.47	211.01	90.66	867.20	-7,752.37	6,665.12	6,429.00	236.12	28.228	
7,900.00	6,937.87	7,041.93	7,037.87	31.44	211.01	90.65	867.20	-7,752.37	6,566.49	6,330.29	236.20	27.801	
8,000.00	6,937.68	7,041.74	7,037.68	32.46	211.00	90.64	867.20	-7,752.37	6,467.90	6,231.62	236.28	27.374	
8,100.00	6,937.49	7,041.55	7,037.49	33.53	211.00	90.63	867.20	-7,752.37	6,369.35	6,132.98	236.37	26.946	
8,200.00	6,937.30	7,041.36	7,037.30	34.64	210.99	90.62	867.20	-7,752.37	6,270.86	6,034.38	236.47	26.518	
8,300.00	6,937.10	7,041.17	7,037.10	35.78	210.99	90.61	867.20	-7,752.37	6,172.41	5,935.82	236.58	26.090	
8,400.00	6,936.91	7,040.97	7,036.91	36.96	210.98	90.60	867.20	-7,752.37	6,074.01	5,837.31	236.70	25.661	
8,500.00	6,936.72	7,040.78	7,036.72	38.17	210.97	90.59	867.20	-7,752.37	5,975.66	5,738.84	236.82	25.232	
8,600.00	6,936.53	7,040.59	7,036.53	39.41	210.97	90.58	867.20	-7,752.37	5,877.37	5,640.41	236.96	24.803	
8,700.00	6,936.34	7,040.40	7,036.34	40.68	210.96	90.57	867.20	-7,752.37	5,779.14	5,542.03	237.11	24.374	
8,800.00	6,936.15	7,040.21	7,036.15	41.97	210.96	90.56	867.20	-7,752.37	5,680.97	5,443.71	237.26	23.944	
8,900.00	6,935.96	7,040.02	7,035.96	43.27	210.95	90.55	867.20	-7,752.37	5,582.86	5,345.43	237.43	23.514	
9,000.00	6,935.76	7,039.83	7,035.76	44.60	210.95	90.54	867.20	-7,752.37	5,484.83	5,247.22	237.61	23.083	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - 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
9,100.00	6,935.57	7,039.63	7,035.57	45.95	210.94	90.53	867.20	-7,752.37	5,386.86	5,149.06	237.80	22.653	
9,200.00	6,935.38	7,039.44	7,035.38	47.31	210.93	90.52	867.20	-7,752.37	5,288.97	5,050.96	238.01	22.222	
9,300.00	6,935.19	7,039.25	7,035.19	48.69	210.93	90.51	867.20	-7,752.37	5,191.17	4,952.93	238.23	21.790	
9,400.00	6,935.00	7,039.06	7,035.00	50.08	210.92	90.50	867.20	-7,752.37	5,093.44	4,854.97	238.47	21.359	
9,500.00	6,934.81	7,038.87	7,034.81	51.48	210.92	90.49	867.20	-7,752.37	4,995.81	4,757.09	238.72	20.927	
9,600.00	6,934.62	7,038.68	7,034.62	52.89	210.91	90.48	867.20	-7,752.37	4,898.27	4,659.28	239.00	20.495	
9,700.00	6,934.43	7,038.49	7,034.43	54.32	210.90	90.47	867.20	-7,752.37	4,800.84	4,561.55	239.29	20.063	
9,800.00	6,934.23	7,038.30	7,034.23	55.75	210.90	90.46	867.20	-7,752.37	4,703.51	4,463.91	239.60	19.631	
9,900.00	6,934.04	7,038.10	7,034.04	57.19	210.89	90.45	867.20	-7,752.37	4,606.30	4,366.36	239.93	19.198	
10,000.00	6,933.85	7,037.91	7,033.85	58.65	210.89	90.44	867.20	-7,752.37	4,509.20	4,268.91	240.29	18.765	
10,100.00	6,933.66	7,037.72	7,033.66	60.10	210.88	90.43	867.20	-7,752.37	4,412.24	4,171.57	240.68	18.333	
10,200.00	6,933.47	7,037.53	7,033.47	61.57	210.88	90.42	867.20	-7,752.37	4,315.42	4,074.33	241.09	17.900	
10,300.00	6,933.28	7,037.34	7,033.28	63.04	210.87	90.41	867.20	-7,752.37	4,218.74	3,977.22	241.53	17.467	
10,400.00	6,933.09	7,037.15	7,033.09	64.52	210.86	90.40	867.20	-7,752.37	4,122.23	3,880.23	242.00	17.034	
10,500.00	6,932.89	7,036.96	7,032.89	66.01	210.86	90.39	867.20	-7,752.37	4,025.88	3,783.37	242.51	16.601	
10,600.00	6,932.70	7,036.76	7,032.70	67.50	210.85	90.38	867.20	-7,752.37	3,929.72	3,686.67	243.05	16.168	
10,700.00	6,932.51	7,036.57	7,032.51	68.99	210.85	90.37	867.20	-7,752.37	3,833.75	3,590.12	243.63	15.736	
10,800.00	6,932.32	7,036.38	7,032.32	70.50	210.84	90.36	867.20	-7,752.37	3,737.99	3,493.74	244.26	15.304	
10,900.00	6,932.13	7,036.19	7,032.13	72.00	210.84	90.35	867.20	-7,752.37	3,642.47	3,397.54	244.93	14.872	
11,000.00	6,931.94	7,036.00	7,031.94	73.51	210.83	90.34	867.20	-7,752.37	3,547.18	3,301.53	245.65	14.440	
11,100.00	6,931.75	7,035.81	7,031.75	75.02	210.82	90.33	867.20	-7,752.37	3,452.17	3,205.75	246.42	14.009	
11,200.00	6,931.55	7,035.62	7,031.55	76.54	210.82	90.32	867.20	-7,752.37	3,357.44	3,110.19	247.26	13.579	
11,300.00	6,931.36	7,035.42	7,031.36	78.06	210.81	90.31	867.20	-7,752.37	3,263.03	3,014.88	248.15	13.149	
11,400.00	6,931.17	7,035.23	7,031.17	79.58	210.81	90.30	867.20	-7,752.37	3,168.97	2,919.85	249.12	12.721	
11,500.00	6,930.98	7,035.04	7,030.98	81.11	210.80	90.29	867.20	-7,752.37	3,075.27	2,825.12	250.15	12.294	
11,600.00	6,930.79	7,034.85	7,030.79	82.64	210.80	90.28	867.20	-7,752.37	2,981.99	2,730.72	251.27	11.868	
11,700.00	6,930.60	7,034.66	7,030.60	84.17	210.79	90.27	867.20	-7,752.37	2,889.16	2,636.68	252.48	11.443	
11,800.00	6,930.41	7,034.47	7,030.41	85.70	210.78	90.26	867.20	-7,752.37	2,796.82	2,543.04	253.78	11.021	
11,900.00	6,930.21	7,034.28	7,030.21	87.24	210.78	90.25	867.20	-7,752.37	2,705.02	2,449.84	255.19	10.600	
12,000.00	6,930.02	7,034.08	7,030.02	88.78	210.77	90.24	867.20	-7,752.37	2,613.83	2,357.12	256.70	10.182	
12,100.00	6,929.83	7,033.89	7,029.83	90.32	210.77	90.23	867.20	-7,752.37	2,523.30	2,264.96	258.34	9.767	
12,200.00	6,929.64	7,033.70	7,029.64	91.87	210.76	90.22	867.20	-7,752.37	2,433.52	2,173.40	260.12	9.355	
12,300.00	6,929.45	7,033.51	7,029.45	93.41	210.76	90.21	867.20	-7,752.37	2,344.56	2,082.52	262.04	8.947	
12,400.00	6,929.26	7,033.32	7,029.26	94.96	210.75	90.20	867.20	-7,752.37	2,256.53	1,992.41	264.12	8.544	
12,500.00	6,929.07	7,033.13	7,029.07	96.51	210.74	90.19	867.20	-7,752.37	2,169.53	1,903.16	266.37	8.145	
12,600.00	6,928.88	7,032.94	7,028.88	98.06	210.74	90.18	867.20	-7,752.37	2,083.71	1,814.89	268.81	7.751	
12,700.00	6,928.68	7,032.74	7,028.68	99.62	210.73	90.17	867.20	-7,752.37	1,999.20	1,727.74	271.46	7.365	
12,800.00	6,928.49	7,032.55	7,028.49	101.17	210.73	90.16	867.20	-7,752.37	1,916.18	1,641.86	274.32	6.985	
12,900.00	6,928.30	7,032.36	7,028.30	102.73	210.72	90.15	867.20	-7,752.37	1,834.86	1,557.45	277.41	6.614	
13,000.00	6,928.11	7,032.17	7,028.11	104.28	210.72	90.14	867.20	-7,752.37	1,755.47	1,474.71	280.76	6.253	
13,100.00	6,927.92	7,031.98	7,027.92	105.84	210.71	90.13	867.20	-7,752.37	1,678.28	1,393.92	284.36	5.902	
13,200.00	6,927.73	7,031.79	7,027.73	107.40	210.70	90.12	867.20	-7,752.37	1,603.61	1,315.39	288.22	5.564	
13,300.00	6,927.54	7,031.60	7,027.54	108.97	210.70	90.11	867.20	-7,752.37	1,531.84	1,239.49	292.36	5.240	
13,400.00	6,927.34	7,031.41	7,027.34	110.53	210.69	90.10	867.20	-7,752.37	1,463.38	1,166.64	296.74	4.932	
13,500.00	6,927.15	7,031.21	7,027.15	112.09	210.69	90.09	867.20	-7,752.37	1,398.73	1,097.38	301.36	4.641	
13,600.00	6,926.96	7,031.02	7,026.96	113.66	210.68	90.08	867.20	-7,752.37	1,338.43	1,032.28	306.15	4.372	
13,700.00	6,926.77	7,030.83	7,026.77	115.22	210.68	90.07	867.20	-7,752.37	1,283.11	972.05	311.06	4.125	
13,800.00	6,926.58	7,030.64	7,026.58	116.79	210.67	90.06	867.20	-7,752.37	1,233.42	917.44	315.98	3.903	
13,900.00	6,926.39	7,030.45	7,026.39	118.36	210.66	90.05	867.20	-7,752.37	1,190.07	869.31	320.77	3.710	
14,000.00	6,926.20	7,030.26	7,026.20	119.93	210.66	90.04	867.20	-7,752.37	1,153.79	828.53	325.27	3.547	
14,100.00	6,926.00	7,030.07	7,026.00	121.50	210.65	90.03	867.20	-7,752.37	1,125.25	795.97	329.28	3.417	
14,200.00	6,925.81	7,029.87	7,025.81	123.07	210.65	90.02	867.20	-7,752.37	1,105.06	772.42	332.64	3.322	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #036 - 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
14,300.00	6,925.62	7,029.68	7,025.62	124.64	210.64	90.01	867.20	-7,752.37	1,093.66	758.51	335.16	3.263	
14,375.22	6,925.48	7,029.54	7,025.48	125.82	210.64	90.00	867.20	-7,752.37	1,091.08	754.65	336.43	3.243	CC
14,400.00	6,925.43	7,029.49	7,025.43	126.21	210.64	90.00	867.20	-7,752.37	1,091.36	754.63	336.72	3.241	ES, SF
14,500.00	6,925.24	7,029.30	7,025.24	127.79	210.63	89.99	867.20	-7,752.37	1,098.19	760.91	337.28	3.256	
14,600.00	6,925.05	7,029.11	7,025.05	129.36	210.62	89.98	867.20	-7,752.37	1,113.99	777.13	336.86	3.307	
14,700.00	6,924.86	7,028.92	7,024.86	130.93	210.62	89.97	867.20	-7,752.37	1,138.39	802.85	335.54	3.393	
14,800.00	6,924.66	7,028.73	7,024.66	132.51	210.61	89.96	867.20	-7,752.37	1,170.85	837.38	333.47	3.511	
14,900.00	6,924.47	7,028.53	7,024.47	134.09	210.61	89.95	867.20	-7,752.37	1,210.72	879.90	330.81	3.660	
15,000.00	6,924.28	7,028.34	7,024.28	135.66	210.60	89.94	867.20	-7,752.37	1,257.30	929.56	327.74	3.836	
15,100.00	6,924.09	7,028.15	7,024.09	137.24	210.60	89.93	867.20	-7,752.37	1,309.87	985.47	324.40	4.038	
15,200.00	6,923.90	7,027.96	7,023.90	138.82	210.59	89.92	867.20	-7,752.37	1,367.74	1,046.82	320.92	4.262	
15,300.00	6,923.71	7,027.77	7,023.71	140.40	210.58	89.91	867.20	-7,752.37	1,430.27	1,112.86	317.41	4.506	
15,400.00	6,923.52	7,027.58	7,023.52	141.97	210.58	89.90	867.20	-7,752.37	1,496.87	1,182.93	313.94	4.768	
15,500.00	6,923.33	7,027.39	7,023.33	143.55	210.57	89.89	867.20	-7,752.37	1,567.03	1,256.46	310.56	5.046	
15,600.00	6,923.13	7,027.19	7,023.13	145.13	210.57	89.88	867.20	-7,752.37	1,640.28	1,332.96	307.32	5.337	
15,700.00	6,922.94	7,027.00	7,022.94	146.72	210.56	89.87	867.20	-7,752.37	1,716.24	1,412.00	304.24	5.641	
15,800.00	6,922.75	7,026.81	7,022.75	148.30	210.56	89.86	867.20	-7,752.37	1,794.56	1,493.24	301.32	5.956	
15,900.00	6,922.56	7,026.62	7,022.56	149.88	210.55	89.85	867.20	-7,752.37	1,874.94	1,576.37	298.57	6.280	
16,000.00	6,922.37	7,026.43	7,022.37	151.46	210.54	89.84	867.20	-7,752.37	1,957.13	1,661.14	295.99	6.612	
16,100.00	6,922.18	7,026.24	7,022.18	153.04	210.54	89.83	867.20	-7,752.37	2,040.91	1,747.34	293.57	6.952	
16,200.00	6,921.99	7,026.05	7,021.99	154.63	210.53	89.82	867.20	-7,752.37	2,126.09	1,834.79	291.30	7.299	
16,300.00	6,921.79	7,025.86	7,021.79	156.21	210.53	89.81	867.20	-7,752.37	2,212.51	1,923.32	289.19	7.651	
16,400.00	6,921.60	7,025.66	7,021.60	157.79	210.52	89.80	867.20	-7,752.37	2,300.04	2,012.83	287.21	8.008	
16,500.00	6,921.41	7,025.47	7,021.41	159.38	210.51	89.79	867.20	-7,752.37	2,388.54	2,103.18	285.36	8.370	
16,600.00	6,921.22	7,025.28	7,021.22	160.96	210.51	89.78	867.20	-7,752.37	2,477.92	2,194.28	283.64	8.736	
16,700.00	6,921.03	7,025.09	7,021.03	162.55	210.50	89.77	867.20	-7,752.37	2,568.08	2,286.05	282.02	9.106	
16,800.00	6,920.84	7,024.90	7,020.84	164.13	210.50	89.76	867.20	-7,752.37	2,658.94	2,378.43	280.52	9.479	
16,900.00	6,920.65	7,024.71	7,020.65	165.72	210.49	89.75	867.20	-7,752.37	2,750.44	2,471.34	279.10	9.855	
17,000.00	6,920.45	7,024.52	7,020.45	167.30	210.49	89.74	867.20	-7,752.37	2,842.52	2,564.73	277.78	10.233	
17,100.00	6,920.26	7,024.32	7,020.26	168.89	210.48	89.73	867.20	-7,752.37	2,935.11	2,658.56	276.54	10.614	
17,200.00	6,920.07	7,024.13	7,020.07	170.48	210.47	89.72	867.20	-7,752.37	3,028.17	2,752.79	275.38	10.996	
17,300.00	6,919.88	7,023.94	7,019.88	172.06	210.47	89.71	867.20	-7,752.37	3,121.66	2,847.37	274.29	11.381	
17,400.00	6,919.69	7,023.75	7,019.69	173.65	210.46	89.70	867.20	-7,752.37	3,215.54	2,942.28	273.26	11.767	
17,500.00	6,919.50	7,023.56	7,019.50	175.24	210.46	89.69	867.20	-7,752.37	3,309.78	3,037.49	272.30	12.155	
17,600.00	6,919.31	7,023.37	7,019.31	176.83	210.45	89.68	867.20	-7,752.37	3,404.35	3,132.96	271.39	12.544	
17,700.00	6,919.11	7,023.18	7,019.11	178.41	210.45	89.67	867.20	-7,752.37	3,499.22	3,228.69	270.54	12.934	
17,759.55	6,919.00	7,023.06	7,019.00	179.36	210.44	89.66	867.20	-7,752.37	3,555.86	3,285.81	270.05	13.167	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - --(O) Rosa Unit #036B - 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	-97.41	-1,197.71	-9,211.76	9,289.29				
100.00	100.00	123.00	123.00	0.25	3.69	-97.41	-1,197.71	-9,211.76	9,289.29	9,285.36	3.94	2,359.654	
200.00	200.00	223.00	223.00	0.61	6.68	-97.41	-1,197.71	-9,211.76	9,289.29	9,282.00	7.29	1,273.971	
300.00	300.00	323.00	323.00	0.97	9.68	-97.41	-1,197.71	-9,211.76	9,289.29	9,278.65	10.65	872.522	
400.00	400.00	423.00	423.00	1.33	12.68	-97.41	-1,197.71	-9,211.76	9,289.29	9,275.29	14.00	663.456	
500.00	500.00	523.10	523.00	1.68	15.67	-97.41	-1,197.71	-9,211.76	9,289.29	9,271.93	17.36	535.119	
600.00	600.00	623.10	623.00	2.04	18.67	-97.41	-1,197.71	-9,211.76	9,289.29	9,268.58	20.71	448.450	
700.00	700.00	723.10	723.00	2.40	21.67	-97.41	-1,197.71	-9,211.76	9,289.29	9,265.22	24.07	385.942	
740.94	740.94	762.95	762.81	2.55	22.86	-97.39	-1,195.53	-9,211.75	9,289.01	9,263.60	25.41	365.566	
800.00	800.00	817.48	817.33	2.76	24.50	-97.40	-1,195.69	-9,211.75	9,289.03	9,261.78	27.26	340.811	
900.00	900.00	909.83	909.66	3.12	27.26	-97.40	-1,196.42	-9,211.76	9,289.14	9,258.75	30.38	305.751	
1,000.00	1,000.00	1,023.41	1,023.00	3.48	30.67	-97.41	-1,197.71	-9,211.76	9,289.29	9,255.15	34.14	272.070	
1,100.00	1,099.98	1,123.39	1,122.98	3.82	33.66	69.50	-1,197.71	-9,211.76	9,288.68	9,251.20	37.48	247.835	
1,129.54	1,129.49	1,152.90	1,152.49	3.92	34.55	69.52	-1,197.71	-9,211.76	9,288.27	9,249.81	38.46	241.506	
1,200.00	1,199.88	1,223.29	1,222.88	4.15	36.66	69.53	-1,197.71	-9,211.76	9,287.15	9,246.35	40.80	227.625	
1,300.00	1,299.78	1,317.61	1,317.15	4.48	39.48	69.57	-1,195.69	-9,211.75	9,285.31	9,241.35	43.96	211.226	
1,400.00	1,399.68	1,409.97	1,409.49	4.82	42.25	69.59	-1,196.42	-9,211.76	9,283.84	9,236.77	47.06	197.260	
1,500.00	1,499.58	1,523.29	1,522.58	5.16	45.64	69.61	-1,197.71	-9,211.76	9,282.41	9,231.61	50.80	182.723	
1,600.00	1,599.48	1,623.19	1,622.48	5.50	48.64	69.64	-1,197.71	-9,211.76	9,280.84	9,226.70	54.14	171.430	
1,700.00	1,699.37	1,723.08	1,722.37	5.85	51.63	69.66	-1,197.71	-9,211.76	9,279.27	9,221.79	57.48	161.441	
1,800.00	1,799.27	1,817.51	1,816.75	6.20	54.46	69.70	-1,195.69	-9,211.75	9,277.44	9,216.79	60.66	152.953	
1,900.00	1,899.17	1,910.01	1,909.23	6.55	57.23	69.72	-1,196.42	-9,211.76	9,275.97	9,212.20	63.78	145.443	
2,000.00	1,999.07	2,023.08	2,022.07	6.90	60.62	69.74	-1,197.71	-9,211.76	9,274.56	9,207.04	67.52	137.366	
2,100.00	2,098.96	2,122.98	2,121.96	7.25	63.61	69.77	-1,197.71	-9,211.76	9,272.99	9,202.13	70.86	130.857	
2,200.00	2,198.86	2,222.88	2,221.86	7.61	66.61	69.80	-1,197.71	-9,211.76	9,271.43	9,197.22	74.21	124.933	
2,300.00	2,298.76	2,317.42	2,316.35	7.96	69.44	69.83	-1,195.69	-9,211.75	9,269.62	9,192.22	77.40	119.765	
2,400.00	2,398.66	2,410.04	2,408.96	8.32	72.22	69.85	-1,196.42	-9,211.76	9,268.16	9,187.63	80.53	115.090	
2,500.00	2,498.56	2,522.88	2,521.56	8.68	75.60	69.87	-1,197.71	-9,211.76	9,266.75	9,182.48	84.27	109.969	
2,600.00	2,598.45	2,622.77	2,621.45	9.03	78.59	69.90	-1,197.71	-9,211.76	9,265.19	9,177.58	87.62	105.746	
2,700.00	2,698.35	2,722.67	2,721.35	9.39	81.58	69.93	-1,197.71	-9,211.76	9,263.64	9,172.67	90.97	101.833	
2,800.00	2,798.25	2,817.32	2,815.95	9.75	84.42	69.96	-1,195.69	-9,211.75	9,261.85	9,167.68	94.16	98.360	
2,900.00	2,898.15	2,910.08	2,908.69	10.11	87.20	69.98	-1,196.42	-9,211.76	9,260.39	9,163.09	97.30	95.173	
3,000.00	2,998.04	3,022.67	3,021.04	10.47	90.57	70.01	-1,197.71	-9,211.76	9,258.99	9,157.96	101.03	91.643	
3,100.00	3,097.94	3,122.57	3,120.94	10.83	93.57	70.03	-1,197.71	-9,211.76	9,257.44	9,153.06	104.39	88.685	
3,200.00	3,197.84	3,222.46	3,220.84	11.19	96.56	70.06	-1,197.71	-9,211.76	9,255.90	9,148.16	107.74	85.910	
3,300.00	3,297.74	3,317.23	3,315.55	11.55	99.40	70.10	-1,195.69	-9,211.75	9,254.12	9,143.18	110.94	83.417	
3,400.00	3,397.64	3,410.12	3,408.42	11.91	102.18	70.12	-1,196.42	-9,211.76	9,252.67	9,138.59	114.08	81.105	
3,500.00	3,497.53	3,522.46	3,520.53	12.27	105.55	70.14	-1,197.71	-9,211.76	9,251.28	9,133.47	117.81	78.528	
3,600.00	3,597.43	3,622.36	3,620.43	12.63	108.54	70.16	-1,197.71	-9,211.76	9,249.74	9,128.58	121.16	76.341	
3,700.00	3,697.33	3,722.26	3,720.33	12.99	111.54	70.19	-1,197.71	-9,211.76	9,248.21	9,123.69	124.52	74.273	
3,800.00	3,797.23	3,817.13	3,815.15	13.35	114.38	70.23	-1,195.69	-9,211.75	9,246.44	9,118.72	127.72	72.396	
3,900.00	3,897.12	3,910.16	3,908.16	13.72	117.17	70.25	-1,196.42	-9,211.76	9,245.01	9,114.14	130.87	70.643	
4,000.00	3,997.02	4,022.26	4,020.02	14.08	120.52	70.27	-1,197.71	-9,211.76	9,243.62	9,109.03	134.59	68.680	
4,100.00	4,096.92	4,122.15	4,119.92	14.44	123.52	70.29	-1,197.71	-9,211.76	9,242.09	9,104.15	137.94	66.998	
4,200.00	4,196.82	4,222.05	4,219.82	14.80	126.51	70.32	-1,197.71	-9,211.76	9,240.57	9,099.27	141.30	65.397	
4,300.00	4,296.72	4,317.03	4,314.75	15.16	129.36	70.36	-1,195.69	-9,211.75	9,238.82	9,094.31	144.51	63.933	
4,400.00	4,396.61	4,410.19	4,407.89	15.53	132.15	70.38	-1,196.42	-9,211.76	9,237.39	9,089.72	147.66	62.558	
4,500.00	4,496.51	4,522.05	4,519.51	15.89	135.50	70.40	-1,197.71	-9,211.76	9,236.01	9,084.63	151.37	61.014	
4,600.00	4,596.41	4,621.95	4,619.41	16.25	138.49	70.43	-1,197.71	-9,211.76	9,234.49	9,079.76	154.73	59.681	
4,700.00	4,696.31	4,721.84	4,719.31	16.61	141.49	70.45	-1,197.71	-9,211.76	9,232.98	9,074.89	158.09	58.405	
4,800.00	4,796.20	4,816.94	4,814.35	16.98	144.34	70.49	-1,195.68	-9,211.75	9,231.24	9,069.94	161.30	57.231	
4,900.00	4,896.10	4,910.23	4,907.62	17.34	147.13	70.51	-1,196.43	-9,211.76	9,229.82	9,065.36	164.46	56.123	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - --(O) Rosa Unit #036B - 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
5,000.00	4,996.00	5,021.84	5,019.00	17.70	150.48	70.53	-1,197.71	-9,211.76	9,228.44	9,060.28	168.16	54.878	
5,100.00	5,095.90	5,121.74	5,118.90	18.07	153.47	70.56	-1,197.71	-9,211.76	9,226.94	9,055.42	171.52	53.796	
5,200.00	5,195.80	5,221.64	5,218.80	18.43	156.46	70.59	-1,197.71	-9,211.76	9,225.43	9,050.56	174.87	52.755	
5,300.00	5,295.69	5,316.84	5,313.95	18.79	159.32	70.62	-1,195.68	-9,211.75	9,223.71	9,045.62	178.09	51.792	
5,400.00	5,395.59	5,410.27	5,407.35	19.16	162.12	70.64	-1,196.43	-9,211.76	9,222.29	9,041.04	181.25	50.881	
5,500.00	5,495.49	5,521.64	5,518.49	19.52	165.45	70.66	-1,197.71	-9,211.76	9,220.93	9,035.98	184.95	49.856	
5,600.00	5,595.39	5,621.53	5,618.39	19.88	168.45	70.69	-1,197.71	-9,211.76	9,219.43	9,031.12	188.31	48.959	
5,700.00	5,695.28	5,721.43	5,718.28	20.25	171.44	70.72	-1,197.71	-9,211.76	9,217.94	9,026.27	191.66	48.094	
5,800.00	5,795.18	5,816.74	5,813.55	20.61	174.30	70.76	-1,195.68	-9,211.75	9,216.23	9,021.34	194.88	47.291	
5,900.00	5,895.08	5,910.30	5,907.09	20.97	177.10	70.78	-1,196.43	-9,211.76	9,214.82	9,016.77	198.05	46.528	
6,000.00	5,994.98	6,021.43	6,017.98	21.34	180.43	70.80	-1,197.71	-9,211.76	9,213.46	9,011.72	201.74	45.669	
6,100.00	6,094.88	6,100.00	6,096.49	21.70	182.78	70.82	-1,197.71	-9,211.76	9,212.00	9,007.54	204.46	45.055	
6,200.00	6,194.77	6,100.00	6,096.49	22.06	182.78	70.82	-1,197.71	-9,211.76	9,211.29	9,006.48	204.81	44.975	
6,215.53	6,210.29	6,100.00	6,096.49	22.12	182.78	70.82	-1,197.71	-9,211.76	9,211.28	9,006.42	204.86	44.963	
6,300.00	6,294.67	6,100.00	6,096.49	22.43	182.78	70.82	-1,197.71	-9,211.76	9,211.66	9,006.53	205.13	44.905	
6,314.74	6,309.40	6,100.00	6,096.49	22.48	182.78	70.82	-1,197.71	-9,211.76	9,211.81	9,006.63	205.18	44.896	
6,350.00	6,344.59	6,100.00	6,096.49	22.61	182.78	27.66	-1,197.71	-9,211.76	9,211.29	9,006.00	205.29	44.870	
6,400.00	6,394.26	6,100.00	6,096.49	22.79	182.78	10.71	-1,197.71	-9,211.76	9,207.45	9,002.02	205.43	44.820	
6,450.00	6,443.36	6,100.00	6,096.49	22.97	182.78	4.85	-1,197.71	-9,211.76	9,200.01	8,994.44	205.57	44.754	
6,500.00	6,491.60	6,100.00	6,096.49	23.15	182.78	1.89	-1,197.71	-9,211.76	9,189.00	8,983.30	205.70	44.673	
6,550.00	6,538.67	6,100.00	6,096.49	23.32	182.78	0.06	-1,197.71	-9,211.76	9,174.47	8,968.66	205.81	44.577	
6,600.00	6,584.29	6,100.00	6,096.49	23.49	182.78	-1.24	-1,197.71	-9,211.76	9,156.50	8,950.58	205.92	44.466	
6,650.00	6,628.18	6,100.00	6,096.49	23.66	182.78	-2.27	-1,197.71	-9,211.76	9,135.17	8,929.16	206.02	44.342	
6,700.00	6,670.06	6,100.00	6,096.49	23.83	182.78	-3.15	-1,197.71	-9,211.76	9,110.61	8,904.51	206.10	44.205	
6,750.00	6,709.68	6,100.00	6,096.49	24.00	182.78	-3.98	-1,197.71	-9,211.76	9,082.92	8,876.75	206.17	44.055	
6,800.00	6,746.79	6,100.00	6,096.49	24.17	182.78	-4.81	-1,197.71	-9,211.76	9,052.26	8,846.03	206.23	43.894	
6,850.00	6,781.17	6,100.00	6,096.49	24.35	182.78	-5.68	-1,197.71	-9,211.76	9,018.79	8,812.51	206.28	43.721	
6,900.00	6,812.60	6,100.00	6,096.49	24.54	182.78	-6.66	-1,197.71	-9,211.76	8,982.68	8,776.36	206.32	43.538	
6,950.00	6,840.88	6,100.00	6,096.49	24.74	182.78	-7.80	-1,197.71	-9,211.76	8,944.12	8,737.77	206.35	43.345	
7,000.00	6,865.85	6,100.00	6,096.49	24.96	182.78	-9.19	-1,197.71	-9,211.76	8,903.32	8,696.95	206.37	43.143	
7,050.00	6,887.35	6,100.00	6,096.49	25.19	182.78	-10.96	-1,197.71	-9,211.76	8,860.50	8,654.13	206.38	42.933	
7,100.00	6,905.25	6,100.00	6,096.49	25.43	182.78	-13.32	-1,197.71	-9,211.76	8,815.91	8,609.53	206.38	42.717	
7,150.00	6,919.43	6,100.00	6,096.49	25.69	182.78	-16.64	-1,197.71	-9,211.76	8,769.78	8,563.40	206.38	42.493	
7,200.00	6,929.81	6,100.00	6,096.49	25.96	182.78	-21.65	-1,197.71	-9,211.76	8,722.39	8,516.01	206.37	42.265	
7,250.00	6,936.33	6,100.00	6,096.49	26.25	182.78	-29.90	-1,197.71	-9,211.76	8,674.00	8,467.64	206.37	42.032	
7,300.00	6,938.95	6,100.00	6,096.49	26.55	182.78	-44.94	-1,197.71	-9,211.76	8,624.90	8,418.55	206.36	41.796	
7,309.56	6,939.00	6,100.00	6,096.49	26.60	182.78	-49.10	-1,197.71	-9,211.76	8,615.46	8,409.11	206.35	41.751	
7,400.00	6,938.83	6,100.00	6,096.49	27.19	182.78	-49.10	-1,197.71	-9,211.76	8,526.06	8,319.72	206.34	41.321	
7,500.00	6,938.64	6,100.00	6,096.49	27.91	182.78	-49.10	-1,197.71	-9,211.76	8,427.24	8,220.92	206.32	40.846	
7,600.00	6,938.44	6,100.00	6,096.49	28.70	182.78	-49.10	-1,197.71	-9,211.76	8,328.44	8,122.14	206.30	40.371	
7,700.00	6,938.25	6,100.00	6,096.49	29.55	182.78	-49.10	-1,197.71	-9,211.76	8,229.68	8,023.39	206.28	39.895	
7,800.00	6,938.06	6,100.00	6,096.49	30.47	182.78	-49.10	-1,197.71	-9,211.76	8,130.94	7,924.67	206.27	39.419	
7,900.00	6,937.87	6,100.00	6,096.49	31.44	182.78	-49.10	-1,197.71	-9,211.76	8,032.24	7,825.98	206.26	38.942	
8,000.00	6,937.68	6,100.00	6,096.49	32.46	182.78	-49.10	-1,197.71	-9,211.76	7,933.57	7,727.32	206.25	38.465	
8,100.00	6,937.49	6,100.00	6,096.49	33.53	182.78	-49.10	-1,197.71	-9,211.76	7,834.93	7,628.68	206.25	37.988	
8,200.00	6,937.30	6,100.00	6,096.49	34.64	182.78	-49.10	-1,197.71	-9,211.76	7,736.33	7,530.08	206.25	37.510	
8,300.00	6,937.10	6,100.00	6,096.49	35.78	182.78	-49.10	-1,197.71	-9,211.76	7,637.76	7,431.52	206.25	37.032	
8,400.00	6,936.91	6,100.00	6,096.49	36.96	182.78	-49.10	-1,197.71	-9,211.76	7,539.24	7,332.99	206.25	36.554	
8,500.00	6,936.72	6,100.00	6,096.49	38.17	182.78	-49.10	-1,197.71	-9,211.76	7,440.75	7,234.49	206.26	36.075	
8,600.00	6,936.53	6,100.00	6,096.49	39.41	182.78	-49.10	-1,197.71	-9,211.76	7,342.30	7,136.03	206.27	35.596	
8,700.00	6,936.34	6,100.00	6,096.49	40.68	182.78	-49.10	-1,197.71	-9,211.76	7,243.89	7,037.61	206.28	35.117	
8,800.00	6,936.15	6,100.00	6,096.49	41.97	182.78	-49.10	-1,197.71	-9,211.76	7,145.53	6,939.23	206.30	34.637	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - --(O) Rosa Unit #036B - 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
8,900.00	6,935.96	6,100.00	6,096.49	43.27	182.78	-49.10	-1,197.71	-9,211.76	7,047.22	6,840.90	206.32	34.157	
9,000.00	6,935.76	6,100.00	6,096.49	44.60	182.78	-49.10	-1,197.71	-9,211.76	6,948.95	6,742.61	206.34	33.677	
9,100.00	6,935.57	6,100.00	6,096.49	45.95	182.78	-49.10	-1,197.71	-9,211.76	6,850.73	6,644.36	206.37	33.196	
9,200.00	6,935.38	6,100.00	6,096.49	47.31	182.78	-49.10	-1,197.71	-9,211.76	6,752.57	6,546.16	206.41	32.715	
9,300.00	6,935.19	6,100.00	6,096.49	48.69	182.78	-49.10	-1,197.71	-9,211.76	6,654.46	6,448.01	206.45	32.233	
9,400.00	6,935.00	6,100.00	6,096.49	50.08	182.78	-49.10	-1,197.71	-9,211.76	6,556.40	6,349.91	206.49	31.751	
9,500.00	6,934.81	6,100.00	6,096.49	51.48	182.78	-49.10	-1,197.71	-9,211.76	6,458.41	6,251.87	206.55	31.269	
9,600.00	6,934.62	6,100.00	6,096.49	52.89	182.78	-49.10	-1,197.71	-9,211.76	6,360.48	6,153.88	206.60	30.786	
9,700.00	6,934.43	6,100.00	6,096.49	54.32	182.78	-49.10	-1,197.71	-9,211.76	6,262.61	6,055.95	206.67	30.303	
9,800.00	6,934.23	6,100.00	6,096.49	55.75	182.78	-49.10	-1,197.71	-9,211.76	6,164.82	5,958.08	206.74	29.820	
9,900.00	6,934.04	6,100.00	6,096.49	57.19	182.78	-49.10	-1,197.71	-9,211.76	6,067.09	5,860.28	206.81	29.336	
10,000.00	6,933.85	6,100.00	6,096.49	58.65	182.78	-49.10	-1,197.71	-9,211.76	5,969.44	5,762.54	206.90	28.852	
10,100.00	6,933.66	6,100.00	6,096.49	60.10	182.78	-49.10	-1,197.71	-9,211.76	5,871.87	5,664.88	206.99	28.367	
10,200.00	6,933.47	6,100.00	6,096.49	61.57	182.78	-49.10	-1,197.71	-9,211.76	5,774.39	5,567.29	207.10	27.882	
10,300.00	6,933.28	6,100.00	6,096.49	63.04	182.78	-49.10	-1,197.71	-9,211.76	5,676.99	5,469.78	207.21	27.397	
10,400.00	6,933.09	6,100.00	6,096.49	64.52	182.78	-49.10	-1,197.71	-9,211.76	5,579.68	5,372.35	207.33	26.912	
10,500.00	6,932.89	6,100.00	6,096.49	66.01	182.78	-49.10	-1,197.71	-9,211.76	5,482.47	5,275.00	207.46	26.426	
10,600.00	6,932.70	6,100.00	6,096.49	67.50	182.78	-49.10	-1,197.71	-9,211.76	5,385.36	5,177.75	207.61	25.940	
10,700.00	6,932.51	6,100.00	6,096.49	68.99	182.78	-49.10	-1,197.71	-9,211.76	5,288.36	5,080.59	207.77	25.454	
10,800.00	6,932.32	6,100.00	6,096.49	70.50	182.78	-49.10	-1,197.71	-9,211.76	5,191.47	4,983.53	207.93	24.967	
10,900.00	6,932.13	6,100.00	6,096.49	72.00	182.78	-49.10	-1,197.71	-9,211.76	5,094.70	4,886.58	208.12	24.480	
11,000.00	6,931.94	6,100.00	6,096.49	73.51	182.78	-49.10	-1,197.71	-9,211.76	4,998.06	4,789.75	208.31	23.993	
11,100.00	6,931.75	6,100.00	6,096.49	75.02	182.78	-49.10	-1,197.71	-9,211.76	4,901.56	4,693.03	208.53	23.506	
11,200.00	6,931.55	6,100.00	6,096.49	76.54	182.78	-49.10	-1,197.71	-9,211.76	4,805.19	4,596.44	208.76	23.018	
11,300.00	6,931.36	6,100.00	6,096.49	78.06	182.78	-49.10	-1,197.71	-9,211.76	4,708.98	4,499.98	209.00	22.531	
11,400.00	6,931.17	6,100.00	6,096.49	79.58	182.78	-49.10	-1,197.71	-9,211.76	4,612.93	4,403.66	209.27	22.043	
11,500.00	6,930.98	6,100.00	6,096.49	81.11	182.78	-49.10	-1,197.71	-9,211.76	4,517.06	4,307.50	209.56	21.555	
11,600.00	6,930.79	6,100.00	6,096.49	82.64	182.78	-49.10	-1,197.71	-9,211.76	4,421.36	4,211.50	209.86	21.068	
11,700.00	6,930.60	6,100.00	6,096.49	84.17	182.78	-49.10	-1,197.71	-9,211.76	4,325.86	4,115.67	210.19	20.580	
11,800.00	6,930.41	6,100.00	6,096.49	85.70	182.78	-49.10	-1,197.71	-9,211.76	4,230.57	4,020.02	210.55	20.093	
11,900.00	6,930.21	6,100.00	6,096.49	87.24	182.78	-49.10	-1,197.71	-9,211.76	4,135.50	3,924.57	210.93	19.606	
12,000.00	6,930.02	6,100.00	6,096.49	88.78	182.78	-49.10	-1,197.71	-9,211.76	4,040.67	3,829.33	211.34	19.119	
12,100.00	6,929.83	6,100.00	6,096.49	90.32	182.78	-49.10	-1,197.71	-9,211.76	3,946.09	3,734.31	211.78	18.633	
12,200.00	6,929.64	6,100.00	6,096.49	91.87	182.78	-49.10	-1,197.71	-9,211.76	3,851.79	3,639.54	212.24	18.148	
12,300.00	6,929.45	6,100.00	6,096.49	93.41	182.78	-49.10	-1,197.71	-9,211.76	3,757.78	3,545.03	212.75	17.663	
12,400.00	6,929.26	6,100.00	6,096.49	94.96	182.78	-49.10	-1,197.71	-9,211.76	3,664.09	3,450.81	213.28	17.180	
12,500.00	6,929.07	6,100.00	6,096.49	96.51	182.78	-49.10	-1,197.71	-9,211.76	3,570.74	3,356.88	213.86	16.697	
12,600.00	6,928.88	6,100.00	6,096.49	98.06	182.78	-49.10	-1,197.71	-9,211.76	3,477.76	3,263.29	214.47	16.216	
12,700.00	6,928.68	6,100.00	6,096.49	99.62	182.78	-49.10	-1,197.71	-9,211.76	3,385.18	3,170.05	215.13	15.736	
12,800.00	6,928.49	6,100.00	6,096.49	101.17	182.78	-49.10	-1,197.71	-9,211.76	3,293.04	3,077.21	215.83	15.258	
12,900.00	6,928.30	6,100.00	6,096.49	102.73	182.78	-49.10	-1,197.71	-9,211.76	3,201.36	2,984.79	216.58	14.782	
13,000.00	6,928.11	6,100.00	6,096.49	104.28	182.78	-49.10	-1,197.71	-9,211.76	3,110.20	2,892.83	217.38	14.308	
13,100.00	6,927.92	6,100.00	6,096.49	105.84	182.78	-49.10	-1,197.71	-9,211.76	3,019.60	2,801.37	218.23	13.837	
13,200.00	6,927.73	6,100.00	6,096.49	107.40	182.78	-49.10	-1,197.71	-9,211.76	2,929.61	2,710.48	219.14	13.369	
13,300.00	6,927.54	6,100.00	6,096.49	108.97	182.78	-49.10	-1,197.71	-9,211.76	2,840.29	2,620.19	220.10	12.904	
13,400.00	6,927.34	6,100.00	6,096.49	110.53	182.78	-49.10	-1,197.71	-9,211.76	2,751.71	2,530.58	221.13	12.444	
13,500.00	6,927.15	6,100.00	6,096.49	112.09	182.78	-49.10	-1,197.71	-9,211.76	2,663.93	2,441.71	222.23	11.987	
13,600.00	6,926.96	6,100.00	6,096.49	113.66	182.78	-49.10	-1,197.71	-9,211.76	2,577.05	2,353.66	223.39	11.536	
13,700.00	6,926.77	6,100.00	6,096.49	115.22	182.78	-49.10	-1,197.71	-9,211.76	2,491.15	2,266.53	224.62	11.091	
13,800.00	6,926.58	6,100.00	6,096.49	116.79	182.78	-49.10	-1,197.71	-9,211.76	2,406.34	2,180.41	225.92	10.651	
13,900.00	6,926.39	6,100.00	6,096.49	118.36	182.78	-49.10	-1,197.71	-9,211.76	2,322.73	2,095.43	227.30	10.219	
14,000.00	6,926.20	6,100.00	6,096.49	119.93	182.78	-49.10	-1,197.71	-9,211.76	2,240.47	2,011.72	228.75	9.794	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - --(O) Rosa Unit #036B - 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
14,100.00	6,926.00	6,100.00	6,096.49	121.50	182.78	-49.10	-1,197.71	-9,211.76	2,159.71	1,929.43	230.28	9.379	
14,200.00	6,925.81	6,100.00	6,096.49	123.07	182.78	-49.10	-1,197.71	-9,211.76	2,080.62	1,848.74	231.88	8.973	
14,300.00	6,925.62	6,100.00	6,096.49	124.64	182.78	-49.10	-1,197.71	-9,211.76	2,003.41	1,769.85	233.56	8.578	
14,400.00	6,925.43	6,100.00	6,096.49	126.21	182.78	-49.10	-1,197.71	-9,211.76	1,928.28	1,692.98	235.30	8.195	
14,500.00	6,925.24	6,100.00	6,096.49	127.79	182.78	-49.10	-1,197.71	-9,211.76	1,855.51	1,618.41	237.10	7.826	
14,600.00	6,925.05	6,100.00	6,096.49	129.36	182.78	-49.10	-1,197.71	-9,211.76	1,785.37	1,546.42	238.95	7.472	
14,700.00	6,924.86	6,100.00	6,096.49	130.93	182.78	-49.10	-1,197.71	-9,211.76	1,718.19	1,477.35	240.84	7.134	
14,800.00	6,924.66	6,100.00	6,096.49	132.51	182.78	-49.10	-1,197.71	-9,211.76	1,654.33	1,411.57	242.76	6.815	
14,900.00	6,924.47	6,100.00	6,096.49	134.09	182.78	-49.10	-1,197.71	-9,211.76	1,594.19	1,349.51	244.69	6.515	
15,000.00	6,924.28	6,100.00	6,096.49	135.66	182.78	-49.10	-1,197.71	-9,211.76	1,538.21	1,291.60	246.61	6.238	
15,100.00	6,924.09	6,100.00	6,096.49	137.24	182.78	-49.10	-1,197.71	-9,211.76	1,486.85	1,238.35	248.50	5.983	
15,200.00	6,923.90	6,100.00	6,096.49	138.82	182.78	-49.10	-1,197.71	-9,211.76	1,440.61	1,190.26	250.36	5.754	
15,300.00	6,923.71	6,100.00	6,096.49	140.40	182.78	-49.10	-1,197.71	-9,211.76	1,400.00	1,147.84	252.16	5.552	
15,400.00	6,923.52	6,100.00	6,096.49	141.97	182.78	-49.10	-1,197.71	-9,211.76	1,365.52	1,111.61	253.91	5.378	
15,500.00	6,923.33	6,100.00	6,096.49	143.55	182.78	-49.10	-1,197.71	-9,211.76	1,337.64	1,082.04	255.60	5.233	
15,600.00	6,923.13	6,100.00	6,096.49	145.13	182.78	-49.10	-1,197.71	-9,211.76	1,316.78	1,059.55	257.23	5.119	
15,700.00	6,922.94	6,100.00	6,096.49	146.72	182.78	-49.10	-1,197.71	-9,211.76	1,303.28	1,044.46	258.82	5.035	
15,800.00	6,922.75	6,100.00	6,096.49	148.30	182.78	-49.10	-1,197.71	-9,211.76	1,297.38	1,037.03	260.35	4.983	
15,826.82	6,922.70	6,100.00	6,096.49	148.72	182.78	-49.10	-1,197.71	-9,211.76	1,297.10	1,036.35	260.75	4.975	CC, ES
15,900.00	6,922.56	6,100.00	6,096.49	149.88	182.78	-49.10	-1,197.71	-9,211.76	1,299.16	1,037.35	261.81	4.962	SF
16,000.00	6,922.37	6,100.00	6,096.49	151.46	182.78	-49.10	-1,197.71	-9,211.76	1,308.61	1,045.45	263.16	4.973	
16,100.00	6,922.18	6,100.00	6,096.49	153.04	182.78	-49.10	-1,197.71	-9,211.76	1,325.55	1,061.18	264.37	5.014	
16,200.00	6,921.99	6,100.00	6,096.49	154.63	182.78	-49.10	-1,197.71	-9,211.76	1,349.71	1,084.32	265.39	5.086	
16,300.00	6,921.79	6,100.00	6,096.49	156.21	182.78	-49.10	-1,197.71	-9,211.76	1,380.71	1,114.52	266.19	5.187	
16,400.00	6,921.60	6,100.00	6,096.49	157.79	182.78	-49.10	-1,197.71	-9,211.76	1,418.10	1,151.35	266.75	5.316	
16,500.00	6,921.41	6,100.00	6,096.49	159.38	182.78	-49.10	-1,197.71	-9,211.76	1,461.38	1,194.34	267.04	5.473	
16,600.00	6,921.22	6,100.00	6,096.49	160.96	182.78	-49.10	-1,197.71	-9,211.76	1,510.06	1,242.97	267.09	5.654	
16,700.00	6,921.03	6,100.00	6,096.49	162.55	182.78	-49.10	-1,197.71	-9,211.76	1,563.62	1,296.72	266.90	5.859	
16,800.00	6,920.84	6,100.00	6,096.49	164.13	182.78	-49.10	-1,197.71	-9,211.76	1,621.59	1,355.08	266.50	6.085	
16,900.00	6,920.65	6,100.00	6,096.49	165.72	182.78	-49.10	-1,197.71	-9,211.76	1,683.50	1,417.57	265.93	6.331	
17,000.00	6,920.45	6,100.00	6,096.49	167.30	182.78	-49.10	-1,197.71	-9,211.76	1,748.95	1,483.73	265.22	6.594	
17,100.00	6,920.26	6,100.00	6,096.49	168.89	182.78	-49.10	-1,197.71	-9,211.76	1,817.54	1,553.14	264.40	6.874	
17,200.00	6,920.07	6,100.00	6,096.49	170.48	182.78	-49.10	-1,197.71	-9,211.76	1,888.94	1,625.45	263.49	7.169	
17,300.00	6,919.88	6,100.00	6,096.49	172.06	182.78	-49.10	-1,197.71	-9,211.76	1,962.84	1,700.32	262.52	7.477	
17,400.00	6,919.69	6,100.00	6,096.49	173.65	182.78	-49.10	-1,197.71	-9,211.76	2,038.96	1,777.46	261.51	7.797	
17,500.00	6,919.50	6,100.00	6,096.49	175.24	182.78	-49.10	-1,197.71	-9,211.76	2,117.07	1,856.60	260.47	8.128	
17,600.00	6,919.31	6,100.00	6,096.49	176.83	182.78	-49.10	-1,197.71	-9,211.76	2,196.96	1,937.53	259.43	8.468	
17,700.00	6,919.11	6,100.00	6,096.49	178.41	182.78	-49.10	-1,197.71	-9,211.76	2,278.44	2,020.05	258.39	8.818	
17,759.55	6,919.00	6,100.00	6,096.49	179.36	182.78	-49.10	-1,197.71	-9,211.76	2,327.65	2,069.87	257.77	9.030	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	79.44	79.44	0.00	0.14	-84.51	858.08	-8,934.64	8,975.76				
100.00	100.00	162.19	162.19	0.25	0.29	-84.51	858.05	-8,934.87	8,976.04	8,975.50	0.54	N/A	
200.00	200.00	244.94	244.94	0.61	0.44	-84.52	857.99	-8,935.27	8,976.52	8,975.47	1.05	8,559.399	
300.00	300.00	327.61	327.60	0.97	0.64	-84.52	857.92	-8,935.83	8,977.18	8,975.58	1.60	5,593.499	
400.00	400.00	372.00	372.00	1.33	0.80	-84.52	857.87	-8,936.20	8,978.14	8,976.02	2.12	4,229.317	
500.00	500.00	372.00	372.00	1.68	0.80	-84.52	857.87	-8,936.20	8,980.08	8,977.59	2.48	3,617.603	
600.00	600.00	372.00	372.00	2.04	0.80	-84.52	857.87	-8,936.20	8,983.13	8,980.28	2.84	3,160.499	
700.00	700.00	372.00	372.00	2.40	0.80	-84.52	857.87	-8,936.20	8,987.29	8,984.09	3.20	2,806.236	
800.00	800.00	372.00	372.00	2.76	0.80	-84.52	857.87	-8,936.20	8,992.56	8,989.00	3.56	2,523.818	
900.00	900.00	552.00	550.99	3.12	1.49	-84.60	846.58	-8,947.81	8,998.78	8,994.20	4.59	1,961.943	
1,000.00	1,000.00	584.00	582.83	3.48	1.60	-84.61	844.06	-8,949.80	9,004.15	8,999.09	5.06	1,778.860	
1,100.00	1,099.98	616.00	614.60	3.82	1.72	82.14	841.02	-8,952.11	9,010.07	9,004.55	5.52	1,632.261	
1,129.54	1,129.49	616.00	614.60	3.92	1.72	82.11	841.02	-8,952.11	9,011.86	9,006.25	5.61	1,604.985	
1,200.00	1,199.88	636.24	634.65	4.15	1.80	82.10	838.82	-8,953.75	9,016.42	9,010.49	5.92	1,522.621	
1,300.00	1,299.78	674.56	672.53	4.48	1.94	82.08	834.13	-8,957.13	9,023.48	9,017.08	6.40	1,409.781	
1,400.00	1,399.68	720.48	717.80	4.82	2.13	82.05	827.79	-8,961.55	9,031.21	9,024.29	6.92	1,305.694	
1,500.00	1,499.58	803.60	799.54	5.16	2.48	81.99	815.28	-8,969.91	9,039.32	9,031.72	7.59	1,190.285	
1,600.00	1,599.48	834.00	829.43	5.50	2.61	81.96	810.64	-8,973.00	9,047.78	9,039.72	8.06	1,122.700	
1,700.00	1,699.37	898.00	892.34	5.85	2.88	81.92	801.19	-8,979.99	9,056.84	9,048.17	8.67	1,044.929	
1,800.00	1,799.27	1,045.81	1,037.62	6.20	3.53	81.81	779.27	-8,996.09	9,065.78	9,056.15	9.64	940.713	
1,900.00	1,899.17	1,148.87	1,138.85	6.55	3.98	81.74	763.58	-9,007.35	9,074.80	9,064.37	10.42	870.562	
2,000.00	1,999.07	1,303.62	1,290.58	6.90	4.68	81.61	737.90	-9,023.66	9,083.37	9,071.93	11.45	793.373	
2,100.00	2,098.96	1,419.42	1,404.40	7.25	5.19	81.52	719.88	-9,035.07	9,091.30	9,079.00	12.30	739.138	
2,200.00	2,198.86	1,462.00	1,446.26	7.61	5.38	81.49	713.40	-9,039.45	9,099.69	9,086.85	12.83	709.169	
2,300.00	2,298.76	1,569.42	1,551.80	7.96	5.86	81.41	697.00	-9,050.85	9,108.45	9,094.80	13.65	667.378	
2,400.00	2,398.66	1,670.37	1,651.00	8.32	6.31	81.34	681.46	-9,061.25	9,116.91	9,102.47	14.44	631.487	
2,500.00	2,498.56	1,714.00	1,693.93	8.68	6.50	81.31	675.15	-9,065.88	9,125.78	9,110.80	14.97	609.442	
2,600.00	2,598.45	1,776.00	1,754.91	9.03	6.77	81.26	666.38	-9,072.79	9,135.18	9,119.59	15.59	585.979	
2,700.00	2,698.35	1,881.19	1,858.37	9.39	7.24	81.19	651.41	-9,084.55	9,144.61	9,128.22	16.39	557.790	
2,800.00	2,798.25	2,103.65	2,077.05	9.75	8.23	81.04	618.49	-9,108.63	9,153.90	9,136.19	17.72	516.694	
2,900.00	2,898.15	2,287.06	2,257.58	10.11	9.04	80.91	591.44	-9,126.41	9,162.03	9,143.16	18.86	485.711	
3,000.00	2,998.04	2,348.67	2,318.31	10.47	9.31	80.87	582.77	-9,132.15	9,169.63	9,150.15	19.48	470.766	
3,100.00	3,097.94	2,455.25	2,423.36	10.83	9.77	80.80	567.78	-9,142.08	9,177.27	9,156.99	20.29	452.386	
3,200.00	3,197.84	2,508.84	2,476.17	11.19	10.01	80.77	560.21	-9,147.20	9,185.19	9,164.32	20.87	440.160	
3,300.00	3,297.74	2,588.72	2,554.76	11.55	10.36	80.71	548.42	-9,155.24	9,193.56	9,171.99	21.57	426.306	
3,400.00	3,397.64	2,675.29	2,639.93	11.91	10.75	80.65	535.63	-9,164.06	9,202.07	9,179.77	22.29	412.762	
3,500.00	3,497.53	2,782.00	2,744.79	12.27	11.22	80.58	519.16	-9,174.92	9,210.56	9,187.44	23.11	398.476	
3,600.00	3,597.43	2,844.00	2,805.67	12.63	11.50	80.53	509.35	-9,181.35	9,219.23	9,195.49	23.74	388.358	
3,700.00	3,697.33	2,917.32	2,877.63	12.99	11.84	80.47	497.71	-9,189.23	9,228.28	9,203.87	24.41	377.983	
3,800.00	3,797.23	2,994.81	2,953.74	13.35	12.19	80.42	485.78	-9,197.61	9,237.47	9,212.37	25.11	367.934	
3,900.00	3,897.12	3,053.76	3,011.66	13.72	12.45	80.38	477.10	-9,204.34	9,247.22	9,221.50	25.71	359.635	
4,000.00	3,997.02	3,264.51	3,219.23	14.08	13.38	80.25	448.05	-9,226.39	9,255.73	9,228.75	26.98	343.096	
4,100.00	4,096.92	3,311.36	3,265.36	14.44	13.58	80.22	441.61	-9,231.30	9,264.69	9,237.16	27.53	336.560	
4,200.00	4,196.82	3,803.93	3,751.89	14.80	15.65	79.96	380.26	-9,274.42	9,272.58	9,242.64	29.94	309.744	
4,300.00	4,296.72	3,912.68	3,860.12	15.16	16.05	79.94	372.04	-9,281.16	9,277.58	9,246.89	30.69	302.293	
4,400.00	4,396.61	4,021.45	3,968.38	15.53	16.44	79.91	363.95	-9,287.79	9,282.49	9,251.05	31.45	295.195	
4,500.00	4,496.51	4,130.24	4,076.68	15.89	16.84	79.89	356.00	-9,294.31	9,287.31	9,255.11	32.20	288.424	
4,600.00	4,596.41	4,239.05	4,185.02	16.25	17.23	79.87	348.18	-9,300.73	9,292.03	9,259.07	32.96	281.959	
4,700.00	4,696.31	4,347.87	4,293.39	16.61	17.63	79.85	340.50	-9,307.03	9,296.65	9,262.94	33.71	275.778	
4,800.00	4,796.20	4,456.72	4,401.80	16.98	18.02	79.83	332.95	-9,313.22	9,301.18	9,266.71	34.47	269.864	
4,900.00	4,896.10	4,565.58	4,510.23	17.34	18.42	79.82	325.54	-9,319.29	9,305.61	9,270.39	35.22	264.199	
5,000.00	4,996.00	4,674.45	4,618.70	17.70	18.81	79.80	318.27	-9,325.26	9,309.95	9,273.97	35.98	258.769	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,100.00	5,095.90	4,783.35	4,727.21	18.07	19.21	79.78	311.13	-9,331.12	9,314.19	9,277.45	36.73	253.558	
5,200.00	5,195.80	4,892.26	4,835.74	18.43	19.60	79.77	304.12	-9,336.86	9,318.33	9,280.84	37.49	248.553	
5,300.00	5,295.69	5,001.18	4,944.30	18.79	20.00	79.75	297.25	-9,342.49	9,322.38	9,284.13	38.25	243.743	
5,400.00	5,395.59	5,110.12	5,052.89	19.16	20.40	79.74	290.52	-9,348.02	9,326.33	9,287.33	39.00	239.116	
5,500.00	5,495.49	5,219.07	5,161.51	19.52	20.79	79.73	283.93	-9,353.43	9,330.19	9,290.43	39.76	234.662	
5,600.00	5,595.39	5,328.04	5,270.15	19.88	21.19	79.72	277.47	-9,358.73	9,333.94	9,293.43	40.52	230.371	
5,700.00	5,695.28	5,437.01	5,378.82	20.25	21.59	79.71	271.14	-9,363.91	9,337.61	9,296.33	41.27	226.234	
5,800.00	5,795.18	5,546.00	5,487.52	20.61	21.98	79.70	264.96	-9,368.99	9,341.17	9,299.14	42.03	222.244	
5,900.00	5,895.08	5,655.00	5,596.24	20.97	22.38	79.69	258.90	-9,373.95	9,344.64	9,301.85	42.79	218.392	
6,000.00	5,994.98	5,764.02	5,704.98	21.34	22.78	79.68	252.99	-9,378.80	9,348.01	9,304.47	43.55	214.671	
6,100.00	6,094.88	5,873.04	5,813.74	21.70	23.18	79.67	247.21	-9,383.54	9,351.29	9,306.98	44.30	211.074	
6,200.00	6,194.77	5,982.07	5,922.53	22.06	23.57	79.67	241.57	-9,388.17	9,354.46	9,309.40	45.06	207.596	
6,300.00	6,294.67	6,091.11	6,031.34	22.43	23.97	79.66	236.07	-9,392.68	9,357.54	9,311.73	45.82	204.231	
6,314.74	6,309.40	6,107.18	6,047.38	22.48	24.03	79.66	235.27	-9,393.34	9,357.99	9,312.06	45.93	203.744	
6,350.00	6,344.59	6,145.65	6,085.76	22.61	24.17	36.50	233.37	-9,394.90	9,358.07	9,311.88	46.20	202.570	
6,400.00	6,394.26	6,200.07	6,140.08	22.79	24.37	19.60	230.70	-9,397.08	9,354.83	9,308.26	46.57	200.864	
6,450.00	6,443.36	6,254.04	6,193.94	22.97	24.56	13.85	228.10	-9,399.22	9,347.66	9,300.71	46.95	199.118	
6,500.00	6,491.60	6,307.21	6,247.01	23.15	24.76	11.05	225.56	-9,401.30	9,336.61	9,289.30	47.31	197.343	
6,550.00	6,538.67	6,359.27	6,298.97	23.32	24.95	9.45	223.11	-9,403.30	9,321.75	9,274.08	47.67	195.552	
6,600.00	6,584.29	6,409.87	6,349.48	23.49	25.13	8.44	220.76	-9,405.23	9,303.18	9,255.17	48.01	193.757	
6,650.00	6,628.18	6,458.70	6,398.23	23.66	25.31	7.79	218.52	-9,407.07	9,281.01	9,232.66	48.35	191.969	
6,700.00	6,670.06	6,505.47	6,444.91	23.83	25.48	7.38	216.40	-9,408.81	9,255.37	9,206.71	48.66	190.197	
6,750.00	6,709.68	6,549.86	6,489.24	24.00	25.64	7.14	214.41	-9,410.44	9,226.44	9,177.48	48.96	188.452	
6,800.00	6,746.79	6,591.62	6,530.93	24.17	25.80	7.04	212.56	-9,411.96	9,194.39	9,145.15	49.24	186.741	
6,850.00	6,781.17	6,630.48	6,569.72	24.35	25.94	7.07	210.86	-9,413.36	9,159.42	9,109.92	49.49	185.071	
6,900.00	6,812.60	6,666.20	6,605.39	24.54	26.07	7.23	209.31	-9,414.63	9,121.75	9,072.02	49.72	183.450	
6,950.00	6,840.88	6,698.56	6,637.70	24.74	26.19	7.54	207.92	-9,415.77	9,081.61	9,031.68	49.93	181.883	
7,000.00	6,865.85	6,727.37	6,666.46	24.96	26.29	8.05	206.69	-9,416.78	9,039.26	8,989.15	50.11	180.375	
7,050.00	6,887.35	6,752.45	6,691.50	25.19	26.38	8.82	205.62	-9,417.65	8,994.96	8,944.69	50.27	178.931	
7,100.00	6,905.25	6,773.65	6,712.67	25.43	26.46	10.00	204.73	-9,418.38	8,948.99	8,898.58	50.40	177.554	
7,150.00	6,919.43	6,790.84	6,729.83	25.69	26.52	11.92	204.01	-9,418.97	8,901.62	8,851.11	50.51	176.246	
7,200.00	6,929.81	6,803.92	6,742.90	25.96	26.57	15.35	203.47	-9,419.42	8,853.16	8,802.57	50.59	175.010	
7,250.00	6,936.33	6,812.82	6,751.78	26.25	26.60	22.82	203.10	-9,419.72	8,803.90	8,753.26	50.64	173.844	
7,300.00	6,938.95	6,817.49	6,756.44	26.55	26.62	47.25	202.90	-9,419.88	8,754.16	8,703.48	50.68	172.750	
7,309.56	6,939.00	6,817.89	6,756.85	26.60	26.62	58.05	202.89	-9,419.90	8,744.62	8,693.94	50.68	172.547	
7,400.00	6,938.83	6,821.02	6,759.97	27.19	26.63	58.35	202.76	-9,420.00	8,654.32	8,603.61	50.71	170.662	
7,500.00	6,938.64	6,824.47	6,763.42	27.91	26.65	58.68	202.61	-9,420.12	8,554.48	8,503.74	50.75	168.576	
7,600.00	6,938.44	6,827.91	6,766.85	28.70	26.66	59.02	202.47	-9,420.24	8,454.65	8,403.87	50.78	166.488	
7,700.00	6,938.25	6,831.34	6,770.28	29.55	26.67	59.36	202.33	-9,420.35	8,354.82	8,304.00	50.82	164.398	
7,800.00	6,938.06	6,834.77	6,773.71	30.47	26.68	59.69	202.19	-9,420.47	8,254.99	8,204.13	50.86	162.307	
7,900.00	6,937.87	6,838.19	6,777.12	31.44	26.70	60.04	202.05	-9,420.58	8,155.16	8,104.26	50.90	160.213	
8,000.00	6,937.68	6,841.61	6,780.53	32.46	26.71	60.38	201.91	-9,420.70	8,055.34	8,004.39	50.95	158.118	
8,100.00	6,937.49	6,845.01	6,783.93	33.53	26.72	60.73	201.77	-9,420.81	7,955.52	7,904.53	50.99	156.022	
8,200.00	6,937.30	6,848.41	6,787.33	34.64	26.73	61.07	201.63	-9,420.93	7,855.70	7,804.67	51.04	153.924	
8,300.00	6,937.10	6,851.81	6,790.72	35.78	26.75	61.42	201.49	-9,421.04	7,755.89	7,704.80	51.08	151.824	
8,400.00	6,936.91	6,855.19	6,794.10	36.96	26.76	61.77	201.35	-9,421.16	7,656.08	7,604.94	51.13	149.724	
8,500.00	6,936.72	6,858.57	6,797.47	38.17	26.77	62.12	201.21	-9,421.27	7,556.27	7,505.09	51.19	147.622	
8,600.00	6,936.53	6,861.94	6,800.84	39.41	26.78	62.48	201.07	-9,421.38	7,456.47	7,405.23	51.24	145.520	
8,700.00	6,936.34	6,865.31	6,804.20	40.68	26.79	62.84	200.93	-9,421.50	7,356.67	7,305.38	51.30	143.416	
8,800.00	6,936.15	6,868.67	6,807.56	41.97	26.81	63.19	200.80	-9,421.61	7,256.88	7,205.52	51.35	141.312	
8,900.00	6,935.96	6,872.02	6,810.90	43.27	26.82	63.55	200.66	-9,421.72	7,157.09	7,105.67	51.41	139.207	
9,000.00	6,935.76	6,875.37	6,814.24	44.60	26.83	63.92	200.52	-9,421.83	7,057.30	7,005.83	51.48	137.101	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,100.00	6,935.57	6,878.71	6,817.58	45.95	26.84	64.28	200.39	-9,421.95	6,957.52	6,905.98	51.54	134.995	
9,200.00	6,935.38	6,882.04	6,820.91	47.31	26.86	64.64	200.25	-9,422.06	6,857.74	6,806.14	51.61	132.888	
9,300.00	6,935.19	6,885.36	6,824.23	48.69	26.87	65.01	200.12	-9,422.17	6,757.97	6,706.30	51.67	130.781	
9,400.00	6,935.00	6,888.68	6,827.54	50.08	26.88	65.38	199.98	-9,422.28	6,658.21	6,606.46	51.74	128.674	
9,500.00	6,934.81	6,891.99	6,830.85	51.48	26.89	65.75	199.85	-9,422.39	6,558.44	6,506.63	51.82	126.567	
9,600.00	6,934.62	6,895.30	6,834.15	52.89	26.90	66.12	199.71	-9,422.50	6,458.69	6,406.80	51.89	124.459	
9,700.00	6,934.43	6,898.60	6,837.44	54.32	26.92	66.50	199.58	-9,422.61	6,358.94	6,306.97	51.97	122.351	
9,800.00	6,934.23	6,901.89	6,840.73	55.75	26.93	66.87	199.44	-9,422.72	6,259.20	6,207.15	52.05	120.244	
9,900.00	6,934.04	6,905.18	6,844.01	57.19	26.94	67.25	199.31	-9,422.83	6,159.46	6,107.33	52.14	118.136	
10,000.00	6,933.85	6,908.46	6,847.29	58.65	26.95	67.63	199.18	-9,422.94	6,059.74	6,007.51	52.23	116.029	
10,100.00	6,933.66	6,911.73	6,850.56	60.10	26.96	68.01	199.05	-9,423.04	5,960.01	5,907.70	52.32	113.921	
10,200.00	6,933.47	6,915.00	6,853.82	61.57	26.98	68.39	198.92	-9,423.15	5,860.30	5,807.89	52.41	111.814	
10,300.00	6,933.28	6,918.26	6,857.07	63.04	26.99	68.77	198.78	-9,423.26	5,760.60	5,708.09	52.51	109.708	
10,400.00	6,933.09	6,921.51	6,860.32	64.52	27.00	69.16	198.65	-9,423.37	5,660.90	5,608.29	52.61	107.602	
10,500.00	6,932.89	6,924.76	6,863.56	66.01	27.01	69.54	198.52	-9,423.47	5,561.21	5,508.50	52.71	105.496	
10,600.00	6,932.70	6,928.00	6,866.80	67.50	27.02	69.93	198.39	-9,423.58	5,461.53	5,408.71	52.82	103.391	
10,700.00	6,932.51	6,931.23	6,870.03	68.99	27.04	70.32	198.26	-9,423.69	5,361.87	5,308.93	52.94	101.286	
10,800.00	6,932.32	6,934.46	6,873.25	70.50	27.05	70.71	198.13	-9,423.79	5,262.21	5,209.15	53.06	99.182	
10,900.00	6,932.13	6,937.68	6,876.47	72.00	27.06	71.10	198.00	-9,423.90	5,162.56	5,109.39	53.18	97.079	
11,000.00	6,931.94	6,940.89	6,879.68	73.51	27.07	71.50	197.87	-9,424.01	5,062.93	5,009.62	53.31	94.976	
11,100.00	6,931.75	6,944.10	6,882.89	75.02	27.08	71.89	197.75	-9,424.11	4,963.31	4,909.87	53.44	92.874	
11,200.00	6,931.55	6,947.31	6,886.08	76.54	27.09	72.29	197.62	-9,424.22	4,863.70	4,810.12	53.58	90.773	
11,300.00	6,931.36	6,950.50	6,889.28	78.06	27.11	72.68	197.49	-9,424.32	4,764.11	4,710.38	53.73	88.672	
11,400.00	6,931.17	6,953.69	6,892.46	79.58	27.12	73.08	197.36	-9,424.43	4,664.53	4,610.65	53.88	86.573	
11,500.00	6,930.98	6,956.88	6,895.64	81.11	27.13	73.48	197.24	-9,424.53	4,564.97	4,510.93	54.04	84.474	
11,600.00	6,930.79	6,960.05	6,898.81	82.64	27.14	73.88	197.11	-9,424.63	4,465.43	4,411.22	54.21	82.375	
11,700.00	6,930.60	6,963.22	6,901.98	84.17	27.15	74.28	196.98	-9,424.74	4,365.90	4,311.52	54.38	80.278	
11,800.00	6,930.41	6,966.39	6,905.14	85.70	27.16	74.68	196.86	-9,424.84	4,266.40	4,211.83	54.57	78.181	
11,900.00	6,930.21	6,969.55	6,908.30	87.24	27.18	75.09	196.73	-9,424.94	4,166.91	4,112.15	54.77	76.086	
12,000.00	6,930.02	6,972.70	6,911.44	88.78	27.19	75.49	196.61	-9,425.05	4,067.45	4,012.48	54.97	73.991	
12,100.00	6,929.83	6,975.85	6,914.59	90.32	27.20	75.90	196.48	-9,425.15	3,968.02	3,912.83	55.19	71.897	
12,200.00	6,929.64	6,978.99	6,917.72	91.87	27.21	76.30	196.36	-9,425.25	3,868.61	3,813.19	55.42	69.804	
12,300.00	6,929.45	6,982.12	6,920.85	93.41	27.22	76.71	196.23	-9,425.35	3,769.23	3,713.56	55.67	67.712	
12,400.00	6,929.26	6,985.25	6,923.98	94.96	27.23	77.12	196.11	-9,425.45	3,669.88	3,613.95	55.93	65.620	
12,500.00	6,929.07	6,988.37	6,927.10	96.51	27.24	77.53	195.99	-9,425.55	3,570.56	3,514.36	56.20	63.530	
12,600.00	6,928.88	6,991.49	6,930.21	98.06	27.26	77.94	195.86	-9,425.66	3,471.28	3,414.78	56.50	61.441	
12,700.00	6,928.68	6,994.60	6,933.31	99.62	27.27	78.35	195.74	-9,425.76	3,372.04	3,315.23	56.81	59.353	
12,800.00	6,928.49	6,997.70	6,936.41	101.17	27.28	78.76	195.62	-9,425.86	3,272.84	3,215.69	57.15	57.266	
12,900.00	6,928.30	7,000.80	6,939.51	102.73	27.29	79.17	195.50	-9,425.96	3,173.70	3,116.18	57.52	55.180	
13,000.00	6,928.11	7,003.89	6,942.60	104.28	27.30	79.58	195.38	-9,426.06	3,074.60	3,016.69	57.91	53.096	
13,100.00	6,927.92	7,006.98	6,945.68	105.84	27.31	79.99	195.25	-9,426.16	2,975.56	2,917.23	58.33	51.013	
13,200.00	6,927.73	7,010.06	6,948.75	107.40	27.32	80.41	195.13	-9,426.25	2,876.58	2,817.80	58.79	48.933	
13,300.00	6,927.54	7,013.13	6,951.82	108.97	27.33	80.82	195.01	-9,426.35	2,777.68	2,718.39	59.28	46.855	
13,400.00	6,927.34	7,016.20	6,954.89	110.53	27.35	81.24	194.89	-9,426.45	2,678.85	2,619.02	59.82	44.779	
13,500.00	6,927.15	7,019.26	6,957.95	112.09	27.36	81.65	194.77	-9,426.55	2,580.11	2,519.69	60.41	42.707	
13,600.00	6,926.96	7,022.32	6,961.00	113.66	27.37	82.06	194.65	-9,426.65	2,481.46	2,420.40	61.06	40.638	
13,700.00	6,926.77	7,025.37	6,964.05	115.22	27.38	82.48	194.53	-9,426.75	2,382.93	2,321.15	61.77	38.575	
13,800.00	6,926.58	7,028.41	6,967.09	116.79	27.39	82.89	194.42	-9,426.84	2,284.51	2,221.95	62.56	36.517	
13,900.00	6,926.39	7,031.45	6,970.12	118.36	27.40	83.31	194.30	-9,426.94	2,186.24	2,122.81	63.43	34.466	
14,000.00	6,926.20	7,034.49	6,973.15	119.93	27.41	83.73	194.18	-9,427.04	2,088.13	2,023.73	64.40	32.423	
14,100.00	6,926.00	7,037.51	6,976.17	121.50	27.42	84.14	194.06	-9,427.13	1,990.20	1,924.71	65.49	30.392	
14,200.00	6,925.81	7,040.53	6,979.19	123.07	27.43	84.56	193.94	-9,427.23	1,892.48	1,825.78	66.70	28.373	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,300.00	6,925.62	7,043.55	6,982.20	124.64	27.45	84.97	193.83	-9,427.33	1,795.01	1,726.94	68.07	26.369	
14,400.00	6,925.43	7,046.56	6,985.21	126.21	27.46	85.39	193.71	-9,427.42	1,697.83	1,628.20	69.63	24.385	
14,500.00	6,925.24	7,049.56	6,988.21	127.79	27.47	85.80	193.59	-9,427.52	1,600.99	1,529.59	71.40	22.424	
14,600.00	6,925.05	7,052.56	6,991.20	129.36	27.48	86.22	193.48	-9,427.61	1,504.55	1,431.13	73.43	20.491	
14,700.00	6,924.86	7,055.56	6,994.19	130.93	27.49	86.64	193.36	-9,427.71	1,408.61	1,332.84	75.77	18.592	
14,800.00	6,924.66	7,058.54	6,997.18	132.51	27.50	87.05	193.24	-9,427.80	1,313.27	1,234.78	78.48	16.734	
14,900.00	6,924.47	7,061.52	7,000.15	134.09	27.51	87.47	193.13	-9,427.90	1,218.66	1,137.01	81.65	14.925	
15,000.00	6,924.28	7,064.50	7,003.13	135.66	27.52	87.88	193.01	-9,427.99	1,124.98	1,039.60	85.39	13.175	
15,100.00	6,924.09	7,067.47	7,006.09	137.24	27.53	88.29	192.90	-9,428.09	1,032.48	942.67	89.81	11.496	
15,200.00	6,923.90	7,070.43	7,009.05	138.82	27.54	88.71	192.79	-9,428.18	941.51	846.41	95.10	9.900	
15,300.00	6,923.71	7,073.39	7,012.01	140.40	27.55	89.12	192.67	-9,428.27	852.55	751.09	101.46	8.403	
15,400.00	6,923.52	7,076.35	7,014.96	141.97	27.57	89.54	192.56	-9,428.37	766.30	657.17	109.13	7.022	
15,500.00	6,923.33	7,079.30	7,017.90	143.55	27.58	89.95	192.44	-9,428.46	683.80	565.40	118.40	5.775	
15,600.00	6,923.13	7,082.24	7,020.84	145.13	27.59	90.36	192.33	-9,428.55	606.57	477.10	129.47	4.685	
15,700.00	6,922.94	7,085.17	7,023.78	146.72	27.60	90.77	192.22	-9,428.64	536.89	394.58	142.31	3.773	
15,800.00	6,922.75	7,088.11	7,026.70	148.30	27.61	91.18	192.11	-9,428.74	478.09	321.92	156.17	3.061	
15,900.00	6,922.56	7,091.03	7,029.63	149.88	27.62	91.59	191.99	-9,428.83	434.58	265.64	168.94	2.572	
16,000.00	6,922.37	7,093.95	7,032.54	151.46	27.63	92.00	191.88	-9,428.92	411.27	234.20	177.06	2.323	
16,048.70	6,922.27	7,095.37	7,033.96	152.23	27.63	92.20	191.83	-9,428.97	408.37	230.11	178.27	2.291	CC, ES, SF
16,100.00	6,922.18	7,096.87	7,035.45	153.04	27.64	92.41	191.77	-9,429.01	411.58	234.25	177.33	2.321	
16,200.00	6,921.99	7,099.78	7,038.36	154.63	27.65	92.82	191.66	-9,429.10	435.48	265.67	169.81	2.564	
16,300.00	6,921.79	7,102.68	7,041.26	156.21	27.66	93.23	191.55	-9,429.19	479.45	321.68	157.76	3.039	
16,400.00	6,921.60	7,105.58	7,044.15	157.79	27.67	93.63	191.44	-9,429.28	538.59	393.93	144.66	3.723	
16,500.00	6,921.41	7,108.47	7,047.04	159.38	27.68	94.04	191.33	-9,429.38	608.50	475.98	132.52	4.592	
16,600.00	6,921.22	7,111.36	7,049.93	160.96	27.69	94.44	191.22	-9,429.47	685.89	563.84	122.05	5.620	
16,700.00	6,921.03	7,114.24	7,052.81	162.55	27.70	94.85	191.11	-9,429.56	768.51	655.23	113.28	6.784	
16,800.00	6,920.84	7,117.12	7,055.68	164.13	27.71	95.25	191.00	-9,429.65	854.84	748.82	106.02	8.063	
16,900.00	6,920.65	7,119.99	7,058.55	165.72	27.72	95.65	190.89	-9,429.73	943.86	843.85	100.01	9.437	
17,000.00	6,920.45	7,122.85	7,061.41	167.30	27.74	96.05	190.78	-9,429.82	1,034.88	939.87	95.02	10.892	
17,100.00	6,920.26	7,125.72	7,064.27	168.89	27.75	96.45	190.67	-9,429.91	1,127.42	1,036.58	90.84	12.411	
17,200.00	6,920.07	7,128.57	7,067.12	170.48	27.76	96.85	190.56	-9,430.00	1,221.13	1,133.81	87.32	13.985	
17,300.00	6,919.88	7,131.42	7,069.97	172.06	27.77	97.24	190.46	-9,430.09	1,315.75	1,231.42	84.34	15.601	
17,400.00	6,919.69	7,134.27	7,072.81	173.65	27.78	97.64	190.35	-9,430.18	1,411.12	1,329.32	81.79	17.252	
17,500.00	6,919.50	7,137.11	7,075.64	175.24	27.79	98.03	190.24	-9,430.27	1,507.08	1,427.47	79.61	18.931	
17,600.00	6,919.31	7,139.94	7,078.48	176.83	27.80	98.43	190.13	-9,430.35	1,603.52	1,525.80	77.72	20.631	
17,700.00	6,919.11	7,142.77	7,081.30	178.41	27.81	98.82	190.03	-9,430.44	1,700.38	1,624.29	76.09	22.347	
17,759.55	6,919.00	7,144.45	7,082.98	179.36	27.81	99.05	189.96	-9,430.49	1,758.22	1,683.00	75.22	23.375	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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	488.00	488.00	0.00	14.62	87.17	895.31	18,120.87	18,142.98				
100.00	100.00	588.10	588.00	0.25	17.62	87.17	895.31	18,120.87	18,142.98	18,125.10	17.87	1,015.099	
200.00	200.00	688.10	688.00	0.61	20.62	87.17	895.31	18,120.87	18,142.98	18,121.75	21.23	854.671	
300.00	300.00	790.65	790.50	0.97	23.69	87.16	897.43	18,120.87	18,143.08	18,118.42	24.66	735.752	
400.00	400.00	897.33	897.16	1.33	26.89	87.17	896.73	18,120.87	18,143.05	18,114.84	28.21	643.044	
500.00	500.00	1,004.04	1,003.83	1.68	30.09	87.17	895.24	18,120.87	18,142.98	18,111.21	31.77	571.067	
511.40	511.40	1,016.20	1,015.99	1.73	30.45	87.17	895.02	18,120.87	18,142.97	18,110.80	32.18	563.871	CC
600.00	600.00	1,088.41	1,088.00	2.04	32.61	87.17	895.31	18,120.87	18,142.98	18,108.32	34.66	523.503	
700.00	700.00	1,188.41	1,188.00	2.40	35.61	87.17	895.31	18,120.87	18,142.98	18,104.97	38.01	477.299	
800.00	800.00	1,290.97	1,290.52	2.76	38.68	87.16	897.43	18,120.87	18,143.08	18,101.64	41.44	437.778	
900.00	900.00	1,397.65	1,397.18	3.12	41.88	87.17	896.73	18,120.87	18,143.05	18,098.05	45.00	403.191	
1,000.00	1,000.00	1,504.36	1,503.85	3.48	45.08	87.17	895.23	18,120.87	18,142.98	18,094.43	48.55	373.661	
1,009.37	1,009.37	1,514.36	1,513.85	3.51	45.38	-105.94	895.05	18,120.87	18,142.98	18,094.09	48.89	371.127	
1,100.00	1,099.98	1,588.69	1,587.98	3.82	47.60	-105.94	895.31	18,120.87	18,143.46	18,092.04	51.42	352.835	
1,129.54	1,129.49	1,618.20	1,617.49	3.92	48.49	-105.93	895.31	18,120.87	18,143.78	18,091.38	52.40	346.240	
1,200.00	1,199.88	1,688.59	1,687.88	4.15	50.60	-105.94	895.31	18,120.87	18,144.66	18,089.92	54.74	331.453	
1,300.00	1,299.78	1,791.10	1,790.34	4.48	53.67	-105.96	897.43	18,120.87	18,146.01	18,087.86	58.15	312.072	
1,400.00	1,399.68	1,897.80	1,897.02	4.82	56.87	-105.98	896.73	18,120.87	18,147.22	18,085.54	61.68	294.208	
1,500.00	1,499.58	2,004.60	2,003.79	5.16	60.07	-105.99	895.23	18,120.87	18,148.39	18,083.17	65.22	278.252	
1,600.00	1,599.48	2,088.49	2,087.48	5.50	62.58	-106.00	895.31	18,120.87	18,149.64	18,081.56	68.08	266.590	
1,700.00	1,699.37	2,188.39	2,187.37	5.85	65.57	-106.01	895.31	18,120.87	18,150.88	18,079.46	71.42	254.140	
1,800.00	1,799.27	2,290.94	2,289.88	6.20	68.65	-106.03	897.43	18,120.87	18,152.24	18,077.40	74.84	242.540	
1,900.00	1,899.17	2,397.82	2,396.74	6.55	71.85	-106.05	896.73	18,120.87	18,153.46	18,075.06	78.40	231.563	
2,000.00	1,999.07	2,504.80	2,503.68	6.90	75.06	-106.06	895.22	18,120.87	18,154.64	18,072.68	81.95	221.526	
2,100.00	2,098.96	2,588.28	2,586.96	7.25	77.56	-106.07	895.31	18,120.87	18,155.89	18,071.08	84.81	214.084	
2,200.00	2,198.86	2,688.18	2,686.86	7.61	80.55	-106.08	895.31	18,120.87	18,157.14	18,068.98	88.15	205.969	
2,300.00	2,298.76	2,790.79	2,789.42	7.96	83.62	-106.10	897.43	18,120.87	18,158.50	18,066.92	91.58	198.271	
2,400.00	2,398.66	2,897.84	2,896.45	8.32	86.83	-106.11	896.73	18,120.87	18,159.72	18,064.57	95.15	190.858	
2,500.00	2,498.56	3,005.00	3,003.57	8.68	90.04	-106.12	895.22	18,120.87	18,160.91	18,062.19	98.72	183.972	
2,600.00	2,598.45	3,088.08	3,086.45	9.03	92.53	-106.14	895.31	18,120.87	18,162.16	18,060.60	101.56	178.828	
2,700.00	2,698.35	3,187.98	3,186.35	9.39	95.53	-106.15	895.31	18,120.87	18,163.42	18,058.50	104.91	173.128	
2,800.00	2,798.25	3,290.63	3,288.97	9.75	98.60	-106.17	897.43	18,120.87	18,164.79	18,056.44	108.35	167.653	
2,900.00	2,898.15	3,397.86	3,396.17	10.11	101.82	-106.18	896.73	18,120.87	18,166.01	18,054.09	111.92	162.313	
3,000.00	2,998.04	3,505.20	3,503.47	10.47	105.03	-106.19	895.22	18,120.87	18,167.20	18,051.71	115.49	157.299	
3,100.00	3,097.94	3,587.87	3,585.94	10.83	107.51	-106.20	895.31	18,120.87	18,168.46	18,050.13	118.33	153.539	
3,200.00	3,197.84	3,687.77	3,685.84	11.19	110.50	-106.22	895.31	18,120.87	18,169.72	18,048.04	121.68	149.318	
3,300.00	3,297.74	3,790.48	3,788.51	11.55	113.58	-106.24	897.43	18,120.87	18,171.10	18,045.98	125.12	145.227	
3,400.00	3,397.64	3,897.89	3,895.89	11.91	116.80	-106.25	896.73	18,120.87	18,172.33	18,043.63	128.70	141.198	
3,500.00	3,497.53	4,005.40	4,003.36	12.27	120.02	-106.26	895.21	18,120.87	18,173.52	18,041.24	132.28	137.384	
3,600.00	3,597.43	4,087.66	4,085.43	12.63	122.48	-106.27	895.31	18,120.87	18,174.79	18,039.68	135.11	134.520	
3,700.00	3,697.33	4,187.56	4,185.33	12.99	125.48	-106.29	895.31	18,120.87	18,176.05	18,037.59	138.46	131.270	
3,800.00	3,797.23	4,290.33	4,288.05	13.35	128.56	-106.31	897.43	18,120.87	18,177.44	18,035.54	141.90	128.097	
3,900.00	3,897.12	4,397.91	4,395.61	13.72	131.78	-106.32	896.73	18,120.87	18,178.67	18,033.19	145.49	124.949	
4,000.00	3,997.02	4,505.60	4,503.26	14.08	135.01	-106.33	895.21	18,120.87	18,179.87	18,030.79	149.08	121.950	
4,100.00	4,096.92	4,587.46	4,584.92	14.44	137.46	-106.34	895.31	18,120.87	18,181.14	18,029.25	151.89	119.698	
4,200.00	4,196.82	4,687.36	4,684.82	14.80	140.45	-106.35	895.31	18,120.87	18,182.41	18,027.16	155.25	117.120	
4,300.00	4,296.72	4,790.17	4,787.59	15.16	143.54	-106.38	897.43	18,120.87	18,183.80	18,025.12	158.69	114.587	
4,400.00	4,396.61	4,897.93	4,895.33	15.53	146.76	-106.39	896.73	18,120.87	18,185.04	18,022.76	162.28	112.059	
4,500.00	4,496.51	5,005.80	5,003.16	15.89	150.00	-106.40	895.21	18,120.87	18,186.24	18,020.37	165.87	109.638	
4,600.00	4,596.41	5,087.25	5,084.41	16.25	152.44	-106.41	895.31	18,120.87	18,187.51	18,018.84	168.68	107.824	
4,700.00	4,696.31	5,187.15	5,184.31	16.61	155.43	-106.42	895.31	18,120.87	18,188.79	18,016.76	172.03	105.728	
4,800.00	4,796.20	5,290.01	5,287.13	16.98	158.51	-106.44	897.43	18,120.87	18,190.20	18,014.72	175.48	103.661	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,900.00	4,896.10	5,397.96	5,395.04	17.34	161.75	-106.46	896.73	18,120.87	18,191.44	18,012.36	179.07	101.586	
5,000.00	4,996.00	5,506.00	5,503.05	17.70	164.98	-106.47	895.20	18,120.87	18,192.64	18,009.96	182.67	99.590	
5,100.00	5,095.90	5,587.05	5,583.90	18.07	167.41	-106.48	895.31	18,120.87	18,193.92	18,008.45	185.47	98.098	
5,200.00	5,195.80	5,686.94	5,683.80	18.43	170.41	-106.49	895.31	18,120.87	18,195.20	18,006.38	188.82	96.362	
5,300.00	5,295.69	5,789.86	5,786.67	18.79	173.49	-106.51	897.44	18,120.87	18,196.61	18,004.34	192.27	94.642	
5,400.00	5,395.59	5,897.98	5,894.76	19.16	176.73	-106.52	896.73	18,120.87	18,197.86	18,001.99	195.87	92.907	
5,500.00	5,495.49	6,006.20	6,002.95	19.52	179.97	-106.53	895.20	18,120.87	18,199.06	17,999.59	199.48	91.234	
5,600.00	5,595.39	6,086.84	6,083.39	19.88	182.39	-106.55	895.31	18,120.87	18,200.35	17,998.09	202.26	89.987	
5,700.00	5,695.28	6,186.74	6,183.28	20.25	185.38	-106.56	895.31	18,120.87	18,201.64	17,996.02	205.61	88.524	
5,800.00	5,795.18	6,289.70	6,286.20	20.61	188.47	-106.58	897.44	18,120.87	18,203.05	17,993.99	209.06	87.071	
5,900.00	5,895.08	6,398.00	6,394.48	20.97	191.71	-106.59	896.72	18,120.87	18,204.31	17,991.64	212.67	85.599	
6,000.00	5,994.98	6,506.40	6,502.85	21.34	194.96	-106.60	895.19	18,120.87	18,205.51	17,989.23	216.28	84.175	
6,100.00	6,094.88	6,586.63	6,582.88	21.70	197.37	-106.61	895.31	18,120.87	18,206.80	17,987.75	219.05	83.118	
6,200.00	6,194.77	6,686.53	6,682.77	22.06	200.36	-106.63	895.31	18,120.87	18,208.10	17,985.69	222.40	81.869	
6,300.00	6,294.67	6,789.54	6,785.74	22.43	203.45	-106.65	897.44	18,120.87	18,209.52	17,983.67	225.85	80.625	
6,314.74	6,309.40	6,805.53	6,801.72	22.48	203.92	-106.65	897.38	18,120.87	18,209.71	17,983.32	226.39	80.436 ES	
6,350.00	6,344.59	6,843.74	6,839.93	22.61	205.07	-149.82	897.18	18,120.87	18,211.13	17,983.47	227.66	79.993	
6,400.00	6,394.26	6,897.69	6,893.86	22.79	206.69	-166.77	896.73	18,120.87	18,216.46	17,987.01	229.45	79.390	
6,450.00	6,443.36	6,951.04	6,947.20	22.97	208.28	-172.61	896.08	18,120.87	18,225.66	17,994.43	231.23	78.821	
6,500.00	6,491.60	7,003.49	6,999.63	23.15	209.86	-175.54	895.25	18,120.87	18,238.66	18,005.69	232.97	78.287	
6,550.00	6,538.67	7,030.73	7,026.67	23.32	210.67	-177.33	895.31	18,120.87	18,255.44	18,021.49	233.95	78.030	
6,600.00	6,584.29	7,076.35	7,072.29	23.49	212.04	-178.57	895.31	18,120.87	18,275.86	18,040.38	235.48	77.611	
6,650.00	6,628.18	7,120.24	7,116.18	23.66	213.35	-179.52	895.31	18,120.87	18,299.79	18,062.85	236.94	77.233	
6,700.00	6,670.06	7,162.12	7,158.06	23.83	214.61	179.68	895.31	18,120.87	18,327.08	18,088.74	238.34	76.895	
6,750.00	6,709.68	7,201.74	7,197.68	24.00	215.80	178.97	895.31	18,120.87	18,357.56	18,117.90	239.66	76.600	
6,800.00	6,746.79	7,238.85	7,234.79	24.17	216.91	178.27	895.31	18,120.87	18,391.04	18,150.15	240.88	76.348	
6,850.00	6,781.17	7,275.26	7,271.16	24.35	218.00	177.55	897.47	18,120.87	18,427.45	18,185.37	242.08	76.121	
6,900.00	6,812.60	7,309.42	7,305.31	24.54	219.02	176.76	897.37	18,120.87	18,466.30	18,223.10	243.20	75.931	
6,950.00	6,840.88	7,340.18	7,336.07	24.74	219.95	175.83	897.21	18,120.87	18,507.48	18,263.28	244.20	75.788	
7,000.00	6,865.85	7,367.34	7,363.22	24.96	220.76	174.67	897.01	18,120.87	18,550.73	18,305.65	245.08	75.692	
7,050.00	6,887.35	7,390.73	7,386.60	25.19	221.46	173.14	896.80	18,120.87	18,595.80	18,349.96	245.84	75.643	
7,100.00	6,905.25	7,410.20	7,406.07	25.43	222.04	170.93	896.59	18,120.87	18,642.41	18,395.94	246.46	75.640 SF	
7,150.00	6,919.43	7,425.63	7,421.49	25.69	222.51	167.42	896.41	18,120.87	18,690.26	18,443.30	246.96	75.682	
7,200.00	6,929.81	7,436.93	7,432.79	25.96	222.84	161.01	896.27	18,120.87	18,739.07	18,491.75	247.32	75.770	
7,250.00	6,936.33	7,444.02	7,439.88	26.25	223.06	146.15	896.18	18,120.87	18,788.54	18,541.00	247.54	75.901	
7,300.00	6,938.95	7,446.86	7,442.72	26.55	223.14	102.06	896.14	18,120.87	18,838.35	18,590.72	247.63	76.074	
7,309.56	6,939.00	7,446.92	7,442.78	26.60	223.14	89.06	896.14	18,120.87	18,847.89	18,600.26	247.63	76.112	
7,400.00	6,938.83	7,446.72	7,442.58	27.19	223.14	89.06	896.14	18,120.87	18,938.14	18,690.51	247.63	76.479	
7,500.00	6,938.64	7,446.51	7,442.36	27.91	223.13	89.05	896.14	18,120.87	19,037.92	18,790.30	247.62	76.883	
7,600.00	6,938.44	7,446.29	7,442.15	28.70	223.12	89.04	896.14	18,120.87	19,137.71	18,890.10	247.62	77.288	
7,700.00	6,938.25	7,446.08	7,441.93	29.55	223.12	89.03	896.15	18,120.87	19,237.51	18,989.89	247.61	77.691	
7,800.00	6,938.06	7,445.86	7,441.72	30.47	223.11	89.02	896.15	18,120.87	19,337.30	19,089.69	247.61	78.095	
7,900.00	6,937.87	7,445.64	7,441.50	31.44	223.11	89.01	896.15	18,120.87	19,437.10	19,189.48	247.61	78.498	
8,000.00	6,937.68	7,445.43	7,441.28	32.46	223.10	89.00	896.16	18,120.87	19,536.89	19,289.28	247.62	78.900	
8,100.00	6,937.49	7,445.21	7,441.07	33.53	223.09	88.99	896.16	18,120.87	19,636.69	19,389.08	247.62	79.302	
8,200.00	6,937.30	7,445.00	7,440.85	34.64	223.09	88.98	896.16	18,120.87	19,736.50	19,488.87	247.62	79.704	
8,300.00	6,937.10	7,444.78	7,440.64	35.78	223.08	88.97	896.16	18,120.87	19,836.30	19,588.67	247.63	80.105	
8,400.00	6,936.91	7,444.56	7,440.42	36.96	223.07	88.96	896.17	18,120.87	19,936.11	19,688.47	247.64	80.506	
8,500.00	6,936.72	7,444.35	7,440.21	38.17	223.07	88.95	896.17	18,120.87	20,035.91	19,788.27	247.64	80.906	
8,600.00	6,936.53	7,444.13	7,439.99	39.41	223.06	88.94	896.17	18,120.87	20,135.72	19,888.07	247.65	81.306	
8,700.00	6,936.34	7,443.92	7,439.77	40.68	223.05	88.93	896.18	18,120.87	20,235.54	19,987.87	247.66	81.705	
8,800.00	6,936.15	7,443.70	7,439.56	41.97	223.05	88.92	896.18	18,120.87	20,335.35	20,087.67	247.68	82.104	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,900.00	6,935.96	7,443.49	7,439.34	43.27	223.04	88.91	896.18	18,120.87	20,435.16	20,187.47	247.69	82.503	
9,000.00	6,935.76	7,443.27	7,439.13	44.60	223.03	88.90	896.19	18,120.87	20,534.98	20,287.28	247.71	82.901	
9,100.00	6,935.57	7,443.05	7,438.91	45.95	223.03	88.89	896.19	18,120.87	20,634.80	20,387.08	247.72	83.298	
9,200.00	6,935.38	7,442.84	7,438.70	47.31	223.02	88.88	896.19	18,120.87	20,734.62	20,486.88	247.74	83.695	
9,300.00	6,935.19	7,442.62	7,438.48	48.69	223.01	88.87	896.19	18,120.87	20,834.44	20,586.69	247.76	84.092	
9,400.00	6,935.00	7,442.41	7,438.27	50.08	223.01	88.86	896.20	18,120.87	20,934.27	20,686.49	247.78	84.488	
9,500.00	6,934.81	7,442.19	7,438.05	51.48	223.00	88.85	896.20	18,120.87	21,034.09	20,786.29	247.80	84.884	
9,600.00	6,934.62	7,441.98	7,437.83	52.89	223.00	88.84	896.20	18,120.87	21,133.92	20,886.10	247.82	85.279	
9,700.00	6,934.43	7,441.76	7,437.62	54.32	222.99	88.83	896.21	18,120.87	21,233.75	20,985.91	247.84	85.674	
9,800.00	6,934.23	7,441.55	7,437.40	55.75	222.98	88.82	896.21	18,120.87	21,333.58	21,085.71	247.87	86.068	
9,900.00	6,934.04	7,441.33	7,437.19	57.19	222.98	88.81	896.21	18,120.87	21,433.41	21,185.52	247.90	86.462	
10,000.00	6,933.85	7,441.11	7,436.97	58.65	222.97	88.80	896.21	18,120.87	21,533.25	21,285.32	247.92	86.855	
10,100.00	6,933.66	7,440.90	7,436.76	60.10	222.96	88.79	896.22	18,120.87	21,633.08	21,385.13	247.95	87.248	
10,200.00	6,933.47	7,440.68	7,436.54	61.57	222.96	88.78	896.22	18,120.87	21,732.92	21,484.94	247.98	87.640	
10,300.00	6,933.28	7,440.47	7,436.33	63.04	222.95	88.77	896.22	18,120.87	21,832.76	21,584.75	248.01	88.032	
10,400.00	6,933.09	7,440.25	7,436.11	64.52	222.94	88.76	896.23	18,120.87	21,932.60	21,684.56	248.04	88.423	
10,500.00	6,932.89	7,440.04	7,435.90	66.01	222.94	88.75	896.23	18,120.87	22,032.44	21,784.36	248.07	88.814	
10,600.00	6,932.70	7,439.82	7,435.68	67.50	222.93	88.74	896.23	18,120.87	22,132.28	21,884.17	248.11	89.205	
10,700.00	6,932.51	7,439.61	7,435.46	68.99	222.92	88.73	896.23	18,120.87	22,232.12	21,983.98	248.14	89.594	
10,800.00	6,932.32	7,439.39	7,435.25	70.50	222.92	88.72	896.24	18,120.87	22,331.97	22,083.79	248.18	89.984	
10,900.00	6,932.13	7,439.18	7,435.03	72.00	222.91	88.71	896.24	18,120.87	22,431.82	22,183.60	248.21	90.373	
11,000.00	6,931.94	7,438.96	7,434.82	73.51	222.90	88.70	896.24	18,120.87	22,531.67	22,283.41	248.25	90.761	
11,100.00	6,931.75	7,438.74	7,434.60	75.02	222.90	88.69	896.25	18,120.87	22,631.51	22,383.22	248.29	91.149	
11,200.00	6,931.55	7,438.53	7,434.39	76.54	222.89	88.68	896.25	18,120.87	22,731.37	22,483.03	248.33	91.537	
11,300.00	6,931.36	7,438.31	7,434.17	78.06	222.89	88.67	896.25	18,120.87	22,831.22	22,582.85	248.37	91.924	
11,400.00	6,931.17	7,438.10	7,433.96	79.58	222.88	88.66	896.25	18,120.87	22,931.07	22,682.66	248.41	92.310	
11,500.00	6,930.98	7,437.88	7,433.74	81.11	222.87	88.65	896.26	18,120.87	23,030.93	22,782.47	248.46	92.696	
11,600.00	6,930.79	7,437.67	7,433.53	82.64	222.87	88.64	896.26	18,120.87	23,130.78	22,882.28	248.50	93.082	
11,700.00	6,930.60	7,437.45	7,433.31	84.17	222.86	88.63	896.26	18,120.87	23,230.64	22,982.09	248.54	93.467	
11,800.00	6,930.41	7,437.24	7,433.10	85.70	222.85	88.62	896.27	18,120.87	23,330.50	23,081.91	248.59	93.851	
11,900.00	6,930.21	7,437.02	7,432.88	87.24	222.85	88.61	896.27	18,120.87	23,430.36	23,181.72	248.64	94.235	
12,000.00	6,930.02	7,436.81	7,432.67	88.78	222.84	88.60	896.27	18,120.87	23,530.22	23,281.53	248.68	94.619	
12,100.00	6,929.83	7,436.59	7,432.45	90.32	222.83	88.59	896.27	18,120.87	23,630.08	23,381.35	248.73	95.002	
12,200.00	6,929.64	7,436.38	7,432.24	91.87	222.83	88.58	896.28	18,120.87	23,729.94	23,481.16	248.78	95.384	
12,300.00	6,929.45	7,436.16	7,432.02	93.41	222.82	88.57	896.28	18,120.87	23,829.81	23,580.97	248.83	95.766	
12,400.00	6,929.26	7,435.95	7,431.81	94.96	222.81	88.56	896.28	18,120.87	23,929.67	23,680.79	248.88	96.148	
12,500.00	6,929.07	7,435.73	7,431.59	96.51	222.81	88.55	896.29	18,120.87	24,029.54	23,780.60	248.94	96.529	
12,600.00	6,928.88	7,435.52	7,431.38	98.06	222.80	88.54	896.29	18,120.87	24,129.41	23,880.42	248.99	96.909	
12,700.00	6,928.68	7,435.30	7,431.16	99.62	222.80	88.53	896.29	18,120.87	24,229.28	23,980.23	249.04	97.289	
12,800.00	6,928.49	7,435.09	7,430.95	101.17	222.79	88.52	896.29	18,120.87	24,329.15	24,080.05	249.10	97.669	
12,900.00	6,928.30	7,434.87	7,430.73	102.73	222.78	88.51	896.30	18,120.87	24,429.02	24,179.86	249.15	98.048	
13,000.00	6,928.11	7,434.66	7,430.52	104.28	222.78	88.50	896.30	18,120.87	24,528.89	24,279.68	249.21	98.426	
13,100.00	6,927.92	7,434.44	7,430.30	105.84	222.77	88.49	896.30	18,120.87	24,628.76	24,379.49	249.27	98.805	
13,200.00	6,927.73	7,434.23	7,430.09	107.40	222.76	88.48	896.30	18,120.87	24,728.64	24,479.31	249.33	99.182	
13,300.00	6,927.54	7,434.01	7,429.87	108.97	222.76	88.47	896.31	18,120.87	24,828.51	24,579.13	249.38	99.559	
13,400.00	6,927.34	7,433.80	7,429.66	110.53	222.75	88.46	896.31	18,120.87	24,928.39	24,678.94	249.44	99.936	
13,500.00	6,927.15	7,433.58	7,429.44	112.09	222.74	88.45	896.31	18,120.87	25,028.26	24,778.76	249.50	100.312	
13,600.00	6,926.96	7,433.37	7,429.23	113.66	222.74	88.44	896.32	18,120.87	25,128.14	24,878.58	249.57	100.687	
13,700.00	6,926.77	7,433.15	7,429.01	115.22	222.73	88.43	896.32	18,120.87	25,228.02	24,978.39	249.63	101.062	
13,800.00	6,926.58	7,432.94	7,428.80	116.79	222.72	88.42	896.32	18,120.87	25,327.90	25,078.21	249.69	101.437	
13,900.00	6,926.39	7,432.72	7,428.58	118.36	222.72	88.41	896.32	18,120.87	25,427.78	25,178.03	249.75	101.811	
14,000.00	6,926.20	7,432.51	7,428.37	119.93	222.71	88.40	896.33	18,120.87	25,527.66	25,277.84	249.82	102.185	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	6,926.00	7,432.29	7,428.15	121.50	222.71	88.39	896.33	18,120.87	25,627.55	25,377.66	249.88	102.558	
14,200.00	6,925.81	7,432.08	7,427.94	123.07	222.70	88.38	896.33	18,120.87	25,727.43	25,477.48	249.95	102.930	
14,300.00	6,925.62	7,431.86	7,427.72	124.64	222.69	88.37	896.33	18,120.87	25,827.31	25,577.30	250.02	103.302	
14,400.00	6,925.43	7,431.65	7,427.51	126.21	222.69	88.36	896.34	18,120.87	25,927.20	25,677.12	250.08	103.674	
14,500.00	6,925.24	7,431.43	7,427.29	127.79	222.68	88.35	896.34	18,120.87	26,027.09	25,776.93	250.15	104.045	
14,600.00	6,925.05	7,431.22	7,427.08	129.36	222.67	88.34	896.34	18,120.87	26,126.97	25,876.75	250.22	104.416	
14,700.00	6,924.86	7,431.00	7,426.87	130.93	222.67	88.33	896.35	18,120.87	26,226.86	25,976.57	250.29	104.786	
14,800.00	6,924.66	7,430.79	7,426.65	132.51	222.66	88.32	896.35	18,120.87	26,326.75	26,076.39	250.36	105.155	
14,900.00	6,924.47	7,430.57	7,426.44	134.09	222.65	88.31	896.35	18,120.87	26,426.64	26,176.21	250.43	105.524	
15,000.00	6,924.28	7,430.36	7,426.22	135.66	222.65	88.30	896.35	18,120.87	26,526.53	26,276.03	250.50	105.893	
15,100.00	6,924.09	7,430.15	7,426.01	137.24	222.64	88.29	896.36	18,120.87	26,626.42	26,375.85	250.58	106.261	
15,200.00	6,923.90	7,429.93	7,425.79	138.82	222.63	88.28	896.36	18,120.87	26,726.31	26,475.67	250.65	106.629	
15,300.00	6,923.71	7,429.72	7,425.58	140.40	222.63	88.27	896.36	18,120.87	26,826.21	26,575.48	250.72	106.996	
15,400.00	6,923.52	7,429.50	7,425.36	141.97	222.62	88.26	896.36	18,120.87	26,926.10	26,675.30	250.80	107.363	
15,500.00	6,923.33	7,429.29	7,425.15	143.55	222.62	88.25	896.37	18,120.87	27,025.99	26,775.12	250.87	107.729	
15,600.00	6,923.13	7,429.07	7,424.93	145.13	222.61	88.24	896.37	18,120.87	27,125.89	26,874.94	250.95	108.094	
15,700.00	6,922.94	7,428.86	7,424.72	146.72	222.60	88.23	896.37	18,120.87	27,225.79	26,974.76	251.02	108.460	
15,800.00	6,922.75	7,428.64	7,424.51	148.30	222.60	88.22	896.38	18,120.87	27,325.68	27,074.58	251.10	108.824	
15,900.00	6,922.56	7,428.43	7,424.29	149.88	222.59	88.21	896.38	18,120.87	27,425.58	27,174.40	251.18	109.189	
16,000.00	6,922.37	7,428.21	7,424.08	151.46	222.58	88.20	896.38	18,120.87	27,525.48	27,274.22	251.25	109.552	
16,100.00	6,922.18	7,428.00	7,423.86	153.04	222.58	88.19	896.38	18,120.87	27,625.38	27,374.04	251.33	109.915	
16,200.00	6,921.99	7,427.79	7,423.65	154.63	222.57	88.18	896.39	18,120.87	27,725.28	27,473.87	251.41	110.278	
16,300.00	6,921.79	7,427.57	7,423.43	156.21	222.56	88.17	896.39	18,120.87	27,825.18	27,573.69	251.49	110.641	
16,400.00	6,921.60	7,427.36	7,423.22	157.79	222.56	88.16	896.39	18,120.87	27,925.08	27,673.51	251.57	111.002	
16,500.00	6,921.41	7,427.14	7,423.00	159.38	222.55	88.15	896.39	18,120.87	28,024.98	27,773.33	251.65	111.364	
16,600.00	6,921.22	7,426.93	7,422.79	160.96	222.54	88.14	896.40	18,120.87	28,124.88	27,873.15	251.73	111.724	
16,700.00	6,921.03	7,426.71	7,422.58	162.55	222.54	88.13	896.40	18,120.87	28,224.79	27,972.97	251.82	112.085	
16,800.00	6,920.84	7,426.50	7,422.36	164.13	222.53	88.12	896.40	18,120.87	28,324.69	28,072.79	251.90	112.445	
16,900.00	6,920.65	7,426.28	7,422.15	165.72	222.53	88.11	896.40	18,120.87	28,424.60	28,172.61	251.98	112.804	
17,000.00	6,920.45	7,426.07	7,421.93	167.30	222.52	88.10	896.41	18,120.87	28,524.50	28,272.44	252.07	113.163	
17,100.00	6,920.26	7,425.86	7,421.72	168.89	222.51	88.09	896.41	18,120.87	28,624.41	28,372.26	252.15	113.521	
17,200.00	6,920.07	7,425.64	7,421.50	170.48	222.51	88.08	896.41	18,120.87	28,724.31	28,472.08	252.23	113.879	
17,300.00	6,919.88	7,425.43	7,421.29	172.06	222.50	88.07	896.42	18,120.87	28,824.22	28,571.90	252.32	114.237	
17,400.00	6,919.69	7,425.21	7,421.08	173.65	222.49	88.06	896.42	18,120.87	28,924.13	28,671.72	252.41	114.594	
17,500.00	6,919.50	7,425.00	7,420.86	175.24	222.49	88.05	896.42	18,120.87	29,024.04	28,771.55	252.49	114.950	
17,600.00	6,919.31	7,424.78	7,420.65	176.83	222.48	88.04	896.42	18,120.87	29,123.95	28,871.37	252.58	115.306	
17,700.00	6,919.11	7,424.57	7,420.43	178.41	222.47	88.03	896.43	18,120.87	29,223.86	28,971.19	252.67	115.662	
17,759.55	6,919.00	7,424.44	7,420.31	179.36	222.47	88.03	896.43	18,120.87	29,283.36	29,030.64	252.72	115.873	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
0.00	0.00	23.00	23.00	0.00	0.69	68.87	1,783.35	4,614.36	4,946.99				
100.00	100.00	123.00	123.00	0.25	3.69	68.87	1,783.35	4,614.36	4,946.99	4,943.05	3.94	1,256.627	
200.00	200.00	223.00	223.00	0.61	6.68	68.87	1,783.35	4,614.36	4,946.99	4,939.70	7.29	678.450	
300.00	300.00	323.00	323.00	0.97	9.68	68.87	1,783.35	4,614.36	4,946.99	4,936.34	10.65	464.659	
400.00	400.00	423.00	423.00	1.33	12.68	68.87	1,783.35	4,614.36	4,946.99	4,932.99	14.00	353.322	
500.00	500.00	523.10	523.00	1.68	15.67	68.87	1,783.35	4,614.36	4,946.99	4,929.63	17.36	284.976	
600.00	600.00	623.10	623.00	2.04	18.67	68.87	1,783.35	4,614.36	4,946.99	4,926.27	20.71	238.821	
700.00	700.00	723.10	723.00	2.40	21.67	68.87	1,783.35	4,614.36	4,946.99	4,922.92	24.07	205.532	
800.00	800.00	833.59	833.43	2.76	24.98	68.85	1,785.29	4,614.36	4,947.70	4,919.96	27.74	178.371	
900.00	900.00	947.94	947.76	3.12	28.40	68.86	1,784.16	4,614.36	4,947.34	4,915.82	31.52	156.944	
1,000.00	1,000.00	1,023.41	1,023.00	3.48	30.67	68.87	1,783.35	4,614.36	4,946.99	4,912.84	34.14	144.890 CC	
1,100.00	1,099.98	1,123.39	1,122.98	3.82	33.66	-124.24	1,783.35	4,614.36	4,947.97	4,910.49	37.48	132.018	
1,129.54	1,129.49	1,152.90	1,152.49	3.92	34.55	-124.24	1,783.35	4,614.36	4,948.64	4,910.18	38.46	128.669	
1,200.00	1,199.88	1,223.29	1,222.88	4.15	36.66	-124.27	1,783.35	4,614.36	4,950.43	4,909.63	40.80	121.332	
1,300.00	1,299.78	1,333.76	1,333.30	4.48	39.97	-124.34	1,785.28	4,614.36	4,953.69	4,909.25	44.44	111.461	
1,400.00	1,399.68	1,448.15	1,447.67	4.82	43.39	-124.38	1,784.16	4,614.36	4,955.89	4,907.68	48.21	102.803	
1,500.00	1,499.58	1,523.29	1,522.58	5.16	45.64	-124.40	1,783.35	4,614.36	4,958.08	4,907.28	50.80	97.600	
1,600.00	1,599.48	1,623.19	1,622.48	5.50	48.64	-124.45	1,783.35	4,614.36	4,960.64	4,906.50	54.14	91.632	
1,700.00	1,699.37	1,723.08	1,722.37	5.85	51.63	-124.49	1,783.35	4,614.36	4,963.20	4,905.73	57.48	86.352	
1,800.00	1,799.27	1,833.67	1,832.90	6.20	54.94	-124.56	1,785.28	4,614.36	4,966.48	4,905.35	61.14	81.235	
1,900.00	1,899.17	1,948.27	1,947.47	6.55	58.38	-124.59	1,784.16	4,614.36	4,968.69	4,903.77	64.92	76.535	
2,000.00	1,999.07	2,023.08	2,022.07	6.90	60.62	-124.62	1,783.35	4,614.36	4,970.90	4,903.38	67.51	73.628	
2,100.00	2,098.96	2,122.98	2,121.96	7.25	63.61	-124.66	1,783.35	4,614.36	4,973.47	4,902.61	70.86	70.188	
2,200.00	2,198.86	2,222.88	2,221.86	7.61	66.61	-124.70	1,783.35	4,614.36	4,976.04	4,901.84	74.21	67.058	
2,300.00	2,298.76	2,333.58	2,332.51	7.96	69.92	-124.77	1,785.29	4,614.36	4,979.35	4,901.47	77.88	63.939	
2,400.00	2,398.66	2,448.38	2,447.28	8.32	73.36	-124.81	1,784.15	4,614.36	4,981.56	4,899.89	81.67	60.996	
2,500.00	2,498.56	2,522.88	2,521.56	8.68	75.60	-124.83	1,783.35	4,614.36	4,983.78	4,899.52	84.26	59.148	
2,600.00	2,598.45	2,622.77	2,621.45	9.03	78.59	-124.87	1,783.35	4,614.36	4,986.37	4,898.76	87.61	56.916	
2,700.00	2,698.35	2,722.67	2,721.35	9.39	81.58	-124.92	1,783.35	4,614.36	4,988.95	4,897.99	90.96	54.849	
2,800.00	2,798.25	2,833.49	2,832.12	9.75	84.90	-124.98	1,785.29	4,614.36	4,992.28	4,897.64	94.64	52.752	
2,900.00	2,898.15	2,948.49	2,947.09	10.11	88.35	-125.02	1,784.15	4,614.36	4,994.50	4,896.06	98.44	50.737	
3,000.00	2,998.04	3,022.67	3,021.04	10.47	90.57	-125.04	1,783.35	4,614.36	4,996.73	4,895.71	101.02	49.463	
3,100.00	3,097.94	3,122.57	3,120.94	10.83	93.57	-125.09	1,783.35	4,614.36	4,999.33	4,894.96	104.37	47.899	
3,200.00	3,197.84	3,222.46	3,220.84	11.19	96.56	-125.13	1,783.35	4,614.36	5,001.93	4,894.21	107.72	46.433	
3,300.00	3,297.74	3,333.40	3,331.72	11.55	99.88	-125.20	1,785.29	4,614.36	5,005.28	4,893.87	111.41	44.928	
3,400.00	3,397.64	3,448.61	3,446.90	11.91	103.34	-125.23	1,784.15	4,614.36	5,007.51	4,892.30	115.22	43.461	
3,500.00	3,497.53	3,522.46	3,520.53	12.27	105.55	-125.26	1,783.35	4,614.36	5,009.75	4,891.96	117.79	42.531	
3,600.00	3,597.43	3,622.36	3,620.43	12.63	108.54	-125.30	1,783.35	4,614.36	5,012.37	4,891.22	121.14	41.375	
3,700.00	3,697.33	3,722.26	3,720.33	12.99	111.54	-125.34	1,783.35	4,614.36	5,014.98	4,890.48	124.50	40.282	
3,800.00	3,797.23	3,833.31	3,831.33	13.35	114.86	-125.41	1,785.29	4,614.36	5,018.35	4,890.16	128.18	39.149	
3,900.00	3,897.12	3,948.72	3,946.71	13.72	118.32	-125.44	1,784.15	4,614.36	5,020.59	4,888.59	132.00	38.034	
4,000.00	3,997.02	4,022.26	4,020.02	14.08	120.52	-125.47	1,783.35	4,614.36	5,022.84	4,888.28	134.57	37.326	
4,100.00	4,096.92	4,122.15	4,119.92	14.44	123.52	-125.51	1,783.35	4,614.36	5,025.47	4,887.55	137.92	36.438	
4,200.00	4,196.82	4,222.05	4,219.82	14.80	126.51	-125.55	1,783.35	4,614.36	5,028.10	4,886.82	141.27	35.591	
4,300.00	4,296.72	4,333.22	4,330.93	15.16	129.84	-125.62	1,785.29	4,614.36	5,031.48	4,886.52	144.97	34.708	
4,400.00	4,396.61	4,448.84	4,446.52	15.53	133.31	-125.65	1,784.15	4,614.36	5,033.74	4,884.95	148.79	33.831	
4,500.00	4,496.51	4,522.05	4,519.51	15.89	135.50	-125.68	1,783.35	4,614.36	5,036.00	4,884.65	151.35	33.275	
4,600.00	4,596.41	4,621.95	4,619.41	16.25	138.49	-125.72	1,783.35	4,614.36	5,038.64	4,883.94	154.70	32.570	
4,700.00	4,696.31	4,721.84	4,719.31	16.61	141.49	-125.76	1,783.35	4,614.36	5,041.28	4,883.22	158.05	31.896	
4,800.00	4,796.20	4,833.13	4,830.54	16.98	144.82	-125.83	1,785.29	4,614.36	5,044.68	4,882.93	161.75	31.188	
4,900.00	4,896.10	4,948.95	4,946.33	17.34	148.29	-125.86	1,784.15	4,614.36	5,046.95	4,881.37	165.58	30.480	
5,000.00	4,996.00	5,021.84	5,019.00	17.70	150.48	-125.88	1,783.35	4,614.36	5,049.22	4,881.09	168.13	30.032	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,100.00	5,095.90	5,121.74	5,118.90	18.07	153.47	-125.93	1,783.35	4,614.36	5,051.87	4,880.39	171.48	29.460	
5,200.00	5,195.80	5,221.64	5,218.80	18.43	156.46	-125.97	1,783.35	4,614.36	5,054.53	4,879.69	174.84	28.910	
5,300.00	5,295.69	5,333.04	5,330.14	18.79	159.80	-126.03	1,785.29	4,614.36	5,057.95	4,879.42	178.54	28.330	
5,400.00	5,395.59	5,449.07	5,446.14	19.16	163.28	-126.07	1,784.14	4,614.36	5,060.23	4,877.86	182.37	27.747	
5,500.00	5,495.49	5,521.64	5,518.49	19.52	165.45	-126.09	1,783.35	4,614.36	5,062.51	4,877.60	184.91	27.378	
5,600.00	5,595.39	5,621.53	5,618.39	19.88	168.45	-126.13	1,783.35	4,614.36	5,065.18	4,876.91	188.26	26.905	
5,700.00	5,695.28	5,721.43	5,718.28	20.25	171.44	-126.17	1,783.35	4,614.36	5,067.84	4,876.22	191.62	26.447	
5,800.00	5,795.18	5,832.95	5,829.75	20.61	174.78	-126.24	1,785.29	4,614.36	5,071.29	4,875.97	195.32	25.964	
5,900.00	5,895.08	5,949.18	5,945.95	20.97	178.26	-126.28	1,784.14	4,614.36	5,073.58	4,874.41	199.17	25.474	
6,000.00	5,994.98	6,021.43	6,017.98	21.34	180.43	-126.30	1,783.35	4,614.36	5,075.86	4,874.17	201.69	25.166	
6,100.00	6,094.88	6,121.33	6,117.88	21.70	183.42	-126.34	1,783.35	4,614.36	5,078.54	4,873.49	205.05	24.767	
6,200.00	6,194.77	6,221.23	6,217.77	22.06	186.42	-126.38	1,783.35	4,614.36	5,081.22	4,872.82	208.40	24.382	
6,300.00	6,294.67	6,332.85	6,329.35	22.43	189.76	-126.44	1,785.29	4,614.36	5,084.69	4,872.58	212.11	23.972	
6,314.74	6,309.40	6,350.01	6,346.50	22.48	190.28	-126.45	1,785.18	4,614.36	5,085.05	4,872.37	212.68	23.910 ES	
6,350.00	6,344.59	6,391.03	6,387.51	22.61	191.50	-169.68	1,784.83	4,614.36	5,086.77	4,872.74	214.03	23.766	
6,400.00	6,394.26	6,448.94	6,445.40	22.79	193.24	173.22	1,784.15	4,614.36	5,092.20	4,876.26	215.94	23.581	
6,450.00	6,443.36	6,506.21	6,502.66	22.97	194.96	167.14	1,783.24	4,614.36	5,101.11	4,883.28	217.83	23.418	
6,500.00	6,491.60	6,518.35	6,514.60	23.15	195.32	163.82	1,783.35	4,614.36	5,113.73	4,895.37	218.36	23.418	
6,550.00	6,538.67	6,565.43	6,561.67	23.32	196.73	161.56	1,783.35	4,614.36	5,129.86	4,909.93	219.93	23.325	
6,600.00	6,584.29	6,611.05	6,607.29	23.49	198.10	159.72	1,783.35	4,614.36	5,149.31	4,927.86	221.45	23.252	
6,650.00	6,628.18	6,654.94	6,651.18	23.66	199.41	158.03	1,783.35	4,614.36	5,171.97	4,949.06	222.91	23.202	
6,700.00	6,670.06	6,696.82	6,693.06	23.83	200.67	156.33	1,783.35	4,614.36	5,197.71	4,973.41	224.30	23.173	
6,750.00	6,709.68	6,736.44	6,732.68	24.00	201.85	154.53	1,783.35	4,614.36	5,226.37	5,000.76	225.61	23.165 SF	
6,800.00	6,746.79	6,777.49	6,773.69	24.17	203.08	152.51	1,785.50	4,614.36	5,258.62	5,031.67	226.95	23.171	
6,850.00	6,781.17	6,817.59	6,813.79	24.35	204.29	150.25	1,785.37	4,614.36	5,292.55	5,064.30	228.26	23.187	
6,900.00	6,812.60	6,854.27	6,850.46	24.54	205.38	147.60	1,785.15	4,614.36	5,328.83	5,099.38	229.45	23.225	
6,950.00	6,840.88	6,887.29	6,883.47	24.74	206.37	144.44	1,784.87	4,614.36	5,367.24	5,136.72	230.52	23.284	
7,000.00	6,865.85	6,916.45	6,912.62	24.96	207.25	140.61	1,784.56	4,614.36	5,407.55	5,176.10	231.46	23.363	
7,050.00	6,887.35	6,941.55	6,937.72	25.19	208.00	135.91	1,784.25	4,614.36	5,449.55	5,217.28	232.27	23.462	
7,100.00	6,905.25	6,962.46	6,958.61	25.43	208.63	130.12	1,783.95	4,614.36	5,492.98	5,260.04	232.94	23.581	
7,150.00	6,919.43	6,979.02	6,975.17	25.69	209.12	122.98	1,783.70	4,614.36	5,537.58	5,304.10	233.48	23.718	
7,200.00	6,929.81	6,991.15	6,987.30	25.96	209.49	114.32	1,783.50	4,614.36	5,583.10	5,349.22	233.87	23.872	
7,250.00	6,936.33	6,998.76	6,994.91	26.25	209.71	104.16	1,783.37	4,614.36	5,629.24	5,395.12	234.12	24.044	
7,300.00	6,938.95	7,001.81	6,997.95	26.55	209.81	92.92	1,783.31	4,614.36	5,675.74	5,441.51	234.23	24.231	
7,309.56	6,939.00	7,001.87	6,998.02	26.60	209.81	90.72	1,783.31	4,614.36	5,684.65	5,450.41	234.24	24.269	
7,400.00	6,938.83	7,001.66	6,997.81	27.19	209.80	90.71	1,783.32	4,614.36	5,769.01	5,534.75	234.26	24.626	
7,500.00	6,938.64	7,001.43	6,997.57	27.91	209.79	90.71	1,783.32	4,614.36	5,862.50	5,628.21	234.30	25.022	
7,600.00	6,938.44	7,001.20	6,997.34	28.70	209.79	90.70	1,783.33	4,614.36	5,956.21	5,721.86	234.34	25.417	
7,700.00	6,938.25	7,000.96	6,997.11	29.55	209.78	90.69	1,783.33	4,614.36	6,050.11	5,815.72	234.40	25.811	
7,800.00	6,938.06	7,000.73	6,996.87	30.47	209.77	90.69	1,783.33	4,614.36	6,144.21	5,909.75	234.46	26.206	
7,900.00	6,937.87	7,000.50	6,996.64	31.44	209.77	90.68	1,783.34	4,614.36	6,238.49	6,003.97	234.53	26.600	
8,000.00	6,937.68	7,000.27	6,996.41	32.46	209.76	90.67	1,783.34	4,614.36	6,332.95	6,098.35	234.60	26.995	
8,100.00	6,937.49	7,000.00	6,995.94	33.53	209.75	90.66	1,783.35	4,614.36	6,427.57	6,192.89	234.68	27.389	
8,200.00	6,937.30	7,000.00	6,995.94	34.64	209.75	90.66	1,783.35	4,614.36	6,522.36	6,287.59	234.77	27.782	
8,300.00	6,937.10	6,999.57	6,995.71	35.78	209.74	90.65	1,783.35	4,614.36	6,617.30	6,382.44	234.85	28.176	
8,400.00	6,936.91	6,999.33	6,995.48	36.96	209.73	90.65	1,783.36	4,614.36	6,712.38	6,477.44	234.95	28.570	
8,500.00	6,936.72	6,999.10	6,995.24	38.17	209.72	90.64	1,783.36	4,614.36	6,807.61	6,572.57	235.04	28.963	
8,600.00	6,936.53	6,998.87	6,995.01	39.41	209.72	90.64	1,783.37	4,614.36	6,902.97	6,667.83	235.14	29.357	
8,700.00	6,936.34	6,998.63	6,994.78	40.68	209.71	90.63	1,783.37	4,614.36	6,998.46	6,763.22	235.24	29.750	
8,800.00	6,936.15	6,998.40	6,994.54	41.97	209.70	90.62	1,783.37	4,614.36	7,094.07	6,858.73	235.35	30.143	
8,900.00	6,935.96	6,998.17	6,994.31	43.27	209.70	90.62	1,783.38	4,614.36	7,189.81	6,954.35	235.45	30.536	
9,000.00	6,935.76	6,997.94	6,994.08	44.60	209.69	90.61	1,783.38	4,614.36	7,285.66	7,050.09	235.56	30.929	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,100.00	6,935.57	6,997.70	6,993.85	45.95	209.68	90.60	1,783.39	4,614.36	7,381.62	7,145.94	235.67	31.321	
9,200.00	6,935.38	6,997.47	6,993.61	47.31	209.68	90.60	1,783.39	4,614.36	7,477.68	7,241.90	235.78	31.714	
9,300.00	6,935.19	6,997.24	6,993.38	48.69	209.67	90.59	1,783.39	4,614.36	7,573.85	7,337.95	235.90	32.107	
9,400.00	6,935.00	6,997.00	6,993.15	50.08	209.66	90.58	1,783.40	4,614.36	7,670.11	7,434.10	236.01	32.499	
9,500.00	6,934.81	6,996.77	6,992.91	51.48	209.65	90.58	1,783.40	4,614.36	7,766.47	7,530.35	236.13	32.891	
9,600.00	6,934.62	6,996.54	6,992.68	52.89	209.65	90.57	1,783.41	4,614.36	7,862.92	7,626.68	236.24	33.284	
9,700.00	6,934.43	6,996.31	6,992.45	54.32	209.64	90.56	1,783.41	4,614.36	7,959.46	7,723.10	236.36	33.676	
9,800.00	6,934.23	6,996.07	6,992.22	55.75	209.63	90.56	1,783.41	4,614.36	8,056.08	7,819.61	236.47	34.068	
9,900.00	6,934.04	6,995.84	6,991.98	57.19	209.63	90.55	1,783.42	4,614.36	8,152.78	7,916.19	236.59	34.460	
10,000.00	6,933.85	6,995.61	6,991.75	58.65	209.62	90.54	1,783.42	4,614.36	8,249.57	8,012.86	236.71	34.851	
10,100.00	6,933.66	6,995.38	6,991.52	60.10	209.61	90.54	1,783.43	4,614.36	8,346.42	8,109.60	236.82	35.243	
10,200.00	6,933.47	6,995.14	6,991.29	61.57	209.61	90.53	1,783.43	4,614.36	8,443.36	8,206.41	236.94	35.635	
10,300.00	6,933.28	6,994.91	6,991.05	63.04	209.60	90.53	1,783.43	4,614.36	8,540.36	8,303.30	237.06	36.026	
10,400.00	6,933.09	6,994.68	6,990.82	64.52	209.59	90.52	1,783.44	4,614.36	8,637.43	8,400.25	237.18	36.417	
10,500.00	6,932.89	6,994.44	6,990.59	66.01	209.59	90.51	1,783.44	4,614.36	8,734.56	8,497.27	237.30	36.809	
10,600.00	6,932.70	6,994.21	6,990.36	67.50	209.58	90.51	1,783.45	4,614.36	8,831.76	8,594.35	237.41	37.200	
10,700.00	6,932.51	6,993.98	6,990.12	68.99	209.57	90.50	1,783.45	4,614.36	8,929.03	8,691.50	237.53	37.591	
10,800.00	6,932.32	6,993.75	6,989.89	70.50	209.56	90.49	1,783.45	4,614.36	9,026.35	8,788.70	237.65	37.982	
10,900.00	6,932.13	6,993.51	6,989.66	72.00	209.56	90.49	1,783.46	4,614.36	9,123.73	8,885.96	237.77	38.373	
11,000.00	6,931.94	6,993.28	6,989.43	73.51	209.55	90.48	1,783.46	4,614.36	9,221.16	8,983.28	237.88	38.764	
11,100.00	6,931.75	6,993.05	6,989.19	75.02	209.54	90.47	1,783.47	4,614.36	9,318.65	9,080.66	238.00	39.154	
11,200.00	6,931.55	6,992.82	6,988.96	76.54	209.54	90.47	1,783.47	4,614.36	9,416.20	9,178.08	238.12	39.545	
11,300.00	6,931.36	6,992.58	6,988.73	78.06	209.53	90.46	1,783.47	4,614.36	9,513.79	9,275.56	238.23	39.935	
11,400.00	6,931.17	6,992.35	6,988.50	79.58	209.52	90.45	1,783.48	4,614.36	9,611.44	9,373.09	238.35	40.325	
11,500.00	6,930.98	6,992.12	6,988.26	81.11	209.52	90.45	1,783.48	4,614.36	9,709.13	9,470.66	238.46	40.716	
11,600.00	6,930.79	6,991.89	6,988.03	82.64	209.51	90.44	1,783.49	4,614.36	9,806.86	9,568.29	238.58	41.106	
11,700.00	6,930.60	6,991.66	6,987.80	84.17	209.50	90.43	1,783.49	4,614.36	9,904.65	9,665.96	238.69	41.495	
11,800.00	6,930.41	6,991.42	6,987.57	85.70	209.49	90.43	1,783.49	4,614.36	10,002.47	9,763.67	238.81	41.885	
11,900.00	6,930.21	6,991.19	6,987.34	87.24	209.49	90.42	1,783.50	4,614.36	10,100.34	9,861.42	238.92	42.275	
12,000.00	6,930.02	6,990.96	6,987.10	88.78	209.48	90.42	1,783.50	4,614.36	10,198.25	9,959.22	239.03	42.664	
12,100.00	6,929.83	6,990.73	6,986.87	90.32	209.47	90.41	1,783.51	4,614.36	10,296.21	10,057.06	239.15	43.054	
12,200.00	6,929.64	6,990.49	6,986.64	91.87	209.47	90.40	1,783.51	4,614.36	10,394.20	10,154.93	239.26	43.443	
12,300.00	6,929.45	6,990.26	6,986.41	93.41	209.46	90.40	1,783.51	4,614.36	10,492.22	10,252.85	239.37	43.832	
12,400.00	6,929.26	6,990.03	6,986.17	94.96	209.45	90.39	1,783.52	4,614.36	10,590.29	10,350.80	239.49	44.221	
12,500.00	6,929.07	6,989.80	6,985.94	96.51	209.45	90.38	1,783.52	4,614.36	10,688.39	10,448.79	239.60	44.610	
12,600.00	6,928.88	6,989.56	6,985.71	98.06	209.44	90.38	1,783.52	4,614.36	10,786.52	10,546.81	239.71	44.998	
12,700.00	6,928.68	6,989.33	6,985.48	99.62	209.43	90.37	1,783.53	4,614.36	10,884.69	10,644.87	239.82	45.387	
12,800.00	6,928.49	6,989.10	6,985.25	101.17	209.43	90.36	1,783.53	4,614.36	10,982.90	10,742.96	239.93	45.775	
12,900.00	6,928.30	6,988.87	6,985.01	102.73	209.42	90.36	1,783.54	4,614.36	11,081.13	10,841.09	240.04	46.163	
13,000.00	6,928.11	6,988.64	6,984.78	104.28	209.41	90.35	1,783.54	4,614.36	11,179.40	10,939.24	240.15	46.551	
13,100.00	6,927.92	6,988.40	6,984.55	105.84	209.40	90.34	1,783.54	4,614.36	11,277.69	11,037.43	240.26	46.939	
13,200.00	6,927.73	6,988.17	6,984.32	107.40	209.40	90.34	1,783.55	4,614.36	11,376.02	11,135.65	240.37	47.327	
13,300.00	6,927.54	6,987.94	6,984.09	108.97	209.39	90.33	1,783.55	4,614.36	11,474.37	11,233.89	240.48	47.714	
13,400.00	6,927.34	6,987.71	6,983.85	110.53	209.38	90.33	1,783.56	4,614.36	11,572.76	11,332.17	240.59	48.101	
13,500.00	6,927.15	6,987.48	6,983.62	112.09	209.38	90.32	1,783.56	4,614.36	11,671.17	11,430.47	240.70	48.489	
13,600.00	6,926.96	6,987.24	6,983.39	113.66	209.37	90.31	1,783.56	4,614.36	11,769.61	11,528.80	240.81	48.875	
13,700.00	6,926.77	6,987.01	6,983.16	115.22	209.36	90.31	1,783.57	4,614.36	11,868.07	11,627.15	240.92	49.262	
13,800.00	6,926.58	6,986.78	6,982.93	116.79	209.36	90.30	1,783.57	4,614.36	11,966.56	11,725.53	241.02	49.649	
13,900.00	6,926.39	6,986.55	6,982.69	118.36	209.35	90.29	1,783.57	4,614.36	12,065.07	11,823.94	241.13	50.035	
14,000.00	6,926.20	6,986.32	6,982.46	119.93	209.34	90.29	1,783.58	4,614.36	12,163.61	11,922.37	241.24	50.421	
14,100.00	6,926.00	6,986.08	6,982.23	121.50	209.33	90.28	1,783.58	4,614.36	12,262.17	12,020.83	241.35	50.807	
14,200.00	6,925.81	6,985.85	6,982.00	123.07	209.33	90.27	1,783.59	4,614.36	12,360.76	12,119.31	241.45	51.193	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,300.00	6,925.62	6,985.62	6,981.77	124.64	209.32	90.27	1,783.59	4,614.36	12,459.37	12,217.81	241.56	51.579	
14,400.00	6,925.43	6,985.39	6,981.54	126.21	209.31	90.26	1,783.59	4,614.36	12,557.99	12,316.33	241.67	51.964	
14,500.00	6,925.24	6,985.16	6,981.30	127.79	209.31	90.25	1,783.60	4,614.36	12,656.65	12,414.87	241.77	52.350	
14,600.00	6,925.05	6,984.92	6,981.07	129.36	209.30	90.25	1,783.60	4,614.36	12,755.32	12,513.44	241.88	52.735	
14,700.00	6,924.86	6,984.69	6,980.84	130.93	209.29	90.24	1,783.61	4,614.36	12,854.01	12,612.03	241.98	53.119	
14,800.00	6,924.66	6,984.46	6,980.61	132.51	209.29	90.24	1,783.61	4,614.36	12,952.72	12,710.63	242.09	53.504	
14,900.00	6,924.47	6,984.23	6,980.38	134.09	209.28	90.23	1,783.61	4,614.36	13,051.46	12,809.26	242.19	53.888	
15,000.00	6,924.28	6,984.00	6,980.14	135.66	209.27	90.22	1,783.62	4,614.36	13,150.21	12,907.91	242.30	54.273	
15,100.00	6,924.09	6,983.76	6,979.91	137.24	209.27	90.22	1,783.62	4,614.36	13,248.98	13,006.57	242.40	54.657	
15,200.00	6,923.90	6,983.53	6,979.68	138.82	209.26	90.21	1,783.62	4,614.36	13,347.76	13,105.26	242.51	55.040	
15,300.00	6,923.71	6,983.30	6,979.45	140.40	209.25	90.20	1,783.63	4,614.36	13,446.57	13,203.96	242.61	55.424	
15,400.00	6,923.52	6,983.07	6,979.22	141.97	209.24	90.20	1,783.63	4,614.36	13,545.40	13,302.68	242.72	55.807	
15,500.00	6,923.33	6,982.84	6,978.99	143.55	209.24	90.19	1,783.64	4,614.36	13,644.24	13,401.41	242.82	56.190	
15,600.00	6,923.13	6,982.61	6,978.75	145.13	209.23	90.18	1,783.64	4,614.36	13,743.09	13,500.17	242.93	56.573	
15,700.00	6,922.94	6,982.37	6,978.52	146.72	209.22	90.18	1,783.64	4,614.36	13,841.97	13,598.94	243.03	56.956	
15,800.00	6,922.75	6,982.14	6,978.29	148.30	209.22	90.17	1,783.65	4,614.36	13,940.86	13,697.72	243.13	57.338	
15,900.00	6,922.56	6,981.91	6,978.06	149.88	209.21	90.16	1,783.65	4,614.36	14,039.76	13,796.53	243.24	57.721	
16,000.00	6,922.37	6,981.68	6,977.83	151.46	209.20	90.16	1,783.65	4,614.36	14,138.69	13,895.34	243.34	58.102	
16,100.00	6,922.18	6,981.45	6,977.60	153.04	209.20	90.15	1,783.66	4,614.36	14,237.62	13,994.18	243.44	58.484	
16,200.00	6,921.99	6,981.22	6,977.37	154.63	209.19	90.15	1,783.66	4,614.36	14,336.57	14,093.03	243.55	58.866	
16,300.00	6,921.79	6,980.98	6,977.13	156.21	209.18	90.14	1,783.67	4,614.36	14,435.54	14,191.89	243.65	59.247	
16,400.00	6,921.60	6,980.75	6,976.90	157.79	209.17	90.13	1,783.67	4,614.36	14,534.52	14,290.76	243.75	59.628	
16,500.00	6,921.41	6,980.52	6,976.67	159.38	209.17	90.13	1,783.67	4,614.36	14,633.51	14,389.65	243.86	60.009	
16,600.00	6,921.22	6,980.29	6,976.44	160.96	209.16	90.12	1,783.68	4,614.36	14,732.52	14,488.56	243.96	60.389	
16,700.00	6,921.03	6,980.06	6,976.21	162.55	209.15	90.11	1,783.68	4,614.36	14,831.54	14,587.48	244.06	60.769	
16,800.00	6,920.84	6,979.83	6,975.98	164.13	209.15	90.11	1,783.68	4,614.36	14,930.57	14,686.41	244.17	61.149	
16,900.00	6,920.65	6,979.60	6,975.75	165.72	209.14	90.10	1,783.69	4,614.36	15,029.62	14,785.35	244.27	61.529	
17,000.00	6,920.45	6,979.36	6,975.51	167.30	209.13	90.09	1,783.69	4,614.36	15,128.68	14,884.31	244.37	61.909	
17,100.00	6,920.26	6,979.13	6,975.28	168.89	209.13	90.09	1,783.70	4,614.36	15,227.75	14,983.28	244.47	62.288	
17,200.00	6,920.07	6,978.90	6,975.05	170.48	209.12	90.08	1,783.70	4,614.36	15,326.83	15,082.26	244.58	62.667	
17,300.00	6,919.88	6,978.67	6,974.82	172.06	209.11	90.07	1,783.70	4,614.36	15,425.93	15,181.25	244.68	63.046	
17,400.00	6,919.69	6,978.44	6,974.59	173.65	209.11	90.07	1,783.71	4,614.36	15,525.03	15,280.25	244.78	63.424	
17,500.00	6,919.50	6,978.21	6,974.36	175.24	209.10	90.06	1,783.71	4,614.36	15,624.15	15,379.27	244.88	63.802	
17,600.00	6,919.31	6,977.98	6,974.13	176.83	209.09	90.06	1,783.71	4,614.36	15,723.28	15,478.30	244.99	64.180	
17,700.00	6,919.11	6,977.75	6,973.90	178.41	209.08	90.05	1,783.72	4,614.36	15,822.42	15,577.33	245.09	64.558	
17,759.55	6,919.00	6,977.61	6,973.76	179.36	209.08	90.04	1,783.72	4,614.36	15,881.47	15,636.32	245.15	64.783	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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	233.00	233.00	0.00	6.98	103.74	-1,814.50	7,420.67	7,639.29				
100.00	100.00	333.00	333.00	0.25	9.98	103.74	-1,814.50	7,420.67	7,639.29	7,629.06	10.23	746.814	
200.00	200.00	433.00	433.00	0.61	12.97	103.74	-1,814.50	7,420.67	7,639.29	7,625.71	13.58	562.372	
300.00	300.00	533.10	533.00	0.97	15.97	103.74	-1,814.50	7,420.67	7,639.29	7,622.35	16.94	450.908	
400.00	400.00	633.10	633.00	1.33	18.97	103.74	-1,814.50	7,420.67	7,639.29	7,619.00	20.30	376.377	
500.00	500.00	733.10	733.00	1.68	21.97	103.74	-1,814.50	7,420.67	7,639.29	7,615.64	23.65	322.989	
540.58	540.58	771.01	770.87	1.83	23.10	103.72	-1,812.34	7,420.67	7,638.78	7,613.85	24.93	306.369	
600.00	600.00	823.78	823.63	2.04	24.68	103.73	-1,812.51	7,420.67	7,638.83	7,612.10	26.73	285.804	
700.00	700.00	912.61	912.43	2.40	27.35	103.73	-1,813.24	7,420.67	7,639.02	7,609.28	29.75	256.795	
800.00	800.00	1,033.41	1,033.00	2.76	30.97	103.74	-1,814.50	7,420.67	7,639.29	7,605.57	33.73	226.512	
900.00	900.00	1,133.41	1,133.00	3.12	33.96	103.74	-1,814.50	7,420.67	7,639.29	7,602.21	37.08	206.018	
1,000.00	1,000.00	1,233.41	1,233.00	3.48	36.96	103.74	-1,814.50	7,420.67	7,639.29	7,598.86	40.44	188.925	
1,041.73	1,041.72	1,272.30	1,271.85	3.62	38.12	-89.39	-1,812.34	7,420.67	7,638.78	7,597.03	41.74	182.995	
1,100.00	1,099.98	1,324.04	1,323.58	3.82	39.67	-89.40	-1,812.51	7,420.67	7,638.81	7,595.32	43.49	175.638	
1,129.54	1,129.49	1,350.26	1,349.80	3.92	40.46	-89.40	-1,812.67	7,420.67	7,638.84	7,594.47	44.37	172.149	
1,200.00	1,199.88	1,412.84	1,412.36	4.15	42.33	-89.42	-1,813.25	7,420.67	7,638.96	7,592.48	46.48	164.351	
1,300.00	1,299.78	1,533.49	1,532.78	4.48	45.95	-89.45	-1,814.50	7,420.67	7,639.18	7,588.76	50.43	151.487	
1,400.00	1,399.68	1,633.39	1,632.68	4.82	48.94	-89.49	-1,814.50	7,420.67	7,639.14	7,585.38	53.76	142.100	
1,500.00	1,499.58	1,733.29	1,732.58	5.16	51.94	-89.52	-1,814.50	7,420.67	7,639.10	7,582.01	57.09	133.799	
1,541.70	1,541.24	1,772.16	1,771.41	5.30	53.10	-89.55	-1,812.34	7,420.67	7,638.58	7,580.18	58.40	130.793	
1,600.00	1,599.48	1,823.96	1,823.20	5.50	54.65	-89.57	-1,812.51	7,420.67	7,638.61	7,578.45	60.16	126.982	
1,700.00	1,699.37	1,912.87	1,912.09	5.85	57.32	-89.59	-1,813.25	7,420.67	7,638.77	7,575.60	63.17	120.932	
1,800.00	1,799.27	2,033.29	2,032.27	6.20	60.93	-89.62	-1,814.50	7,420.67	7,639.00	7,571.88	67.12	113.806	
1,900.00	1,899.17	2,133.18	2,132.17	6.55	63.92	-89.66	-1,814.50	7,420.67	7,638.97	7,568.51	70.47	108.405	
2,000.00	1,999.07	2,233.08	2,232.07	6.90	66.91	-89.69	-1,814.50	7,420.67	7,638.95	7,565.13	73.81	103.491	
2,041.28	2,040.30	2,271.63	2,270.58	7.05	68.07	-89.72	-1,812.34	7,420.67	7,638.44	7,563.32	75.11	101.692	
2,100.00	2,098.96	2,323.88	2,322.81	7.25	69.63	-89.73	-1,812.51	7,420.67	7,638.47	7,561.58	76.89	99.347	
2,200.00	2,198.86	2,412.91	2,411.83	7.61	72.30	-89.76	-1,813.25	7,420.67	7,638.64	7,558.73	79.91	95.592	
2,300.00	2,298.76	2,533.08	2,531.76	7.96	75.90	-89.79	-1,814.50	7,420.67	7,638.89	7,555.02	83.86	91.086	
2,400.00	2,398.66	2,632.98	2,631.66	8.32	78.90	-89.82	-1,814.50	7,420.67	7,638.87	7,551.66	87.21	87.587	
2,500.00	2,498.56	2,732.88	2,731.56	8.68	81.89	-89.86	-1,814.50	7,420.67	7,638.86	7,548.29	90.56	84.347	
2,540.84	2,539.36	2,771.09	2,769.73	8.82	83.03	-89.89	-1,812.34	7,420.67	7,638.36	7,546.50	91.86	83.156	
2,600.00	2,598.45	2,823.80	2,822.43	9.03	84.61	-89.90	-1,812.51	7,420.67	7,638.40	7,544.75	93.65	81.566	
2,700.00	2,698.35	2,912.95	2,911.56	9.39	87.29	-89.93	-1,813.25	7,420.67	7,638.58	7,541.90	96.68	79.012	
2,800.00	2,798.25	3,032.87	3,031.25	9.75	90.88	-89.96	-1,814.50	7,420.67	7,638.84	7,538.21	100.63	75.911	
2,900.00	2,898.15	3,132.77	3,131.15	10.11	93.87	-89.99	-1,814.50	7,420.67	7,638.83	7,534.85	103.98	73.464	
2,917.19	2,915.32	3,149.94	3,148.32	10.17	94.39	-90.00	-1,814.50	7,420.67	7,638.83	7,534.28	104.56	73.059	
3,000.00	2,998.04	3,232.67	3,231.04	10.47	96.87	-90.03	-1,814.50	7,420.67	7,638.84	7,531.50	107.33	71.169	
3,040.39	3,038.39	3,270.53	3,268.87	10.61	98.00	-90.06	-1,812.34	7,420.67	7,638.35	7,529.73	108.61	70.326 CC	
3,100.00	3,097.94	3,323.72	3,322.04	10.83	99.59	-90.07	-1,812.51	7,420.67	7,638.39	7,527.97	110.42	69.175	
3,200.00	3,197.84	3,412.99	3,411.30	11.19	102.27	-90.10	-1,813.25	7,420.67	7,638.59	7,525.13	113.46	67.326	
3,300.00	3,297.74	3,532.67	3,530.74	11.55	105.85	-90.13	-1,814.50	7,420.67	7,638.85	7,521.45	117.40	65.065	
3,400.00	3,397.64	3,632.56	3,630.64	11.91	108.85	-90.16	-1,814.50	7,420.67	7,638.87	7,518.11	120.76	63.258	
3,500.00	3,497.53	3,732.46	3,730.53	12.27	111.84	-90.20	-1,814.50	7,420.67	7,638.88	7,514.77	124.11	61.549	
3,539.92	3,537.42	3,769.96	3,767.99	12.41	112.97	-90.23	-1,812.33	7,420.67	7,638.40	7,513.02	125.38	60.922	
3,600.00	3,597.43	3,823.63	3,821.65	12.63	114.57	-90.24	-1,812.51	7,420.67	7,638.46	7,511.25	127.20	60.049	
3,700.00	3,697.33	3,913.03	3,911.03	12.99	117.25	-90.27	-1,813.25	7,420.67	7,638.66	7,508.42	130.24	58.649	
3,800.00	3,797.23	4,032.46	4,030.23	13.35	120.83	-90.30	-1,814.50	7,420.67	7,638.94	7,504.75	134.18	56.929	
3,900.00	3,897.12	4,132.36	4,130.12	13.72	123.82	-90.33	-1,814.50	7,420.67	7,638.96	7,501.42	137.54	55.540	
4,000.00	3,997.02	4,232.26	4,230.02	14.08	126.82	-90.37	-1,814.50	7,420.67	7,638.99	7,498.10	140.89	54.218	
4,039.44	4,036.42	4,269.37	4,267.09	14.22	127.93	-90.40	-1,812.33	7,420.67	7,638.53	7,496.38	142.15	53.736	
4,100.00	4,096.92	4,323.55	4,321.26	14.44	129.55	-90.41	-1,812.51	7,420.67	7,638.59	7,494.60	143.99	53.049	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,200.00	4,196.82	4,413.07	4,410.77	14.80	132.24	-90.44	-1,813.25	7,420.67	7,638.80	7,491.77	147.04	51.952	
4,300.00	4,296.72	4,532.25	4,529.72	15.16	135.81	-90.47	-1,814.50	7,420.67	7,639.09	7,488.12	150.97	50.600	
4,400.00	4,396.61	4,632.15	4,629.61	15.53	138.80	-90.50	-1,814.50	7,420.67	7,639.13	7,484.80	154.33	49.500	
4,500.00	4,496.51	4,732.05	4,729.51	15.89	141.79	-90.54	-1,814.50	7,420.67	7,639.17	7,481.49	157.68	48.447	
4,538.94	4,535.41	4,768.76	4,766.18	16.03	142.89	-90.56	-1,812.33	7,420.67	7,638.71	7,479.79	158.92	48.065	
4,600.00	4,596.41	4,823.47	4,820.88	16.25	144.53	-90.58	-1,812.51	7,420.67	7,638.79	7,478.00	160.78	47.510	
4,700.00	4,696.31	4,913.11	4,910.50	16.61	147.22	-90.61	-1,813.25	7,420.67	7,639.01	7,475.18	163.83	46.627	
4,800.00	4,796.20	5,032.05	5,029.20	16.98	150.78	-90.64	-1,814.50	7,420.67	7,639.31	7,471.55	167.76	45.537	
4,900.00	4,896.10	5,131.95	5,129.10	17.34	153.78	-90.67	-1,814.50	7,420.67	7,639.36	7,468.24	171.12	44.644	
5,000.00	4,996.00	5,231.84	5,229.00	17.70	156.77	-90.71	-1,814.50	7,420.67	7,639.41	7,464.94	174.47	43.786	
5,038.41	5,034.37	5,268.13	5,265.25	17.84	157.86	-90.73	-1,812.33	7,420.67	7,638.97	7,463.27	175.70	43.478	
5,100.00	5,095.90	5,323.38	5,320.49	18.07	159.51	-90.75	-1,812.51	7,420.67	7,639.05	7,461.47	177.58	43.018	
5,200.00	5,195.80	5,413.15	5,410.24	18.43	162.20	-90.78	-1,813.25	7,420.67	7,639.29	7,458.66	180.63	42.292	
5,300.00	5,295.69	5,531.84	5,528.69	18.79	165.76	-90.81	-1,814.50	7,420.67	7,639.59	7,455.04	184.55	41.396	
5,400.00	5,395.59	5,631.74	5,628.59	19.16	168.75	-90.84	-1,814.50	7,420.67	7,639.66	7,451.75	187.91	40.656	
5,500.00	5,495.49	5,731.64	5,728.49	19.52	171.75	-90.87	-1,814.50	7,420.67	7,639.73	7,448.46	191.26	39.943	
5,537.87	5,533.32	5,767.49	5,764.30	19.66	172.82	-90.90	-1,812.33	7,420.67	7,639.29	7,446.82	192.48	39.690	
5,600.00	5,595.39	5,823.30	5,820.10	19.88	174.49	-90.92	-1,812.51	7,420.67	7,639.38	7,445.01	194.37	39.302	
5,700.00	5,695.28	5,913.19	5,909.97	20.25	177.19	-90.95	-1,813.25	7,420.67	7,639.63	7,442.20	197.43	38.695	
5,800.00	5,795.18	6,031.63	6,028.18	20.61	180.74	-90.98	-1,814.50	7,420.67	7,639.95	7,438.60	201.34	37.945	
5,900.00	5,895.08	6,117.00	6,113.48	20.97	183.29	-91.01	-1,814.50	7,420.67	7,640.04	7,435.77	204.26	37.403 ES	
6,000.00	5,994.98	6,117.00	6,113.48	21.34	183.29	-91.01	-1,814.50	7,420.67	7,640.96	7,436.36	204.61	37.345	
6,100.00	6,094.88	6,117.00	6,113.48	21.70	183.29	-91.01	-1,814.50	7,420.67	7,643.20	7,438.28	204.91	37.300	
6,200.00	6,194.77	6,117.00	6,113.48	22.06	183.29	-91.01	-1,814.50	7,420.67	7,646.74	7,441.55	205.19	37.267	
6,300.00	6,294.67	6,117.00	6,113.48	22.43	183.29	-91.01	-1,814.50	7,420.67	7,651.58	7,446.16	205.43	37.247	
6,314.74	6,309.40	6,117.00	6,113.48	22.48	183.29	-91.01	-1,814.50	7,420.67	7,652.41	7,446.95	205.46	37.246 SF	
6,350.00	6,344.59	6,117.00	6,113.48	22.61	183.29	-134.10	-1,814.50	7,420.67	7,655.45	7,449.92	205.53	37.247	
6,400.00	6,394.26	6,117.00	6,113.48	22.79	183.29	-150.87	-1,814.50	7,420.67	7,663.28	7,457.65	205.63	37.267	
6,450.00	6,443.36	6,117.00	6,113.48	22.97	183.29	-156.42	-1,814.50	7,420.67	7,675.19	7,469.47	205.72	37.309	
6,500.00	6,491.60	6,117.00	6,113.48	23.15	183.29	-158.94	-1,814.50	7,420.67	7,691.08	7,485.28	205.80	37.371	
6,550.00	6,538.67	6,117.00	6,113.48	23.32	183.29	-160.18	-1,814.50	7,420.67	7,710.84	7,504.97	205.87	37.454	
6,600.00	6,584.29	6,117.00	6,113.48	23.49	183.29	-160.72	-1,814.50	7,420.67	7,734.30	7,528.37	205.93	37.557	
6,650.00	6,628.18	6,117.00	6,113.48	23.66	183.29	-160.79	-1,814.50	7,420.67	7,761.30	7,555.31	205.99	37.678	
6,700.00	6,670.06	6,117.00	6,113.48	23.83	183.29	-160.48	-1,814.50	7,420.67	7,791.63	7,585.60	206.03	37.817	
6,750.00	6,709.68	6,117.00	6,113.48	24.00	183.29	-159.81	-1,814.50	7,420.67	7,825.06	7,618.99	206.07	37.972	
6,800.00	6,746.79	6,117.00	6,113.48	24.17	183.29	-158.75	-1,814.50	7,420.67	7,861.36	7,655.26	206.10	38.143	
6,850.00	6,781.17	6,117.00	6,113.48	24.35	183.29	-157.24	-1,814.50	7,420.67	7,900.25	7,694.12	206.13	38.326	
6,900.00	6,812.60	6,117.00	6,113.48	24.54	183.29	-155.14	-1,814.50	7,420.67	7,941.47	7,735.32	206.15	38.522	
6,950.00	6,840.88	6,117.00	6,113.48	24.74	183.29	-152.24	-1,814.50	7,420.67	7,984.73	7,778.56	206.17	38.728	
7,000.00	6,865.85	6,117.00	6,113.48	24.96	183.29	-148.17	-1,814.50	7,420.67	8,029.72	7,823.53	206.19	38.943	
7,050.00	6,887.35	6,117.00	6,113.48	25.19	183.29	-142.31	-1,814.50	7,420.67	8,076.15	7,869.94	206.21	39.164	
7,100.00	6,905.25	6,117.00	6,113.48	25.43	183.29	-133.59	-1,814.50	7,420.67	8,123.71	7,917.47	206.23	39.391	
7,150.00	6,919.43	6,117.00	6,113.48	25.69	183.29	-120.42	-1,814.50	7,420.67	8,172.08	7,965.82	206.26	39.621	
7,200.00	6,929.81	6,117.00	6,113.48	25.96	183.29	-101.39	-1,814.50	7,420.67	8,220.95	8,014.67	206.28	39.852	
7,250.00	6,936.33	6,117.00	6,113.48	26.25	183.29	-78.54	-1,814.50	7,420.67	8,270.02	8,063.71	206.32	40.084	
7,300.00	6,938.95	6,117.00	6,113.48	26.55	183.29	-58.05	-1,814.50	7,420.67	8,318.99	8,112.63	206.36	40.313	
7,309.56	6,939.00	6,117.00	6,113.48	26.60	183.29	-54.78	-1,814.50	7,420.67	8,328.32	8,121.95	206.37	40.356	
7,400.00	6,938.83	6,117.00	6,113.48	27.19	183.29	-54.78	-1,814.50	7,420.67	8,416.49	8,210.03	206.46	40.766	
7,500.00	6,938.64	6,117.00	6,113.48	27.91	183.29	-54.78	-1,814.50	7,420.67	8,514.04	8,307.48	206.56	41.218	
7,600.00	6,938.44	6,117.00	6,113.48	28.70	183.29	-54.78	-1,814.50	7,420.67	8,611.65	8,404.99	206.66	41.670	
7,700.00	6,938.25	6,117.00	6,113.48	29.55	183.29	-54.78	-1,814.50	7,420.67	8,709.31	8,502.55	206.76	42.122	
7,800.00	6,938.06	6,117.00	6,113.48	30.47	183.29	-54.78	-1,814.50	7,420.67	8,807.02	8,600.15	206.87	42.573	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
7,900.00	6,937.87	6,117.00	6,113.48	31.44	183.29	-54.78	-1,814.50	7,420.67	8,904.79	8,697.81	206.97	43.024	
8,000.00	6,937.68	6,117.00	6,113.48	32.46	183.29	-54.78	-1,814.50	7,420.67	9,002.60	8,795.52	207.08	43.474	
8,100.00	6,937.49	6,117.00	6,113.48	33.53	183.29	-54.78	-1,814.50	7,420.67	9,100.46	8,893.27	207.18	43.924	
8,200.00	6,937.30	6,117.00	6,113.48	34.64	183.29	-54.78	-1,814.50	7,420.67	9,198.36	8,991.07	207.29	44.374	
8,300.00	6,937.10	6,117.00	6,113.48	35.78	183.29	-54.78	-1,814.50	7,420.67	9,296.32	9,088.92	207.40	44.823	
8,400.00	6,936.91	6,117.00	6,113.48	36.96	183.29	-54.78	-1,814.50	7,420.67	9,394.31	9,186.80	207.51	45.272	
8,500.00	6,936.72	6,117.00	6,113.48	38.17	183.29	-54.78	-1,814.50	7,420.67	9,492.35	9,284.73	207.62	45.721	
8,600.00	6,936.53	6,117.00	6,113.48	39.41	183.29	-54.78	-1,814.50	7,420.67	9,590.42	9,382.70	207.72	46.169	
8,700.00	6,936.34	6,117.00	6,113.48	40.68	183.29	-54.78	-1,814.50	7,420.67	9,688.54	9,480.70	207.83	46.617	
8,800.00	6,936.15	6,117.00	6,113.48	41.97	183.29	-54.78	-1,814.50	7,420.67	9,786.69	9,578.75	207.94	47.064	
8,900.00	6,935.96	6,117.00	6,113.48	43.27	183.29	-54.78	-1,814.50	7,420.67	9,884.88	9,676.83	208.05	47.511	
9,000.00	6,935.76	6,117.00	6,113.48	44.60	183.29	-54.78	-1,814.50	7,420.67	9,983.11	9,774.95	208.16	47.958	
9,100.00	6,935.57	6,117.00	6,113.48	45.95	183.29	-54.78	-1,814.50	7,420.67	10,081.37	9,873.10	208.27	48.405	
9,200.00	6,935.38	6,117.00	6,113.48	47.31	183.29	-54.78	-1,814.50	7,420.67	10,179.67	9,971.28	208.38	48.851	
9,300.00	6,935.19	6,117.00	6,113.48	48.69	183.29	-54.78	-1,814.50	7,420.67	10,277.99	10,069.50	208.49	49.296	
9,400.00	6,935.00	6,117.00	6,113.48	50.08	183.29	-54.78	-1,814.50	7,420.67	10,376.36	10,167.75	208.60	49.742	
9,500.00	6,934.81	6,117.00	6,113.48	51.48	183.29	-54.78	-1,814.50	7,420.67	10,474.75	10,266.03	208.72	50.187	
9,600.00	6,934.62	6,117.00	6,113.48	52.89	183.29	-54.78	-1,814.50	7,420.67	10,573.17	10,364.34	208.83	50.631	
9,700.00	6,934.43	6,117.00	6,113.48	54.32	183.29	-54.78	-1,814.50	7,420.67	10,671.62	10,462.68	208.94	51.076	
9,800.00	6,934.23	6,117.00	6,113.48	55.75	183.29	-54.78	-1,814.50	7,420.67	10,770.10	10,561.05	209.05	51.520	
9,900.00	6,934.04	6,117.00	6,113.48	57.19	183.29	-54.78	-1,814.50	7,420.67	10,868.61	10,659.45	209.16	51.964	
10,000.00	6,933.85	6,117.00	6,113.48	58.65	183.29	-54.78	-1,814.50	7,420.67	10,967.14	10,757.87	209.27	52.407	
10,100.00	6,933.66	6,117.00	6,113.48	60.10	183.29	-54.78	-1,814.50	7,420.67	11,065.70	10,856.32	209.38	52.850	
10,200.00	6,933.47	6,117.00	6,113.48	61.57	183.29	-54.78	-1,814.50	7,420.67	11,164.29	10,954.80	209.49	53.293	
10,300.00	6,933.28	6,117.00	6,113.48	63.04	183.29	-54.78	-1,814.50	7,420.67	11,262.90	11,053.30	209.60	53.735	
10,400.00	6,933.09	6,117.00	6,113.48	64.52	183.29	-54.78	-1,814.50	7,420.67	11,361.53	11,151.82	209.71	54.177	
10,500.00	6,932.89	6,117.00	6,113.48	66.01	183.29	-54.78	-1,814.50	7,420.67	11,460.19	11,250.37	209.82	54.619	
10,600.00	6,932.70	6,117.00	6,113.48	67.50	183.29	-54.78	-1,814.50	7,420.67	11,558.87	11,348.94	209.93	55.060	
10,700.00	6,932.51	6,117.00	6,113.48	68.99	183.29	-54.78	-1,814.50	7,420.67	11,657.58	11,447.54	210.04	55.501	
10,800.00	6,932.32	6,117.00	6,113.48	70.50	183.29	-54.78	-1,814.50	7,420.67	11,756.31	11,546.15	210.15	55.942	
10,900.00	6,932.13	6,117.00	6,113.48	72.00	183.29	-54.78	-1,814.50	7,420.67	11,855.05	11,644.79	210.26	56.383	
11,000.00	6,931.94	6,117.00	6,113.48	73.51	183.29	-54.78	-1,814.50	7,420.67	11,953.82	11,743.45	210.37	56.823	
11,100.00	6,931.75	6,117.00	6,113.48	75.02	183.29	-54.78	-1,814.50	7,420.67	12,052.61	11,842.13	210.48	57.262	
11,200.00	6,931.55	6,117.00	6,113.48	76.54	183.29	-54.78	-1,814.50	7,420.67	12,151.42	11,940.83	210.59	57.702	
11,300.00	6,931.36	6,117.00	6,113.48	78.06	183.29	-54.78	-1,814.50	7,420.67	12,250.25	12,039.55	210.70	58.141	
11,400.00	6,931.17	6,117.00	6,113.48	79.58	183.29	-54.78	-1,814.50	7,420.67	12,349.09	12,138.29	210.81	58.580	
11,500.00	6,930.98	6,117.00	6,113.48	81.11	183.29	-54.78	-1,814.50	7,420.67	12,447.96	12,237.04	210.92	59.018	
11,600.00	6,930.79	6,117.00	6,113.48	82.64	183.29	-54.78	-1,814.50	7,420.67	12,546.84	12,335.82	211.03	59.456	
11,700.00	6,930.60	6,117.00	6,113.48	84.17	183.29	-54.78	-1,814.50	7,420.67	12,645.74	12,434.61	211.14	59.894	
11,800.00	6,930.41	6,117.00	6,113.48	85.70	183.29	-54.78	-1,814.50	7,420.67	12,744.66	12,533.42	211.25	60.331	
11,900.00	6,930.21	6,117.00	6,113.48	87.24	183.29	-54.78	-1,814.50	7,420.67	12,843.60	12,632.24	211.35	60.768	
12,000.00	6,930.02	6,117.00	6,113.48	88.78	183.29	-54.78	-1,814.50	7,420.67	12,942.55	12,731.09	211.46	61.205	
12,100.00	6,929.83	6,117.00	6,113.48	90.32	183.29	-54.78	-1,814.50	7,420.67	13,041.52	12,829.94	211.57	61.641	
12,200.00	6,929.64	6,117.00	6,113.48	91.87	183.29	-54.78	-1,814.50	7,420.67	13,140.50	12,928.82	211.68	62.077	
12,300.00	6,929.45	6,117.00	6,113.48	93.41	183.29	-54.78	-1,814.50	7,420.67	13,239.50	13,027.71	211.79	62.513	
12,400.00	6,929.26	6,117.00	6,113.48	94.96	183.29	-54.78	-1,814.50	7,420.67	13,338.51	13,126.61	211.90	62.948	
12,500.00	6,929.07	6,117.00	6,113.48	96.51	183.29	-54.78	-1,814.50	7,420.67	13,437.54	13,225.53	212.01	63.383	
12,600.00	6,928.88	6,117.00	6,113.48	98.06	183.29	-54.78	-1,814.50	7,420.67	13,536.58	13,324.47	212.11	63.818	
12,700.00	6,928.68	6,117.00	6,113.48	99.62	183.29	-54.78	-1,814.50	7,420.67	13,635.64	13,423.41	212.22	64.252	
12,800.00	6,928.49	6,117.00	6,113.48	101.17	183.29	-54.78	-1,814.50	7,420.67	13,734.71	13,522.38	212.33	64.686	
12,900.00	6,928.30	6,117.00	6,113.48	102.73	183.29	-54.78	-1,814.50	7,420.67	13,833.79	13,621.35	212.44	65.119	
13,000.00	6,928.11	6,117.00	6,113.48	104.28	183.29	-54.78	-1,814.50	7,420.67	13,932.88	13,720.34	212.55	65.553	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
13,100.00	6,927.92	6,117.00	6,113.48	105.84	183.29	-54.78	-1,814.50	7,420.67	14,031.99	13,819.34	212.65	65.985	
13,200.00	6,927.73	6,117.00	6,113.48	107.40	183.29	-54.78	-1,814.50	7,420.67	14,131.11	13,918.35	212.76	66.418	
13,300.00	6,927.54	6,117.00	6,113.48	108.97	183.29	-54.78	-1,814.50	7,420.67	14,230.25	14,017.38	212.87	66.850	
13,400.00	6,927.34	6,117.00	6,113.48	110.53	183.29	-54.78	-1,814.50	7,420.67	14,329.39	14,116.42	212.98	67.282	
13,500.00	6,927.15	6,117.00	6,113.48	112.09	183.29	-54.78	-1,814.50	7,420.67	14,428.55	14,215.47	213.08	67.713	
13,600.00	6,926.96	6,117.00	6,113.48	113.66	183.29	-54.78	-1,814.50	7,420.67	14,527.72	14,314.53	213.19	68.144	
13,700.00	6,926.77	6,117.00	6,113.48	115.22	183.29	-54.78	-1,814.50	7,420.67	14,626.90	14,413.60	213.30	68.575	
13,800.00	6,926.58	6,117.00	6,113.48	116.79	183.29	-54.78	-1,814.50	7,420.67	14,726.09	14,512.69	213.41	69.005	
13,900.00	6,926.39	6,117.00	6,113.48	118.36	183.29	-54.78	-1,814.50	7,420.67	14,825.30	14,611.78	213.51	69.435	
14,000.00	6,926.20	6,117.00	6,113.48	119.93	183.29	-54.78	-1,814.50	7,420.67	14,924.51	14,710.89	213.62	69.864	
14,100.00	6,926.00	6,117.00	6,113.48	121.50	183.29	-54.78	-1,814.50	7,420.67	15,023.73	14,810.00	213.73	70.294	
14,200.00	6,925.81	6,117.00	6,113.48	123.07	183.29	-54.78	-1,814.50	7,420.67	15,122.97	14,909.13	213.84	70.722	
14,300.00	6,925.62	6,117.00	6,113.48	124.64	183.29	-54.78	-1,814.50	7,420.67	15,222.21	15,008.27	213.94	71.151	
14,400.00	6,925.43	6,117.00	6,113.48	126.21	183.29	-54.78	-1,814.50	7,420.67	15,321.46	15,107.41	214.05	71.579	
14,500.00	6,925.24	6,117.00	6,113.48	127.79	183.29	-54.78	-1,814.50	7,420.67	15,420.73	15,206.57	214.16	72.007	
14,600.00	6,925.05	6,117.00	6,113.48	129.36	183.29	-54.78	-1,814.50	7,420.67	15,520.00	15,305.73	214.26	72.434	
14,700.00	6,924.86	6,117.00	6,113.48	130.93	183.29	-54.78	-1,814.50	7,420.67	15,619.28	15,404.91	214.37	72.861	
14,800.00	6,924.66	6,117.00	6,113.48	132.51	183.29	-54.78	-1,814.50	7,420.67	15,718.57	15,504.09	214.48	73.287	
14,900.00	6,924.47	6,117.00	6,113.48	134.09	183.29	-54.78	-1,814.50	7,420.67	15,817.87	15,603.29	214.59	73.713	
15,000.00	6,924.28	6,117.00	6,113.48	135.66	183.29	-54.78	-1,814.50	7,420.67	15,917.18	15,702.49	214.69	74.139	
15,100.00	6,924.09	6,117.00	6,113.48	137.24	183.29	-54.78	-1,814.50	7,420.67	16,016.50	15,801.70	214.80	74.564	
15,200.00	6,923.90	6,117.00	6,113.48	138.82	183.29	-54.78	-1,814.50	7,420.67	16,115.82	15,900.92	214.91	74.989	
15,300.00	6,923.71	6,117.00	6,113.48	140.40	183.29	-54.78	-1,814.50	7,420.67	16,215.16	16,000.14	215.02	75.414	
15,400.00	6,923.52	6,117.00	6,113.48	141.97	183.29	-54.78	-1,814.50	7,420.67	16,314.50	16,099.38	215.12	75.838	
15,500.00	6,923.33	6,117.00	6,113.48	143.55	183.29	-54.78	-1,814.50	7,420.67	16,413.85	16,198.62	215.23	76.262	
15,600.00	6,923.13	6,117.00	6,113.48	145.13	183.29	-54.78	-1,814.50	7,420.67	16,513.21	16,297.87	215.34	76.685	
15,700.00	6,922.94	6,117.00	6,113.48	146.72	183.29	-54.78	-1,814.50	7,420.67	16,612.58	16,397.13	215.45	77.108	
15,800.00	6,922.75	6,117.00	6,113.48	148.30	183.29	-54.78	-1,814.50	7,420.67	16,711.95	16,496.40	215.55	77.531	
15,900.00	6,922.56	6,117.00	6,113.48	149.88	183.29	-54.78	-1,814.50	7,420.67	16,811.33	16,595.67	215.66	77.953	
16,000.00	6,922.37	6,117.00	6,113.48	151.46	183.29	-54.78	-1,814.50	7,420.67	16,910.72	16,694.95	215.77	78.375	
16,100.00	6,922.18	6,117.00	6,113.48	153.04	183.29	-54.78	-1,814.50	7,420.67	17,010.11	16,794.24	215.88	78.796	
16,200.00	6,921.99	6,117.00	6,113.48	154.63	183.29	-54.78	-1,814.50	7,420.67	17,109.51	16,893.53	215.98	79.217	
16,300.00	6,921.79	6,117.00	6,113.48	156.21	183.29	-54.78	-1,814.50	7,420.67	17,208.92	16,992.83	216.09	79.638	
16,400.00	6,921.60	6,117.00	6,113.48	157.79	183.29	-54.78	-1,814.50	7,420.67	17,308.34	17,092.14	216.20	80.058	
16,500.00	6,921.41	6,117.00	6,113.48	159.38	183.29	-54.78	-1,814.50	7,420.67	17,407.76	17,191.46	216.31	80.477	
16,600.00	6,921.22	6,117.00	6,113.48	160.96	183.29	-54.78	-1,814.50	7,420.67	17,507.19	17,290.78	216.41	80.897	
16,700.00	6,921.03	6,117.00	6,113.48	162.55	183.29	-54.78	-1,814.50	7,420.67	17,606.63	17,390.11	216.52	81.316	
16,800.00	6,920.84	6,117.00	6,113.48	164.13	183.29	-54.78	-1,814.50	7,420.67	17,706.07	17,489.44	216.63	81.734	
16,900.00	6,920.65	6,117.00	6,113.48	165.72	183.29	-54.78	-1,814.50	7,420.67	17,805.52	17,588.78	216.74	82.152	
17,000.00	6,920.45	6,117.00	6,113.48	167.30	183.29	-54.78	-1,814.50	7,420.67	17,904.97	17,688.13	216.85	82.570	
17,100.00	6,920.26	6,117.00	6,113.48	168.89	183.29	-54.78	-1,814.50	7,420.67	18,004.43	17,787.48	216.95	82.987	
17,200.00	6,920.07	6,117.00	6,113.48	170.48	183.29	-54.78	-1,814.50	7,420.67	18,103.90	17,886.84	217.06	83.404	
17,300.00	6,919.88	6,117.00	6,113.48	172.06	183.29	-54.78	-1,814.50	7,420.67	18,203.37	17,986.20	217.17	83.821	
17,400.00	6,919.69	6,117.00	6,113.48	173.65	183.29	-54.78	-1,814.50	7,420.67	18,302.85	18,085.57	217.28	84.237	
17,500.00	6,919.50	6,117.00	6,113.48	175.24	183.29	-54.78	-1,814.50	7,420.67	18,402.33	18,184.95	217.39	84.652	
17,600.00	6,919.31	6,117.00	6,113.48	176.83	183.29	-54.78	-1,814.50	7,420.67	18,501.82	18,284.33	217.50	85.067	
17,700.00	6,919.11	6,117.00	6,113.48	178.41	183.29	-54.78	-1,814.50	7,420.67	18,601.32	18,383.71	217.60	85.482	
17,759.55	6,919.00	6,117.00	6,113.48	179.36	183.29	-54.78	-1,814.50	7,420.67	18,660.57	18,442.91	217.67	85.729	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	122.40	-2,622.46	4,132.35	4,896.08				
100.00	100.00	0.00	0.00	0.25	0.00	122.40	-2,622.46	4,132.35	4,894.36	4,894.11	0.25	N/A	
134.00	134.00	0.00	0.00	0.37	0.00	122.40	-2,622.46	4,132.35	4,894.24	4,893.87	0.37	N/A	
200.00	200.00	61.63	61.63	0.61	0.07	122.40	-2,622.46	4,132.38	4,894.27	4,893.59	0.68	7,210.033	
300.00	300.00	155.01	155.01	0.97	0.17	122.40	-2,622.48	4,132.55	4,894.43	4,893.29	1.14	4,285.282	
400.00	400.00	248.39	248.39	1.33	0.28	122.40	-2,622.50	4,132.85	4,894.72	4,893.12	1.61	3,048.733	
500.00	500.00	354.22	354.22	1.68	0.43	122.39	-2,622.38	4,133.43	4,895.12	4,893.00	2.12	2,311.951	
600.00	600.00	501.00	500.83	2.04	0.77	122.32	-2,616.78	4,136.24	4,894.61	4,891.81	2.80	1,749.281	
700.00	700.00	591.00	590.32	2.40	0.99	122.21	-2,608.49	4,140.93	4,894.09	4,890.70	3.39	1,445.365	
724.32	724.32	591.00	590.32	2.49	0.99	122.21	-2,608.49	4,140.93	4,894.03	4,890.56	3.47	1,409.037 CC	
800.00	800.00	628.14	627.11	2.76	1.09	122.15	-2,604.31	4,143.80	4,894.39	4,890.53	3.85	1,270.582	
900.00	900.00	691.62	689.89	3.12	1.29	122.04	-2,596.78	4,149.42	4,895.59	4,891.18	4.41	1,111.160	
1,000.00	1,000.00	826.78	822.79	3.48	1.76	121.75	-2,577.03	4,163.85	4,897.00	4,891.75	5.24	934.389	
1,100.00	1,099.98	963.75	956.02	3.82	2.35	-71.75	-2,550.29	4,180.69	4,896.62	4,890.45	6.17	793.600	
1,129.54	1,129.49	991.32	982.58	3.92	2.49	-71.86	-2,543.98	4,184.60	4,896.32	4,889.91	6.41	764.212	
1,200.00	1,199.88	1,055.78	1,044.27	4.15	2.83	-72.11	-2,528.10	4,194.45	4,895.58	4,888.60	6.97	701.918	
1,300.00	1,299.78	1,140.00	1,123.88	4.48	3.33	-72.47	-2,504.79	4,208.93	4,894.83	4,887.02	7.80	627.294	
1,354.88	1,354.60	1,172.74	1,154.51	4.66	3.54	-72.62	-2,495.00	4,215.09	4,894.68	4,886.47	8.20	596.568	
1,400.00	1,399.68	1,198.29	1,178.31	4.82	3.71	-72.74	-2,487.17	4,220.12	4,894.78	4,886.25	8.53	574.089 ES	
1,500.00	1,499.58	1,272.80	1,247.15	5.16	4.23	-73.11	-2,463.34	4,235.76	4,895.66	4,886.28	9.39	521.646	
1,600.00	1,599.48	1,355.18	1,322.40	5.50	4.85	-73.54	-2,435.22	4,254.01	4,896.92	4,886.58	10.34	473.588	
1,700.00	1,699.37	1,420.00	1,381.04	5.85	5.35	-73.89	-2,412.22	4,269.28	4,899.09	4,887.90	11.19	437.897	
1,800.00	1,799.27	1,474.79	1,430.30	6.20	5.80	-74.19	-2,392.39	4,282.76	4,902.20	4,890.22	11.98	409.253	
1,900.00	1,899.17	1,545.87	1,493.87	6.55	6.40	-74.60	-2,366.19	4,300.83	4,906.19	4,893.27	12.91	379.887	
2,000.00	1,999.07	1,640.15	1,577.38	6.90	7.21	-75.15	-2,330.13	4,325.59	4,910.79	4,896.72	14.07	349.082	
2,100.00	2,098.96	1,729.01	1,655.71	7.25	7.99	-75.67	-2,295.28	4,348.96	4,915.56	4,900.38	15.18	323.774	
2,200.00	2,198.86	1,794.00	1,712.67	7.61	8.56	-76.06	-2,269.45	4,366.63	4,921.32	4,905.23	16.09	305.797	
2,300.00	2,298.76	1,861.72	1,771.96	7.96	9.13	-76.47	-2,242.60	4,385.31	4,927.97	4,910.97	16.99	290.021	
2,400.00	2,398.66	2,448.00	2,289.37	8.32	13.81	-79.90	-2,002.42	4,512.90	4,926.29	4,904.29	22.00	223.883	
2,463.83	2,462.42	2,448.00	2,289.37	8.55	13.81	-79.90	-2,002.42	4,512.90	4,925.88	4,903.65	22.23	221.559	
2,500.00	2,498.56	2,448.00	2,289.37	8.68	13.81	-79.90	-2,002.42	4,512.90	4,926.01	4,903.65	22.36	220.294	
2,600.00	2,598.45	2,448.00	2,289.37	9.03	13.81	-79.90	-2,002.42	4,512.90	4,927.76	4,905.05	22.71	216.978	
2,700.00	2,698.35	2,448.00	2,289.37	9.39	13.81	-79.90	-2,002.42	4,512.90	4,931.54	4,908.49	23.05	213.923	
2,800.00	2,798.25	2,448.00	2,289.37	9.75	13.81	-79.90	-2,002.42	4,512.90	4,937.34	4,913.95	23.39	211.120	
2,900.00	2,898.15	2,516.51	2,349.46	10.11	14.40	-80.31	-1,974.35	4,530.06	4,944.68	4,920.37	24.30	203.445	
3,000.00	2,998.04	2,654.22	2,470.77	10.47	15.55	-81.12	-1,918.30	4,563.34	4,951.82	4,926.04	25.78	192.107	
3,100.00	3,097.94	2,747.00	2,553.56	10.83	16.28	-81.64	-1,882.33	4,584.77	4,959.25	4,932.42	26.83	184.824	
3,200.00	3,197.84	2,834.66	2,632.93	11.19	16.94	-82.10	-1,850.62	4,604.19	4,967.10	4,939.28	27.82	178.576	
3,300.00	3,297.74	2,928.72	2,719.02	11.55	17.62	-82.58	-1,818.57	4,624.41	4,975.38	4,946.56	28.81	172.674	
3,400.00	3,397.64	3,092.25	2,871.10	11.91	18.71	-83.33	-1,767.80	4,656.48	4,983.24	4,953.01	30.23	164.860	
3,500.00	3,497.53	3,230.38	3,002.57	12.27	19.49	-83.88	-1,732.24	4,679.44	4,990.25	4,958.91	31.33	159.255	
3,600.00	3,597.43	3,446.98	3,212.54	12.63	20.50	-84.57	-1,688.03	4,708.31	4,996.17	4,963.49	32.68	152.887	
3,700.00	3,697.33	3,586.95	3,350.12	12.99	21.01	-84.93	-1,666.22	4,721.79	4,999.98	4,966.46	33.52	149.168	
3,800.00	3,797.23	3,695.36	3,457.62	13.35	21.31	-85.13	-1,655.14	4,730.13	5,003.79	4,969.62	34.17	146.447	
3,900.00	3,897.12	3,782.05	3,543.90	13.72	21.51	-85.27	-1,649.04	4,735.94	5,007.66	4,972.96	34.70	144.312	
4,000.00	3,997.02	3,869.05	3,630.49	14.08	21.70	-85.40	-1,643.13	4,741.92	5,011.81	4,976.57	35.23	142.243	
4,100.00	4,096.92	3,956.07	3,717.11	14.44	21.89	-85.52	-1,637.43	4,748.06	5,016.22	4,980.46	35.77	140.245	
4,200.00	4,196.82	4,059.24	3,819.81	14.80	22.11	-85.67	-1,630.94	4,755.41	5,020.82	4,984.49	36.33	138.200	
4,300.00	4,296.72	4,173.86	3,933.95	15.16	22.36	-85.83	-1,623.96	4,763.20	5,025.18	4,988.27	36.91	136.136	
4,400.00	4,396.61	4,288.59	4,048.24	15.53	22.60	-85.99	-1,617.20	4,770.55	5,029.27	4,991.78	37.50	134.128	
4,500.00	4,496.51	4,403.43	4,162.69	15.89	22.84	-86.14	-1,610.67	4,777.47	5,033.08	4,995.00	38.08	132.174	
4,600.00	4,596.41	4,509.09	4,268.03	16.25	23.05	-86.28	-1,604.91	4,783.47	5,036.66	4,998.02	38.63	130.374	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,700.00	4,696.31	4,604.14	4,362.81	16.61	23.23	-86.40	-1,600.17	4,788.76	5,040.28	5,001.13	39.15	128.739	
4,800.00	4,796.20	4,699.28	4,457.71	16.98	23.40	-86.51	-1,595.89	4,794.00	5,044.01	5,004.34	39.67	127.148	
4,900.00	4,896.10	4,794.51	4,552.72	17.34	23.58	-86.62	-1,592.09	4,799.19	5,047.84	5,007.65	40.19	125.599	
5,000.00	4,996.00	4,889.83	4,647.84	17.70	23.76	-86.72	-1,588.75	4,804.33	5,051.78	5,011.07	40.71	124.091	
5,100.00	5,095.90	4,983.86	4,741.70	18.07	23.92	-86.81	-1,585.94	4,809.35	5,055.82	5,014.61	41.21	122.672	
5,200.00	5,195.80	5,076.41	4,834.08	18.43	24.06	-86.90	-1,583.69	4,814.26	5,060.00	5,018.31	41.70	121.349	
5,300.00	5,295.69	5,169.02	4,926.55	18.79	24.21	-86.98	-1,581.96	4,819.16	5,064.34	5,022.16	42.18	120.057	
5,400.00	5,395.59	5,261.69	5,019.09	19.16	24.35	-87.06	-1,580.76	4,824.05	5,068.82	5,026.16	42.67	118.797	
5,500.00	5,495.49	5,354.43	5,111.70	19.52	24.49	-87.13	-1,580.08	4,828.92	5,073.45	5,030.30	43.15	117.568	
5,600.00	5,595.39	5,449.41	5,206.55	19.88	24.63	-87.19	-1,579.90	4,833.89	5,078.22	5,034.58	43.64	116.378	
5,700.00	5,695.28	5,547.54	5,304.54	20.25	24.77	-87.26	-1,579.91	4,839.02	5,083.04	5,038.93	44.11	115.231	
5,800.00	5,795.18	5,645.68	5,402.55	20.61	24.91	-87.32	-1,580.05	4,844.15	5,087.90	5,043.31	44.59	114.108	
5,900.00	5,895.08	5,743.83	5,500.56	20.97	25.04	-87.39	-1,580.32	4,849.27	5,092.79	5,047.73	45.07	113.010	
6,000.00	5,994.98	5,841.99	5,598.59	21.34	25.18	-87.45	-1,580.73	4,854.38	5,097.73	5,052.19	45.54	111.935	
6,100.00	6,094.88	5,942.68	5,699.14	21.70	25.32	-87.51	-1,581.21	4,859.63	5,102.68	5,056.66	46.02	110.868	
6,200.00	6,194.77	6,044.82	5,801.14	22.06	25.47	-87.57	-1,581.54	4,864.95	5,107.60	5,061.09	46.51	109.814	
6,300.00	6,294.67	6,146.94	5,903.12	22.43	25.61	-87.64	-1,581.67	4,870.27	5,112.47	5,065.48	47.00	108.782	
6,314.74	6,309.40	6,161.99	5,918.15	22.48	25.63	-87.65	-1,581.67	4,871.06	5,113.19	5,066.12	47.07	108.631	
6,350.00	6,344.59	6,197.91	5,954.02	22.61	25.69	-130.77	-1,581.66	4,872.93	5,115.84	5,068.60	47.24	108.294	
6,400.00	6,394.26	6,248.41	6,004.46	22.79	25.76	-147.56	-1,581.61	4,875.56	5,122.80	5,075.32	47.48	107.893	
6,450.00	6,443.36	6,298.13	6,054.11	22.97	25.83	-153.15	-1,581.51	4,878.16	5,133.47	5,085.76	47.72	107.583	
6,500.00	6,491.60	6,346.76	6,102.67	23.15	25.90	-155.70	-1,581.37	4,880.69	5,147.81	5,099.86	47.95	107.365	
6,550.00	6,538.67	6,398.51	6,154.35	23.32	25.97	-156.99	-1,581.20	4,883.38	5,165.70	5,117.53	48.17	107.231	
6,600.00	6,584.29	6,455.64	6,211.41	23.49	26.04	-157.60	-1,581.16	4,886.18	5,186.99	5,138.59	48.40	107.178 SF	
6,650.00	6,628.18	6,510.57	6,266.28	23.66	26.10	-157.75	-1,581.31	4,888.70	5,211.52	5,162.91	48.61	107.214	
6,700.00	6,670.06	6,562.97	6,318.64	23.83	26.17	-157.55	-1,581.64	4,890.92	5,239.16	5,190.35	48.81	107.338	
6,750.00	6,709.68	6,612.54	6,368.17	24.00	26.23	-157.03	-1,582.10	4,892.87	5,269.77	5,220.77	49.00	107.548	
6,800.00	6,746.79	6,658.99	6,414.58	24.17	26.28	-156.18	-1,582.67	4,894.56	5,303.17	5,253.99	49.17	107.843	
6,850.00	6,781.17	6,702.02	6,457.58	24.35	26.34	-154.96	-1,583.32	4,896.02	5,339.17	5,289.83	49.34	108.219	
6,900.00	6,812.60	6,741.36	6,496.90	24.54	26.38	-153.31	-1,584.01	4,897.25	5,377.56	5,328.08	49.48	108.673	
6,950.00	6,840.88	6,776.76	6,532.27	24.74	26.43	-151.10	-1,584.72	4,898.27	5,418.14	5,368.52	49.62	109.201	
7,000.00	6,865.85	6,807.97	6,563.46	24.96	26.46	-148.14	-1,585.41	4,899.11	5,460.66	5,410.92	49.73	109.801	
7,050.00	6,887.35	6,834.76	6,590.24	25.19	26.50	-144.13	-1,586.05	4,899.79	5,504.88	5,455.04	49.83	110.466	
7,100.00	6,905.25	6,856.94	6,612.41	25.43	26.52	-138.61	-1,586.61	4,900.31	5,550.53	5,500.61	49.92	111.191	
7,150.00	6,919.43	6,875.37	6,630.82	25.69	26.55	-130.89	-1,587.10	4,900.73	5,597.36	5,547.37	49.99	111.970	
7,200.00	6,929.81	6,897.93	6,653.37	25.96	26.56	-120.26	-1,587.71	4,901.19	5,645.06	5,595.01	50.05	112.785	
7,250.00	6,936.33	6,911.58	6,667.01	26.25	26.57	-105.60	-1,588.09	4,901.44	5,693.37	5,643.27	50.10	113.644	
7,300.00	6,938.95	6,915.86	6,671.29	26.55	26.58	-87.36	-1,588.21	4,901.52	5,741.98	5,691.85	50.13	114.542	
7,309.56	6,939.00	6,915.58	6,671.01	26.60	26.58	-83.68	-1,588.20	4,901.51	5,751.29	5,701.15	50.13	114.717	
7,400.00	6,938.83	6,911.10	6,666.53	27.19	26.57	-83.49	-1,588.08	4,901.44	5,839.37	5,789.20	50.18	116.380	
7,500.00	6,938.64	6,905.87	6,661.30	27.91	26.57	-83.26	-1,587.93	4,901.34	5,936.85	5,886.62	50.22	118.210	
7,600.00	6,938.44	6,900.32	6,655.76	28.70	26.56	-83.02	-1,587.78	4,901.24	6,034.40	5,984.13	50.27	120.033	
7,700.00	6,938.25	6,894.43	6,649.87	29.55	26.56	-82.76	-1,587.62	4,901.12	6,132.03	6,081.71	50.33	121.848	
7,800.00	6,938.06	6,888.15	6,643.60	30.47	26.56	-82.49	-1,587.45	4,901.00	6,229.73	6,179.36	50.38	123.657	
7,900.00	6,937.87	6,881.47	6,636.92	31.44	26.55	-82.20	-1,587.26	4,900.86	6,327.51	6,277.07	50.43	125.459	
8,000.00	6,937.68	6,874.33	6,629.78	32.46	26.55	-81.89	-1,587.07	4,900.70	6,425.35	6,374.86	50.49	127.255	
8,100.00	6,937.49	6,870.15	6,625.61	33.53	26.54	-81.71	-1,586.96	4,900.61	6,523.25	6,472.70	50.55	129.039	
8,200.00	6,937.30	6,866.63	6,622.09	34.64	26.54	-81.56	-1,586.86	4,900.53	6,621.21	6,570.60	50.62	130.814	
8,300.00	6,937.10	6,863.05	6,618.51	35.78	26.53	-81.41	-1,586.77	4,900.45	6,719.24	6,668.56	50.68	132.584	
8,400.00	6,936.91	6,859.41	6,614.87	36.96	26.53	-81.25	-1,586.67	4,900.37	6,817.32	6,766.57	50.74	134.347	
8,500.00	6,936.72	6,855.69	6,611.16	38.17	26.52	-81.09	-1,586.58	4,900.28	6,915.45	6,864.64	50.81	136.104	
8,600.00	6,936.53	6,851.92	6,607.38	39.41	26.52	-80.93	-1,586.48	4,900.20	7,013.63	6,962.76	50.88	137.855	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,700.00	6,936.34	6,848.07	6,603.54	40.68	26.51	-80.76	-1,586.38	4,900.11	7,111.87	7,060.92	50.94	139.601	
8,800.00	6,936.15	6,844.15	6,599.62	41.97	26.51	-80.60	-1,586.28	4,900.01	7,210.15	7,159.13	51.01	141.340	
8,900.00	6,935.96	6,840.16	6,595.63	43.27	26.50	-80.43	-1,586.18	4,899.92	7,308.47	7,257.39	51.08	143.075	
9,000.00	6,935.76	6,836.09	6,591.57	44.60	26.50	-80.25	-1,586.08	4,899.82	7,406.84	7,355.69	51.15	144.804	
9,100.00	6,935.57	6,831.94	6,587.42	45.95	26.49	-80.07	-1,585.98	4,899.72	7,505.25	7,454.03	51.22	146.528	
9,200.00	6,935.38	6,827.72	6,583.20	47.31	26.49	-79.89	-1,585.87	4,899.61	7,603.70	7,552.41	51.29	148.246	
9,300.00	6,935.19	6,823.41	6,578.90	48.69	26.48	-79.71	-1,585.77	4,899.51	7,702.19	7,650.83	51.36	149.960	
9,400.00	6,935.00	6,819.02	6,574.51	50.08	26.48	-79.52	-1,585.67	4,899.40	7,800.72	7,749.28	51.43	151.669	
9,500.00	6,934.81	6,814.55	6,570.04	51.48	26.47	-79.33	-1,585.56	4,899.28	7,899.28	7,847.77	51.50	153.373	
9,600.00	6,934.62	6,809.98	6,565.47	52.89	26.47	-79.14	-1,585.45	4,899.16	7,997.87	7,946.30	51.58	155.072	
9,700.00	6,934.43	6,805.32	6,560.82	54.32	26.46	-78.94	-1,585.35	4,899.04	8,096.50	8,044.86	51.65	156.766	
9,800.00	6,934.23	6,800.57	6,556.06	55.75	26.46	-78.74	-1,585.24	4,898.92	8,195.16	8,143.44	51.72	158.456	
9,900.00	6,934.04	6,795.71	6,551.22	57.19	26.45	-78.53	-1,585.13	4,898.79	8,293.85	8,242.06	51.79	160.141	
10,000.00	6,933.85	6,790.76	6,546.27	58.65	26.44	-78.32	-1,585.02	4,898.66	8,392.57	8,340.71	51.86	161.822	
10,100.00	6,933.66	6,785.70	6,541.21	60.10	26.44	-78.11	-1,584.91	4,898.52	8,491.32	8,439.39	51.94	163.498	
10,200.00	6,933.47	6,780.54	6,536.05	61.57	26.43	-77.89	-1,584.80	4,898.38	8,590.10	8,538.09	52.01	165.170	
10,300.00	6,933.28	6,775.27	6,530.78	63.04	26.42	-77.67	-1,584.69	4,898.23	8,688.90	8,636.82	52.08	166.837	
10,400.00	6,933.09	6,769.88	6,525.39	64.52	26.42	-77.44	-1,584.58	4,898.08	8,787.73	8,735.57	52.15	168.500	
10,500.00	6,932.89	6,764.37	6,519.89	66.01	26.41	-77.21	-1,584.46	4,897.92	8,886.58	8,834.35	52.23	170.158	
10,600.00	6,932.70	6,758.74	6,514.26	67.50	26.40	-76.97	-1,584.35	4,897.76	8,985.45	8,933.15	52.30	171.812	
10,700.00	6,932.51	6,752.98	6,508.51	68.99	26.40	-76.73	-1,584.24	4,897.59	9,084.35	9,031.98	52.37	173.462	
10,800.00	6,932.32	6,747.10	6,502.63	70.50	26.39	-76.49	-1,584.12	4,897.42	9,183.27	9,130.83	52.44	175.108	
10,900.00	6,932.13	6,741.07	6,496.61	72.00	26.38	-76.23	-1,584.01	4,897.24	9,282.21	9,229.69	52.52	176.749	
11,000.00	6,931.94	6,734.91	6,490.45	73.51	26.38	-75.98	-1,583.89	4,897.05	9,381.17	9,328.58	52.59	178.386	
11,100.00	6,931.75	6,728.61	6,484.15	75.02	26.37	-75.72	-1,583.78	4,896.86	9,480.15	9,427.49	52.66	180.019	
11,200.00	6,931.55	6,722.15	6,477.70	76.54	26.36	-75.45	-1,583.66	4,896.66	9,579.15	9,526.42	52.73	181.648	
11,300.00	6,931.36	6,715.54	6,471.09	78.06	26.35	-75.18	-1,583.55	4,896.45	9,678.17	9,625.36	52.81	183.272	
11,400.00	6,931.17	6,708.77	6,464.33	79.58	26.34	-74.90	-1,583.43	4,896.23	9,777.20	9,724.32	52.88	184.893	
11,500.00	6,930.98	6,701.83	6,457.39	81.11	26.34	-74.61	-1,583.32	4,896.01	9,876.26	9,823.30	52.95	186.509	
11,600.00	6,930.79	6,694.72	6,450.28	82.64	26.33	-74.32	-1,583.20	4,895.78	9,975.33	9,922.30	53.03	188.121	
11,700.00	6,930.60	6,687.43	6,443.00	84.17	26.32	-74.02	-1,583.09	4,895.54	10,074.41	10,021.31	53.10	189.730	
11,800.00	6,930.41	6,679.95	6,435.53	85.70	26.31	-73.72	-1,582.97	4,895.29	10,173.51	10,120.34	53.17	191.334	
11,900.00	6,930.21	6,672.28	6,427.86	87.24	26.30	-73.40	-1,582.86	4,895.02	10,272.63	10,219.38	53.24	192.934	
12,000.00	6,930.02	6,664.41	6,419.99	88.78	26.29	-73.09	-1,582.75	4,894.75	10,371.76	10,318.44	53.32	194.530	
12,100.00	6,929.83	6,656.32	6,411.92	90.32	26.28	-72.76	-1,582.63	4,894.47	10,470.90	10,417.51	53.39	196.121	
12,200.00	6,929.64	6,648.02	6,403.62	91.87	26.27	-72.43	-1,582.52	4,894.18	10,570.06	10,516.59	53.46	197.709	
12,300.00	6,929.45	6,639.50	6,395.10	93.41	26.26	-72.08	-1,582.41	4,893.87	10,669.23	10,615.69	53.54	199.293	
12,400.00	6,929.26	6,630.74	6,386.35	94.96	26.25	-71.73	-1,582.31	4,893.55	10,768.41	10,714.80	53.61	200.873	
12,500.00	6,929.07	6,621.73	6,377.34	96.51	26.24	-71.38	-1,582.20	4,893.22	10,867.60	10,813.92	53.68	202.449	
12,600.00	6,928.88	6,612.46	6,368.09	98.06	26.23	-71.01	-1,582.10	4,892.87	10,966.81	10,913.05	53.75	204.020	
12,700.00	6,928.68	6,602.93	6,358.56	99.62	26.22	-70.63	-1,582.00	4,892.50	11,066.02	11,012.20	53.83	205.588	
12,800.00	6,928.49	6,593.12	6,348.76	101.17	26.20	-70.25	-1,581.90	4,892.12	11,165.25	11,111.35	53.90	207.152	
12,900.00	6,928.30	6,583.01	6,338.66	102.73	26.19	-69.85	-1,581.81	4,891.73	11,264.48	11,210.51	53.97	208.712	
13,000.00	6,928.11	6,572.60	6,328.26	104.28	26.18	-69.45	-1,581.71	4,891.31	11,363.73	11,309.69	54.04	210.268	
13,100.00	6,927.92	6,561.88	6,317.54	105.84	26.17	-69.04	-1,581.63	4,890.88	11,462.99	11,408.87	54.12	211.820	
13,200.00	6,927.73	6,550.82	6,306.49	107.40	26.15	-68.61	-1,581.55	4,890.42	11,562.25	11,508.06	54.19	213.368	
13,300.00	6,927.54	6,539.40	6,295.09	108.97	26.14	-68.18	-1,581.47	4,889.94	11,661.52	11,607.26	54.26	214.912	
13,400.00	6,927.34	6,527.63	6,283.32	110.53	26.12	-67.73	-1,581.40	4,889.44	11,760.80	11,706.47	54.33	216.452	
13,500.00	6,927.15	6,515.46	6,271.17	112.09	26.11	-67.27	-1,581.34	4,888.91	11,860.09	11,805.68	54.41	217.988	
13,600.00	6,926.96	6,502.90	6,258.62	113.66	26.09	-66.80	-1,581.28	4,888.36	11,959.38	11,904.91	54.48	219.520	
13,700.00	6,926.77	6,489.91	6,245.64	115.22	26.08	-66.32	-1,581.23	4,887.77	12,058.69	12,004.13	54.55	221.049	
13,800.00	6,926.58	6,476.47	6,232.22	116.79	26.06	-65.82	-1,581.20	4,887.16	12,157.99	12,103.37	54.62	222.573	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
13,900.00	6,926.39	6,462.56	6,218.33	118.36	26.04	-65.32	-1,581.17	4,886.51	12,257.31	12,202.61	54.70	224.094	
14,000.00	6,926.20	6,448.17	6,203.94	119.93	26.03	-64.79	-1,581.15	4,885.83	12,356.63	12,301.86	54.77	225.610	
14,100.00	6,926.00	6,433.25	6,189.04	121.50	26.01	-64.26	-1,581.15	4,885.11	12,455.95	12,401.11	54.84	227.123	
14,200.00	6,925.81	6,417.78	6,173.59	123.07	25.99	-63.71	-1,581.16	4,884.35	12,555.28	12,500.37	54.92	228.631	
14,300.00	6,925.62	6,401.73	6,157.56	124.64	25.97	-63.14	-1,581.19	4,883.54	12,654.61	12,599.63	54.99	230.136	
14,400.00	6,925.43	6,385.06	6,140.92	126.21	25.95	-62.56	-1,581.24	4,882.69	12,753.95	12,698.89	55.06	231.636	
14,500.00	6,925.24	6,373.39	6,129.27	127.79	25.94	-62.16	-1,581.28	4,882.08	12,853.29	12,798.15	55.14	233.114	
14,600.00	6,925.05	6,367.86	6,123.74	129.36	25.93	-61.97	-1,581.30	4,881.80	12,952.64	12,897.42	55.22	234.567	
14,700.00	6,924.86	6,362.34	6,118.22	130.93	25.92	-61.78	-1,581.32	4,881.51	13,052.00	12,996.69	55.30	236.015	
14,800.00	6,924.66	6,356.81	6,112.70	132.51	25.91	-61.60	-1,581.34	4,881.22	13,151.36	13,095.97	55.38	237.457	
14,900.00	6,924.47	6,351.28	6,107.18	134.09	25.90	-61.41	-1,581.36	4,880.93	13,250.73	13,195.26	55.47	238.895	
15,000.00	6,924.28	6,345.75	6,101.66	135.66	25.90	-61.22	-1,581.38	4,880.64	13,350.11	13,294.56	55.55	240.326	
15,100.00	6,924.09	6,340.22	6,096.14	137.24	25.89	-61.04	-1,581.39	4,880.35	13,449.49	13,393.86	55.63	241.753	
15,200.00	6,923.90	6,334.70	6,090.62	138.82	25.88	-60.85	-1,581.41	4,880.06	13,548.88	13,493.16	55.72	243.174	
15,300.00	6,923.71	6,329.17	6,085.10	140.40	25.87	-60.67	-1,581.43	4,879.78	13,648.28	13,592.48	55.80	244.590	
15,400.00	6,923.52	6,323.64	6,079.59	141.97	25.87	-60.48	-1,581.44	4,879.49	13,747.68	13,691.80	55.88	246.001	
15,500.00	6,923.33	6,318.12	6,074.07	143.55	25.86	-60.30	-1,581.46	4,879.20	13,847.10	13,791.13	55.97	247.407	
15,600.00	6,923.13	6,312.59	6,068.55	145.13	25.85	-60.11	-1,581.48	4,878.91	13,946.51	13,890.46	56.05	248.807	
15,700.00	6,922.94	6,307.06	6,063.03	146.72	25.84	-59.93	-1,581.49	4,878.62	14,045.94	13,989.80	56.14	250.202	
15,800.00	6,922.75	6,301.54	6,057.51	148.30	25.83	-59.75	-1,581.50	4,878.33	14,145.37	14,089.14	56.22	251.591	
15,900.00	6,922.56	6,296.01	6,051.99	149.88	25.83	-59.57	-1,581.52	4,878.05	14,244.80	14,188.49	56.31	252.976	
16,000.00	6,922.37	6,290.49	6,046.47	151.46	25.82	-59.39	-1,581.53	4,877.76	14,344.24	14,287.85	56.39	254.355	
16,100.00	6,922.18	6,284.96	6,040.96	153.04	25.81	-59.21	-1,581.54	4,877.47	14,443.69	14,387.21	56.48	255.728	
16,200.00	6,921.99	6,279.44	6,035.44	154.63	25.80	-59.03	-1,581.55	4,877.18	14,543.14	14,486.57	56.57	257.097	
16,300.00	6,921.79	6,273.91	6,029.92	156.21	25.79	-58.85	-1,581.57	4,876.89	14,642.60	14,585.95	56.65	258.460	
16,400.00	6,921.60	6,268.39	6,024.40	157.79	25.79	-58.68	-1,581.58	4,876.60	14,742.06	14,685.32	56.74	259.818	
16,500.00	6,921.41	6,262.86	6,018.89	159.38	25.78	-58.50	-1,581.59	4,876.32	14,841.53	14,784.70	56.83	261.170	
16,600.00	6,921.22	6,257.34	6,013.37	160.96	25.77	-58.32	-1,581.60	4,876.03	14,941.00	14,884.09	56.91	262.517	
16,700.00	6,921.03	6,251.81	6,007.85	162.55	25.76	-58.15	-1,581.60	4,875.74	15,040.48	14,983.48	57.00	263.859	
16,800.00	6,920.84	6,246.29	6,002.34	164.13	25.75	-57.97	-1,581.61	4,875.45	15,139.96	15,082.87	57.09	265.196	
16,900.00	6,920.65	6,240.76	5,996.82	165.72	25.75	-57.80	-1,581.62	4,875.16	15,239.45	15,182.27	57.18	266.527	
17,000.00	6,920.45	6,235.24	5,991.30	167.30	25.74	-57.62	-1,581.63	4,874.88	15,338.95	15,281.68	57.27	267.853	
17,100.00	6,920.26	6,229.72	5,985.79	168.89	25.73	-57.45	-1,581.63	4,874.59	15,438.44	15,381.09	57.35	269.174	
17,200.00	6,920.07	6,224.19	5,980.27	170.48	25.72	-57.28	-1,581.64	4,874.30	15,537.94	15,480.50	57.44	270.489	
17,300.00	6,919.88	6,218.67	5,974.75	172.06	25.72	-57.11	-1,581.65	4,874.01	15,637.45	15,579.92	57.53	271.799	
17,400.00	6,919.69	6,213.15	5,969.24	173.65	25.71	-56.94	-1,581.65	4,873.72	15,736.96	15,679.34	57.62	273.104	
17,500.00	6,919.50	6,207.62	5,963.72	175.24	25.70	-56.77	-1,581.66	4,873.44	15,836.48	15,778.76	57.71	274.403	
17,600.00	6,919.31	6,202.10	5,958.21	176.83	25.69	-56.60	-1,581.66	4,873.15	15,936.00	15,878.19	57.80	275.698	
17,700.00	6,919.11	6,196.58	5,952.69	178.41	25.68	-56.43	-1,581.66	4,872.86	16,035.52	15,977.63	57.89	276.987	
17,759.55	6,919.00	6,193.29	5,949.41	179.36	25.68	-56.33	-1,581.66	4,872.69	16,094.79	16,036.84	57.95	277.752	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
0.00	0.00	193.00	193.00	0.00	5.78	81.11	2,058.11	13,164.37	13,324.28				
100.00	100.00	293.00	293.00	0.25	8.78	81.11	2,058.11	13,164.37	13,324.28	13,315.25	9.03	1,475.456	
200.00	200.00	393.00	393.00	0.61	11.78	81.11	2,058.11	13,164.37	13,324.28	13,311.90	12.39	1,075.797	
300.00	300.00	493.00	493.00	0.97	14.77	81.11	2,058.11	13,164.37	13,324.28	13,308.54	15.74	846.503	
400.00	400.00	593.10	593.00	1.33	17.77	81.11	2,058.11	13,164.37	13,324.28	13,305.18	19.10	697.667	
500.00	500.00	693.10	693.00	1.68	20.77	81.11	2,058.11	13,164.37	13,324.28	13,301.83	22.45	593.423	
600.00	600.00	800.38	800.23	2.04	23.98	81.11	2,060.20	13,164.37	13,324.61	13,298.58	26.03	511.969	
700.00	700.00	917.23	917.05	2.40	27.48	81.11	2,059.31	13,164.37	13,324.49	13,294.60	29.89	445.843	
800.00	800.00	1,034.11	1,033.90	2.76	30.99	81.12	2,057.47	13,164.37	13,324.25	13,290.50	33.75	394.830 CC	
827.04	827.04	1,020.45	1,020.04	2.86	30.58	81.11	2,058.11	13,164.37	13,324.28	13,290.85	33.43	398.520	
900.00	900.00	1,093.41	1,093.00	3.12	32.76	81.11	2,058.11	13,164.37	13,324.28	13,288.40	35.88	371.335	
1,000.00	1,000.00	1,193.41	1,193.00	3.48	35.76	81.11	2,058.11	13,164.37	13,324.28	13,285.05	39.24	339.584	
1,100.00	1,099.98	1,300.72	1,300.26	3.82	38.98	-112.00	2,060.20	13,164.37	13,325.26	13,282.47	42.79	311.389	
1,129.54	1,129.49	1,335.21	1,334.75	3.92	40.01	-112.00	2,060.04	13,164.37	13,325.68	13,281.76	43.92	303.390	
1,200.00	1,199.88	1,417.53	1,417.05	4.15	42.48	-112.01	2,059.31	13,164.37	13,326.78	13,280.16	46.62	285.857	
1,300.00	1,299.78	1,534.46	1,533.93	4.48	45.98	-112.02	2,057.46	13,164.37	13,328.23	13,277.78	50.46	264.152	
1,400.00	1,399.68	1,593.39	1,592.68	4.82	47.75	-112.04	2,058.11	13,164.37	13,329.97	13,277.41	52.56	253.614	
1,500.00	1,499.58	1,693.29	1,692.58	5.16	50.74	-112.06	2,058.11	13,164.37	13,331.66	13,275.77	55.89	238.515	
1,600.00	1,599.48	1,800.57	1,799.82	5.50	53.95	-112.08	2,060.20	13,164.37	13,333.69	13,274.24	59.45	224.272	
1,700.00	1,699.37	1,917.59	1,916.81	5.85	57.46	-112.10	2,059.31	13,164.37	13,335.27	13,271.97	63.31	210.649	
1,800.00	1,799.27	2,034.73	2,033.90	6.20	60.97	-112.11	2,057.46	13,164.37	13,336.73	13,269.57	67.16	198.570	
1,900.00	1,899.17	2,093.18	2,092.17	6.55	62.72	-112.13	2,058.11	13,164.37	13,338.47	13,269.20	69.27	192.569	
2,000.00	1,999.07	2,193.08	2,192.07	6.90	65.71	-112.15	2,058.11	13,164.37	13,340.18	13,267.56	72.61	183.722	
2,100.00	2,098.96	2,300.42	2,299.36	7.25	68.93	-112.17	2,060.20	13,164.37	13,342.21	13,266.03	76.18	175.141	
2,200.00	2,198.86	2,417.65	2,416.56	7.61	72.44	-112.19	2,059.31	13,164.37	13,343.80	13,263.75	80.05	166.701	
2,300.00	2,298.76	2,535.00	2,533.87	7.96	75.96	-112.20	2,057.45	13,164.37	13,345.26	13,261.34	83.92	159.029	
2,400.00	2,398.66	2,592.98	2,591.66	8.32	77.70	-112.22	2,058.11	13,164.37	13,347.01	13,261.00	86.01	155.179	
2,500.00	2,498.56	2,692.88	2,691.56	8.68	80.69	-112.24	2,058.11	13,164.37	13,348.72	13,259.36	89.36	149.381	
2,600.00	2,598.45	2,800.27	2,798.90	9.03	83.91	-112.26	2,060.20	13,164.37	13,350.77	13,257.83	92.94	143.657	
2,700.00	2,698.35	2,917.71	2,916.32	9.39	87.43	-112.28	2,059.31	13,164.37	13,352.36	13,255.55	96.81	137.921	
2,800.00	2,798.25	3,035.27	3,033.83	9.75	90.95	-112.29	2,057.45	13,164.37	13,353.82	13,253.13	100.69	132.621	
2,900.00	2,898.15	3,092.77	3,091.15	10.11	92.67	-112.31	2,058.11	13,164.37	13,355.58	13,252.80	102.77	129.951	
3,000.00	2,998.04	3,192.67	3,191.04	10.47	95.67	-112.33	2,058.11	13,164.37	13,357.29	13,251.17	106.13	125.863	
3,100.00	3,097.94	3,300.12	3,298.45	10.83	98.89	-112.35	2,060.20	13,164.37	13,359.35	13,249.65	109.70	121.776	
3,200.00	3,197.84	3,417.77	3,416.07	11.19	102.41	-112.37	2,059.31	13,164.37	13,360.95	13,247.36	113.59	117.625	
3,300.00	3,297.74	3,535.54	3,533.80	11.55	105.94	-112.38	2,057.44	13,164.37	13,362.42	13,244.94	117.48	113.744	
3,400.00	3,397.64	3,592.56	3,590.64	11.91	107.65	-112.40	2,058.11	13,164.37	13,364.18	13,244.63	119.55	111.790	
3,500.00	3,497.53	3,692.46	3,690.53	12.27	110.64	-112.41	2,058.11	13,164.37	13,365.90	13,243.00	122.90	108.754	
3,600.00	3,597.43	3,799.97	3,797.99	12.63	113.86	-112.44	2,060.20	13,164.37	13,367.97	13,241.49	126.48	105.691	
3,700.00	3,697.33	3,917.83	3,915.83	12.99	117.40	-112.46	2,059.31	13,164.37	13,369.57	13,239.20	130.37	102.547	
3,800.00	3,797.23	4,035.82	4,033.77	13.35	120.93	-112.47	2,057.44	13,164.37	13,371.05	13,236.78	134.27	99.583	
3,900.00	3,897.12	4,092.36	4,090.12	13.72	122.63	-112.49	2,058.11	13,164.37	13,372.81	13,236.49	136.33	98.094	
4,000.00	3,997.02	4,192.26	4,190.02	14.08	125.62	-112.50	2,058.11	13,164.37	13,374.55	13,234.87	139.68	95.751	
4,100.00	4,096.92	4,299.81	4,297.53	14.44	128.84	-112.53	2,060.20	13,164.37	13,376.62	13,233.36	143.26	93.370	
4,200.00	4,196.82	4,417.89	4,415.59	14.80	132.38	-112.55	2,059.30	13,164.37	13,378.23	13,231.07	147.16	90.907	
4,300.00	4,296.72	4,536.09	4,533.74	15.16	135.92	-112.56	2,057.43	13,164.37	13,379.71	13,228.64	151.07	88.568	
4,400.00	4,396.61	4,592.15	4,589.61	15.53	137.60	-112.58	2,058.11	13,164.37	13,381.48	13,228.37	153.11	87.398	
4,500.00	4,496.51	4,692.05	4,689.51	15.89	140.60	-112.59	2,058.11	13,164.37	13,383.22	13,226.76	156.46	85.535	
4,600.00	4,596.41	4,799.66	4,797.08	16.25	143.82	-112.62	2,060.20	13,164.37	13,385.31	13,225.26	160.05	83.632	
4,700.00	4,696.31	4,917.95	4,915.34	16.61	147.36	-112.64	2,059.30	13,164.37	13,386.92	13,222.96	163.96	81.649	
4,800.00	4,796.20	5,036.37	5,033.71	16.98	150.91	-112.65	2,057.43	13,164.37	13,388.40	13,220.53	167.87	79.756	
4,900.00	4,896.10	5,091.95	5,089.10	17.34	152.58	-112.66	2,058.11	13,164.37	13,390.18	13,220.29	169.90	78.814	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	5,191.84	5,189.00	17.70	155.57	-112.68	2,058.11	13,164.37	13,391.93	13,218.68	173.25	77.298	
5,100.00	5,095.90	5,299.51	5,296.62	18.07	158.80	-112.71	2,060.20	13,164.37	13,394.02	13,217.18	176.84	75.741	
5,200.00	5,195.80	5,418.02	5,415.10	18.43	162.35	-112.73	2,059.30	13,164.37	13,395.64	13,214.89	180.75	74.110	
5,300.00	5,295.69	5,536.65	5,533.69	18.79	165.90	-112.74	2,057.42	13,164.37	13,397.13	13,212.46	184.67	72.547	
5,400.00	5,395.59	5,591.74	5,588.59	19.16	167.55	-112.75	2,058.11	13,164.37	13,398.92	13,212.23	186.68	71.774	
5,500.00	5,495.49	5,691.64	5,688.49	19.52	170.55	-112.77	2,058.11	13,164.37	13,400.67	13,210.63	190.04	70.515	
5,600.00	5,595.39	5,799.35	5,796.16	19.88	173.77	-112.80	2,060.20	13,164.37	13,402.77	13,209.14	193.63	69.219	
5,700.00	5,695.28	5,918.08	5,914.86	20.25	177.33	-112.82	2,059.30	13,164.37	13,404.40	13,206.85	197.55	67.853	
5,800.00	5,795.18	6,036.93	6,033.66	20.61	180.89	-112.83	2,057.41	13,164.37	13,405.88	13,204.41	201.47	66.539	
5,900.00	5,895.08	6,091.53	6,088.08	20.97	182.53	-112.84	2,058.11	13,164.37	13,407.68	13,204.21	203.47	65.894	
6,000.00	5,994.98	6,191.43	6,187.98	21.34	185.52	-112.86	2,058.11	13,164.37	13,409.44	13,202.61	206.83	64.834	
6,100.00	6,094.88	6,299.20	6,295.70	21.70	188.75	-112.89	2,060.21	13,164.37	13,411.55	13,201.13	210.42	63.737	
6,200.00	6,194.77	6,418.14	6,414.61	22.06	192.32	-112.91	2,059.30	13,164.37	13,413.18	13,198.84	214.35	62.577	
6,300.00	6,294.67	6,537.20	6,533.64	22.43	195.88	-112.92	2,057.41	13,164.37	13,414.68	13,196.40	218.28	61.457 ES, SF	
6,314.74	6,309.40	6,506.15	6,502.40	22.48	194.95	-112.92	2,058.11	13,164.37	13,414.98	13,197.57	217.40	61.706	
6,350.00	6,344.59	6,518.00	6,514.23	22.61	195.31	-156.10	2,058.11	13,164.37	13,416.58	13,198.70	217.88	61.577	
6,400.00	6,394.26	6,518.00	6,514.23	22.79	195.31	-173.10	2,058.11	13,164.37	13,422.28	13,204.23	218.06	61.554	
6,450.00	6,443.36	6,518.00	6,514.23	22.97	195.31	-179.05	2,058.11	13,164.37	13,431.99	13,213.76	218.22	61.551	
6,500.00	6,491.60	6,518.00	6,514.23	23.15	195.31	177.88	2,058.11	13,164.37	13,445.62	13,227.24	218.38	61.569	
6,550.00	6,538.67	6,518.00	6,514.23	23.32	195.31	175.89	2,058.11	13,164.37	13,463.09	13,244.55	218.54	61.606	
6,600.00	6,584.29	6,518.00	6,514.23	23.49	195.31	174.40	2,058.11	13,164.37	13,484.27	13,265.59	218.68	61.663	
6,650.00	6,628.18	6,518.00	6,514.23	23.66	195.31	173.12	2,058.11	13,164.37	13,509.01	13,290.21	218.81	61.740	
6,700.00	6,670.06	6,518.00	6,514.23	23.83	195.31	171.91	2,058.11	13,164.37	13,537.15	13,318.23	218.92	61.835	
6,750.00	6,709.68	6,518.00	6,514.23	24.00	195.31	170.68	2,058.11	13,164.37	13,568.48	13,349.45	219.03	61.948	
6,800.00	6,746.79	6,518.00	6,514.23	24.17	195.31	169.34	2,058.11	13,164.37	13,602.80	13,383.68	219.12	62.078	
6,850.00	6,781.17	6,518.00	6,514.23	24.35	195.31	167.80	2,058.11	13,164.37	13,639.87	13,420.67	219.20	62.224	
6,900.00	6,812.60	6,518.00	6,514.23	24.54	195.31	165.95	2,058.11	13,164.37	13,679.44	13,460.17	219.27	62.385	
6,950.00	6,840.88	6,518.00	6,514.23	24.74	195.31	163.63	2,058.11	13,164.37	13,721.24	13,501.91	219.33	62.560	
7,000.00	6,865.85	6,518.00	6,514.23	24.96	195.31	160.60	2,058.11	13,164.37	13,765.01	13,545.63	219.37	62.747	
7,050.00	6,887.35	6,518.00	6,514.23	25.19	195.31	156.46	2,058.11	13,164.37	13,810.44	13,591.04	219.41	62.944	
7,100.00	6,905.25	6,518.00	6,514.23	25.43	195.31	150.51	2,058.11	13,164.37	13,857.26	13,637.82	219.43	63.150	
7,150.00	6,919.43	6,518.00	6,514.23	25.69	195.31	141.49	2,058.11	13,164.37	13,905.15	13,685.70	219.45	63.364	
7,200.00	6,929.81	6,518.00	6,514.23	25.96	195.31	127.25	2,058.11	13,164.37	13,953.81	13,734.35	219.46	63.583	
7,250.00	6,936.33	6,518.00	6,514.23	26.25	195.31	105.62	2,058.11	13,164.37	14,002.93	13,783.47	219.46	63.806	
7,300.00	6,938.95	6,518.00	6,514.23	26.55	195.31	79.55	2,058.11	13,164.37	14,052.21	13,832.75	219.46	64.030	
7,309.56	6,939.00	6,518.00	6,514.23	26.60	195.31	74.84	2,058.11	13,164.37	14,061.63	13,842.16	219.46	64.073	
7,400.00	6,938.83	6,518.00	6,514.23	27.19	195.31	74.84	2,058.11	13,164.37	14,150.68	13,931.22	219.46	64.479	
7,500.00	6,938.64	6,518.00	6,514.23	27.91	195.31	74.84	2,058.11	13,164.37	14,249.16	14,029.70	219.47	64.926	
7,600.00	6,938.44	6,518.00	6,514.23	28.70	195.31	74.84	2,058.11	13,164.37	14,347.67	14,128.20	219.47	65.373	
7,700.00	6,938.25	6,518.00	6,514.23	29.55	195.31	74.84	2,058.11	13,164.37	14,446.20	14,226.71	219.49	65.819	
7,800.00	6,938.06	6,518.00	6,514.23	30.47	195.31	74.84	2,058.11	13,164.37	14,544.74	14,325.24	219.50	66.263	
7,900.00	6,937.87	6,518.00	6,514.23	31.44	195.31	74.84	2,058.11	13,164.37	14,643.31	14,423.79	219.52	66.707	
8,000.00	6,937.68	6,518.00	6,514.23	32.46	195.31	74.84	2,058.11	13,164.37	14,741.89	14,522.35	219.54	67.149	
8,100.00	6,937.49	6,518.00	6,514.23	33.53	195.31	74.84	2,058.11	13,164.37	14,840.50	14,620.93	219.56	67.591	
8,200.00	6,937.30	6,518.00	6,514.23	34.64	195.31	74.84	2,058.11	13,164.37	14,939.12	14,719.53	219.59	68.032	
8,300.00	6,937.10	6,518.00	6,514.23	35.78	195.31	74.84	2,058.11	13,164.37	15,037.76	14,818.14	219.62	68.472	
8,400.00	6,936.91	6,518.00	6,514.23	36.96	195.31	74.84	2,058.11	13,164.37	15,136.42	14,916.76	219.65	68.911	
8,500.00	6,936.72	6,518.00	6,514.23	38.17	195.31	74.84	2,058.11	13,164.37	15,235.09	15,015.40	219.69	69.349	
8,600.00	6,936.53	6,518.00	6,514.23	39.41	195.31	74.84	2,058.11	13,164.37	15,333.79	15,114.06	219.73	69.786	
8,700.00	6,936.34	6,518.00	6,514.23	40.68	195.31	74.84	2,058.11	13,164.37	15,432.50	15,212.73	219.77	70.222	
8,800.00	6,936.15	6,518.00	6,514.23	41.97	195.31	74.84	2,058.11	13,164.37	15,531.22	15,311.41	219.81	70.657	
8,900.00	6,935.96	6,518.00	6,514.23	43.27	195.31	74.84	2,058.11	13,164.37	15,629.96	15,410.11	219.86	71.091	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	6,518.00	6,514.23	44.60	195.31	74.84	2,058.11	13,164.37	15,728.72	15,508.82	219.91	71.525	
9,100.00	6,935.57	6,518.00	6,514.23	45.95	195.31	74.84	2,058.11	13,164.37	15,827.50	15,607.54	219.96	71.958	
9,200.00	6,935.38	6,518.00	6,514.23	47.31	195.31	74.84	2,058.11	13,164.37	15,926.29	15,706.28	220.01	72.389	
9,300.00	6,935.19	6,518.00	6,514.23	48.69	195.31	74.84	2,058.11	13,164.37	16,025.09	15,805.03	220.06	72.820	
9,400.00	6,935.00	6,518.00	6,514.23	50.08	195.31	74.84	2,058.11	13,164.37	16,123.91	15,903.79	220.12	73.250	
9,500.00	6,934.81	6,518.00	6,514.23	51.48	195.31	74.84	2,058.11	13,164.37	16,222.74	16,002.56	220.18	73.680	
9,600.00	6,934.62	6,518.00	6,514.23	52.89	195.31	74.84	2,058.11	13,164.37	16,321.59	16,101.35	220.24	74.108	
9,700.00	6,934.43	6,518.00	6,514.23	54.32	195.31	74.84	2,058.11	13,164.37	16,420.45	16,200.15	220.30	74.536	
9,800.00	6,934.23	6,518.00	6,514.23	55.75	195.31	74.84	2,058.11	13,164.37	16,519.33	16,298.96	220.37	74.962	
9,900.00	6,934.04	6,518.00	6,514.23	57.19	195.31	74.84	2,058.11	13,164.37	16,618.22	16,397.78	220.43	75.389	
10,000.00	6,933.85	6,518.00	6,514.23	58.65	195.31	74.84	2,058.11	13,164.37	16,717.12	16,496.62	220.50	75.814	
10,100.00	6,933.66	6,518.00	6,514.23	60.10	195.31	74.84	2,058.11	13,164.37	16,816.04	16,595.46	220.57	76.238	
10,200.00	6,933.47	6,518.00	6,514.23	61.57	195.31	74.84	2,058.11	13,164.37	16,914.96	16,694.32	220.64	76.662	
10,300.00	6,933.28	6,518.00	6,514.23	63.04	195.31	74.84	2,058.11	13,164.37	17,013.90	16,793.19	220.72	77.085	
10,400.00	6,933.09	6,518.00	6,514.23	64.52	195.31	74.84	2,058.11	13,164.37	17,112.86	16,892.07	220.79	77.507	
10,500.00	6,932.89	6,518.00	6,514.23	66.01	195.31	74.84	2,058.11	13,164.37	17,211.82	16,990.95	220.87	77.929	
10,600.00	6,932.70	6,518.00	6,514.23	67.50	195.31	74.84	2,058.11	13,164.37	17,310.80	17,089.85	220.94	78.349	
10,700.00	6,932.51	6,518.00	6,514.23	68.99	195.31	74.84	2,058.11	13,164.37	17,409.79	17,188.76	221.02	78.769	
10,800.00	6,932.32	6,518.00	6,514.23	70.50	195.31	74.84	2,058.11	13,164.37	17,508.79	17,287.68	221.10	79.189	
10,900.00	6,932.13	6,518.00	6,514.23	72.00	195.31	74.84	2,058.11	13,164.37	17,607.80	17,386.61	221.18	79.607	
11,000.00	6,931.94	6,518.00	6,514.23	73.51	195.31	74.84	2,058.11	13,164.37	17,706.82	17,485.55	221.27	80.025	
11,100.00	6,931.75	6,518.00	6,514.23	75.02	195.31	74.84	2,058.11	13,164.37	17,805.85	17,584.50	221.35	80.442	
11,200.00	6,931.55	6,518.00	6,514.23	76.54	195.31	74.84	2,058.11	13,164.37	17,904.90	17,683.46	221.43	80.859	
11,300.00	6,931.36	6,518.00	6,514.23	78.06	195.31	74.84	2,058.11	13,164.37	18,003.95	17,782.43	221.52	81.274	
11,400.00	6,931.17	6,518.00	6,514.23	79.58	195.31	74.84	2,058.11	13,164.37	18,103.02	17,881.41	221.61	81.690	
11,500.00	6,930.98	6,518.00	6,514.23	81.11	195.31	74.84	2,058.11	13,164.37	18,202.09	17,980.40	221.70	82.104	
11,600.00	6,930.79	6,518.00	6,514.23	82.64	195.31	74.84	2,058.11	13,164.37	18,301.18	18,079.39	221.78	82.518	
11,700.00	6,930.60	6,518.00	6,514.23	84.17	195.31	74.84	2,058.11	13,164.37	18,400.27	18,178.40	221.87	82.931	
11,800.00	6,930.41	6,518.00	6,514.23	85.70	195.31	74.84	2,058.11	13,164.37	18,499.38	18,277.41	221.97	83.343	
11,900.00	6,930.21	6,518.00	6,514.23	87.24	195.31	74.84	2,058.11	13,164.37	18,598.49	18,376.43	222.06	83.755	
12,000.00	6,930.02	6,518.00	6,514.23	88.78	195.31	74.84	2,058.11	13,164.37	18,697.62	18,475.47	222.15	84.166	
12,100.00	6,929.83	6,518.00	6,514.23	90.32	195.31	74.84	2,058.11	13,164.37	18,796.75	18,574.50	222.24	84.577	
12,200.00	6,929.64	6,518.00	6,514.23	91.87	195.31	74.84	2,058.11	13,164.37	18,895.89	18,673.55	222.34	84.987	
12,300.00	6,929.45	6,518.00	6,514.23	93.41	195.31	74.84	2,058.11	13,164.37	18,995.04	18,772.61	222.43	85.396	
12,400.00	6,929.26	6,518.00	6,514.23	94.96	195.31	74.84	2,058.11	13,164.37	19,094.20	18,871.67	222.53	85.805	
12,500.00	6,929.07	6,518.00	6,514.23	96.51	195.31	74.84	2,058.11	13,164.37	19,193.37	18,970.74	222.63	86.213	
12,600.00	6,928.88	6,518.00	6,514.23	98.06	195.31	74.84	2,058.11	13,164.37	19,292.55	19,069.82	222.73	86.620	
12,700.00	6,928.68	6,518.00	6,514.23	99.62	195.31	74.84	2,058.11	13,164.37	19,391.74	19,168.91	222.82	87.027	
12,800.00	6,928.49	6,518.00	6,514.23	101.17	195.31	74.84	2,058.11	13,164.37	19,490.93	19,268.01	222.92	87.433	
12,900.00	6,928.30	6,518.00	6,514.23	102.73	195.31	74.84	2,058.11	13,164.37	19,590.13	19,367.11	223.02	87.839	
13,000.00	6,928.11	6,518.00	6,514.23	104.28	195.31	74.84	2,058.11	13,164.37	19,689.34	19,466.22	223.12	88.244	
13,100.00	6,927.92	6,518.00	6,514.23	105.84	195.31	74.84	2,058.11	13,164.37	19,788.56	19,565.34	223.23	88.648	
13,200.00	6,927.73	6,518.00	6,514.23	107.40	195.31	74.84	2,058.11	13,164.37	19,887.79	19,664.46	223.33	89.052	
13,300.00	6,927.54	6,518.00	6,514.23	108.97	195.31	74.84	2,058.11	13,164.37	19,987.02	19,763.59	223.43	89.455	
13,400.00	6,927.34	6,518.00	6,514.23	110.53	195.31	74.84	2,058.11	13,164.37	20,086.26	19,862.73	223.53	89.858	
13,500.00	6,927.15	6,518.00	6,514.23	112.09	195.31	74.84	2,058.11	13,164.37	20,185.51	19,961.88	223.64	90.260	
13,600.00	6,926.96	6,518.00	6,514.23	113.66	195.31	74.84	2,058.11	13,164.37	20,284.77	20,061.03	223.74	90.662	
13,700.00	6,926.77	6,518.00	6,514.23	115.22	195.31	74.84	2,058.11	13,164.37	20,384.03	20,160.19	223.85	91.063	
13,800.00	6,926.58	6,518.00	6,514.23	116.79	195.31	74.84	2,058.11	13,164.37	20,483.30	20,259.35	223.95	91.463	
13,900.00	6,926.39	6,518.00	6,514.23	118.36	195.31	74.84	2,058.11	13,164.37	20,582.58	20,358.52	224.06	91.863	
14,000.00	6,926.20	6,518.00	6,514.23	119.93	195.31	74.84	2,058.11	13,164.37	20,681.87	20,457.70	224.16	92.262	
14,100.00	6,926.00	6,518.00	6,514.23	121.50	195.31	74.84	2,058.11	13,164.37	20,781.16	20,556.89	224.27	92.661	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,518.00	6,514.23	123.07	195.31	74.84	2,058.11	13,164.37	20,880.46	20,656.08	224.38	93.060	
14,300.00	6,925.62	6,518.00	6,514.23	124.64	195.31	74.84	2,058.11	13,164.37	20,979.76	20,755.28	224.49	93.457	
14,400.00	6,925.43	6,518.00	6,514.23	126.21	195.31	74.84	2,058.11	13,164.37	21,079.07	20,854.48	224.59	93.854	
14,500.00	6,925.24	6,518.00	6,514.23	127.79	195.31	74.84	2,058.11	13,164.37	21,178.39	20,953.69	224.70	94.251	
14,600.00	6,925.05	6,518.00	6,514.23	129.36	195.31	74.84	2,058.11	13,164.37	21,277.72	21,052.91	224.81	94.647	
14,700.00	6,924.86	6,518.00	6,514.23	130.93	195.31	74.84	2,058.11	13,164.37	21,377.05	21,152.13	224.92	95.043	
14,800.00	6,924.66	6,518.00	6,514.23	132.51	195.31	74.84	2,058.11	13,164.37	21,476.38	21,251.35	225.03	95.438	
14,900.00	6,924.47	6,518.00	6,514.23	134.09	195.31	74.84	2,058.11	13,164.37	21,575.73	21,350.59	225.14	95.832	
15,000.00	6,924.28	6,518.00	6,514.23	135.66	195.31	74.84	2,058.11	13,164.37	21,675.08	21,449.83	225.25	96.226	
15,100.00	6,924.09	6,518.00	6,514.23	137.24	195.31	74.84	2,058.11	13,164.37	21,774.43	21,549.07	225.36	96.620	
15,200.00	6,923.90	6,518.00	6,514.23	138.82	195.31	74.84	2,058.11	13,164.37	21,873.79	21,648.32	225.47	97.013	
15,300.00	6,923.71	6,518.00	6,514.23	140.40	195.31	74.84	2,058.11	13,164.37	21,973.16	21,747.58	225.59	97.405	
15,400.00	6,923.52	6,518.00	6,514.23	141.97	195.31	74.84	2,058.11	13,164.37	22,072.53	21,846.84	225.70	97.797	
15,500.00	6,923.33	6,518.00	6,514.23	143.55	195.31	74.84	2,058.11	13,164.37	22,171.91	21,946.10	225.81	98.188	
15,600.00	6,923.13	6,518.00	6,514.23	145.13	195.31	74.84	2,058.11	13,164.37	22,271.30	22,045.37	225.92	98.579	
15,700.00	6,922.94	6,518.00	6,514.23	146.72	195.31	74.84	2,058.11	13,164.37	22,370.68	22,144.65	226.04	98.970	
15,800.00	6,922.75	6,518.00	6,514.23	148.30	195.31	74.84	2,058.11	13,164.37	22,470.08	22,243.93	226.15	99.360	
15,900.00	6,922.56	6,518.00	6,514.23	149.88	195.31	74.84	2,058.11	13,164.37	22,569.48	22,343.22	226.26	99.749	
16,000.00	6,922.37	6,518.00	6,514.23	151.46	195.31	74.84	2,058.11	13,164.37	22,668.88	22,442.51	226.38	100.138	
16,100.00	6,922.18	6,518.00	6,514.23	153.04	195.31	74.84	2,058.11	13,164.37	22,768.30	22,541.80	226.49	100.526	
16,200.00	6,921.99	6,518.00	6,514.23	154.63	195.31	74.84	2,058.11	13,164.37	22,867.71	22,641.11	226.61	100.914	
16,300.00	6,921.79	6,518.00	6,514.23	156.21	195.31	74.84	2,058.11	13,164.37	22,967.13	22,740.41	226.72	101.302	
16,400.00	6,921.60	6,518.00	6,514.23	157.79	195.31	74.84	2,058.11	13,164.37	23,066.56	22,839.72	226.84	101.689	
16,500.00	6,921.41	6,518.00	6,514.23	159.38	195.31	74.84	2,058.11	13,164.37	23,165.99	22,939.04	226.95	102.075	
16,600.00	6,921.22	6,518.00	6,514.23	160.96	195.31	74.84	2,058.11	13,164.37	23,265.42	23,038.36	227.07	102.461	
16,700.00	6,921.03	6,518.00	6,514.23	162.55	195.31	74.84	2,058.11	13,164.37	23,364.86	23,137.68	227.18	102.846	
16,800.00	6,920.84	6,518.00	6,514.23	164.13	195.31	74.84	2,058.11	13,164.37	23,464.31	23,237.01	227.30	103.231	
16,900.00	6,920.65	6,518.00	6,514.23	165.72	195.31	74.84	2,058.11	13,164.37	23,563.76	23,336.35	227.41	103.616	
17,000.00	6,920.45	6,518.00	6,514.23	167.30	195.31	74.84	2,058.11	13,164.37	23,663.21	23,435.68	227.53	104.000	
17,100.00	6,920.26	6,518.00	6,514.23	168.89	195.31	74.84	2,058.11	13,164.37	23,762.67	23,535.03	227.65	104.384	
17,200.00	6,920.07	6,518.00	6,514.23	170.48	195.31	74.84	2,058.11	13,164.37	23,862.14	23,634.37	227.76	104.767	
17,300.00	6,919.88	6,518.00	6,514.23	172.06	195.31	74.84	2,058.11	13,164.37	23,961.61	23,733.72	227.88	105.149	
17,400.00	6,919.69	6,518.00	6,514.23	173.65	195.31	74.84	2,058.11	13,164.37	24,061.08	23,833.08	228.00	105.531	
17,500.00	6,919.50	6,518.00	6,514.23	175.24	195.31	74.84	2,058.11	13,164.37	24,160.55	23,932.44	228.12	105.913	
17,600.00	6,919.31	6,518.00	6,514.23	176.83	195.31	74.84	2,058.11	13,164.37	24,260.04	24,031.80	228.24	106.294	
17,700.00	6,919.11	6,518.00	6,514.23	178.41	195.31	74.84	2,058.11	13,164.37	24,359.52	24,131.17	228.35	106.675	
17,759.55	6,919.00	6,518.00	6,514.23	179.36	195.31	74.84	2,058.11	13,164.37	24,418.77	24,190.35	228.42	106.901	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - 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	0.00	0.00	0.00	0.00	107.41	-973.72	3,104.49	3,254.24				
100.00	100.00	36.00	36.00	0.25	1.08	107.41	-973.72	3,104.49	3,253.61	3,252.28	1.33	2,446.619	
200.00	200.00	136.00	136.00	0.61	4.08	107.41	-973.72	3,104.49	3,253.61	3,248.92	4.68	694.515	
300.00	300.00	236.00	236.00	0.97	7.07	107.41	-973.72	3,104.49	3,253.61	3,245.57	8.04	404.698	
400.00	400.00	336.00	336.00	1.33	10.07	107.41	-973.72	3,104.49	3,253.61	3,242.22	11.39	285.542	
500.00	500.00	436.00	436.00	1.68	13.06	107.41	-973.72	3,104.49	3,253.61	3,238.86	14.75	220.593	
600.00	600.00	536.10	536.00	2.04	16.06	107.41	-973.72	3,104.49	3,253.61	3,235.50	18.11	179.685	
700.00	700.00	636.10	636.00	2.40	19.06	107.41	-973.72	3,104.49	3,253.61	3,232.15	21.46	151.597	
800.00	800.00	736.10	736.00	2.76	22.06	107.41	-973.72	3,104.49	3,253.61	3,228.79	24.82	131.103	
840.21	840.21	774.64	774.50	2.90	23.21	107.38	-971.56	3,104.49	3,252.96	3,226.85	26.12	124.557	
900.00	900.00	830.67	830.51	3.12	24.89	107.38	-971.76	3,104.49	3,253.03	3,225.02	28.01	116.141	
1,000.00	1,000.00	924.39	924.22	3.48	27.70	107.40	-972.60	3,104.49	3,253.30	3,222.12	31.18	104.353	
1,100.00	1,099.98	1,036.39	1,035.98	3.82	31.05	-85.73	-973.72	3,104.49	3,253.48	3,218.61	34.87	93.297	
1,129.54	1,129.49	1,065.90	1,065.49	3.92	31.94	-85.75	-973.72	3,104.49	3,253.39	3,217.54	35.85	90.743	
1,200.00	1,199.88	1,136.29	1,135.88	4.15	34.05	-85.81	-973.72	3,104.49	3,253.16	3,214.96	38.19	85.176	
1,300.00	1,299.78	1,236.19	1,235.78	4.48	37.04	-85.89	-973.72	3,104.49	3,252.83	3,211.31	41.52	78.344	
1,400.00	1,399.68	1,330.73	1,330.27	4.82	39.87	-86.00	-971.76	3,104.49	3,251.94	3,207.25	44.69	72.766	
1,476.07	1,475.67	1,402.06	1,401.58	5.08	42.01	-86.04	-972.35	3,104.49	3,251.88	3,204.79	47.09	69.061	
1,500.00	1,499.58	1,424.50	1,424.02	5.16	42.68	-86.06	-972.60	3,104.49	3,251.89	3,204.05	47.84	67.973	
1,600.00	1,599.48	1,536.19	1,535.48	5.50	46.03	-86.13	-973.72	3,104.49	3,251.88	3,200.35	51.53	63.104	
1,700.00	1,699.37	1,636.08	1,635.37	5.85	49.02	-86.21	-973.72	3,104.49	3,251.58	3,196.71	54.87	59.257	
1,800.00	1,799.27	1,735.98	1,735.27	6.20	52.02	-86.29	-973.72	3,104.49	3,251.29	3,193.07	58.21	55.850	
1,900.00	1,899.17	1,830.65	1,829.89	6.55	54.85	-86.39	-971.76	3,104.49	3,250.44	3,189.04	61.40	52.937	
1,963.40	1,962.51	1,890.18	1,889.41	6.77	56.64	-86.43	-972.22	3,104.49	3,250.40	3,186.99	63.41	51.261	
2,000.00	1,999.07	1,924.56	1,923.77	6.90	57.67	-86.45	-972.60	3,104.49	3,250.41	3,185.84	64.57	50.341	
2,100.00	2,098.96	2,035.98	2,034.96	7.25	61.01	-86.52	-973.72	3,104.49	3,250.43	3,182.17	68.26	47.619	
2,200.00	2,198.86	2,135.88	2,134.86	7.61	64.00	-86.60	-973.72	3,104.49	3,250.16	3,178.56	71.61	45.389	
2,300.00	2,298.76	2,235.77	2,234.76	7.96	66.99	-86.68	-973.72	3,104.49	3,249.90	3,174.94	74.96	43.357	
2,400.00	2,398.66	2,330.58	2,329.51	8.32	69.83	-86.79	-971.76	3,104.49	3,249.09	3,170.94	78.15	41.573	
2,450.19	2,448.80	2,377.76	2,376.69	8.50	71.25	-86.82	-972.11	3,104.49	3,249.07	3,169.32	79.75	40.743	
2,500.00	2,498.56	2,424.62	2,423.53	8.68	72.65	-86.85	-972.60	3,104.49	3,249.09	3,167.77	81.33	39.951	
2,600.00	2,598.45	2,535.77	2,534.45	9.03	75.98	-86.92	-973.72	3,104.49	3,249.14	3,164.13	85.02	38.218	
2,700.00	2,698.35	2,635.67	2,634.35	9.39	78.98	-87.00	-973.72	3,104.49	3,248.90	3,160.53	88.37	36.766	
2,800.00	2,798.25	2,735.57	2,734.25	9.75	81.97	-87.08	-973.72	3,104.49	3,248.67	3,156.95	91.72	35.420	
2,900.00	2,898.15	2,830.50	2,829.13	10.11	84.81	-87.19	-971.76	3,104.49	3,247.91	3,152.99	94.92	34.216	
2,936.40	2,934.51	2,864.77	2,863.39	10.24	85.84	-87.21	-972.00	3,104.49	3,247.90	3,151.82	96.08	33.804	
3,000.00	2,998.04	2,924.68	2,923.28	10.47	87.64	-87.25	-972.60	3,104.49	3,247.93	3,149.83	98.10	33.107	
3,100.00	3,097.94	3,035.57	3,033.94	10.83	90.96	-87.32	-973.72	3,104.49	3,248.01	3,146.22	101.79	31.910	
3,200.00	3,197.84	3,135.46	3,133.84	11.19	93.95	-87.40	-973.72	3,104.49	3,247.80	3,142.66	105.14	30.890	
3,300.00	3,297.74	3,235.36	3,233.74	11.55	96.95	-87.48	-973.72	3,104.49	3,247.59	3,139.10	108.49	29.933	
3,400.00	3,397.64	3,330.42	3,328.74	11.91	99.79	-87.59	-971.76	3,104.49	3,246.88	3,135.18	111.70	29.067	
3,421.97	3,419.58	3,351.13	3,349.45	11.99	100.42	-87.60	-971.89	3,104.49	3,246.87	3,134.47	112.40	28.886	
3,500.00	3,497.53	3,424.73	3,423.03	12.27	102.62	-87.65	-972.60	3,104.49	3,246.93	3,132.04	114.89	28.261	
3,600.00	3,597.43	3,535.36	3,533.43	12.63	105.94	-87.72	-973.72	3,104.49	3,247.03	3,128.46	118.57	27.386	
3,700.00	3,697.33	3,635.26	3,633.33	12.99	108.93	-87.80	-973.72	3,104.49	3,246.85	3,124.93	121.92	26.631	
3,800.00	3,797.23	3,735.16	3,733.23	13.35	111.92	-87.88	-973.72	3,104.49	3,246.68	3,121.40	125.28	25.916	
3,900.00	3,897.12	3,830.34	3,828.36	13.72	114.77	-87.99	-971.76	3,104.49	3,246.01	3,117.52	128.49	25.263	
3,906.89	3,904.01	3,836.85	3,834.86	13.74	114.97	-87.99	-971.80	3,104.49	3,246.01	3,117.30	128.71	25.220	
4,000.00	3,997.02	3,924.79	3,922.79	14.08	117.60	-88.05	-972.60	3,104.49	3,246.08	3,114.40	131.68	24.651	
4,100.00	4,096.92	4,035.15	4,032.92	14.44	120.91	-88.12	-973.72	3,104.49	3,246.20	3,110.85	135.35	23.984	
4,200.00	4,196.82	4,135.05	4,132.82	14.80	123.90	-88.20	-973.72	3,104.49	3,246.06	3,107.35	138.71	23.402	
4,300.00	4,296.72	4,234.95	4,232.72	15.16	126.90	-88.28	-973.72	3,104.49	3,245.92	3,103.86	142.06	22.849	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - 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
4,391.10	4,387.73	4,321.85	4,319.57	15.49	129.50	-88.38	-971.72	3,104.49	3,245.29	3,100.29	145.00	22.382	
4,400.00	4,396.61	4,330.26	4,327.98	15.53	129.75	-88.38	-971.76	3,104.49	3,245.29	3,100.01	145.28	22.338	
4,500.00	4,496.51	4,424.85	4,422.54	15.89	132.59	-88.45	-972.61	3,104.49	3,245.39	3,096.92	148.48	21.858	
4,600.00	4,596.41	4,534.95	4,532.41	16.25	135.89	-88.51	-973.72	3,104.49	3,245.54	3,093.40	152.14	21.333	
4,700.00	4,696.31	4,634.84	4,632.31	16.61	138.88	-88.59	-973.72	3,104.49	3,245.42	3,089.93	155.49	20.872	
4,800.00	4,796.20	4,734.74	4,732.20	16.98	141.87	-88.67	-973.72	3,104.49	3,245.32	3,086.46	158.85	20.430	
4,874.55	4,870.68	4,806.09	4,803.51	17.25	144.01	-88.77	-971.65	3,104.49	3,244.73	3,083.47	161.26	20.121	
4,900.00	4,896.10	4,830.18	4,827.59	17.34	144.73	-88.78	-971.76	3,104.49	3,244.73	3,082.66	162.07	20.020	
5,000.00	4,996.00	4,924.91	4,922.30	17.70	147.57	-88.84	-972.61	3,104.49	3,244.86	3,079.59	165.27	19.633	
5,100.00	5,095.90	5,034.74	5,031.90	18.07	150.86	-88.91	-973.72	3,104.49	3,245.03	3,076.10	168.93	19.209	
5,200.00	5,195.80	5,134.64	5,131.80	18.43	153.86	-88.99	-973.72	3,104.49	3,244.95	3,072.66	172.29	18.835	
5,300.00	5,295.69	5,234.54	5,231.69	18.79	156.85	-89.07	-973.72	3,104.49	3,244.87	3,069.23	175.64	18.474	
5,357.18	5,352.82	5,289.51	5,286.63	19.00	158.50	-89.15	-971.59	3,104.49	3,244.32	3,066.82	177.50	18.278	
5,400.00	5,395.59	5,330.11	5,327.21	19.16	159.71	-89.18	-971.76	3,104.49	3,244.33	3,065.46	178.87	18.138	
5,500.00	5,495.49	5,424.97	5,422.05	19.52	162.56	-89.24	-972.61	3,104.49	3,244.48	3,062.41	182.07	17.820	
5,600.00	5,595.39	5,534.53	5,531.39	19.88	165.84	-89.31	-973.72	3,104.49	3,244.68	3,058.96	185.72	17.471	
5,700.00	5,695.28	5,634.43	5,631.28	20.25	168.83	-89.39	-973.72	3,104.49	3,244.63	3,055.55	189.08	17.160	
5,800.00	5,795.18	5,734.33	5,731.18	20.61	171.83	-89.47	-973.72	3,104.49	3,244.58	3,052.15	192.43	16.861	
5,841.36	5,836.50	5,774.36	5,771.17	20.76	173.03	-89.54	-971.56	3,104.49	3,244.06	3,050.27	193.78	16.741	
5,900.00	5,895.08	5,830.03	5,826.83	20.97	174.69	-89.58	-971.76	3,104.49	3,244.09	3,048.42	195.67	16.580	
6,000.00	5,994.98	5,925.03	5,921.81	21.34	177.54	-89.64	-972.61	3,104.49	3,244.27	3,045.39	198.88	16.313	
6,100.00	6,094.88	6,034.33	6,030.88	21.70	180.82	-89.71	-973.72	3,104.49	3,244.49	3,041.97	202.51	16.021	
6,200.00	6,194.77	6,134.23	6,130.77	22.06	183.81	-89.79	-973.72	3,104.49	3,244.47	3,038.59	205.87	15.760	
6,300.00	6,294.67	6,234.12	6,230.67	22.43	186.80	-89.87	-973.72	3,104.49	3,244.45	3,035.22	209.23	15.507	
6,314.74	6,309.40	6,248.85	6,245.40	22.48	187.24	-89.88	-973.72	3,104.49	3,244.45	3,034.73	209.72	15.470	
6,316.33	6,310.98	6,250.41	6,246.91	22.49	187.29	-92.96	-971.54	3,104.49	3,243.95	3,034.18	209.78	15.464 CC	
6,350.00	6,344.59	6,282.38	6,278.89	22.61	188.25	-133.08	-971.57	3,104.49	3,244.91	3,034.05	210.86	15.389 ES	
6,400.00	6,394.26	6,329.65	6,326.15	22.79	189.66	-149.95	-971.76	3,104.49	3,249.56	3,037.11	212.45	15.295	
6,450.00	6,443.36	6,376.41	6,372.89	22.97	191.07	-155.63	-972.10	3,104.49	3,258.04	3,044.01	214.03	15.222	
6,500.00	6,491.60	6,422.35	6,418.83	23.15	192.44	-158.29	-972.58	3,104.49	3,270.30	3,054.72	215.59	15.169	
6,550.00	6,538.67	6,467.21	6,463.67	23.32	193.79	-159.70	-973.19	3,104.49	3,286.27	3,069.17	217.10	15.137	
6,600.00	6,584.29	6,524.05	6,520.29	23.49	195.49	-160.48	-973.72	3,104.49	3,305.78	3,086.81	218.97	15.097 SF	
6,650.00	6,628.18	6,567.94	6,564.18	23.66	196.81	-160.82	-973.72	3,104.49	3,328.65	3,108.20	220.45	15.099	
6,700.00	6,670.06	6,609.82	6,606.06	23.83	198.06	-160.83	-973.72	3,104.49	3,354.85	3,133.00	221.85	15.122	
6,750.00	6,709.68	6,649.44	6,645.68	24.00	199.25	-160.57	-973.72	3,104.49	3,384.23	3,161.04	223.19	15.163	
6,800.00	6,746.79	6,686.55	6,682.79	24.17	200.36	-160.04	-973.72	3,104.49	3,416.60	3,192.17	224.43	15.223	
6,850.00	6,781.17	6,720.93	6,717.17	24.35	201.39	-159.21	-973.72	3,104.49	3,451.76	3,226.18	225.58	15.301	
6,900.00	6,812.60	6,752.23	6,748.44	24.54	202.33	-158.08	-971.54	3,104.49	3,489.06	3,262.43	226.63	15.395	
6,950.00	6,840.88	6,779.18	6,775.38	24.74	203.13	-156.44	-971.57	3,104.49	3,529.18	3,301.64	227.54	15.510	
7,000.00	6,865.85	6,802.98	6,799.17	24.96	203.85	-154.19	-971.64	3,104.49	3,571.41	3,343.06	228.35	15.640	
7,050.00	6,887.35	6,823.47	6,819.66	25.19	204.46	-151.08	-971.73	3,104.49	3,615.49	3,386.46	229.04	15.786	
7,100.00	6,905.25	6,840.53	6,836.71	25.43	204.97	-146.66	-971.82	3,104.49	3,661.15	3,431.54	229.62	15.945	
7,150.00	6,919.43	6,854.05	6,850.23	25.69	205.38	-140.19	-971.92	3,104.49	3,708.11	3,478.03	230.08	16.117	
7,200.00	6,929.81	6,863.94	6,860.13	25.96	205.67	-130.35	-971.99	3,104.49	3,756.07	3,525.65	230.42	16.301	
7,250.00	6,936.33	6,870.16	6,866.34	26.25	205.86	-115.17	-972.04	3,104.49	3,804.73	3,574.08	230.65	16.496	
7,300.00	6,938.95	6,872.65	6,868.83	26.55	205.94	-93.55	-972.06	3,104.49	3,853.79	3,623.04	230.75	16.701	
7,309.56	6,939.00	6,872.70	6,868.88	26.60	205.94	-88.90	-972.06	3,104.49	3,863.19	3,632.43	230.76	16.741	
7,400.00	6,938.83	6,872.53	6,868.71	27.19	205.93	-88.89	-972.06	3,104.49	3,952.17	3,721.37	230.80	17.124	
7,500.00	6,938.64	6,872.35	6,868.53	27.91	205.93	-88.87	-972.06	3,104.49	4,050.64	3,819.79	230.85	17.547	
7,600.00	6,938.44	6,872.16	6,868.34	28.70	205.92	-88.86	-972.06	3,104.49	4,149.17	3,918.27	230.90	17.970	
7,700.00	6,938.25	6,871.97	6,868.16	29.55	205.92	-88.84	-972.06	3,104.49	4,247.78	4,016.83	230.95	18.393	
7,800.00	6,938.06	6,871.79	6,867.97	30.47	205.91	-88.83	-972.06	3,104.49	4,346.45	4,115.45	231.00	18.816	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - 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
7,900.00	6,937.87	6,871.60	6,867.78	31.44	205.90	-88.81	-972.05	3,104.49	4,445.17	4,214.12	231.05	19.239	
8,000.00	6,937.68	6,871.41	6,867.60	32.46	205.90	-88.80	-972.05	3,104.49	4,543.96	4,312.86	231.10	19.662	
8,100.00	6,937.49	6,871.23	6,867.41	33.53	205.89	-88.78	-972.05	3,104.49	4,642.79	4,411.64	231.15	20.086	
8,200.00	6,937.30	6,871.04	6,867.22	34.64	205.89	-88.77	-972.05	3,104.49	4,741.68	4,510.48	231.20	20.509	
8,300.00	6,937.10	6,870.86	6,867.04	35.78	205.88	-88.75	-972.05	3,104.49	4,840.61	4,609.36	231.25	20.932	
8,400.00	6,936.91	6,870.67	6,866.85	36.96	205.88	-88.74	-972.05	3,104.49	4,939.58	4,708.28	231.30	21.355	
8,500.00	6,936.72	6,870.48	6,866.67	38.17	205.87	-88.72	-972.04	3,104.49	5,038.60	4,807.24	231.36	21.779	
8,600.00	6,936.53	6,870.30	6,866.48	39.41	205.87	-88.71	-972.04	3,104.49	5,137.65	4,906.24	231.41	22.202	
8,700.00	6,936.34	6,870.11	6,866.29	40.68	205.86	-88.69	-972.04	3,104.49	5,236.74	5,005.28	231.46	22.625	
8,800.00	6,936.15	6,869.93	6,866.11	41.97	205.85	-88.67	-972.04	3,104.49	5,335.86	5,104.35	231.51	23.048	
8,900.00	6,935.96	6,869.74	6,865.92	43.27	205.85	-88.66	-972.04	3,104.49	5,435.01	5,203.45	231.56	23.471	
9,000.00	6,935.76	6,869.55	6,865.74	44.60	205.84	-88.64	-972.04	3,104.49	5,534.20	5,302.58	231.61	23.894	
9,100.00	6,935.57	6,869.37	6,865.55	45.95	205.84	-88.63	-972.04	3,104.49	5,633.41	5,401.75	231.66	24.317	
9,200.00	6,935.38	6,869.18	6,865.36	47.31	205.83	-88.61	-972.03	3,104.49	5,732.65	5,500.93	231.72	24.740	
9,300.00	6,935.19	6,869.00	6,865.18	48.69	205.83	-88.60	-972.03	3,104.49	5,831.92	5,600.15	231.77	25.163	
9,400.00	6,935.00	6,868.81	6,864.99	50.08	205.82	-88.58	-972.03	3,104.49	5,931.21	5,699.39	231.82	25.585	
9,500.00	6,934.81	6,868.62	6,864.81	51.48	205.82	-88.57	-972.03	3,104.49	6,030.52	5,798.65	231.87	26.008	
9,600.00	6,934.62	6,868.44	6,864.62	52.89	205.81	-88.55	-972.03	3,104.49	6,129.86	5,897.94	231.93	26.430	
9,700.00	6,934.43	6,868.25	6,864.43	54.32	205.80	-88.54	-972.03	3,104.49	6,229.22	5,997.24	231.98	26.853	
9,800.00	6,934.23	6,868.07	6,864.25	55.75	205.80	-88.52	-972.02	3,104.49	6,328.60	6,096.57	232.03	27.275	
9,900.00	6,934.04	6,867.88	6,864.06	57.19	205.79	-88.51	-972.02	3,104.49	6,428.00	6,195.91	232.08	27.697	
10,000.00	6,933.85	6,867.69	6,863.88	58.65	205.79	-88.49	-972.02	3,104.49	6,527.41	6,295.28	232.14	28.119	
10,100.00	6,933.66	6,867.51	6,863.69	60.10	205.78	-88.48	-972.02	3,104.49	6,626.85	6,394.66	232.19	28.541	
10,200.00	6,933.47	6,867.32	6,863.51	61.57	205.78	-88.46	-972.02	3,104.49	6,726.30	6,494.05	232.24	28.962	
10,300.00	6,933.28	6,867.14	6,863.32	63.04	205.77	-88.45	-972.02	3,104.49	6,825.76	6,593.47	232.30	29.384	
10,400.00	6,933.09	6,866.95	6,863.13	64.52	205.76	-88.43	-972.02	3,104.49	6,925.24	6,692.89	232.35	29.805	
10,500.00	6,932.89	6,866.76	6,862.95	66.01	205.76	-88.42	-972.01	3,104.49	7,024.74	6,792.34	232.41	30.226	
10,600.00	6,932.70	6,866.58	6,862.76	67.50	205.75	-88.40	-972.01	3,104.49	7,124.25	6,891.79	232.46	30.647	
10,700.00	6,932.51	6,866.39	6,862.58	68.99	205.75	-88.39	-972.01	3,104.49	7,223.78	6,991.26	232.51	31.068	
10,800.00	6,932.32	6,866.21	6,862.39	70.50	205.74	-88.37	-972.01	3,104.49	7,323.31	7,090.74	232.57	31.489	
10,900.00	6,932.13	6,866.02	6,862.20	72.00	205.74	-88.35	-972.01	3,104.49	7,422.86	7,190.24	232.63	31.909	
11,000.00	6,931.94	6,865.83	6,862.02	73.51	205.73	-88.34	-972.01	3,104.49	7,522.42	7,289.74	232.68	32.329	
11,100.00	6,931.75	6,865.65	6,861.83	75.02	205.73	-88.32	-972.00	3,104.49	7,622.00	7,389.26	232.74	32.749	
11,200.00	6,931.55	6,865.46	6,861.65	76.54	205.72	-88.31	-972.00	3,104.49	7,721.58	7,488.79	232.79	33.169	
11,300.00	6,931.36	6,865.28	6,861.46	78.06	205.71	-88.29	-972.00	3,104.49	7,821.18	7,588.33	232.85	33.589	
11,400.00	6,931.17	6,865.09	6,861.28	79.58	205.71	-88.28	-972.00	3,104.49	7,920.78	7,687.87	232.91	34.008	
11,500.00	6,930.98	6,864.91	6,861.09	81.11	205.70	-88.26	-972.00	3,104.49	8,020.40	7,787.43	232.96	34.428	
11,600.00	6,930.79	6,864.72	6,860.90	82.64	205.70	-88.25	-972.00	3,104.49	8,120.02	7,887.00	233.02	34.847	
11,700.00	6,930.60	6,864.53	6,860.72	84.17	205.69	-88.23	-972.00	3,104.49	8,219.65	7,986.57	233.08	35.265	
11,800.00	6,930.41	6,864.35	6,860.53	85.70	205.69	-88.22	-971.99	3,104.49	8,319.30	8,086.16	233.14	35.684	
11,900.00	6,930.21	6,864.16	6,860.35	87.24	205.68	-88.20	-971.99	3,104.49	8,418.95	8,185.75	233.20	36.102	
12,000.00	6,930.02	6,863.98	6,860.16	88.78	205.68	-88.19	-971.99	3,104.49	8,518.61	8,285.35	233.26	36.521	
12,100.00	6,929.83	6,863.79	6,859.98	90.32	205.67	-88.17	-971.99	3,104.49	8,618.27	8,384.96	233.31	36.938	
12,200.00	6,929.64	6,863.61	6,859.79	91.87	205.66	-88.16	-971.99	3,104.49	8,717.95	8,484.57	233.37	37.356	
12,300.00	6,929.45	6,863.42	6,859.60	93.41	205.66	-88.14	-971.99	3,104.49	8,817.63	8,584.19	233.43	37.773	
12,400.00	6,929.26	6,863.23	6,859.42	94.96	205.65	-88.13	-971.99	3,104.49	8,917.32	8,683.82	233.50	38.191	
12,500.00	6,929.07	6,863.05	6,859.23	96.51	205.65	-88.11	-971.98	3,104.49	9,017.01	8,783.46	233.56	38.607	
12,600.00	6,928.88	6,862.86	6,859.05	98.06	205.64	-88.10	-971.98	3,104.49	9,116.71	8,883.10	233.62	39.024	
12,700.00	6,928.68	6,862.68	6,858.86	99.62	205.64	-88.08	-971.98	3,104.49	9,216.42	8,982.74	233.68	39.440	
12,800.00	6,928.49	6,862.49	6,858.68	101.17	205.63	-88.07	-971.98	3,104.49	9,316.14	9,082.40	233.74	39.857	
12,900.00	6,928.30	6,862.31	6,858.49	102.73	205.63	-88.05	-971.98	3,104.49	9,415.86	9,182.06	233.80	40.272	
13,000.00	6,928.11	6,862.12	6,858.31	104.28	205.62	-88.04	-971.98	3,104.49	9,515.59	9,281.72	233.87	40.688	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #080 - 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
13,100.00	6,927.92	6,861.94	6,858.12	105.84	205.61	-88.02	-971.98	3,104.49	9,615.32	9,381.39	233.93	41.103	
13,200.00	6,927.73	6,861.75	6,857.93	107.40	205.61	-88.00	-971.97	3,104.49	9,715.06	9,481.06	233.99	41.518	
13,300.00	6,927.54	6,861.56	6,857.75	108.97	205.60	-87.99	-971.97	3,104.49	9,814.80	9,580.74	234.06	41.933	
13,400.00	6,927.34	6,861.38	6,857.56	110.53	205.60	-87.97	-971.97	3,104.49	9,914.55	9,680.43	234.12	42.348	
13,500.00	6,927.15	6,861.19	6,857.38	112.09	205.59	-87.96	-971.97	3,104.49	10,014.30	9,780.11	234.19	42.762	
13,600.00	6,926.96	6,861.01	6,857.19	113.66	205.59	-87.94	-971.97	3,104.49	10,114.06	9,879.81	234.25	43.176	
13,700.00	6,926.77	6,860.82	6,857.01	115.22	205.58	-87.93	-971.97	3,104.49	10,213.82	9,979.50	234.32	43.589	
13,800.00	6,926.58	6,860.64	6,856.82	116.79	205.58	-87.91	-971.97	3,104.49	10,313.59	10,079.21	234.39	44.002	
13,900.00	6,926.39	6,860.45	6,856.64	118.36	205.57	-87.90	-971.96	3,104.49	10,413.36	10,178.91	234.45	44.415	
14,000.00	6,926.20	6,860.27	6,856.45	119.93	205.56	-87.88	-971.96	3,104.49	10,513.14	10,278.62	234.52	44.828	
14,100.00	6,926.00	6,860.08	6,856.27	121.50	205.56	-87.87	-971.96	3,104.49	10,612.92	10,378.33	234.59	45.241	
14,200.00	6,925.81	6,859.89	6,856.08	123.07	205.55	-87.85	-971.96	3,104.49	10,712.71	10,478.05	234.66	45.653	
14,300.00	6,925.62	6,859.71	6,855.89	124.64	205.55	-87.84	-971.96	3,104.49	10,812.50	10,577.77	234.73	46.064	
14,400.00	6,925.43	6,859.52	6,855.71	126.21	205.54	-87.82	-971.96	3,104.49	10,912.29	10,677.49	234.79	46.476	
14,500.00	6,925.24	6,859.34	6,855.52	127.79	205.54	-87.81	-971.96	3,104.49	11,012.08	10,777.22	234.86	46.887	
14,600.00	6,925.05	6,859.15	6,855.34	129.36	205.53	-87.79	-971.95	3,104.49	11,111.88	10,876.95	234.93	47.298	
14,700.00	6,924.86	6,858.97	6,855.15	130.93	205.53	-87.78	-971.95	3,104.49	11,211.69	10,976.68	235.00	47.708	
14,800.00	6,924.66	6,858.78	6,854.97	132.51	205.52	-87.76	-971.95	3,104.49	11,311.50	11,076.42	235.08	48.119	
14,900.00	6,924.47	6,858.60	6,854.78	134.09	205.51	-87.75	-971.95	3,104.49	11,411.31	11,176.16	235.15	48.528	
15,000.00	6,924.28	6,858.41	6,854.60	135.66	205.51	-87.73	-971.95	3,104.49	11,511.12	11,275.90	235.22	48.938	
15,100.00	6,924.09	6,858.23	6,854.41	137.24	205.50	-87.72	-971.95	3,104.49	11,610.94	11,375.65	235.29	49.347	
15,200.00	6,923.90	6,858.04	6,854.23	138.82	205.50	-87.70	-971.95	3,104.49	11,710.76	11,475.39	235.36	49.756	
15,300.00	6,923.71	6,857.86	6,854.04	140.40	205.49	-87.69	-971.94	3,104.49	11,810.58	11,575.14	235.44	50.165	
15,400.00	6,923.52	6,857.67	6,853.86	141.97	205.49	-87.67	-971.94	3,104.49	11,910.41	11,674.90	235.51	50.573	
15,500.00	6,923.33	6,857.49	6,853.67	143.55	205.48	-87.66	-971.94	3,104.49	12,010.23	11,774.65	235.58	50.981	
15,600.00	6,923.13	6,857.30	6,853.49	145.13	205.48	-87.64	-971.94	3,104.49	12,110.07	11,874.41	235.66	51.388	
15,700.00	6,922.94	6,857.11	6,853.30	146.72	205.47	-87.63	-971.94	3,104.49	12,209.90	11,974.17	235.73	51.796	
15,800.00	6,922.75	6,856.93	6,853.11	148.30	205.46	-87.61	-971.94	3,104.49	12,309.74	12,073.93	235.81	52.202	
15,900.00	6,922.56	6,856.74	6,852.93	149.88	205.46	-87.59	-971.94	3,104.49	12,409.58	12,173.69	235.88	52.609	
16,000.00	6,922.37	6,856.56	6,852.74	151.46	205.45	-87.58	-971.93	3,104.49	12,509.42	12,273.46	235.96	53.015	
16,100.00	6,922.18	6,856.37	6,852.56	153.04	205.45	-87.56	-971.93	3,104.49	12,609.27	12,373.23	236.04	53.421	
16,200.00	6,921.99	6,856.19	6,852.37	154.63	205.44	-87.55	-971.93	3,104.49	12,709.11	12,473.00	236.11	53.826	
16,300.00	6,921.79	6,856.00	6,852.19	156.21	205.44	-87.53	-971.93	3,104.49	12,808.96	12,572.77	236.19	54.231	
16,400.00	6,921.60	6,855.82	6,852.00	157.79	205.43	-87.52	-971.93	3,104.49	12,908.81	12,672.55	236.27	54.636	
16,500.00	6,921.41	6,855.63	6,851.82	159.38	205.43	-87.50	-971.93	3,104.49	13,008.67	12,772.32	236.35	55.041	
16,600.00	6,921.22	6,855.45	6,851.63	160.96	205.42	-87.49	-971.93	3,104.49	13,108.53	12,872.10	236.43	55.445	
16,700.00	6,921.03	6,855.26	6,851.45	162.55	205.41	-87.47	-971.92	3,104.49	13,208.38	12,971.88	236.50	55.848	
16,800.00	6,920.84	6,855.08	6,851.26	164.13	205.41	-87.46	-971.92	3,104.49	13,308.24	13,071.66	236.58	56.252	
16,900.00	6,920.65	6,854.89	6,851.08	165.72	205.40	-87.44	-971.92	3,104.49	13,408.11	13,171.44	236.66	56.655	
17,000.00	6,920.45	6,854.71	6,850.89	167.30	205.40	-87.43	-971.92	3,104.49	13,507.97	13,271.23	236.74	57.057	
17,100.00	6,920.26	6,854.52	6,850.71	168.89	205.39	-87.41	-971.92	3,104.49	13,607.84	13,371.01	236.83	57.459	
17,200.00	6,920.07	6,854.34	6,850.52	170.48	205.39	-87.40	-971.92	3,104.49	13,707.71	13,470.80	236.91	57.861	
17,300.00	6,919.88	6,854.15	6,850.34	172.06	205.38	-87.38	-971.92	3,104.49	13,807.58	13,570.59	236.99	58.263	
17,400.00	6,919.69	6,853.97	6,850.15	173.65	205.38	-87.37	-971.92	3,104.49	13,907.45	13,670.38	237.07	58.664	
17,500.00	6,919.50	6,853.78	6,849.97	175.24	205.37	-87.35	-971.91	3,104.49	14,007.33	13,770.17	237.15	59.064	
17,600.00	6,919.31	6,853.60	6,849.78	176.83	205.36	-87.34	-971.91	3,104.49	14,107.20	13,869.97	237.24	59.465	
17,700.00	6,919.11	6,853.41	6,849.60	178.41	205.36	-87.32	-971.91	3,104.49	14,207.08	13,969.76	237.32	59.865	
17,759.55	6,919.00	6,853.30	6,849.49	179.36	205.36	-87.31	-971.91	3,104.49	14,266.56	14,029.19	237.37	60.103	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
0.00	0.00	0.00	0.00	0.00	0.00	70.99	994.00	2,884.57	3,051.32				
100.00	100.00	58.00	58.00	0.25	1.74	70.99	994.00	2,884.57	3,051.03	3,049.04	1.99	1,533.914	
200.00	200.00	158.00	158.00	0.61	4.73	70.99	994.00	2,884.57	3,051.03	3,045.69	5.34	570.934	
300.00	300.00	258.00	258.00	0.97	7.73	70.99	994.00	2,884.57	3,051.03	3,042.33	8.70	350.741	
400.00	400.00	358.00	358.00	1.33	10.73	70.99	994.00	2,884.57	3,051.03	3,038.98	12.05	253.120	
500.00	500.00	458.00	458.00	1.68	13.72	70.99	994.00	2,884.57	3,051.03	3,035.62	15.41	198.008	
600.00	600.00	558.10	558.00	2.04	16.72	70.99	994.00	2,884.57	3,051.03	3,032.26	18.77	162.578	
700.00	700.00	658.10	658.00	2.40	19.72	70.99	994.00	2,884.57	3,051.03	3,028.91	22.12	137.922	CC
800.00	800.00	758.72	758.58	2.76	22.73	70.95	996.18	2,884.57	3,051.74	3,026.25	25.50	119.700	
900.00	900.00	866.27	866.11	3.12	25.96	70.96	995.71	2,884.57	3,051.60	3,022.52	29.08	104.952	
1,000.00	1,000.00	973.86	973.67	3.48	29.18	70.98	994.43	2,884.57	3,051.21	3,018.55	32.66	93.429	
1,031.57	1,031.57	1,007.83	1,007.63	3.58	30.20	-122.13	993.86	2,884.57	3,051.13	3,017.35	33.78	90.315	
1,100.00	1,099.98	1,058.39	1,057.98	3.82	31.71	-122.14	994.00	2,884.57	3,051.96	3,016.43	35.53	85.894	
1,129.54	1,129.49	1,087.90	1,087.49	3.92	32.60	-122.15	994.00	2,884.57	3,052.59	3,016.08	36.51	83.604	
1,200.00	1,199.88	1,158.29	1,157.88	4.15	34.71	-122.20	994.00	2,884.57	3,054.29	3,015.43	38.85	78.612	
1,300.00	1,299.78	1,258.82	1,258.38	4.48	37.72	-122.31	996.18	2,884.57	3,057.41	3,015.22	42.20	72.454	
1,400.00	1,399.68	1,366.39	1,365.92	4.82	40.94	-122.38	995.71	2,884.57	3,059.69	3,013.93	45.76	66.867	
1,500.00	1,499.58	1,474.06	1,473.56	5.16	44.17	-122.43	994.43	2,884.57	3,061.72	3,012.40	49.32	62.073	
1,600.00	1,599.48	1,558.19	1,557.48	5.50	46.69	-122.48	994.00	2,884.57	3,063.96	3,011.78	52.19	58.709	
1,700.00	1,699.37	1,658.08	1,657.37	5.85	49.68	-122.55	994.00	2,884.57	3,066.40	3,010.87	55.53	55.222	
1,800.00	1,799.27	1,758.62	1,757.86	6.20	52.70	-122.66	996.18	2,884.57	3,069.56	3,010.67	58.89	52.125	
1,900.00	1,899.17	1,866.36	1,865.59	6.55	55.92	-122.73	995.71	2,884.57	3,071.86	3,009.39	62.47	49.176	
2,000.00	1,999.07	1,974.20	1,973.40	6.90	59.16	-122.79	994.42	2,884.57	3,073.91	3,007.86	66.05	46.540	
2,100.00	2,098.96	2,057.98	2,056.96	7.25	61.67	-122.84	994.00	2,884.57	3,076.17	3,007.26	68.91	44.639	
2,200.00	2,198.86	2,157.88	2,156.86	7.61	64.66	-122.91	994.00	2,884.57	3,078.63	3,006.37	72.26	42.606	
2,300.00	2,298.76	2,258.41	2,257.35	7.96	67.67	-123.02	996.18	2,884.57	3,081.83	3,006.20	75.63	40.751	
2,400.00	2,398.66	2,366.33	2,365.25	8.32	70.91	-123.08	995.71	2,884.57	3,084.14	3,004.93	79.21	38.934	
2,500.00	2,498.56	2,474.35	2,473.25	8.68	74.14	-123.14	994.42	2,884.57	3,086.21	3,003.40	82.81	37.270	
2,600.00	2,598.45	2,557.77	2,556.45	9.03	76.64	-123.19	994.00	2,884.57	3,088.49	3,002.83	85.66	36.054	
2,700.00	2,698.35	2,657.67	2,656.35	9.39	79.64	-123.26	994.00	2,884.57	3,090.97	3,001.96	89.01	34.725	
2,800.00	2,798.25	2,758.20	2,756.84	9.75	82.65	-123.37	996.18	2,884.57	3,094.21	3,001.83	92.38	33.494	
2,900.00	2,898.15	2,866.30	2,864.92	10.11	85.89	-123.43	995.71	2,884.57	3,096.55	3,000.57	95.98	32.263	
3,000.00	2,998.04	2,974.50	2,973.09	10.47	89.13	-123.49	994.42	2,884.57	3,098.63	2,999.05	99.58	31.118	
3,100.00	3,097.94	3,057.57	3,055.94	10.83	91.62	-123.54	994.00	2,884.57	3,100.93	2,998.50	102.43	30.275	
3,200.00	3,197.84	3,157.46	3,155.84	11.19	94.61	-123.61	994.00	2,884.57	3,103.43	2,997.65	105.78	29.339	
3,300.00	3,297.74	3,257.99	3,256.32	11.55	97.62	-123.72	996.18	2,884.57	3,106.70	2,997.56	109.15	28.463	
3,400.00	3,397.64	3,366.27	3,364.58	11.91	100.87	-123.78	995.71	2,884.57	3,109.06	2,996.31	112.75	27.574	
3,500.00	3,497.53	3,474.65	3,472.94	12.27	104.12	-123.84	994.42	2,884.57	3,111.16	2,994.80	116.36	26.738	
3,600.00	3,597.43	3,557.36	3,555.43	12.63	106.59	-123.88	994.00	2,884.57	3,113.48	2,994.29	119.20	26.120	
3,700.00	3,697.33	3,657.26	3,655.33	12.99	109.59	-123.95	994.00	2,884.57	3,116.01	2,993.46	122.55	25.426	
3,800.00	3,797.23	3,757.78	3,755.81	13.35	112.60	-124.06	996.18	2,884.57	3,119.31	2,993.39	125.92	24.772	
3,900.00	3,897.12	3,866.24	3,864.25	13.72	115.85	-124.13	995.71	2,884.57	3,121.69	2,992.16	129.53	24.100	
4,000.00	3,997.02	3,974.81	3,972.78	14.08	119.10	-124.18	994.41	2,884.57	3,123.81	2,990.66	133.15	23.462	
4,100.00	4,096.92	4,057.15	4,054.92	14.44	121.57	-124.23	994.00	2,884.57	3,126.15	2,990.17	135.97	22.991	
4,200.00	4,196.82	4,157.05	4,154.82	14.80	124.56	-124.30	994.00	2,884.57	3,128.70	2,989.37	139.33	22.456	
4,300.00	4,296.72	4,257.57	4,255.29	15.16	127.58	-124.40	996.18	2,884.57	3,132.04	2,989.34	142.70	21.948	
4,400.00	4,396.61	4,366.21	4,363.91	15.53	130.83	-124.47	995.71	2,884.57	3,134.44	2,988.12	146.32	21.422	
4,500.00	4,496.51	4,474.96	4,472.63	15.89	134.09	-124.52	994.41	2,884.57	3,136.56	2,986.63	149.94	20.919	
4,600.00	4,596.41	4,556.95	4,554.41	16.25	136.55	-124.57	994.00	2,884.57	3,138.93	2,986.17	152.75	20.549	
4,700.00	4,696.31	4,656.84	4,654.31	16.61	139.54	-124.64	994.00	2,884.57	3,141.49	2,985.39	156.11	20.124	
4,800.00	4,796.20	4,757.35	4,754.78	16.98	142.55	-124.74	996.18	2,884.57	3,144.87	2,985.39	159.48	19.719	
4,900.00	4,896.10	4,866.18	4,863.58	17.34	145.81	-124.81	995.71	2,884.57	3,147.29	2,984.19	163.10	19.296	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
5,000.00	4,996.00	4,975.11	4,972.48	17.70	149.08	-124.86	994.41	2,884.57	3,149.43	2,982.71	166.73	18.890	
5,100.00	5,095.90	5,056.74	5,053.90	18.07	151.52	-124.91	994.00	2,884.57	3,151.81	2,982.28	169.54	18.591	
5,200.00	5,195.80	5,156.64	5,153.80	18.43	154.52	-124.97	994.00	2,884.57	3,154.40	2,981.51	172.89	18.245	
5,300.00	5,295.69	5,257.14	5,254.26	18.79	157.53	-125.08	996.18	2,884.57	3,157.81	2,981.55	176.26	17.915	
5,400.00	5,395.59	5,366.15	5,363.25	19.16	160.79	-125.14	995.71	2,884.57	3,160.25	2,980.36	179.89	17.568	
5,500.00	5,495.49	5,475.26	5,472.33	19.52	164.06	-125.20	994.41	2,884.57	3,162.41	2,978.89	183.52	17.232	
5,600.00	5,595.39	5,556.53	5,553.39	19.88	166.50	-125.24	994.00	2,884.57	3,164.81	2,978.49	186.32	16.986	
5,700.00	5,695.28	5,656.43	5,653.28	20.25	169.49	-125.31	994.00	2,884.57	3,167.42	2,977.75	189.67	16.699	
5,800.00	5,795.18	5,756.93	5,753.74	20.61	172.50	-125.41	996.18	2,884.57	3,170.87	2,977.82	193.05	16.425	
5,900.00	5,895.08	5,866.12	5,862.91	20.97	175.78	-125.48	995.71	2,884.57	3,173.32	2,976.64	196.68	16.134	
6,000.00	5,994.98	5,975.41	5,972.18	21.34	179.05	-125.53	994.40	2,884.57	3,175.50	2,975.18	200.32	15.852 ES	
6,100.00	6,094.88	6,011.00	6,007.54	21.70	180.12	-125.55	994.00	2,884.57	3,178.24	2,976.52	201.72	15.756 SF	
6,200.00	6,194.77	6,011.00	6,007.54	22.06	180.12	-125.55	994.00	2,884.57	3,183.86	2,981.98	201.89	15.771	
6,300.00	6,294.67	6,011.00	6,007.54	22.43	180.12	-125.55	994.00	2,884.57	3,192.61	2,990.75	201.86	15.816	
6,314.74	6,309.40	6,011.00	6,007.54	22.48	180.12	-125.55	994.00	2,884.57	3,194.16	2,992.32	201.84	15.825	
6,350.00	6,344.59	6,011.00	6,007.54	22.61	180.12	-168.87	994.00	2,884.57	3,199.04	2,997.26	201.78	15.854	
6,400.00	6,394.26	6,011.00	6,007.54	22.79	180.12	173.83	994.00	2,884.57	3,209.63	3,007.99	201.65	15.917	
6,450.00	6,443.36	6,011.00	6,007.54	22.97	180.12	167.49	994.00	2,884.57	3,224.44	3,022.97	201.48	16.004	
6,500.00	6,491.60	6,011.00	6,007.54	23.15	180.12	163.89	994.00	2,884.57	3,243.32	3,042.05	201.27	16.114	
6,550.00	6,538.67	6,011.00	6,007.54	23.32	180.12	161.25	994.00	2,884.57	3,266.07	3,065.04	201.04	16.246	
6,600.00	6,584.29	6,011.00	6,007.54	23.49	180.12	158.92	994.00	2,884.57	3,292.49	3,091.71	200.78	16.398	
6,650.00	6,628.18	6,011.00	6,007.54	23.66	180.12	156.61	994.00	2,884.57	3,322.32	3,121.81	200.51	16.569	
6,700.00	6,670.06	6,011.00	6,007.54	23.83	180.12	154.11	994.00	2,884.57	3,355.29	3,155.05	200.24	16.756	
6,750.00	6,709.68	6,011.00	6,007.54	24.00	180.12	151.27	994.00	2,884.57	3,391.11	3,191.13	199.98	16.958	
6,800.00	6,746.79	6,011.00	6,007.54	24.17	180.12	147.92	994.00	2,884.57	3,429.47	3,229.75	199.72	17.171	
6,850.00	6,781.17	6,011.00	6,007.54	24.35	180.12	143.83	994.00	2,884.57	3,470.06	3,270.57	199.48	17.395	
6,900.00	6,812.60	6,011.00	6,007.54	24.54	180.12	138.77	994.00	2,884.57	3,512.55	3,313.28	199.27	17.627	
6,950.00	6,840.88	6,011.00	6,007.54	24.74	180.12	132.42	994.00	2,884.57	3,556.62	3,357.52	199.09	17.864	
7,000.00	6,865.85	6,011.00	6,007.54	24.96	180.12	124.42	994.00	2,884.57	3,601.94	3,402.99	198.95	18.105	
7,050.00	6,887.35	6,011.00	6,007.54	25.19	180.12	114.53	994.00	2,884.57	3,648.19	3,449.35	198.84	18.347	
7,100.00	6,905.25	6,011.00	6,007.54	25.43	180.12	102.81	994.00	2,884.57	3,695.06	3,496.28	198.78	18.589	
7,150.00	6,919.43	6,011.00	6,007.54	25.69	180.12	89.98	994.00	2,884.57	3,742.24	3,543.48	198.76	18.828	
7,200.00	6,929.81	6,011.00	6,007.54	25.96	180.12	77.26	994.00	2,884.57	3,789.44	3,590.66	198.78	19.064	
7,250.00	6,936.33	6,011.00	6,007.54	26.25	180.12	65.83	994.00	2,884.57	3,836.36	3,637.52	198.84	19.294	
7,300.00	6,938.95	6,011.00	6,007.54	26.55	180.12	56.31	994.00	2,884.57	3,882.73	3,683.79	198.95	19.516	
7,309.56	6,939.00	6,011.00	6,007.54	26.60	180.12	54.71	994.00	2,884.57	3,891.51	3,692.54	198.97	19.558	
7,400.00	6,938.83	6,011.00	6,007.54	27.19	180.12	54.71	994.00	2,884.57	3,974.62	3,775.40	199.22	19.951	
7,500.00	6,938.64	6,011.00	6,007.54	27.91	180.12	54.71	994.00	2,884.57	4,066.88	3,867.39	199.48	20.387	
7,600.00	6,938.44	6,011.00	6,007.54	28.70	180.12	54.71	994.00	2,884.57	4,159.49	3,959.75	199.74	20.824	
7,700.00	6,938.25	6,011.00	6,007.54	29.55	180.12	54.71	994.00	2,884.57	4,252.44	4,052.44	199.99	21.263	
7,800.00	6,938.06	6,011.00	6,007.54	30.47	180.12	54.71	994.00	2,884.57	4,345.70	4,145.46	200.24	21.703	
7,900.00	6,937.87	6,011.00	6,007.54	31.44	180.12	54.71	994.00	2,884.57	4,439.25	4,238.78	200.48	22.144	
8,000.00	6,937.68	6,011.00	6,007.54	32.46	180.12	54.71	994.00	2,884.57	4,533.08	4,332.38	200.71	22.586	
8,100.00	6,937.49	6,011.00	6,007.54	33.53	180.12	54.71	994.00	2,884.57	4,627.17	4,426.24	200.93	23.029	
8,200.00	6,937.30	6,011.00	6,007.54	34.64	180.12	54.71	994.00	2,884.57	4,721.50	4,520.35	201.15	23.473	
8,300.00	6,937.10	6,011.00	6,007.54	35.78	180.12	54.71	994.00	2,884.57	4,816.06	4,614.70	201.36	23.917	
8,400.00	6,936.91	6,011.00	6,007.54	36.96	180.12	54.71	994.00	2,884.57	4,910.83	4,709.27	201.57	24.363	
8,500.00	6,936.72	6,011.00	6,007.54	38.17	180.12	54.71	994.00	2,884.57	5,005.81	4,804.04	201.77	24.809	
8,600.00	6,936.53	6,011.00	6,007.54	39.41	180.12	54.71	994.00	2,884.57	5,100.98	4,899.02	201.97	25.257	
8,700.00	6,936.34	6,011.00	6,007.54	40.68	180.12	54.71	994.00	2,884.57	5,196.34	4,994.18	202.16	25.704	
8,800.00	6,936.15	6,011.00	6,007.54	41.97	180.12	54.71	994.00	2,884.57	5,291.86	5,089.51	202.35	26.153	
8,900.00	6,935.96	6,011.00	6,007.54	43.27	180.12	54.71	994.00	2,884.57	5,387.54	5,185.02	202.53	26.602	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
9,000.00	6,935.76	6,011.00	6,007.54	44.60	180.12	54.71	994.00	2,884.57	5,483.38	5,280.68	202.71	27.051	
9,100.00	6,935.57	6,011.00	6,007.54	45.95	180.12	54.71	994.00	2,884.57	5,579.37	5,376.49	202.88	27.501	
9,200.00	6,935.38	6,011.00	6,007.54	47.31	180.12	54.71	994.00	2,884.57	5,675.49	5,472.45	203.05	27.951	
9,300.00	6,935.19	6,011.00	6,007.54	48.69	180.12	54.71	994.00	2,884.57	5,771.75	5,568.54	203.22	28.402	
9,400.00	6,935.00	6,011.00	6,007.54	50.08	180.12	54.71	994.00	2,884.57	5,868.13	5,664.75	203.38	28.853	
9,500.00	6,934.81	6,011.00	6,007.54	51.48	180.12	54.71	994.00	2,884.57	5,964.63	5,761.10	203.54	29.305	
9,600.00	6,934.62	6,011.00	6,007.54	52.89	180.12	54.71	994.00	2,884.57	6,061.25	5,857.55	203.69	29.757	
9,700.00	6,934.43	6,011.00	6,007.54	54.32	180.12	54.71	994.00	2,884.57	6,157.97	5,954.12	203.85	30.209	
9,800.00	6,934.23	6,011.00	6,007.54	55.75	180.12	54.71	994.00	2,884.57	6,254.79	6,050.80	204.00	30.661	
9,900.00	6,934.04	6,011.00	6,007.54	57.19	180.12	54.71	994.00	2,884.57	6,351.72	6,147.57	204.14	31.114	
10,000.00	6,933.85	6,011.00	6,007.54	58.65	180.12	54.71	994.00	2,884.57	6,448.73	6,244.45	204.29	31.567	
10,100.00	6,933.66	6,011.00	6,007.54	60.10	180.12	54.71	994.00	2,884.57	6,545.84	6,341.41	204.43	32.020	
10,200.00	6,933.47	6,011.00	6,007.54	61.57	180.12	54.71	994.00	2,884.57	6,643.03	6,438.47	204.57	32.474	
10,300.00	6,933.28	6,011.00	6,007.54	63.04	180.12	54.71	994.00	2,884.57	6,740.31	6,535.61	204.70	32.927	
10,400.00	6,933.09	6,011.00	6,007.54	64.52	180.12	54.71	994.00	2,884.57	6,837.66	6,632.82	204.84	33.381	
10,500.00	6,932.89	6,011.00	6,007.54	66.01	180.12	54.71	994.00	2,884.57	6,935.09	6,730.12	204.97	33.834	
10,600.00	6,932.70	6,011.00	6,007.54	67.50	180.12	54.71	994.00	2,884.57	7,032.59	6,827.49	205.10	34.288	
10,700.00	6,932.51	6,011.00	6,007.54	68.99	180.12	54.71	994.00	2,884.57	7,130.16	6,924.93	205.23	34.742	
10,800.00	6,932.32	6,011.00	6,007.54	70.50	180.12	54.71	994.00	2,884.57	7,227.80	7,022.44	205.36	35.196	
10,900.00	6,932.13	6,011.00	6,007.54	72.00	180.12	54.71	994.00	2,884.57	7,325.50	7,120.02	205.48	35.650	
11,000.00	6,931.94	6,011.00	6,007.54	73.51	180.12	54.71	994.00	2,884.57	7,423.26	7,217.66	205.61	36.104	
11,100.00	6,931.75	6,011.00	6,007.54	75.02	180.12	54.71	994.00	2,884.57	7,521.08	7,315.35	205.73	36.558	
11,200.00	6,931.55	6,011.00	6,007.54	76.54	180.12	54.71	994.00	2,884.57	7,618.96	7,413.11	205.85	37.012	
11,300.00	6,931.36	6,011.00	6,007.54	78.06	180.12	54.71	994.00	2,884.57	7,716.89	7,510.92	205.97	37.466	
11,400.00	6,931.17	6,011.00	6,007.54	79.58	180.12	54.71	994.00	2,884.57	7,814.88	7,608.79	206.09	37.920	
11,500.00	6,930.98	6,011.00	6,007.54	81.11	180.12	54.71	994.00	2,884.57	7,912.91	7,706.71	206.21	38.374	
11,600.00	6,930.79	6,011.00	6,007.54	82.64	180.12	54.71	994.00	2,884.57	8,011.00	7,804.67	206.32	38.828	
11,700.00	6,930.60	6,011.00	6,007.54	84.17	180.12	54.71	994.00	2,884.57	8,109.13	7,902.69	206.44	39.281	
11,800.00	6,930.41	6,011.00	6,007.54	85.70	180.12	54.71	994.00	2,884.57	8,207.30	8,000.75	206.55	39.735	
11,900.00	6,930.21	6,011.00	6,007.54	87.24	180.12	54.71	994.00	2,884.57	8,305.52	8,098.86	206.66	40.189	
12,000.00	6,930.02	6,011.00	6,007.54	88.78	180.12	54.71	994.00	2,884.57	8,403.78	8,197.01	206.77	40.642	
12,100.00	6,929.83	6,011.00	6,007.54	90.32	180.12	54.71	994.00	2,884.57	8,502.08	8,295.20	206.88	41.096	
12,200.00	6,929.64	6,011.00	6,007.54	91.87	180.12	54.71	994.00	2,884.57	8,600.42	8,393.43	206.99	41.549	
12,300.00	6,929.45	6,011.00	6,007.54	93.41	180.12	54.71	994.00	2,884.57	8,698.80	8,491.70	207.10	42.002	
12,400.00	6,929.26	6,011.00	6,007.54	94.96	180.12	54.71	994.00	2,884.57	8,797.21	8,590.00	207.21	42.455	
12,500.00	6,929.07	6,011.00	6,007.54	96.51	180.12	54.71	994.00	2,884.57	8,895.66	8,688.35	207.32	42.908	
12,600.00	6,928.88	6,011.00	6,007.54	98.06	180.12	54.71	994.00	2,884.57	8,994.15	8,786.72	207.43	43.361	
12,700.00	6,928.68	6,011.00	6,007.54	99.62	180.12	54.71	994.00	2,884.57	9,092.67	8,885.13	207.53	43.813	
12,800.00	6,928.49	6,011.00	6,007.54	101.17	180.12	54.71	994.00	2,884.57	9,191.22	8,983.58	207.64	44.266	
12,900.00	6,928.30	6,011.00	6,007.54	102.73	180.12	54.71	994.00	2,884.57	9,289.80	9,082.05	207.74	44.718	
13,000.00	6,928.11	6,011.00	6,007.54	104.28	180.12	54.71	994.00	2,884.57	9,388.41	9,180.56	207.85	45.170	
13,100.00	6,927.92	6,011.00	6,007.54	105.84	180.12	54.71	994.00	2,884.57	9,487.05	9,279.10	207.95	45.621	
13,200.00	6,927.73	6,011.00	6,007.54	107.40	180.12	54.71	994.00	2,884.57	9,585.71	9,377.66	208.06	46.073	
13,300.00	6,927.54	6,011.00	6,007.54	108.97	180.12	54.71	994.00	2,884.57	9,684.41	9,476.25	208.16	46.524	
13,400.00	6,927.34	6,011.00	6,007.54	110.53	180.12	54.71	994.00	2,884.57	9,783.13	9,574.87	208.26	46.975	
13,500.00	6,927.15	6,011.00	6,007.54	112.09	180.12	54.71	994.00	2,884.57	9,881.88	9,673.52	208.36	47.426	
13,600.00	6,926.96	6,011.00	6,007.54	113.66	180.12	54.71	994.00	2,884.57	9,980.65	9,772.19	208.47	47.877	
13,700.00	6,926.77	6,011.00	6,007.54	115.22	180.12	54.71	994.00	2,884.57	10,079.45	9,870.88	208.57	48.327	
13,800.00	6,926.58	6,011.00	6,007.54	116.79	180.12	54.71	994.00	2,884.57	10,178.27	9,969.60	208.67	48.777	
13,900.00	6,926.39	6,011.00	6,007.54	118.36	180.12	54.71	994.00	2,884.57	10,277.11	10,068.34	208.77	49.227	
14,000.00	6,926.20	6,011.00	6,007.54	119.93	180.12	54.71	994.00	2,884.57	10,375.98	10,167.10	208.87	49.677	
14,100.00	6,926.00	6,011.00	6,007.54	121.50	180.12	54.71	994.00	2,884.57	10,474.86	10,265.89	208.97	50.126	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,200.00	6,925.81	6,011.00	6,007.54	123.07	180.12	54.71	994.00	2,884.57	10,573.77	10,364.70	209.07	50.575	
14,300.00	6,925.62	6,011.00	6,007.54	124.64	180.12	54.71	994.00	2,884.57	10,672.70	10,463.53	209.17	51.024	
14,400.00	6,925.43	6,011.00	6,007.54	126.21	180.12	54.71	994.00	2,884.57	10,771.64	10,562.37	209.27	51.472	
14,500.00	6,925.24	6,011.00	6,007.54	127.79	180.12	54.71	994.00	2,884.57	10,870.61	10,661.24	209.37	51.920	
14,600.00	6,925.05	6,011.00	6,007.54	129.36	180.12	54.71	994.00	2,884.57	10,969.60	10,760.13	209.47	52.368	
14,700.00	6,924.86	6,011.00	6,007.54	130.93	180.12	54.71	994.00	2,884.57	11,068.60	10,859.03	209.57	52.816	
14,800.00	6,924.66	6,011.00	6,007.54	132.51	180.12	54.71	994.00	2,884.57	11,167.62	10,957.95	209.67	53.263	
14,900.00	6,924.47	6,011.00	6,007.54	134.09	180.12	54.71	994.00	2,884.57	11,266.66	11,056.89	209.77	53.710	
15,000.00	6,924.28	6,011.00	6,007.54	135.66	180.12	54.71	994.00	2,884.57	11,365.72	11,155.85	209.87	54.156	
15,100.00	6,924.09	6,011.00	6,007.54	137.24	180.12	54.71	994.00	2,884.57	11,464.79	11,254.82	209.97	54.603	
15,200.00	6,923.90	6,011.00	6,007.54	138.82	180.12	54.71	994.00	2,884.57	11,563.88	11,353.81	210.07	55.049	
15,300.00	6,923.71	6,011.00	6,007.54	140.40	180.12	54.71	994.00	2,884.57	11,662.98	11,452.82	210.17	55.494	
15,400.00	6,923.52	6,011.00	6,007.54	141.97	180.12	54.71	994.00	2,884.57	11,762.10	11,551.84	210.27	55.939	
15,500.00	6,923.33	6,011.00	6,007.54	143.55	180.12	54.71	994.00	2,884.57	11,861.23	11,650.87	210.36	56.384	
15,600.00	6,923.13	6,011.00	6,007.54	145.13	180.12	54.71	994.00	2,884.57	11,960.38	11,749.92	210.46	56.829	
15,700.00	6,922.94	6,011.00	6,007.54	146.72	180.12	54.71	994.00	2,884.57	12,059.54	11,848.98	210.56	57.273	
15,800.00	6,922.75	6,011.00	6,007.54	148.30	180.12	54.71	994.00	2,884.57	12,158.72	11,948.06	210.66	57.717	
15,900.00	6,922.56	6,011.00	6,007.54	149.88	180.12	54.71	994.00	2,884.57	12,257.91	12,047.15	210.76	58.160	
16,000.00	6,922.37	6,011.00	6,007.54	151.46	180.12	54.71	994.00	2,884.57	12,357.11	12,146.25	210.86	58.604	
16,100.00	6,922.18	6,011.00	6,007.54	153.04	180.12	54.71	994.00	2,884.57	12,456.33	12,245.37	210.96	59.046	
16,200.00	6,921.99	6,011.00	6,007.54	154.63	180.12	54.71	994.00	2,884.57	12,555.55	12,344.50	211.06	59.489	
16,300.00	6,921.79	6,011.00	6,007.54	156.21	180.12	54.71	994.00	2,884.57	12,654.79	12,443.64	211.16	59.931	
16,400.00	6,921.60	6,011.00	6,007.54	157.79	180.12	54.71	994.00	2,884.57	12,754.05	12,542.79	211.26	60.372	
16,500.00	6,921.41	6,011.00	6,007.54	159.38	180.12	54.71	994.00	2,884.57	12,853.31	12,641.95	211.36	60.814	
16,600.00	6,921.22	6,011.00	6,007.54	160.96	180.12	54.71	994.00	2,884.57	12,952.58	12,741.13	211.45	61.255	
16,700.00	6,921.03	6,011.00	6,007.54	162.55	180.12	54.71	994.00	2,884.57	13,051.87	12,840.31	211.55	61.695	
16,800.00	6,920.84	6,011.00	6,007.54	164.13	180.12	54.71	994.00	2,884.57	13,151.17	12,939.51	211.65	62.135	
16,900.00	6,920.65	6,011.00	6,007.54	165.72	180.12	54.71	994.00	2,884.57	13,250.47	13,038.72	211.75	62.575	
17,000.00	6,920.45	6,011.00	6,007.54	167.30	180.12	54.71	994.00	2,884.57	13,349.79	13,137.94	211.85	63.014	
17,100.00	6,920.26	6,011.00	6,007.54	168.89	180.12	54.71	994.00	2,884.57	13,449.12	13,237.16	211.95	63.453	
17,200.00	6,920.07	6,011.00	6,007.54	170.48	180.12	54.71	994.00	2,884.57	13,548.45	13,336.40	212.05	63.892	
17,300.00	6,919.88	6,011.00	6,007.54	172.06	180.12	54.71	994.00	2,884.57	13,647.80	13,435.65	212.15	64.330	
17,400.00	6,919.69	6,011.00	6,007.54	173.65	180.12	54.71	994.00	2,884.57	13,747.16	13,534.90	212.25	64.767	
17,500.00	6,919.50	6,011.00	6,007.54	175.24	180.12	54.71	994.00	2,884.57	13,846.52	13,634.17	212.35	65.205	
17,600.00	6,919.31	6,011.00	6,007.54	176.83	180.12	54.71	994.00	2,884.57	13,945.90	13,733.44	212.46	65.642	
17,700.00	6,919.11	6,011.00	6,007.54	178.41	180.12	54.71	994.00	2,884.57	14,045.28	13,832.73	212.56	66.078	
17,759.55	6,919.00	6,011.00	6,007.54	179.36	180.12	54.71	994.00	2,884.57	14,104.47	13,891.86	212.62	66.338	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	63.76	1,069.27	2,169.48	2,418.82				
100.00	100.00	73.00	73.00	0.25	2.19	63.76	1,069.27	2,169.48	2,418.67	2,416.23	2.44	991.863	
200.00	200.00	173.00	173.00	0.61	5.18	63.76	1,069.27	2,169.48	2,418.67	2,412.88	5.79	417.487	
300.00	300.00	273.00	273.00	0.97	8.18	63.76	1,069.27	2,169.48	2,418.67	2,409.52	9.15	264.385	
400.00	400.00	373.00	373.00	1.33	11.18	63.76	1,069.27	2,169.48	2,418.67	2,406.17	12.50	193.445	
500.00	500.00	473.00	473.00	1.68	14.17	63.76	1,069.27	2,169.48	2,418.67	2,402.81	15.86	152.520	
600.00	600.00	573.10	573.00	2.04	17.17	63.76	1,069.27	2,169.48	2,418.67	2,399.45	19.22	125.867	
700.00	700.00	673.10	673.00	2.40	20.17	63.76	1,069.27	2,169.48	2,418.67	2,396.10	22.57	107.159 CC	
800.00	800.00	775.00	774.85	2.76	23.22	63.72	1,071.43	2,169.48	2,419.62	2,393.64	25.98	93.125	
900.00	900.00	883.17	883.00	3.12	26.46	63.73	1,070.83	2,169.48	2,419.38	2,389.80	29.58	81.785	
1,000.00	1,000.00	991.37	991.17	3.48	29.71	63.76	1,069.41	2,169.48	2,418.80	2,385.62	33.18	72.895	
1,025.00	1,025.00	1,018.42	1,018.21	3.56	30.52	-129.35	1,068.93	2,169.48	2,418.67	2,384.60	34.08	70.975	
1,100.00	1,099.98	1,073.39	1,072.98	3.82	32.16	-129.36	1,069.27	2,169.48	2,419.78	2,383.80	35.98	67.251	
1,129.54	1,129.49	1,102.90	1,102.49	3.92	33.05	-129.37	1,069.27	2,169.48	2,420.53	2,383.57	36.96	65.487	
1,200.00	1,199.88	1,173.29	1,172.88	4.15	35.16	-129.43	1,069.27	2,169.48	2,422.55	2,383.25	39.30	61.639	
1,300.00	1,299.78	1,275.11	1,274.66	4.48	38.21	-129.56	1,071.43	2,169.48	2,426.39	2,383.70	42.69	56.843	
1,400.00	1,399.68	1,383.30	1,382.83	4.82	41.45	-129.64	1,070.83	2,169.48	2,429.02	2,382.76	46.26	52.503	
1,500.00	1,499.58	1,491.59	1,491.09	5.16	44.69	-129.70	1,069.41	2,169.48	2,431.32	2,381.48	49.85	48.774	
1,600.00	1,599.48	1,573.19	1,572.48	5.50	47.14	-129.76	1,069.27	2,169.48	2,434.08	2,381.44	52.64	46.242	
1,700.00	1,699.37	1,673.08	1,672.37	5.85	50.13	-129.84	1,069.27	2,169.48	2,436.98	2,381.00	55.98	43.535	
1,800.00	1,799.27	1,774.93	1,774.17	6.20	53.18	-129.97	1,071.43	2,169.48	2,440.85	2,381.48	59.38	41.108	
1,900.00	1,899.17	1,883.30	1,882.52	6.55	56.43	-130.05	1,070.83	2,169.48	2,443.51	2,380.54	62.97	38.803	
2,000.00	1,999.07	1,991.77	1,990.96	6.90	59.68	-130.10	1,069.41	2,169.48	2,445.83	2,379.26	66.57	36.739	
2,100.00	2,098.96	2,072.98	2,071.96	7.25	62.12	-130.17	1,069.27	2,169.48	2,448.61	2,379.25	69.36	35.303	
2,200.00	2,198.86	2,172.88	2,171.86	7.61	65.11	-130.25	1,069.27	2,169.48	2,451.53	2,378.82	72.70	33.719	
2,300.00	2,298.76	2,274.74	2,273.69	7.96	68.16	-130.37	1,071.43	2,169.48	2,455.44	2,379.33	76.11	32.261	
2,400.00	2,398.66	2,383.29	2,382.21	8.32	71.41	-130.45	1,070.83	2,169.48	2,458.12	2,378.40	79.72	30.835	
2,500.00	2,498.56	2,491.95	2,490.84	8.68	74.67	-130.51	1,069.40	2,169.48	2,460.45	2,377.12	83.33	29.528	
2,600.00	2,598.45	2,572.77	2,571.45	9.03	77.09	-130.57	1,069.27	2,169.48	2,463.25	2,377.15	86.11	28.607	
2,700.00	2,698.35	2,672.67	2,671.35	9.39	80.09	-130.65	1,069.27	2,169.48	2,466.20	2,376.74	89.46	27.569	
2,800.00	2,798.25	2,774.56	2,773.20	9.75	83.14	-130.77	1,071.43	2,169.48	2,470.15	2,377.28	92.87	26.599	
2,900.00	2,898.15	2,883.29	2,881.91	10.11	86.40	-130.85	1,070.83	2,169.48	2,472.85	2,376.37	96.48	25.630	
3,000.00	2,998.04	2,992.13	2,990.71	10.47	89.66	-130.90	1,069.40	2,169.48	2,475.20	2,375.10	100.10	24.728	
3,100.00	3,097.94	3,072.57	3,070.94	10.83	92.07	-130.97	1,069.27	2,169.48	2,478.02	2,375.15	102.87	24.089	
3,200.00	3,197.84	3,172.46	3,170.84	11.19	95.06	-131.04	1,069.27	2,169.48	2,480.99	2,374.77	106.22	23.357	
3,300.00	3,297.74	3,274.38	3,272.71	11.55	98.12	-131.17	1,071.43	2,169.48	2,484.98	2,375.35	109.63	22.667	
3,400.00	3,397.64	3,383.29	3,381.60	11.91	101.38	-131.24	1,070.83	2,169.48	2,487.70	2,374.44	113.25	21.966	
3,500.00	3,497.53	3,492.31	3,490.59	12.27	104.65	-131.30	1,069.40	2,169.48	2,490.06	2,373.18	116.88	21.305	
3,600.00	3,597.43	3,572.36	3,570.43	12.63	107.04	-131.36	1,069.27	2,169.48	2,492.90	2,373.27	119.64	20.837	
3,700.00	3,697.33	3,672.26	3,670.33	12.99	110.04	-131.44	1,069.27	2,169.48	2,495.90	2,372.91	122.99	20.294	
3,800.00	3,797.23	3,774.19	3,772.22	13.35	113.09	-131.56	1,071.43	2,169.48	2,499.92	2,373.52	126.40	19.777	
3,900.00	3,897.12	3,883.29	3,881.30	13.72	116.36	-131.63	1,070.83	2,169.48	2,502.66	2,372.63	130.03	19.247	
4,000.00	3,997.02	3,992.49	3,990.46	14.08	119.63	-131.69	1,069.40	2,169.48	2,505.04	2,371.38	133.66	18.742	
4,100.00	4,096.92	4,072.15	4,069.92	14.44	122.02	-131.75	1,069.27	2,169.48	2,507.90	2,371.49	136.41	18.385	
4,200.00	4,196.82	4,172.05	4,169.82	14.80	125.01	-131.82	1,069.27	2,169.48	2,510.92	2,371.15	139.76	17.966	
4,300.00	4,296.72	4,274.01	4,271.73	15.16	128.07	-131.94	1,071.43	2,169.48	2,514.98	2,371.80	143.18	17.565	
4,400.00	4,396.61	4,383.29	4,380.99	15.53	131.34	-132.01	1,070.83	2,169.48	2,517.74	2,370.92	146.81	17.149	
4,500.00	4,496.51	4,492.67	4,490.34	15.89	134.62	-132.07	1,069.39	2,169.48	2,520.13	2,369.68	150.45	16.751	
4,600.00	4,596.41	4,571.95	4,569.41	16.25	137.00	-132.13	1,069.27	2,169.48	2,523.02	2,369.83	153.19	16.470	
4,700.00	4,696.31	4,671.84	4,669.31	16.61	139.99	-132.20	1,069.27	2,169.48	2,526.05	2,369.51	156.54	16.137	
4,800.00	4,796.20	4,773.82	4,771.24	16.98	143.05	-132.32	1,071.43	2,169.48	2,530.15	2,370.19	159.96	15.818	
4,900.00	4,896.10	4,883.29	4,880.68	17.34	146.33	-132.39	1,070.83	2,169.48	2,532.93	2,369.33	163.60	15.483	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	4,992.86	4,990.22	17.70	149.61	-132.45	1,069.39	2,169.48	2,535.33	2,368.10	167.24	15.160	
5,100.00	5,095.90	5,071.74	5,068.90	18.07	151.97	-132.51	1,069.27	2,169.48	2,538.24	2,368.28	169.96	14.934	
5,200.00	5,195.80	5,171.64	5,168.80	18.43	154.97	-132.58	1,069.27	2,169.48	2,541.30	2,367.98	173.32	14.663	
5,300.00	5,295.69	5,273.64	5,270.75	18.79	158.02	-132.70	1,071.43	2,169.48	2,545.43	2,368.69	176.74	14.402	
5,400.00	5,395.59	5,383.28	5,380.38	19.16	161.31	-132.77	1,070.83	2,169.48	2,548.23	2,367.84	180.38	14.127	
5,500.00	5,495.49	5,493.04	5,490.10	19.52	164.60	-132.82	1,069.39	2,169.48	2,550.65	2,366.62	184.03	13.860	
5,600.00	5,595.39	5,571.53	5,568.39	19.88	166.95	-132.88	1,069.27	2,169.48	2,553.57	2,366.83	186.74	13.674	
5,700.00	5,695.28	5,671.43	5,668.28	20.25	169.94	-132.95	1,069.27	2,169.48	2,556.65	2,366.55	190.10	13.449	
5,800.00	5,795.18	5,773.45	5,770.26	20.61	173.00	-133.07	1,071.43	2,169.48	2,560.82	2,367.30	193.52	13.233	
5,900.00	5,895.08	5,883.28	5,880.07	20.97	176.29	-133.14	1,070.83	2,169.48	2,563.63	2,366.46	197.17	13.002	
6,000.00	5,994.98	5,993.22	5,989.98	21.34	179.58	-133.19	1,069.38	2,169.48	2,566.07	2,365.25	200.82	12.778	
6,100.00	6,094.88	6,071.33	6,067.88	21.70	181.92	-133.25	1,069.27	2,169.48	2,569.01	2,365.49	203.53	12.623	
6,200.00	6,194.77	6,171.23	6,167.77	22.06	184.92	-133.32	1,069.27	2,169.48	2,572.11	2,365.23	206.88	12.433 ES	
6,300.00	6,294.67	6,273.26	6,269.77	22.43	187.98	-133.44	1,071.43	2,169.48	2,576.31	2,366.01	210.30	12.251	
6,314.74	6,309.40	6,289.47	6,285.98	22.48	188.46	-133.45	1,071.40	2,169.48	2,576.75	2,365.92	210.84	12.221	
6,350.00	6,344.59	6,328.23	6,324.72	22.61	189.62	-176.70	1,071.24	2,169.48	2,578.62	2,366.49	212.13	12.156	
6,400.00	6,394.26	6,382.94	6,379.42	22.79	191.26	166.16	1,070.83	2,169.48	2,584.04	2,370.10	213.94	12.078	
6,450.00	6,443.36	6,437.05	6,433.52	22.97	192.88	160.05	1,070.23	2,169.48	2,592.71	2,376.98	215.73	12.018	
6,500.00	6,491.60	6,490.24	6,486.69	23.15	194.48	156.76	1,069.43	2,169.48	2,604.58	2,387.09	217.49	11.976 SF	
6,550.00	6,538.67	6,515.43	6,511.67	23.32	195.23	154.41	1,069.27	2,169.48	2,619.85	2,401.45	218.41	11.995	
6,600.00	6,584.29	6,561.05	6,557.29	23.49	196.60	152.53	1,069.27	2,169.48	2,638.44	2,418.51	219.93	11.997	
6,650.00	6,628.18	6,604.94	6,601.18	23.66	197.91	150.81	1,069.27	2,169.48	2,660.07	2,438.69	221.38	12.016	
6,700.00	6,670.06	6,646.82	6,643.06	23.83	199.17	149.09	1,069.27	2,169.48	2,684.63	2,461.85	222.77	12.051	
6,750.00	6,709.68	6,686.44	6,682.68	24.00	200.36	147.26	1,069.27	2,169.48	2,711.98	2,487.90	224.08	12.102	
6,800.00	6,746.79	6,723.55	6,719.79	24.17	201.47	145.23	1,069.27	2,169.48	2,741.99	2,516.68	225.31	12.170	
6,850.00	6,781.17	6,758.75	6,754.96	24.35	202.52	142.89	1,071.45	2,169.48	2,775.52	2,549.05	226.47	12.255	
6,900.00	6,812.60	6,793.40	6,789.60	24.54	203.56	140.27	1,071.38	2,169.48	2,810.28	2,582.68	227.61	12.347	
6,950.00	6,840.88	6,824.60	6,820.79	24.74	204.50	137.18	1,071.26	2,169.48	2,847.13	2,618.51	228.63	12.453	
7,000.00	6,865.85	6,852.14	6,848.33	24.96	205.32	133.51	1,071.08	2,169.48	2,885.87	2,656.35	229.53	12.573	
7,050.00	6,887.35	6,875.86	6,872.04	25.19	206.03	129.11	1,070.90	2,169.48	2,926.29	2,695.99	230.30	12.706	
7,100.00	6,905.25	6,895.61	6,891.79	25.43	206.62	123.83	1,070.71	2,169.48	2,968.15	2,737.20	230.95	12.852	
7,150.00	6,919.43	6,911.26	6,907.43	25.69	207.09	117.52	1,070.54	2,169.48	3,011.22	2,779.76	231.47	13.009	
7,200.00	6,929.81	6,922.72	6,918.89	25.96	207.44	110.10	1,070.41	2,169.48	3,055.25	2,823.40	231.85	13.178	
7,250.00	6,936.33	6,929.91	6,926.08	26.25	207.65	101.61	1,070.32	2,169.48	3,099.96	2,867.87	232.09	13.356	
7,300.00	6,938.95	6,932.80	6,928.96	26.55	207.74	92.32	1,070.28	2,169.48	3,145.09	2,912.88	232.21	13.544	
7,309.56	6,939.00	6,932.85	6,929.02	26.60	207.74	90.49	1,070.28	2,169.48	3,153.74	2,921.53	232.21	13.581	
7,400.00	6,938.83	6,932.66	6,928.82	27.19	207.73	90.49	1,070.28	2,169.48	3,235.85	3,003.60	232.25	13.933	
7,500.00	6,938.64	6,932.44	6,928.61	27.91	207.73	90.48	1,070.29	2,169.48	3,327.14	3,094.84	232.30	14.322	
7,600.00	6,938.44	6,932.22	6,928.39	28.70	207.72	90.47	1,070.29	2,169.48	3,418.92	3,186.55	232.36	14.714	
7,700.00	6,938.25	6,932.00	6,928.17	29.55	207.71	90.46	1,070.29	2,169.48	3,511.14	3,278.72	232.43	15.107	
7,800.00	6,938.06	6,931.79	6,927.95	30.47	207.71	90.45	1,070.29	2,169.48	3,603.78	3,371.29	232.50	15.500	
7,900.00	6,937.87	6,931.57	6,927.74	31.44	207.70	90.44	1,070.30	2,169.48	3,696.80	3,464.24	232.57	15.895	
8,000.00	6,937.68	6,931.35	6,927.52	32.46	207.69	90.43	1,070.30	2,169.48	3,790.18	3,557.54	232.65	16.292	
8,100.00	6,937.49	6,931.13	6,927.30	33.53	207.69	90.42	1,070.30	2,169.48	3,883.89	3,651.17	232.73	16.689	
8,200.00	6,937.30	6,930.92	6,927.08	34.64	207.68	90.41	1,070.31	2,169.48	3,977.91	3,745.10	232.81	17.087	
8,300.00	6,937.10	6,930.70	6,926.87	35.78	207.68	90.40	1,070.31	2,169.48	4,072.21	3,839.32	232.89	17.485	
8,400.00	6,936.91	6,930.48	6,926.65	36.96	207.67	90.39	1,070.31	2,169.48	4,166.77	3,933.80	232.98	17.885	
8,500.00	6,936.72	6,930.26	6,926.43	38.17	207.66	90.38	1,070.31	2,169.48	4,261.59	4,028.53	233.06	18.285	
8,600.00	6,936.53	6,930.05	6,926.21	39.41	207.66	90.37	1,070.32	2,169.48	4,356.63	4,123.49	233.15	18.686	
8,700.00	6,936.34	6,929.83	6,926.00	40.68	207.65	90.36	1,070.32	2,169.48	4,451.90	4,218.66	233.23	19.088	
8,800.00	6,936.15	6,929.61	6,925.78	41.97	207.64	90.36	1,070.32	2,169.48	4,547.36	4,314.04	233.32	19.490	
8,900.00	6,935.96	6,929.39	6,925.56	43.27	207.64	90.35	1,070.33	2,169.48	4,643.02	4,409.61	233.41	19.892	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	6,929.18	6,925.34	44.60	207.63	90.34	1,070.33	2,169.48	4,738.86	4,505.36	233.49	20.295	
9,100.00	6,935.57	6,928.96	6,925.13	45.95	207.62	90.33	1,070.33	2,169.48	4,834.86	4,601.28	233.58	20.699	
9,200.00	6,935.38	6,928.74	6,924.91	47.31	207.62	90.32	1,070.33	2,169.48	4,931.02	4,697.36	233.67	21.103	
9,300.00	6,935.19	6,928.52	6,924.69	48.69	207.61	90.31	1,070.34	2,169.48	5,027.34	4,793.59	233.75	21.507	
9,400.00	6,935.00	6,928.31	6,924.47	50.08	207.60	90.30	1,070.34	2,169.48	5,123.79	4,889.96	233.84	21.912	
9,500.00	6,934.81	6,928.09	6,924.26	51.48	207.60	90.29	1,070.34	2,169.48	5,220.38	4,986.46	233.92	22.317	
9,600.00	6,934.62	6,927.87	6,924.04	52.89	207.59	90.28	1,070.34	2,169.48	5,317.10	5,083.09	234.01	22.722	
9,700.00	6,934.43	6,927.66	6,923.82	54.32	207.58	90.27	1,070.35	2,169.48	5,413.93	5,179.84	234.09	23.127	
9,800.00	6,934.23	6,927.44	6,923.61	55.75	207.58	90.26	1,070.35	2,169.48	5,510.88	5,276.70	234.17	23.533	
9,900.00	6,934.04	6,927.22	6,923.39	57.19	207.57	90.25	1,070.35	2,169.48	5,607.93	5,373.67	234.26	23.939	
10,000.00	6,933.85	6,927.00	6,923.17	58.65	207.56	90.24	1,070.35	2,169.48	5,705.09	5,470.75	234.34	24.345	
10,100.00	6,933.66	6,926.79	6,922.95	60.10	207.56	90.23	1,070.36	2,169.48	5,802.34	5,567.92	234.42	24.752	
10,200.00	6,933.47	6,926.57	6,922.74	61.57	207.55	90.23	1,070.36	2,169.48	5,899.68	5,665.18	234.50	25.158	
10,300.00	6,933.28	6,926.35	6,922.52	63.04	207.54	90.22	1,070.36	2,169.48	5,997.11	5,762.53	234.58	25.565	
10,400.00	6,933.09	6,926.13	6,922.30	64.52	207.54	90.21	1,070.37	2,169.48	6,094.63	5,859.96	234.67	25.972	
10,500.00	6,932.89	6,925.92	6,922.09	66.01	207.53	90.20	1,070.37	2,169.48	6,192.22	5,957.48	234.75	26.378	
10,600.00	6,932.70	6,925.70	6,921.87	67.50	207.53	90.19	1,070.37	2,169.48	6,289.89	6,055.07	234.83	26.785	
10,700.00	6,932.51	6,925.48	6,921.65	68.99	207.52	90.18	1,070.37	2,169.48	6,387.63	6,152.73	234.90	27.192	
10,800.00	6,932.32	6,925.27	6,921.43	70.50	207.51	90.17	1,070.38	2,169.48	6,485.45	6,250.46	234.98	27.600	
10,900.00	6,932.13	6,925.05	6,921.22	72.00	207.51	90.16	1,070.38	2,169.48	6,583.32	6,348.26	235.06	28.007	
11,000.00	6,931.94	6,924.83	6,921.00	73.51	207.50	90.15	1,070.38	2,169.48	6,681.26	6,446.12	235.14	28.414	
11,100.00	6,931.75	6,924.61	6,920.78	75.02	207.49	90.14	1,070.38	2,169.48	6,779.26	6,544.04	235.22	28.821	
11,200.00	6,931.55	6,924.40	6,920.57	76.54	207.49	90.13	1,070.39	2,169.48	6,877.32	6,642.02	235.30	29.228	
11,300.00	6,931.36	6,924.18	6,920.35	78.06	207.48	90.12	1,070.39	2,169.48	6,975.43	6,740.06	235.37	29.636	
11,400.00	6,931.17	6,923.96	6,920.13	79.58	207.47	90.11	1,070.39	2,169.48	7,073.59	6,838.14	235.45	30.043	
11,500.00	6,930.98	6,923.75	6,919.91	81.11	207.47	90.10	1,070.39	2,169.48	7,171.81	6,936.28	235.53	30.450	
11,600.00	6,930.79	6,923.53	6,919.70	82.64	207.46	90.10	1,070.40	2,169.48	7,270.08	7,034.47	235.61	30.857	
11,700.00	6,930.60	6,923.31	6,919.48	84.17	207.45	90.09	1,070.40	2,169.48	7,368.39	7,132.70	235.68	31.264	
11,800.00	6,930.41	6,923.10	6,919.26	85.70	207.45	90.08	1,070.40	2,169.48	7,466.74	7,230.98	235.76	31.671	
11,900.00	6,930.21	6,922.88	6,919.05	87.24	207.44	90.07	1,070.41	2,169.48	7,565.14	7,329.31	235.83	32.078	
12,000.00	6,930.02	6,922.66	6,918.83	88.78	207.43	90.06	1,070.41	2,169.48	7,663.58	7,427.67	235.91	32.485	
12,100.00	6,929.83	6,922.44	6,918.61	90.32	207.43	90.05	1,070.41	2,169.48	7,762.06	7,526.08	235.99	32.892	
12,200.00	6,929.64	6,922.23	6,918.40	91.87	207.42	90.04	1,070.41	2,169.48	7,860.58	7,624.52	236.06	33.299	
12,300.00	6,929.45	6,922.01	6,918.18	93.41	207.41	90.03	1,070.42	2,169.48	7,959.14	7,723.00	236.14	33.705	
12,400.00	6,929.26	6,921.79	6,917.96	94.96	207.41	90.02	1,070.42	2,169.48	8,057.73	7,821.51	236.21	34.112	
12,500.00	6,929.07	6,921.58	6,917.75	96.51	207.40	90.01	1,070.42	2,169.48	8,156.35	7,920.06	236.29	34.518	
12,600.00	6,928.88	6,921.36	6,917.53	98.06	207.40	90.00	1,070.42	2,169.48	8,255.01	8,018.65	236.37	34.925	
12,700.00	6,928.68	6,921.14	6,917.31	99.62	207.39	89.99	1,070.43	2,169.48	8,353.70	8,117.26	236.44	35.331	
12,800.00	6,928.49	6,920.93	6,917.10	101.17	207.38	89.98	1,070.43	2,169.48	8,452.42	8,215.91	236.52	35.737	
12,900.00	6,928.30	6,920.71	6,916.88	102.73	207.38	89.97	1,070.43	2,169.48	8,551.17	8,314.58	236.59	36.143	
13,000.00	6,928.11	6,920.49	6,916.66	104.28	207.37	89.97	1,070.43	2,169.48	8,649.95	8,413.29	236.67	36.549	
13,100.00	6,927.92	6,920.28	6,916.45	105.84	207.36	89.96	1,070.44	2,169.48	8,748.76	8,512.02	236.74	36.954	
13,200.00	6,927.73	6,920.06	6,916.23	107.40	207.36	89.95	1,070.44	2,169.48	8,847.60	8,610.78	236.82	37.360	
13,300.00	6,927.54	6,919.84	6,916.01	108.97	207.35	89.94	1,070.44	2,169.48	8,946.46	8,709.56	236.90	37.765	
13,400.00	6,927.34	6,919.63	6,915.80	110.53	207.34	89.93	1,070.44	2,169.48	9,045.34	8,808.37	236.97	38.171	
13,500.00	6,927.15	6,919.41	6,915.58	112.09	207.34	89.92	1,070.45	2,169.48	9,144.25	8,907.20	237.05	38.576	
13,600.00	6,926.96	6,919.19	6,915.36	113.66	207.33	89.91	1,070.45	2,169.48	9,243.18	9,006.06	237.12	38.980	
13,700.00	6,926.77	6,918.98	6,915.15	115.22	207.32	89.90	1,070.45	2,169.48	9,342.14	9,104.94	237.20	39.385	
13,800.00	6,926.58	6,918.76	6,914.93	116.79	207.32	89.89	1,070.45	2,169.48	9,441.12	9,203.84	237.28	39.790	
13,900.00	6,926.39	6,918.54	6,914.71	118.36	207.31	89.88	1,070.46	2,169.48	9,540.12	9,302.76	237.35	40.194	
14,000.00	6,926.20	6,918.33	6,914.50	119.93	207.30	89.87	1,070.46	2,169.48	9,639.14	9,401.71	237.43	40.598	
14,100.00	6,926.00	6,918.11	6,914.28	121.50	207.30	89.86	1,070.46	2,169.48	9,738.18	9,500.67	237.51	41.002	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,917.89	6,914.06	123.07	207.29	89.85	1,070.46	2,169.48	9,837.23	9,599.65	237.58	41.405	
14,300.00	6,925.62	6,917.68	6,913.85	124.64	207.28	89.85	1,070.47	2,169.48	9,936.31	9,698.65	237.66	41.809	
14,400.00	6,925.43	6,917.46	6,913.63	126.21	207.28	89.84	1,070.47	2,169.48	10,035.41	9,797.67	237.74	42.212	
14,500.00	6,925.24	6,917.24	6,913.41	127.79	207.27	89.83	1,070.47	2,169.48	10,134.52	9,896.71	237.81	42.615	
14,600.00	6,925.05	6,917.03	6,913.20	129.36	207.27	89.82	1,070.47	2,169.48	10,233.65	9,995.76	237.89	43.018	
14,700.00	6,924.86	6,916.81	6,912.98	130.93	207.26	89.81	1,070.48	2,169.48	10,332.80	10,094.83	237.97	43.421	
14,800.00	6,924.66	6,916.59	6,912.76	132.51	207.25	89.80	1,070.48	2,169.48	10,431.97	10,193.92	238.05	43.823	
14,900.00	6,924.47	6,916.38	6,912.55	134.09	207.25	89.79	1,070.48	2,169.48	10,531.15	10,293.02	238.13	44.225	
15,000.00	6,924.28	6,916.16	6,912.33	135.66	207.24	89.78	1,070.48	2,169.48	10,630.34	10,392.14	238.20	44.627	
15,100.00	6,924.09	6,915.94	6,912.11	137.24	207.23	89.77	1,070.49	2,169.48	10,729.55	10,491.27	238.28	45.029	
15,200.00	6,923.90	6,915.73	6,911.90	138.82	207.23	89.76	1,070.49	2,169.48	10,828.78	10,590.41	238.36	45.430	
15,300.00	6,923.71	6,915.51	6,911.68	140.40	207.22	89.75	1,070.49	2,169.48	10,928.01	10,689.57	238.44	45.831	
15,400.00	6,923.52	6,915.29	6,911.46	141.97	207.21	89.74	1,070.49	2,169.48	11,027.27	10,788.75	238.52	46.232	
15,500.00	6,923.33	6,915.08	6,911.25	143.55	207.21	89.73	1,070.50	2,169.48	11,126.53	10,887.93	238.60	46.633	
15,600.00	6,923.13	6,914.86	6,911.03	145.13	207.20	89.72	1,070.50	2,169.48	11,225.81	10,987.13	238.68	47.033	
15,700.00	6,922.94	6,914.64	6,910.82	146.72	207.19	89.72	1,070.50	2,169.48	11,325.10	11,086.35	238.76	47.433	
15,800.00	6,922.75	6,914.43	6,910.60	148.30	207.19	89.71	1,070.50	2,169.48	11,424.41	11,185.57	238.84	47.833	
15,900.00	6,922.56	6,914.21	6,910.38	149.88	207.18	89.70	1,070.51	2,169.48	11,523.72	11,284.81	238.92	48.233	
16,000.00	6,922.37	6,914.00	6,910.17	151.46	207.17	89.69	1,070.51	2,169.48	11,623.05	11,384.05	239.00	48.632	
16,100.00	6,922.18	6,913.78	6,909.95	153.04	207.17	89.68	1,070.51	2,169.48	11,722.39	11,483.31	239.08	49.031	
16,200.00	6,921.99	6,913.56	6,909.73	154.63	207.16	89.67	1,070.51	2,169.48	11,821.74	11,582.58	239.16	49.430	
16,300.00	6,921.79	6,913.35	6,909.52	156.21	207.16	89.66	1,070.52	2,169.48	11,921.10	11,681.86	239.24	49.828	
16,400.00	6,921.60	6,913.13	6,909.30	157.79	207.15	89.65	1,070.52	2,169.48	12,020.48	11,781.15	239.32	50.227	
16,500.00	6,921.41	6,912.91	6,909.09	159.38	207.14	89.64	1,070.52	2,169.48	12,119.86	11,880.45	239.41	50.625	
16,600.00	6,921.22	6,912.70	6,908.87	160.96	207.14	89.63	1,070.52	2,169.48	12,219.25	11,979.76	239.49	51.022	
16,700.00	6,921.03	6,912.48	6,908.65	162.55	207.13	89.62	1,070.53	2,169.48	12,318.65	12,079.08	239.57	51.420	
16,800.00	6,920.84	6,912.27	6,908.44	164.13	207.12	89.61	1,070.53	2,169.48	12,418.06	12,178.41	239.65	51.817	
16,900.00	6,920.65	6,912.05	6,908.22	165.72	207.12	89.60	1,070.53	2,169.48	12,517.48	12,277.75	239.74	52.213	
17,000.00	6,920.45	6,911.83	6,908.00	167.30	207.11	89.60	1,070.53	2,169.48	12,616.91	12,377.09	239.82	52.610	
17,100.00	6,920.26	6,911.62	6,907.79	168.89	207.10	89.59	1,070.54	2,169.48	12,716.35	12,476.45	239.90	53.006	
17,200.00	6,920.07	6,911.40	6,907.57	170.48	207.10	89.58	1,070.54	2,169.48	12,815.80	12,575.81	239.99	53.402	
17,300.00	6,919.88	6,911.18	6,907.36	172.06	207.09	89.57	1,070.54	2,169.48	12,915.26	12,675.19	240.07	53.797	
17,400.00	6,919.69	6,910.97	6,907.14	173.65	207.08	89.56	1,070.54	2,169.48	13,014.72	12,774.57	240.16	54.193	
17,500.00	6,919.50	6,910.75	6,906.92	175.24	207.08	89.55	1,070.55	2,169.48	13,114.20	12,873.95	240.24	54.588	
17,600.00	6,919.31	6,910.54	6,906.71	176.83	207.07	89.54	1,070.55	2,169.48	13,213.68	12,973.35	240.33	54.982	
17,700.00	6,919.11	6,910.32	6,906.49	178.41	207.06	89.53	1,070.55	2,169.48	13,313.17	13,072.75	240.41	55.377	
17,759.55	6,919.00	6,910.19	6,906.36	179.36	207.06	89.53	1,070.55	2,169.48	13,372.42	13,131.96	240.46	55.611	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	81.98	1,514.10	10,746.50	10,852.63				
100.00	100.00	581.10	581.00	0.25	17.41	81.98	1,514.10	10,746.50	10,852.63	10,834.97	17.66	614.415	
200.00	200.00	681.10	681.00	0.61	20.41	81.98	1,514.10	10,746.50	10,852.63	10,831.62	21.02	516.343	
300.00	300.00	784.81	784.67	0.97	23.52	81.97	1,516.23	10,746.50	10,852.93	10,828.45	24.48	443.259	
400.00	400.00	896.71	896.54	1.33	26.87	81.97	1,515.52	10,746.50	10,852.84	10,824.65	28.20	384.909	
500.00	500.00	1,008.64	1,008.44	1.68	30.22	81.98	1,513.94	10,746.50	10,852.65	10,820.74	31.91	340.121	
515.00	515.00	1,025.44	1,025.22	1.74	30.73	81.98	1,513.63	10,746.50	10,852.61	10,820.14	32.47	334.285 CC	
600.00	600.00	1,081.41	1,081.00	2.04	32.40	81.98	1,514.10	10,746.50	10,852.63	10,818.19	34.45	315.052	
700.00	700.00	1,181.41	1,181.00	2.40	35.40	81.98	1,514.10	10,746.50	10,852.63	10,814.83	37.80	287.091	
800.00	800.00	1,285.15	1,284.70	2.76	38.51	81.97	1,516.23	10,746.50	10,852.93	10,811.66	41.27	262.979	
900.00	900.00	1,397.05	1,396.58	3.12	41.86	81.97	1,515.52	10,746.50	10,852.84	10,807.86	44.98	241.278	
1,000.00	1,000.00	1,508.98	1,508.47	3.48	45.22	81.98	1,513.93	10,746.50	10,852.65	10,803.95	48.69	222.879	
1,015.00	1,015.00	1,525.78	1,525.26	3.53	45.72	-111.13	1,513.62	10,746.50	10,852.62	10,803.37	49.25	220.370	
1,100.00	1,099.98	1,581.69	1,580.98	3.82	47.39	-111.13	1,514.10	10,746.50	10,853.26	10,802.05	51.21	211.927	
1,129.54	1,129.49	1,611.20	1,610.49	3.92	48.28	-111.13	1,514.10	10,746.50	10,853.69	10,801.50	52.19	207.954	
1,200.00	1,199.88	1,681.59	1,680.88	4.15	50.39	-111.14	1,514.10	10,746.50	10,854.84	10,800.31	54.53	199.051	
1,300.00	1,299.78	1,785.28	1,784.52	4.48	53.49	-111.18	1,516.23	10,746.50	10,856.77	10,798.80	57.97	187.274	
1,400.00	1,399.68	1,897.20	1,896.43	4.82	56.85	-111.20	1,515.52	10,746.50	10,858.32	10,796.65	61.66	176.089	
1,500.00	1,499.58	2,009.24	2,008.42	5.16	60.21	-111.21	1,513.93	10,746.50	10,859.75	10,794.39	65.36	166.149	
1,600.00	1,599.48	2,081.49	2,080.48	5.50	62.37	-111.23	1,514.10	10,746.50	10,861.38	10,793.51	67.87	160.030	
1,700.00	1,699.37	2,181.39	2,180.37	5.85	65.36	-111.25	1,514.10	10,746.50	10,863.02	10,791.81	71.21	152.548	
1,800.00	1,799.27	2,285.11	2,284.05	6.20	68.47	-111.29	1,516.23	10,746.50	10,864.96	10,790.30	74.67	145.513	
1,900.00	1,899.17	2,397.23	2,396.14	6.55	71.83	-111.31	1,515.52	10,746.50	10,866.52	10,788.14	78.38	138.645	
2,000.00	1,999.07	2,509.46	2,508.34	6.90	75.19	-111.33	1,513.92	10,746.50	10,867.96	10,785.87	82.09	132.389	
2,100.00	2,098.96	2,581.28	2,579.96	7.25	77.35	-111.34	1,514.10	10,746.50	10,869.59	10,785.00	84.60	128.488	
2,200.00	2,198.86	2,681.18	2,679.86	7.61	80.34	-111.36	1,514.10	10,746.50	10,871.24	10,783.30	87.94	123.616	
2,300.00	2,298.76	2,784.94	2,783.57	7.96	83.45	-111.40	1,516.23	10,746.50	10,873.20	10,781.79	91.41	118.953	
2,400.00	2,398.66	2,897.25	2,895.86	8.32	86.81	-111.42	1,515.52	10,746.50	10,874.76	10,779.63	95.13	114.317	
2,500.00	2,498.56	3,009.67	3,008.25	8.68	90.18	-111.44	1,513.92	10,746.50	10,876.20	10,777.35	98.85	110.024	
2,600.00	2,598.45	3,081.08	3,079.45	9.03	92.32	-111.45	1,514.10	10,746.50	10,877.84	10,776.50	101.35	107.330	
2,700.00	2,698.35	3,180.98	3,179.35	9.39	95.32	-111.48	1,514.10	10,746.50	10,879.50	10,774.80	104.70	103.910	
2,800.00	2,798.25	3,284.76	3,283.10	9.75	98.43	-111.51	1,516.23	10,746.50	10,881.47	10,773.30	108.17	100.597	
2,900.00	2,898.15	3,397.27	3,395.58	10.11	101.80	-111.53	1,515.52	10,746.50	10,883.04	10,771.14	111.90	97.258	
3,000.00	2,998.04	3,509.89	3,508.16	10.47	105.17	-111.55	1,513.92	10,746.50	10,884.49	10,768.86	115.63	94.131	
3,100.00	3,097.94	3,580.87	3,578.94	10.83	107.30	-111.56	1,514.10	10,746.50	10,886.14	10,768.02	118.12	92.163	
3,200.00	3,197.84	3,680.77	3,678.84	11.19	110.29	-111.59	1,514.10	10,746.50	10,887.80	10,766.33	121.47	89.633	
3,300.00	3,297.74	3,784.59	3,782.62	11.55	113.40	-111.62	1,516.23	10,746.50	10,889.78	10,764.84	124.94	87.159	
3,400.00	3,397.64	3,897.29	3,895.30	11.91	116.78	-111.64	1,515.52	10,746.50	10,891.36	10,762.68	128.68	84.640	
3,500.00	3,497.53	4,010.11	4,008.07	12.27	120.16	-111.66	1,513.91	10,746.50	10,892.82	10,760.40	132.42	82.260	
3,600.00	3,597.43	4,080.66	4,078.43	12.63	122.28	-111.67	1,514.10	10,746.50	10,894.47	10,759.58	134.89	80.763	
3,700.00	3,697.33	4,180.56	4,178.33	12.99	125.27	-111.70	1,514.10	10,746.50	10,896.14	10,757.90	138.25	78.816	
3,800.00	3,797.23	4,284.42	4,282.14	13.35	128.38	-111.73	1,516.23	10,746.50	10,898.14	10,756.42	141.72	76.899	
3,900.00	3,897.12	4,397.32	4,395.02	13.72	131.76	-111.75	1,515.52	10,746.50	10,899.72	10,754.25	145.46	74.930	
4,000.00	3,997.02	4,510.33	4,507.99	14.08	135.15	-111.77	1,513.91	10,746.50	10,901.18	10,751.97	149.21	73.058	
4,100.00	4,096.92	4,580.46	4,577.92	14.44	137.25	-111.78	1,514.10	10,746.50	10,902.85	10,751.17	151.68	71.883	
4,200.00	4,196.82	4,680.36	4,677.82	14.80	140.24	-111.81	1,514.10	10,746.50	10,904.53	10,749.50	155.03	70.338	
4,300.00	4,296.72	4,784.25	4,781.66	15.16	143.36	-111.84	1,516.23	10,746.50	10,906.53	10,748.03	158.50	68.809	
4,400.00	4,396.61	4,897.34	4,894.73	15.53	146.75	-111.86	1,515.52	10,746.50	10,908.12	10,745.87	162.26	67.228	
4,500.00	4,496.51	5,010.55	5,007.90	15.89	150.14	-111.88	1,513.90	10,746.50	10,909.59	10,743.58	166.01	65.717	
4,600.00	4,596.41	5,080.25	5,077.41	16.25	152.23	-111.89	1,514.10	10,746.50	10,911.26	10,742.80	168.46	64.771	
4,700.00	4,696.31	5,180.15	5,177.31	16.61	155.22	-111.92	1,514.10	10,746.50	10,912.95	10,741.13	171.82	63.516	
4,800.00	4,796.20	5,284.07	5,281.19	16.98	158.33	-111.95	1,516.24	10,746.50	10,914.97	10,739.68	175.29	62.268	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,900.00	4,896.10	5,397.36	5,394.45	17.34	161.73	-111.97	1,515.52	10,746.50	10,916.56	10,737.51	179.05	60.970	
5,000.00	4,996.00	5,510.77	5,507.82	17.70	165.13	-111.99	1,513.90	10,746.50	10,918.04	10,735.23	182.81	59.724	
5,100.00	5,095.90	5,580.05	5,576.90	18.07	167.20	-112.00	1,514.10	10,746.50	10,919.72	10,734.47	185.25	58.947	
5,200.00	5,195.80	5,679.94	5,676.80	18.43	170.20	-112.03	1,514.10	10,746.50	10,921.41	10,732.81	188.60	57.907	
5,300.00	5,295.69	5,783.90	5,780.71	18.79	173.31	-112.06	1,516.24	10,746.50	10,923.44	10,731.36	192.08	56.869	
5,400.00	5,395.59	5,897.39	5,894.17	19.16	176.71	-112.08	1,515.52	10,746.50	10,925.05	10,729.20	195.84	55.785	
5,500.00	5,495.49	6,010.99	6,007.73	19.52	180.12	-112.10	1,513.90	10,746.50	10,926.52	10,726.91	199.61	54.740	
5,600.00	5,595.39	6,079.84	6,076.39	19.88	182.18	-112.11	1,514.10	10,746.50	10,928.21	10,726.18	202.04	54.091	
5,700.00	5,695.28	6,179.74	6,176.28	20.25	185.17	-112.14	1,514.10	10,746.50	10,929.92	10,724.53	205.39	53.215	
5,800.00	5,795.18	6,279.63	6,276.18	20.61	188.17	-112.16	1,514.10	10,746.50	10,931.62	10,722.87	208.75	52.368 ES	
5,900.00	5,895.08	6,300.00	6,296.37	20.97	188.78	-112.16	1,514.10	10,746.50	10,933.62	10,723.91	209.71	52.136	
6,000.00	5,994.98	6,300.00	6,296.37	21.34	188.78	-112.16	1,514.10	10,746.50	10,936.51	10,726.46	210.05	52.066	
6,100.00	6,094.88	6,300.00	6,296.37	21.70	188.78	-112.16	1,514.10	10,746.50	10,940.32	10,729.95	210.37	52.004	
6,200.00	6,194.77	6,300.00	6,296.37	22.06	188.78	-112.16	1,514.10	10,746.50	10,945.04	10,734.36	210.68	51.952	
6,300.00	6,294.67	6,300.00	6,296.37	22.43	188.78	-112.16	1,514.10	10,746.50	10,950.67	10,739.70	210.96	51.908	
6,314.74	6,309.40	6,300.00	6,296.37	22.48	188.78	-112.16	1,514.10	10,746.50	10,951.58	10,740.57	211.01	51.902	
6,350.00	6,344.59	6,300.00	6,296.37	22.61	188.78	-155.36	1,514.10	10,746.50	10,954.78	10,743.68	211.10	51.894 SF	
6,400.00	6,394.26	6,300.00	6,296.37	22.79	188.78	-172.40	1,514.10	10,746.50	10,962.80	10,751.57	211.23	51.900	
6,450.00	6,443.36	6,300.00	6,296.37	22.97	188.78	-178.37	1,514.10	10,746.50	10,974.83	10,763.48	211.35	51.926	
6,500.00	6,491.60	6,300.00	6,296.37	23.15	188.78	178.53	1,514.10	10,746.50	10,990.78	10,779.31	211.47	51.974	
6,550.00	6,538.67	6,300.00	6,296.37	23.32	188.78	176.52	1,514.10	10,746.50	11,010.54	10,798.97	211.57	52.041	
6,600.00	6,584.29	6,300.00	6,296.37	23.49	188.78	174.99	1,514.10	10,746.50	11,033.97	10,822.30	211.67	52.128	
6,650.00	6,628.18	6,300.00	6,296.37	23.66	188.78	173.68	1,514.10	10,746.50	11,060.90	10,849.14	211.76	52.234	
6,700.00	6,670.06	6,300.00	6,296.37	23.83	188.78	172.43	1,514.10	10,746.50	11,091.13	10,879.30	211.83	52.358	
6,750.00	6,709.68	6,300.00	6,296.37	24.00	188.78	171.14	1,514.10	10,746.50	11,124.46	10,912.57	211.90	52.500	
6,800.00	6,746.79	6,300.00	6,296.37	24.17	188.78	169.72	1,514.10	10,746.50	11,160.66	10,948.71	211.95	52.657	
6,850.00	6,781.17	6,300.00	6,296.37	24.35	188.78	168.07	1,514.10	10,746.50	11,199.47	10,987.47	212.00	52.829	
6,900.00	6,812.60	6,300.00	6,296.37	24.54	188.78	166.04	1,514.10	10,746.50	11,240.63	11,028.60	212.03	53.014	
6,950.00	6,840.88	6,300.00	6,296.37	24.74	188.78	163.43	1,514.10	10,746.50	11,283.86	11,071.80	212.06	53.211	
7,000.00	6,865.85	6,300.00	6,296.37	24.96	188.78	159.92	1,514.10	10,746.50	11,328.87	11,116.79	212.08	53.419	
7,050.00	6,887.35	6,300.00	6,296.37	25.19	188.78	154.93	1,514.10	10,746.50	11,375.36	11,163.27	212.09	53.635	
7,100.00	6,905.25	6,300.00	6,296.37	25.43	188.78	147.38	1,514.10	10,746.50	11,423.04	11,210.94	212.10	53.858	
7,150.00	6,919.43	6,300.00	6,296.37	25.69	188.78	135.21	1,514.10	10,746.50	11,471.60	11,259.49	212.10	54.086	
7,200.00	6,929.81	6,300.00	6,296.37	25.96	188.78	115.28	1,514.10	10,746.50	11,520.72	11,308.61	212.10	54.317	
7,250.00	6,936.33	6,300.00	6,296.37	26.25	188.78	87.55	1,514.10	10,746.50	11,570.10	11,357.99	212.10	54.549	
7,300.00	6,938.95	6,300.00	6,296.37	26.55	188.78	61.77	1,514.10	10,746.50	11,619.43	11,407.32	212.11	54.781	
7,309.56	6,939.00	6,300.00	6,296.37	26.60	188.78	57.85	1,514.10	10,746.50	11,628.83	11,416.72	212.11	54.825	
7,400.00	6,938.83	6,300.00	6,296.37	27.19	188.78	57.85	1,514.10	10,746.50	11,717.72	11,505.60	212.12	55.241	
7,500.00	6,938.64	6,300.00	6,296.37	27.91	188.78	57.85	1,514.10	10,746.50	11,816.03	11,603.90	212.13	55.701	
7,600.00	6,938.44	6,300.00	6,296.37	28.70	188.78	57.85	1,514.10	10,746.50	11,914.37	11,702.22	212.15	56.159	
7,700.00	6,938.25	6,300.00	6,296.37	29.55	188.78	57.85	1,514.10	10,746.50	12,012.74	11,800.57	212.18	56.617	
7,800.00	6,938.06	6,300.00	6,296.37	30.47	188.78	57.85	1,514.10	10,746.50	12,111.14	11,898.94	212.20	57.074	
7,900.00	6,937.87	6,300.00	6,296.37	31.44	188.78	57.85	1,514.10	10,746.50	12,209.56	11,997.33	212.23	57.530	
8,000.00	6,937.68	6,300.00	6,296.37	32.46	188.78	57.85	1,514.10	10,746.50	12,308.01	12,095.74	212.26	57.985	
8,100.00	6,937.49	6,300.00	6,296.37	33.53	188.78	57.85	1,514.10	10,746.50	12,406.48	12,194.18	212.29	58.440	
8,200.00	6,937.30	6,300.00	6,296.37	34.64	188.78	57.85	1,514.10	10,746.50	12,504.97	12,292.64	212.33	58.894	
8,300.00	6,937.10	6,300.00	6,296.37	35.78	188.78	57.85	1,514.10	10,746.50	12,603.49	12,391.12	212.37	59.347	
8,400.00	6,936.91	6,300.00	6,296.37	36.96	188.78	57.85	1,514.10	10,746.50	12,702.03	12,489.63	212.41	59.800	
8,500.00	6,936.72	6,300.00	6,296.37	38.17	188.78	57.85	1,514.10	10,746.50	12,800.60	12,588.15	212.45	60.252	
8,600.00	6,936.53	6,300.00	6,296.37	39.41	188.78	57.85	1,514.10	10,746.50	12,899.19	12,686.69	212.50	60.703	
8,700.00	6,936.34	6,300.00	6,296.37	40.68	188.78	57.85	1,514.10	10,746.50	12,997.80	12,785.25	212.54	61.153	
8,800.00	6,936.15	6,300.00	6,296.37	41.97	188.78	57.85	1,514.10	10,746.50	13,096.43	12,883.83	212.59	61.603	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,900.00	6,935.96	6,300.00	6,296.37	43.27	188.78	57.85	1,514.10	10,746.50	13,195.08	12,982.43	212.64	62.052	
9,000.00	6,935.76	6,300.00	6,296.37	44.60	188.78	57.85	1,514.10	10,746.50	13,293.75	13,081.05	212.70	62.501	
9,100.00	6,935.57	6,300.00	6,296.37	45.95	188.78	57.85	1,514.10	10,746.50	13,392.44	13,179.68	212.75	62.949	
9,200.00	6,935.38	6,300.00	6,296.37	47.31	188.78	57.85	1,514.10	10,746.50	13,491.15	13,278.34	212.81	63.396	
9,300.00	6,935.19	6,300.00	6,296.37	48.69	188.78	57.85	1,514.10	10,746.50	13,589.87	13,377.01	212.87	63.842	
9,400.00	6,935.00	6,300.00	6,296.37	50.08	188.78	57.85	1,514.10	10,746.50	13,688.62	13,475.70	212.93	64.288	
9,500.00	6,934.81	6,300.00	6,296.37	51.48	188.78	57.85	1,514.10	10,746.50	13,787.39	13,574.40	212.99	64.733	
9,600.00	6,934.62	6,300.00	6,296.37	52.89	188.78	57.85	1,514.10	10,746.50	13,886.17	13,673.12	213.05	65.178	
9,700.00	6,934.43	6,300.00	6,296.37	54.32	188.78	57.85	1,514.10	10,746.50	13,984.97	13,771.85	213.12	65.621	
9,800.00	6,934.23	6,300.00	6,296.37	55.75	188.78	57.85	1,514.10	10,746.50	14,083.79	13,870.60	213.18	66.065	
9,900.00	6,934.04	6,300.00	6,296.37	57.19	188.78	57.85	1,514.10	10,746.50	14,182.62	13,969.37	213.25	66.507	
10,000.00	6,933.85	6,300.00	6,296.37	58.65	188.78	57.85	1,514.10	10,746.50	14,281.47	14,068.15	213.32	66.949	
10,100.00	6,933.66	6,300.00	6,296.37	60.10	188.78	57.85	1,514.10	10,746.50	14,380.34	14,166.95	213.39	67.390	
10,200.00	6,933.47	6,300.00	6,296.37	61.57	188.78	57.85	1,514.10	10,746.50	14,479.22	14,265.76	213.46	67.831	
10,300.00	6,933.28	6,300.00	6,296.37	63.04	188.78	57.85	1,514.10	10,746.50	14,578.11	14,364.58	213.53	68.271	
10,400.00	6,933.09	6,300.00	6,296.37	64.52	188.78	57.85	1,514.10	10,746.50	14,677.03	14,463.42	213.61	68.711	
10,500.00	6,932.89	6,300.00	6,296.37	66.01	188.78	57.85	1,514.10	10,746.50	14,775.95	14,562.27	213.68	69.150	
10,600.00	6,932.70	6,300.00	6,296.37	67.50	188.78	57.85	1,514.10	10,746.50	14,874.89	14,661.13	213.76	69.588	
10,700.00	6,932.51	6,300.00	6,296.37	68.99	188.78	57.85	1,514.10	10,746.50	14,973.85	14,760.01	213.83	70.026	
10,800.00	6,932.32	6,300.00	6,296.37	70.50	188.78	57.85	1,514.10	10,746.50	15,072.81	14,858.90	213.91	70.463	
10,900.00	6,932.13	6,300.00	6,296.37	72.00	188.78	57.85	1,514.10	10,746.50	15,171.80	14,957.81	213.99	70.899	
11,000.00	6,931.94	6,300.00	6,296.37	73.51	188.78	57.85	1,514.10	10,746.50	15,270.79	15,056.72	214.07	71.335	
11,100.00	6,931.75	6,300.00	6,296.37	75.02	188.78	57.85	1,514.10	10,746.50	15,369.80	15,155.65	214.15	71.770	
11,200.00	6,931.55	6,300.00	6,296.37	76.54	188.78	57.85	1,514.10	10,746.50	15,468.82	15,254.59	214.23	72.205	
11,300.00	6,931.36	6,300.00	6,296.37	78.06	188.78	57.85	1,514.10	10,746.50	15,567.85	15,353.54	214.32	72.639	
11,400.00	6,931.17	6,300.00	6,296.37	79.58	188.78	57.85	1,514.10	10,746.50	15,666.90	15,452.50	214.40	73.073	
11,500.00	6,930.98	6,300.00	6,296.37	81.11	188.78	57.85	1,514.10	10,746.50	15,765.96	15,551.47	214.49	73.506	
11,600.00	6,930.79	6,300.00	6,296.37	82.64	188.78	57.85	1,514.10	10,746.50	15,865.03	15,650.46	214.57	73.938	
11,700.00	6,930.60	6,300.00	6,296.37	84.17	188.78	57.85	1,514.10	10,746.50	15,964.11	15,749.45	214.66	74.370	
11,800.00	6,930.41	6,300.00	6,296.37	85.70	188.78	57.85	1,514.10	10,746.50	16,063.20	15,848.46	214.74	74.802	
11,900.00	6,930.21	6,300.00	6,296.37	87.24	188.78	57.85	1,514.10	10,746.50	16,162.31	15,947.47	214.83	75.232	
12,000.00	6,930.02	6,300.00	6,296.37	88.78	188.78	57.85	1,514.10	10,746.50	16,261.42	16,046.50	214.92	75.663	
12,100.00	6,929.83	6,300.00	6,296.37	90.32	188.78	57.85	1,514.10	10,746.50	16,360.55	16,145.54	215.01	76.092	
12,200.00	6,929.64	6,300.00	6,296.37	91.87	188.78	57.85	1,514.10	10,746.50	16,459.68	16,244.58	215.10	76.521	
12,300.00	6,929.45	6,300.00	6,296.37	93.41	188.78	57.85	1,514.10	10,746.50	16,558.83	16,343.64	215.19	76.950	
12,400.00	6,929.26	6,300.00	6,296.37	94.96	188.78	57.85	1,514.10	10,746.50	16,657.98	16,442.70	215.28	77.378	
12,500.00	6,929.07	6,300.00	6,296.37	96.51	188.78	57.85	1,514.10	10,746.50	16,757.15	16,541.78	215.37	77.805	
12,600.00	6,928.88	6,300.00	6,296.37	98.06	188.78	57.85	1,514.10	10,746.50	16,856.33	16,640.86	215.46	78.232	
12,700.00	6,928.68	6,300.00	6,296.37	99.62	188.78	57.85	1,514.10	10,746.50	16,955.51	16,739.96	215.56	78.659	
12,800.00	6,928.49	6,300.00	6,296.37	101.17	188.78	57.85	1,514.10	10,746.50	17,054.71	16,839.06	215.65	79.085	
12,900.00	6,928.30	6,300.00	6,296.37	102.73	188.78	57.85	1,514.10	10,746.50	17,153.92	16,938.17	215.75	79.510	
13,000.00	6,928.11	6,300.00	6,296.37	104.28	188.78	57.85	1,514.10	10,746.50	17,253.13	17,037.29	215.84	79.935	
13,100.00	6,927.92	6,300.00	6,296.37	105.84	188.78	57.85	1,514.10	10,746.50	17,352.35	17,136.42	215.94	80.359	
13,200.00	6,927.73	6,300.00	6,296.37	107.40	188.78	57.85	1,514.10	10,746.50	17,451.59	17,235.55	216.03	80.783	
13,300.00	6,927.54	6,300.00	6,296.37	108.97	188.78	57.85	1,514.10	10,746.50	17,550.83	17,334.70	216.13	81.206	
13,400.00	6,927.34	6,300.00	6,296.37	110.53	188.78	57.85	1,514.10	10,746.50	17,650.08	17,433.85	216.22	81.628	
13,500.00	6,927.15	6,300.00	6,296.37	112.09	188.78	57.85	1,514.10	10,746.50	17,749.33	17,533.01	216.32	82.051	
13,600.00	6,926.96	6,300.00	6,296.37	113.66	188.78	57.85	1,514.10	10,746.50	17,848.60	17,632.18	216.42	82.472	
13,700.00	6,926.77	6,300.00	6,296.37	115.22	188.78	57.85	1,514.10	10,746.50	17,947.87	17,731.36	216.52	82.893	
13,800.00	6,926.58	6,300.00	6,296.37	116.79	188.78	57.85	1,514.10	10,746.50	18,047.16	17,830.54	216.62	83.314	
13,900.00	6,926.39	6,300.00	6,296.37	118.36	188.78	57.85	1,514.10	10,746.50	18,146.45	17,929.73	216.72	83.734	
14,000.00	6,926.20	6,300.00	6,296.37	119.93	188.78	57.85	1,514.10	10,746.50	18,245.74	18,028.93	216.82	84.153	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,100.00	6,926.00	6,300.00	6,296.37	121.50	188.78	57.85	1,514.10	10,746.50	18,345.05	18,128.13	216.92	84.572	
14,200.00	6,925.81	6,300.00	6,296.37	123.07	188.78	57.85	1,514.10	10,746.50	18,444.36	18,227.35	217.02	84.991	
14,300.00	6,925.62	6,300.00	6,296.37	124.64	188.78	57.85	1,514.10	10,746.50	18,543.68	18,326.57	217.12	85.409	
14,400.00	6,925.43	6,300.00	6,296.37	126.21	188.78	57.85	1,514.10	10,746.50	18,643.01	18,425.79	217.22	85.826	
14,500.00	6,925.24	6,300.00	6,296.37	127.79	188.78	57.85	1,514.10	10,746.50	18,742.35	18,525.03	217.32	86.243	
14,600.00	6,925.05	6,300.00	6,296.37	129.36	188.78	57.85	1,514.10	10,746.50	18,841.69	18,624.27	217.42	86.659	
14,700.00	6,924.86	6,300.00	6,296.37	130.93	188.78	57.85	1,514.10	10,746.50	18,941.04	18,723.51	217.52	87.075	
14,800.00	6,924.66	6,300.00	6,296.37	132.51	188.78	57.85	1,514.10	10,746.50	19,040.39	18,822.76	217.63	87.491	
14,900.00	6,924.47	6,300.00	6,296.37	134.09	188.78	57.85	1,514.10	10,746.50	19,139.75	18,922.02	217.73	87.906	
15,000.00	6,924.28	6,300.00	6,296.37	135.66	188.78	57.85	1,514.10	10,746.50	19,239.12	19,021.29	217.83	88.320	
15,100.00	6,924.09	6,300.00	6,296.37	137.24	188.78	57.85	1,514.10	10,746.50	19,338.50	19,120.56	217.94	88.734	
15,200.00	6,923.90	6,300.00	6,296.37	138.82	188.78	57.85	1,514.10	10,746.50	19,437.88	19,219.84	218.04	89.147	
15,300.00	6,923.71	6,300.00	6,296.37	140.40	188.78	57.85	1,514.10	10,746.50	19,537.27	19,319.12	218.15	89.560	
15,400.00	6,923.52	6,300.00	6,296.37	141.97	188.78	57.85	1,514.10	10,746.50	19,636.66	19,418.41	218.25	89.972	
15,500.00	6,923.33	6,300.00	6,296.37	143.55	188.78	57.85	1,514.10	10,746.50	19,736.06	19,517.71	218.36	90.384	
15,600.00	6,923.13	6,300.00	6,296.37	145.13	188.78	57.85	1,514.10	10,746.50	19,835.47	19,617.01	218.46	90.796	
15,700.00	6,922.94	6,300.00	6,296.37	146.72	188.78	57.85	1,514.10	10,746.50	19,934.88	19,716.31	218.57	91.206	
15,800.00	6,922.75	6,300.00	6,296.37	148.30	188.78	57.85	1,514.10	10,746.50	20,034.30	19,815.63	218.67	91.617	
15,900.00	6,922.56	6,300.00	6,296.37	149.88	188.78	57.85	1,514.10	10,746.50	20,133.73	19,914.94	218.78	92.027	
16,000.00	6,922.37	6,300.00	6,296.37	151.46	188.78	57.85	1,514.10	10,746.50	20,233.16	20,014.27	218.89	92.436	
16,100.00	6,922.18	6,300.00	6,296.37	153.04	188.78	57.85	1,514.10	10,746.50	20,332.59	20,113.60	219.00	92.845	
16,200.00	6,921.99	6,300.00	6,296.37	154.63	188.78	57.85	1,514.10	10,746.50	20,432.03	20,212.93	219.10	93.253	
16,300.00	6,921.79	6,300.00	6,296.37	156.21	188.78	57.85	1,514.10	10,746.50	20,531.48	20,312.27	219.21	93.661	
16,400.00	6,921.60	6,300.00	6,296.37	157.79	188.78	57.85	1,514.10	10,746.50	20,630.93	20,411.61	219.32	94.068	
16,500.00	6,921.41	6,300.00	6,296.37	159.38	188.78	57.85	1,514.10	10,746.50	20,730.39	20,510.96	219.43	94.475	
16,600.00	6,921.22	6,300.00	6,296.37	160.96	188.78	57.85	1,514.10	10,746.50	20,829.85	20,610.31	219.54	94.882	
16,700.00	6,921.03	6,300.00	6,296.37	162.55	188.78	57.85	1,514.10	10,746.50	20,929.32	20,709.67	219.64	95.287	
16,800.00	6,920.84	6,300.00	6,296.37	164.13	188.78	57.85	1,514.10	10,746.50	21,028.79	20,809.03	219.75	95.693	
16,900.00	6,920.65	6,300.00	6,296.37	165.72	188.78	57.85	1,514.10	10,746.50	21,128.27	20,908.40	219.86	96.098	
17,000.00	6,920.45	6,300.00	6,296.37	167.30	188.78	57.85	1,514.10	10,746.50	21,227.75	21,007.78	219.97	96.502	
17,100.00	6,920.26	6,300.00	6,296.37	168.89	188.78	57.85	1,514.10	10,746.50	21,327.23	21,107.15	220.08	96.906	
17,200.00	6,920.07	6,300.00	6,296.37	170.48	188.78	57.85	1,514.10	10,746.50	21,426.73	21,206.53	220.19	97.309	
17,300.00	6,919.88	6,300.00	6,296.37	172.06	188.78	57.85	1,514.10	10,746.50	21,526.22	21,305.92	220.30	97.712	
17,400.00	6,919.69	6,300.00	6,296.37	173.65	188.78	57.85	1,514.10	10,746.50	21,625.72	21,405.31	220.41	98.115	
17,500.00	6,919.50	6,300.00	6,296.37	175.24	188.78	57.85	1,514.10	10,746.50	21,725.23	21,504.71	220.52	98.517	
17,600.00	6,919.31	6,300.00	6,296.37	176.83	188.78	57.85	1,514.10	10,746.50	21,824.74	21,604.11	220.63	98.918	
17,700.00	6,919.11	6,300.00	6,296.37	178.41	188.78	57.85	1,514.10	10,746.50	21,924.26	21,703.51	220.75	99.319	
17,759.55	6,919.00	6,300.00	6,296.37	179.36	188.78	57.85	1,514.10	10,746.50	21,983.52	21,762.71	220.81	99.557	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-23.83	795.50	-351.38	871.08				
100.00	100.00	50.00	50.00	0.25	0.99	-23.83	795.50	-351.38	869.65	868.41	1.24	703.589	
200.00	200.00	150.00	150.00	0.61	2.90	-23.83	795.50	-351.38	869.65	866.14	3.51	247.905	
300.00	300.00	250.01	250.00	0.97	4.74	-23.83	795.50	-351.38	869.65	863.94	5.71	152.380	
400.00	400.00	350.68	350.67	1.33	6.60	-23.83	795.58	-351.38	869.72	861.80	7.92	109.760	
500.00	500.00	450.02	450.00	1.68	8.48	-23.83	795.50	-351.38	869.65	859.48	10.17	85.525	
600.00	600.00	550.02	550.00	2.04	10.45	-23.83	795.50	-351.38	869.65	857.15	12.49	69.616	
700.00	700.00	650.02	650.00	2.40	12.41	-23.83	795.50	-351.38	869.65	854.83	14.82	58.698	
800.00	800.00	751.97	751.94	2.76	14.42	-23.81	796.21	-351.38	870.30	853.12	17.18	50.665	
900.00	900.00	854.09	854.07	3.12	16.42	-23.82	795.82	-351.38	869.95	850.41	19.54	44.515	
1,000.00	1,000.00	950.06	950.00	3.48	18.29	-23.83	795.50	-351.38	869.65	847.88	21.76	39.960	CC
1,100.00	1,099.98	1,050.04	1,049.98	3.82	20.19	143.11	795.50	-351.38	871.04	847.03	24.01	36.283	ES
1,129.54	1,129.49	1,079.55	1,079.49	3.92	20.75	143.14	795.50	-351.38	871.99	847.32	24.67	35.352	
1,200.00	1,199.88	1,150.88	1,150.82	4.15	22.11	143.29	796.14	-351.38	875.13	848.88	26.26	33.332	
1,300.00	1,299.78	1,253.44	1,253.37	4.48	24.06	143.46	795.86	-351.38	878.51	849.97	28.54	30.782	
1,400.00	1,399.68	1,349.76	1,349.68	4.82	25.86	143.62	795.50	-351.38	881.80	851.13	30.67	28.748	
1,500.00	1,499.58	1,449.66	1,449.58	5.16	27.64	143.79	795.50	-351.38	885.45	852.66	32.79	27.000	
1,600.00	1,599.48	1,551.31	1,551.22	5.50	29.45	143.97	795.75	-351.38	889.34	854.39	34.95	25.447	
1,700.00	1,699.37	1,649.46	1,649.37	5.85	31.21	144.14	795.50	-351.38	892.76	855.71	37.05	24.093	
1,800.00	1,799.27	1,749.36	1,749.27	6.20	33.05	144.30	795.50	-351.38	896.43	857.19	39.24	22.842	
1,900.00	1,899.17	1,849.26	1,849.17	6.55	34.90	144.47	795.50	-351.38	900.11	858.67	41.44	21.722	
2,000.00	1,999.07	1,949.99	1,949.89	6.90	36.76	144.65	795.69	-351.38	903.97	860.32	43.65	20.711	
2,100.00	2,098.96	2,050.73	2,050.64	7.25	38.62	144.81	795.54	-351.38	907.52	861.66	45.86	19.790	
2,200.00	2,198.86	2,148.97	2,148.86	7.61	40.57	144.97	795.50	-351.38	911.18	863.02	48.16	18.920	
2,300.00	2,298.76	2,251.35	2,251.24	7.96	42.64	145.14	795.83	-351.38	915.20	864.61	50.58	18.094	
2,400.00	2,398.66	2,348.80	2,348.66	8.32	44.63	145.29	795.50	-351.38	918.60	865.68	52.92	17.357	
2,500.00	2,498.56	2,448.69	2,448.56	8.68	46.71	145.45	795.50	-351.38	922.32	866.96	55.36	16.659	
2,600.00	2,598.45	2,551.09	2,550.94	9.03	48.85	145.63	796.17	-351.38	926.68	868.82	57.86	16.016	
2,700.00	2,698.35	2,655.60	2,655.45	9.39	51.04	145.78	795.59	-351.38	929.90	869.50	60.40	15.396	
2,800.00	2,798.25	2,748.44	2,748.25	9.75	52.88	145.92	795.50	-351.38	933.52	870.93	62.59	14.914	
2,900.00	2,898.15	2,848.34	2,848.15	10.11	54.84	146.08	795.50	-351.38	937.27	872.36	64.92	14.438	
3,000.00	2,998.04	2,948.23	2,948.04	10.47	56.81	146.23	795.50	-351.38	941.03	873.79	67.24	13.996	
3,100.00	3,097.94	3,049.37	3,049.16	10.83	58.80	146.42	796.90	-351.38	946.11	876.52	69.58	13.596	
3,200.00	3,197.84	3,151.70	3,151.49	11.19	60.81	146.56	796.62	-351.38	949.62	877.66	71.96	13.197	
3,300.00	3,297.74	3,254.07	3,253.85	11.55	62.83	146.71	796.06	-351.38	952.88	878.56	74.33	12.820	
3,400.00	3,397.64	3,347.88	3,347.64	11.91	64.68	146.83	795.50	-351.38	956.12	879.59	76.53	12.493	
3,500.00	3,497.53	3,447.78	3,447.53	12.27	66.64	146.98	795.50	-351.38	959.90	881.05	78.85	12.173	
3,600.00	3,597.43	3,547.68	3,547.43	12.63	68.61	147.13	795.50	-351.38	963.70	882.52	81.18	11.871	
3,700.00	3,697.33	3,647.58	3,647.33	12.99	70.58	147.27	795.50	-351.38	967.50	884.00	83.50	11.586	
3,800.00	3,797.23	3,747.48	3,747.23	13.35	72.54	147.42	795.50	-351.38	971.31	885.48	85.83	11.317	
3,900.00	3,897.12	3,847.37	3,847.12	13.72	74.51	147.56	795.50	-351.38	975.12	886.97	88.15	11.062	
4,000.00	3,997.02	3,947.79	3,947.54	14.08	76.49	147.73	796.68	-351.38	980.05	889.56	90.49	10.831	
4,100.00	4,096.92	4,048.44	4,048.19	14.44	78.47	147.86	796.58	-351.38	983.79	890.96	92.83	10.598	
4,200.00	4,196.82	4,149.10	4,148.84	14.80	80.45	148.00	796.40	-351.38	987.45	892.28	95.17	10.376	
4,300.00	4,296.72	4,249.76	4,249.50	15.16	82.43	148.14	796.14	-351.38	991.05	893.54	97.51	10.164	
4,400.00	4,396.61	4,350.43	4,350.17	15.53	84.41	148.27	795.81	-351.38	994.57	894.72	99.85	9.961	
4,500.00	4,496.51	4,446.86	4,446.51	15.89	86.31	148.39	795.50	-351.38	998.12	896.01	102.11	9.775	
4,600.00	4,596.41	4,546.76	4,546.41	16.25	88.28	148.53	795.50	-351.38	1,001.97	897.54	104.43	9.595	
4,700.00	4,696.31	4,647.66	4,647.30	16.61	90.27	148.68	796.34	-351.38	1,006.64	899.86	106.78	9.427	
4,800.00	4,796.20	4,752.02	4,751.66	16.98	92.32	148.81	795.99	-351.38	1,010.18	900.99	109.19	9.251	
4,900.00	4,896.10	4,846.48	4,846.10	17.34	94.16	148.93	795.50	-351.38	1,013.57	902.17	111.39	9.099	
5,000.00	4,996.00	4,946.38	4,946.00	17.70	96.06	149.06	795.50	-351.38	1,017.44	903.79	113.65	8.952	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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
5,100.00	5,095.90	5,046.28	5,045.90	18.07	97.97	149.19	795.50	-351.38	1,021.32	905.41	115.91	8.811	
5,200.00	5,195.80	5,146.18	5,145.80	18.43	99.87	149.32	795.50	-351.38	1,025.21	907.04	118.17	8.676	
5,300.00	5,295.69	5,246.08	5,245.69	18.79	101.77	149.45	795.50	-351.38	1,029.10	908.67	120.43	8.545	
5,400.00	5,395.59	5,345.97	5,345.59	19.16	103.67	149.58	795.50	-351.38	1,033.00	910.30	122.69	8.419	
5,500.00	5,495.49	5,446.28	5,445.89	19.52	105.58	149.72	796.73	-351.38	1,038.08	913.12	124.96	8.307	
5,600.00	5,595.39	5,546.94	5,546.56	19.88	107.49	149.85	796.65	-351.38	1,041.91	914.68	127.23	8.189	
5,700.00	5,695.28	5,647.62	5,647.23	20.25	109.41	149.97	796.50	-351.38	1,045.67	916.16	129.51	8.074	
5,800.00	5,795.18	5,748.31	5,747.91	20.61	111.32	150.09	796.26	-351.38	1,049.37	917.58	131.78	7.963	
5,900.00	5,895.08	5,849.00	5,848.60	20.97	113.24	150.21	795.95	-351.38	1,052.99	918.93	134.06	7.855	
6,000.00	5,994.98	5,949.70	5,949.30	21.34	115.15	150.33	795.56	-351.38	1,056.55	920.21	136.34	7.750	
6,100.00	6,094.88	6,045.33	6,044.88	21.70	117.03	150.44	795.50	-351.38	1,060.41	921.84	138.57	7.653	
6,200.00	6,194.77	6,145.22	6,144.77	22.06	118.99	150.56	795.50	-351.38	1,064.34	923.45	140.89	7.554	
6,300.00	6,294.67	6,245.12	6,244.67	22.43	120.96	150.68	795.50	-351.38	1,068.28	925.06	143.22	7.459	
6,314.74	6,309.40	6,259.85	6,259.40	22.48	121.25	150.70	795.50	-351.38	1,068.86	925.30	143.56	7.445	
6,350.00	6,344.59	6,295.04	6,294.59	22.61	121.94	107.54	795.50	-351.38	1,069.98	925.60	144.38	7.411	
6,400.00	6,394.26	6,344.71	6,344.26	22.79	122.92	90.87	795.50	-351.38	1,070.63	925.09	145.54	7.356	
6,450.00	6,443.36	6,393.81	6,393.36	22.97	123.89	85.61	795.50	-351.38	1,070.24	923.55	146.68	7.296	
6,500.00	6,491.60	6,442.05	6,441.60	23.15	124.84	83.56	795.50	-351.38	1,068.90	921.09	147.81	7.232	
6,550.00	6,538.67	6,489.12	6,488.67	23.32	125.77	82.92	795.50	-351.38	1,066.77	917.86	148.91	7.164	
6,600.00	6,584.29	6,534.74	6,534.29	23.49	126.66	83.06	795.50	-351.38	1,064.02	914.04	149.98	7.094	
6,650.00	6,628.18	6,578.63	6,578.18	23.66	127.53	83.70	795.50	-351.38	1,060.87	909.85	151.02	7.025	
6,700.00	6,670.06	6,620.51	6,620.06	23.83	128.35	84.66	795.50	-351.38	1,057.57	905.55	152.02	6.957	
6,750.00	6,709.68	6,660.13	6,659.68	24.00	129.13	85.83	795.50	-351.38	1,054.39	901.41	152.98	6.893	
6,800.00	6,746.79	6,697.24	6,696.79	24.17	129.86	87.10	795.50	-351.38	1,051.62	897.73	153.89	6.834	
6,850.00	6,781.17	6,731.62	6,731.17	24.35	130.54	88.39	795.50	-351.38	1,049.56	894.81	154.74	6.783	
6,900.00	6,812.60	6,763.05	6,762.60	24.54	131.16	89.61	795.50	-351.38	1,048.50	892.95	155.55	6.741	
6,917.00	6,822.57	6,773.03	6,772.57	24.61	131.36	90.00	795.50	-351.38	1,048.42	892.61	155.81	6.729	
6,950.00	6,840.88	6,791.33	6,790.88	24.74	131.72	90.70	795.50	-351.38	1,048.73	892.43	156.30	6.710	
7,000.00	6,865.85	6,816.30	6,815.85	24.96	132.21	91.58	795.50	-351.38	1,050.51	893.52	156.99	6.692	
7,050.00	6,887.35	6,837.80	6,837.35	25.19	132.63	92.22	795.50	-351.38	1,054.05	896.44	157.61	6.688 SF	
7,100.00	6,905.25	6,855.70	6,855.25	25.43	132.98	92.55	795.50	-351.38	1,059.54	901.38	158.16	6.699	
7,150.00	6,919.43	6,869.88	6,869.43	25.69	133.26	92.54	795.50	-351.38	1,067.09	908.45	158.64	6.726	
7,200.00	6,929.81	6,880.27	6,879.81	25.96	133.47	92.16	795.50	-351.38	1,076.76	917.72	159.04	6.770	
7,250.00	6,936.33	6,886.78	6,886.33	26.25	133.60	91.40	795.50	-351.38	1,088.55	929.19	159.36	6.831	
7,300.00	6,938.95	6,889.40	6,888.95	26.55	133.65	90.23	795.50	-351.38	1,102.39	942.79	159.59	6.908	
7,309.56	6,939.00	6,889.45	6,889.00	26.60	133.65	89.97	795.50	-351.38	1,105.25	945.63	159.62	6.924	
7,400.00	6,938.83	6,889.28	6,888.83	27.19	133.64	89.96	795.50	-351.38	1,135.99	976.06	159.93	7.103	
7,500.00	6,938.64	6,889.09	6,888.64	27.91	133.64	89.95	795.50	-351.38	1,177.14	1,016.89	160.25	7.346	
7,600.00	6,938.44	6,888.90	6,888.44	28.70	133.64	89.93	795.50	-351.38	1,225.10	1,064.56	160.55	7.631	
7,700.00	6,938.25	6,888.70	6,888.25	29.55	133.63	89.92	795.50	-351.38	1,279.09	1,118.28	160.81	7.954	
7,800.00	6,938.06	6,888.51	6,888.06	30.47	133.63	89.91	795.50	-351.38	1,338.39	1,177.35	161.04	8.311	
7,900.00	6,937.87	6,888.32	6,887.87	31.44	133.63	89.90	795.50	-351.38	1,402.32	1,241.07	161.24	8.697	
8,000.00	6,937.68	6,888.13	6,887.68	32.46	133.62	89.89	795.50	-351.38	1,470.27	1,308.85	161.42	9.108	
8,100.00	6,937.49	6,887.94	6,887.49	33.53	133.62	89.88	795.50	-351.38	1,541.72	1,380.15	161.57	9.542	
8,200.00	6,937.30	6,887.75	6,887.30	34.64	133.61	89.87	795.50	-351.38	1,616.20	1,454.51	161.69	9.996	
8,300.00	6,937.10	6,887.56	6,887.10	35.78	133.61	89.86	795.50	-351.38	1,693.31	1,531.51	161.80	10.465	
8,400.00	6,936.91	6,887.36	6,886.91	36.96	133.61	89.85	795.50	-351.38	1,772.71	1,610.82	161.89	10.950	
8,500.00	6,936.72	6,887.17	6,886.72	38.17	133.60	89.84	795.50	-351.38	1,854.11	1,692.14	161.97	11.447	
8,600.00	6,936.53	6,886.98	6,886.53	39.41	133.60	89.83	795.50	-351.38	1,937.25	1,775.21	162.04	11.955	
8,700.00	6,936.34	6,886.79	6,886.34	40.68	133.60	89.82	795.50	-351.38	2,021.91	1,859.81	162.10	12.473	
8,800.00	6,936.15	6,886.60	6,886.15	41.97	133.59	89.81	795.50	-351.38	2,107.92	1,945.77	162.15	13.000	
8,900.00	6,935.96	6,886.41	6,885.96	43.27	133.59	89.80	795.50	-351.38	2,195.12	2,032.92	162.20	13.534	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	6,886.22	6,885.76	44.60	133.58	89.79	795.50	-351.38	2,283.36	2,121.12	162.24	14.074	
9,100.00	6,935.57	6,886.02	6,885.57	45.95	133.58	89.78	795.50	-351.38	2,372.54	2,210.26	162.28	14.620	
9,200.00	6,935.38	6,885.83	6,885.38	47.31	133.58	89.77	795.50	-351.38	2,462.55	2,300.24	162.31	15.172	
9,300.00	6,935.19	6,885.64	6,885.19	48.69	133.57	89.76	795.50	-351.38	2,553.30	2,390.96	162.34	15.728	
9,400.00	6,935.00	6,885.45	6,885.00	50.08	133.57	89.75	795.50	-351.38	2,644.72	2,482.35	162.37	16.288	
9,500.00	6,934.81	6,885.26	6,884.81	51.48	133.57	89.74	795.50	-351.38	2,736.74	2,574.34	162.40	16.852	
9,600.00	6,934.62	6,885.07	6,884.62	52.89	133.56	89.73	795.50	-351.38	2,829.30	2,666.87	162.43	17.419	
9,700.00	6,934.43	6,884.88	6,884.43	54.32	133.56	89.72	795.50	-351.38	2,922.36	2,759.90	162.46	17.989	
9,800.00	6,934.23	6,884.68	6,884.23	55.75	133.55	89.71	795.50	-351.38	3,015.85	2,853.37	162.48	18.561	
9,900.00	6,934.04	6,884.49	6,884.04	57.19	133.55	89.70	795.50	-351.38	3,109.75	2,947.25	162.51	19.136	
10,000.00	6,933.85	6,884.30	6,883.85	58.65	133.55	89.68	795.50	-351.38	3,204.02	3,041.49	162.53	19.713	
10,100.00	6,933.66	6,884.11	6,883.66	60.10	133.54	89.67	795.50	-351.38	3,298.63	3,136.07	162.56	20.292	
10,200.00	6,933.47	6,883.92	6,883.47	61.57	133.54	89.66	795.50	-351.38	3,393.55	3,230.96	162.58	20.873	
10,300.00	6,933.28	6,883.73	6,883.28	63.04	133.54	89.65	795.50	-351.38	3,488.75	3,326.14	162.61	21.455	
10,400.00	6,933.09	6,883.54	6,883.09	64.52	133.53	89.64	795.50	-351.38	3,584.21	3,421.58	162.64	22.038	
10,500.00	6,932.89	6,883.34	6,882.89	66.01	133.53	89.63	795.50	-351.38	3,679.92	3,517.25	162.66	22.623	
10,600.00	6,932.70	6,883.15	6,882.70	67.50	133.52	89.62	795.50	-351.38	3,775.84	3,613.15	162.69	23.209	
10,700.00	6,932.51	6,882.96	6,882.51	68.99	133.52	89.61	795.50	-351.38	3,871.97	3,709.26	162.72	23.796	
10,800.00	6,932.32	6,882.77	6,882.32	70.50	133.52	89.60	795.50	-351.38	3,968.30	3,805.55	162.74	24.384	
10,900.00	6,932.13	6,882.58	6,882.13	72.00	133.51	89.59	795.50	-351.38	4,064.80	3,902.03	162.77	24.972	
11,000.00	6,931.94	6,882.39	6,881.94	73.51	133.51	89.58	795.50	-351.38	4,161.47	3,998.66	162.80	25.561	
11,100.00	6,931.75	6,882.20	6,881.75	75.02	133.51	89.57	795.50	-351.38	4,258.29	4,095.45	162.83	26.151	
11,200.00	6,931.55	6,882.01	6,881.55	76.54	133.50	89.56	795.50	-351.38	4,355.25	4,192.39	162.86	26.742	
11,300.00	6,931.36	6,881.81	6,881.36	78.06	133.50	89.55	795.50	-351.38	4,452.35	4,289.45	162.89	27.333	
11,400.00	6,931.17	6,881.62	6,881.17	79.58	133.49	89.54	795.50	-351.38	4,549.57	4,386.65	162.93	27.924	
11,500.00	6,930.98	6,881.43	6,880.98	81.11	133.49	89.53	795.50	-351.38	4,646.91	4,483.96	162.96	28.516	
11,600.00	6,930.79	6,881.24	6,880.79	82.64	133.49	89.52	795.50	-351.38	4,744.37	4,581.37	162.99	29.108	
11,700.00	6,930.60	6,881.05	6,880.60	84.17	133.48	89.51	795.50	-351.38	4,841.92	4,678.90	163.03	29.700	
11,800.00	6,930.41	6,880.86	6,880.41	85.70	133.48	89.50	795.50	-351.38	4,939.58	4,776.52	163.06	30.293	
11,900.00	6,930.21	6,880.67	6,880.21	87.24	133.47	89.49	795.50	-351.38	5,037.32	4,874.23	163.10	30.886	
12,000.00	6,930.02	6,880.47	6,880.02	88.78	133.47	89.48	795.50	-351.38	5,135.16	4,972.02	163.13	31.478	
12,100.00	6,929.83	6,880.28	6,879.83	90.32	133.47	89.47	795.50	-351.38	5,233.07	5,069.90	163.17	32.071	
12,200.00	6,929.64	6,880.09	6,879.64	91.87	133.46	89.46	795.50	-351.38	5,331.06	5,167.85	163.21	32.664	
12,300.00	6,929.45	6,879.90	6,879.45	93.41	133.46	89.45	795.50	-351.38	5,429.13	5,265.88	163.25	33.257	
12,400.00	6,929.26	6,879.71	6,879.26	94.96	133.46	89.44	795.50	-351.38	5,527.26	5,363.98	163.29	33.850	
12,500.00	6,929.07	6,879.52	6,879.07	96.51	133.45	89.42	795.50	-351.38	5,625.46	5,462.14	163.33	34.443	
12,600.00	6,928.88	6,879.33	6,878.88	98.06	133.45	89.41	795.50	-351.38	5,723.72	5,560.36	163.37	35.036	
12,700.00	6,928.68	6,879.13	6,878.68	99.62	133.44	89.40	795.50	-351.38	5,822.05	5,658.64	163.41	35.629	
12,800.00	6,928.49	6,878.94	6,878.49	101.17	133.44	89.39	795.50	-351.38	5,920.42	5,756.97	163.45	36.222	
12,900.00	6,928.30	6,878.75	6,878.30	102.73	133.44	89.38	795.50	-351.38	6,018.86	5,855.36	163.49	36.814	
13,000.00	6,928.11	6,878.56	6,878.11	104.28	133.43	89.37	795.50	-351.38	6,117.34	5,953.80	163.54	37.406	
13,100.00	6,927.92	6,878.37	6,877.92	105.84	133.43	89.36	795.50	-351.38	6,215.87	6,052.29	163.58	37.999	
13,200.00	6,927.73	6,878.18	6,877.73	107.40	133.43	89.35	795.50	-351.38	6,314.45	6,150.82	163.63	38.590	
13,300.00	6,927.54	6,877.99	6,877.54	108.97	133.42	89.34	795.50	-351.38	6,413.07	6,249.39	163.67	39.182	
13,400.00	6,927.34	6,877.79	6,877.34	110.53	133.42	89.33	795.50	-351.38	6,511.73	6,348.01	163.72	39.774	
13,500.00	6,927.15	6,877.60	6,877.15	112.09	133.41	89.32	795.50	-351.38	6,610.43	6,446.67	163.77	40.365	
13,600.00	6,926.96	6,877.41	6,876.96	113.66	133.41	89.31	795.50	-351.38	6,709.18	6,545.36	163.82	40.955	
13,700.00	6,926.77	6,877.22	6,876.77	115.22	133.41	89.30	795.50	-351.38	6,807.95	6,644.09	163.87	41.546	
13,800.00	6,926.58	6,877.03	6,876.58	116.79	133.40	89.29	795.50	-351.38	6,906.77	6,742.85	163.92	42.136	
13,900.00	6,926.39	6,876.84	6,876.39	118.36	133.40	89.28	795.50	-351.38	7,005.61	6,841.65	163.97	42.726	
14,000.00	6,926.20	6,876.65	6,876.20	119.93	133.40	89.27	795.50	-351.38	7,104.49	6,940.48	164.02	43.316	
14,100.00	6,926.00	6,876.46	6,876.00	121.50	133.39	89.26	795.50	-351.38	7,203.40	7,039.34	164.07	43.905	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,876.26	6,875.81	123.07	133.39	89.25	795.50	-351.38	7,302.34	7,138.22	164.12	44.494	
14,300.00	6,925.62	6,876.07	6,875.62	124.64	133.38	89.24	795.50	-351.38	7,401.31	7,237.14	164.17	45.082	
14,400.00	6,925.43	6,875.88	6,875.43	126.21	133.38	89.23	795.50	-351.38	7,500.31	7,336.08	164.23	45.670	
14,500.00	6,925.24	6,875.69	6,875.24	127.79	133.38	89.22	795.50	-351.38	7,599.33	7,435.05	164.28	46.257	
14,600.00	6,925.05	6,875.50	6,875.05	129.36	133.37	89.21	795.50	-351.38	7,698.38	7,534.04	164.34	46.844	
14,700.00	6,924.86	6,875.31	6,874.86	130.93	133.37	89.20	795.50	-351.38	7,797.45	7,633.06	164.40	47.431	
14,800.00	6,924.66	6,875.12	6,874.66	132.51	133.37	89.19	795.50	-351.38	7,896.55	7,732.09	164.45	48.017	
14,900.00	6,924.47	6,874.92	6,874.47	134.09	133.36	89.17	795.50	-351.38	7,995.66	7,831.15	164.51	48.603	
15,000.00	6,924.28	6,874.73	6,874.28	135.66	133.36	89.16	795.50	-351.38	8,094.80	7,930.24	164.57	49.188	
15,100.00	6,924.09	6,874.54	6,874.09	137.24	133.35	89.15	795.50	-351.38	8,193.96	8,029.34	164.63	49.773	
15,200.00	6,923.90	6,874.35	6,873.90	138.82	133.35	89.14	795.50	-351.38	8,293.14	8,128.46	164.69	50.357	
15,300.00	6,923.71	6,874.16	6,873.71	140.40	133.35	89.13	795.50	-351.38	8,392.34	8,227.60	164.75	50.941	
15,400.00	6,923.52	6,873.97	6,873.52	141.97	133.34	89.12	795.50	-351.38	8,491.56	8,326.76	164.81	51.524	
15,500.00	6,923.33	6,873.78	6,873.33	143.55	133.34	89.11	795.50	-351.38	8,590.80	8,425.93	164.87	52.107	
15,600.00	6,923.13	6,873.58	6,873.13	145.13	133.34	89.10	795.50	-351.38	8,690.05	8,525.12	164.93	52.689	
15,700.00	6,922.94	6,873.39	6,872.94	146.72	133.33	89.09	795.50	-351.38	8,789.32	8,624.33	164.99	53.271	
15,800.00	6,922.75	6,873.20	6,872.75	148.30	133.33	89.08	795.50	-351.38	8,888.61	8,723.56	165.06	53.852	
15,900.00	6,922.56	6,873.01	6,872.56	149.88	133.32	89.07	795.50	-351.38	8,987.92	8,822.80	165.12	54.432	
16,000.00	6,922.37	6,872.82	6,872.37	151.46	133.32	89.06	795.50	-351.38	9,087.23	8,922.05	165.19	55.012	
16,100.00	6,922.18	6,872.63	6,872.18	153.04	133.32	89.05	795.50	-351.38	9,186.57	9,021.32	165.25	55.592	
16,200.00	6,921.99	6,872.44	6,871.99	154.63	133.31	89.04	795.50	-351.38	9,285.92	9,120.60	165.32	56.171	
16,300.00	6,921.79	6,872.24	6,871.79	156.21	133.31	89.03	795.50	-351.38	9,385.28	9,219.89	165.38	56.749	
16,400.00	6,921.60	6,872.05	6,871.60	157.79	133.31	89.02	795.50	-351.38	9,484.65	9,319.20	165.45	57.326	
16,500.00	6,921.41	6,871.86	6,871.41	159.38	133.30	89.01	795.50	-351.38	9,584.04	9,418.52	165.52	57.904	
16,600.00	6,921.22	6,871.67	6,871.22	160.96	133.30	89.00	795.50	-351.38	9,683.44	9,517.85	165.59	58.480	
16,700.00	6,921.03	6,871.48	6,871.03	162.55	133.29	88.99	795.50	-351.38	9,782.85	9,617.20	165.65	59.056	
16,800.00	6,920.84	6,871.29	6,870.84	164.13	133.29	88.98	795.50	-351.38	9,882.28	9,716.55	165.72	59.631	
16,900.00	6,920.65	6,871.10	6,870.65	165.72	133.29	88.97	795.50	-351.38	9,981.71	9,815.92	165.79	60.206	
17,000.00	6,920.45	6,870.91	6,870.45	167.30	133.28	88.96	795.50	-351.38	10,081.16	9,915.30	165.86	60.780	
17,100.00	6,920.26	6,870.71	6,870.26	168.89	133.28	88.95	795.50	-351.38	10,180.62	10,014.68	165.94	61.353	
17,200.00	6,920.07	6,870.52	6,870.07	170.48	133.28	88.94	795.50	-351.38	10,280.09	10,114.08	166.01	61.926	
17,300.00	6,919.88	6,870.33	6,869.88	172.06	133.27	88.92	795.50	-351.38	10,379.57	10,213.49	166.08	62.498	
17,400.00	6,919.69	6,870.14	6,869.69	173.65	133.27	88.91	795.50	-351.38	10,479.06	10,312.90	166.15	63.069	
17,500.00	6,919.50	6,869.95	6,869.50	175.24	133.26	88.90	795.50	-351.38	10,578.55	10,412.33	166.23	63.640	
17,600.00	6,919.31	6,869.76	6,869.31	176.83	133.26	88.89	795.50	-351.38	10,678.06	10,511.76	166.30	64.210	
17,700.00	6,919.11	6,869.57	6,869.11	178.41	133.26	88.88	795.50	-351.38	10,777.58	10,611.20	166.37	64.779	
17,759.55	6,919.00	6,869.45	6,869.00	179.36	133.25	88.88	795.50	-351.38	10,836.85	10,670.43	166.42	65.118	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Rule Assigned: Warning
0.00	0.00	295.00	295.00	0.00	8.84	100.75	-1,444.53	7,610.03	7,745.91				
100.00	100.00	395.00	395.00	0.25	11.84	100.75	-1,444.53	7,610.03	7,745.91	7,733.82	12.09	640.849	
200.00	200.00	495.00	495.00	0.61	14.83	100.75	-1,444.53	7,610.03	7,745.91	7,730.47	15.44	501.618	
300.00	300.00	595.10	595.00	0.97	17.83	100.75	-1,444.53	7,610.03	7,745.91	7,727.11	18.80	412.021	
400.00	400.00	695.10	695.00	1.33	20.83	100.75	-1,444.53	7,610.03	7,745.91	7,723.76	22.15	349.628	
454.75	454.75	749.85	749.71	1.52	22.47	100.73	-1,442.35	7,610.03	7,745.50	7,721.51	23.99	322.843 CC	
500.00	500.00	790.98	790.83	1.68	23.70	100.73	-1,442.40	7,610.03	7,745.52	7,720.13	25.39	305.110	
600.00	600.00	881.88	881.71	2.04	26.43	100.74	-1,442.95	7,610.03	7,745.63	7,717.16	28.47	272.079	
700.00	700.00	972.81	972.61	2.40	29.15	100.74	-1,444.08	7,610.03	7,745.86	7,714.31	31.55	245.500	
800.00	800.00	1,095.41	1,095.00	2.76	32.82	100.75	-1,444.53	7,610.03	7,745.91	7,710.33	35.58	217.682	
900.00	900.00	1,195.41	1,195.00	3.12	35.82	100.75	-1,444.53	7,610.03	7,745.91	7,706.97	38.94	198.927	
954.45	954.45	1,249.85	1,249.41	3.31	37.45	100.73	-1,442.35	7,610.03	7,745.50	7,704.74	40.77	190.003	
1,000.00	1,000.00	1,291.25	1,290.80	3.48	38.69	100.73	-1,442.41	7,610.03	7,745.52	7,703.35	42.17	183.678	
1,100.00	1,099.98	1,382.15	1,381.68	3.82	41.42	-92.38	-1,442.96	7,610.03	7,745.70	7,700.47	45.23	171.240	
1,129.54	1,129.49	1,409.00	1,408.52	3.92	42.22	-92.39	-1,443.23	7,610.03	7,745.81	7,699.67	46.13	167.900	
1,200.00	1,199.88	1,473.06	1,472.56	4.15	44.14	-92.40	-1,444.08	7,610.03	7,746.12	7,697.83	48.28	160.428	
1,300.00	1,299.78	1,595.49	1,594.78	4.48	47.81	-92.44	-1,444.53	7,610.03	7,746.36	7,694.07	52.29	148.154	
1,400.00	1,399.68	1,695.39	1,694.68	4.82	50.80	-92.47	-1,444.53	7,610.03	7,746.55	7,690.93	55.62	139.284	
1,454.52	1,454.14	1,749.85	1,749.10	5.00	52.43	-92.51	-1,442.35	7,610.03	7,746.26	7,688.82	57.43	134.871	
1,500.00	1,499.58	1,791.20	1,790.44	5.16	53.67	-92.52	-1,442.40	7,610.03	7,746.36	7,687.53	58.83	131.676	
1,600.00	1,599.48	1,882.15	1,881.38	5.50	56.40	-92.55	-1,442.96	7,610.03	7,746.67	7,684.77	61.90	125.151	
1,700.00	1,699.37	1,973.19	1,972.38	5.85	59.13	-92.57	-1,444.09	7,610.03	7,747.10	7,682.13	64.97	119.236	
1,800.00	1,799.27	2,095.29	2,094.27	6.20	62.78	-92.61	-1,444.53	7,610.03	7,747.35	7,678.37	68.98	112.312	
1,900.00	1,899.17	2,195.18	2,194.17	6.55	65.78	-92.64	-1,444.53	7,610.03	7,747.56	7,675.24	72.32	107.122	
1,954.75	1,953.86	2,249.88	2,248.82	6.74	67.42	-92.67	-1,442.35	7,610.03	7,747.28	7,673.12	74.16	104.472	
2,000.00	1,999.07	2,291.07	2,290.01	6.90	68.65	-92.69	-1,442.40	7,610.03	7,747.39	7,671.84	75.55	102.547	
2,100.00	2,098.96	2,382.15	2,381.07	7.25	71.38	-92.71	-1,442.96	7,610.03	7,747.71	7,669.08	78.63	98.531	
2,200.00	2,198.86	2,473.31	2,472.20	7.61	74.11	-92.74	-1,444.09	7,610.03	7,748.15	7,666.43	81.72	94.816	
2,300.00	2,298.76	2,595.08	2,593.76	7.96	77.76	-92.77	-1,444.53	7,610.03	7,748.42	7,662.69	85.72	90.389	
2,400.00	2,398.66	2,694.98	2,693.66	8.32	80.75	-92.81	-1,444.53	7,610.03	7,748.64	7,659.56	89.07	86.993	
2,454.93	2,453.53	2,749.85	2,748.49	8.51	82.40	-92.84	-1,442.35	7,610.03	7,748.37	7,657.46	90.91	85.229	
2,500.00	2,498.56	2,790.93	2,789.57	8.68	83.63	-92.85	-1,442.40	7,610.03	7,748.48	7,656.18	92.30	83.945	
2,600.00	2,598.45	2,882.15	2,880.76	9.03	86.36	-92.88	-1,442.96	7,610.03	7,748.82	7,653.42	95.39	81.229	
2,700.00	2,698.35	2,973.44	2,972.02	9.39	89.10	-92.90	-1,444.09	7,610.03	7,749.26	7,650.78	98.49	78.682	
2,800.00	2,798.25	3,094.87	3,093.25	9.75	92.74	-92.94	-1,444.53	7,610.03	7,749.54	7,647.06	102.49	75.616	
2,900.00	2,898.15	3,194.77	3,193.15	10.11	95.73	-92.97	-1,444.53	7,610.03	7,749.78	7,643.94	105.84	73.223	
2,955.16	2,953.25	3,249.87	3,248.21	10.31	97.38	-93.01	-1,442.35	7,610.03	7,749.52	7,641.84	107.69	71.963	
3,000.00	2,998.04	3,290.80	3,289.13	10.47	98.61	-93.02	-1,442.40	7,610.03	7,749.64	7,640.57	109.08	71.049	
3,100.00	3,097.94	3,382.15	3,380.46	10.83	101.34	-93.05	-1,442.96	7,610.03	7,749.99	7,637.82	112.17	69.090	
3,200.00	3,197.84	3,473.56	3,471.85	11.19	104.08	-93.07	-1,444.09	7,610.03	7,750.45	7,635.18	115.27	67.237	
3,300.00	3,297.74	3,594.67	3,592.74	11.55	107.71	-93.11	-1,444.53	7,610.03	7,750.74	7,631.48	119.26	64.990	
3,400.00	3,397.64	3,694.56	3,692.64	11.91	110.71	-93.14	-1,444.53	7,610.03	7,750.98	7,628.37	122.61	63.214	
3,459.79	3,457.36	3,753.91	3,751.94	12.12	112.48	-93.18	-1,442.35	7,610.03	7,750.76	7,626.15	124.61	62.201	
3,500.00	3,497.53	3,790.67	3,788.70	12.27	113.59	-93.19	-1,442.40	7,610.03	7,750.87	7,625.01	125.86	61.586	
3,600.00	3,597.43	3,882.14	3,880.15	12.63	116.33	-93.21	-1,442.96	7,610.03	7,751.22	7,622.27	128.96	60.107	
3,700.00	3,697.33	3,973.69	3,971.67	12.99	119.07	-93.24	-1,444.09	7,610.03	7,751.69	7,619.63	132.06	58.698	
3,800.00	3,797.23	4,094.46	4,092.23	13.35	122.69	-93.27	-1,444.53	7,610.03	7,752.00	7,615.95	136.04	56.982	
3,900.00	3,897.12	4,194.36	4,192.12	13.72	125.68	-93.31	-1,444.53	7,610.03	7,752.26	7,612.86	139.40	55.613	
3,958.75	3,955.82	4,252.78	4,250.51	13.93	127.43	-93.34	-1,442.35	7,610.03	7,752.04	7,610.68	141.36	54.839	
4,000.00	3,997.02	4,290.54	4,288.26	14.08	128.56	-93.35	-1,442.40	7,610.03	7,752.16	7,609.52	142.64	54.347	
4,100.00	4,096.92	4,382.14	4,379.84	14.44	131.31	-93.38	-1,442.96	7,610.03	7,752.53	7,606.78	145.75	53.191	
4,200.00	4,196.82	4,473.81	4,471.49	14.80	134.06	-93.40	-1,444.10	7,610.03	7,753.01	7,604.15	148.86	52.084	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,300.00	4,296.72	4,594.25	4,591.72	15.16	137.66	-93.44	-1,444.53	7,610.03	7,753.32	7,600.49	152.83	50.732	
4,400.00	4,396.61	4,694.15	4,691.61	15.53	140.66	-93.47	-1,444.53	7,610.03	7,753.59	7,597.41	156.18	49.644	
4,457.65	4,454.20	4,751.58	4,749.01	15.74	142.38	-93.51	-1,442.35	7,610.03	7,753.39	7,595.27	158.11	49.037	
4,500.00	4,496.51	4,790.41	4,787.83	15.89	143.54	-93.52	-1,442.40	7,610.03	7,753.52	7,594.09	159.43	48.633	
4,600.00	4,596.41	4,882.14	4,879.53	16.25	146.29	-93.55	-1,442.96	7,610.03	7,753.90	7,591.35	162.54	47.704	
4,700.00	4,696.31	4,973.94	4,971.31	16.61	149.04	-93.57	-1,444.10	7,610.03	7,754.38	7,588.73	165.65	46.811	
4,800.00	4,796.20	5,094.05	5,091.20	16.98	152.64	-93.61	-1,444.53	7,610.03	7,754.71	7,585.09	169.62	45.719	
4,900.00	4,896.10	5,193.95	5,191.10	17.34	155.63	-93.64	-1,444.53	7,610.03	7,755.00	7,582.02	172.97	44.834	
4,956.47	4,952.51	5,250.31	5,247.43	17.54	157.32	-93.68	-1,442.35	7,610.03	7,754.80	7,579.94	174.87	44.347	
5,000.00	4,996.00	5,290.28	5,287.39	17.70	158.52	-93.69	-1,442.40	7,610.03	7,754.94	7,578.72	176.22	44.007	
5,100.00	5,095.90	5,382.13	5,379.23	18.07	161.27	-93.71	-1,442.96	7,610.03	7,755.33	7,575.99	179.34	43.244	
5,200.00	5,195.80	5,474.07	5,471.13	18.43	164.03	-93.74	-1,444.10	7,610.03	7,755.83	7,573.37	182.46	42.508	
5,300.00	5,295.69	5,593.84	5,590.69	18.79	167.62	-93.77	-1,444.53	7,610.03	7,756.17	7,569.76	186.41	41.609	
5,400.00	5,395.59	5,693.74	5,690.59	19.16	170.61	-93.81	-1,444.53	7,610.03	7,756.47	7,566.70	189.76	40.874	
5,456.20	5,451.73	5,749.88	5,746.69	19.36	172.29	-93.84	-1,442.35	7,610.03	7,756.28	7,564.63	191.65	40.471	
5,500.00	5,495.49	5,790.14	5,786.95	19.52	173.50	-93.85	-1,442.40	7,610.03	7,756.43	7,563.41	193.02	40.185	
5,600.00	5,595.39	5,882.13	5,878.92	19.88	176.26	-93.88	-1,442.96	7,610.03	7,756.83	7,560.69	196.14	39.548	
5,700.00	5,695.28	5,974.19	5,970.95	20.25	179.01	-93.90	-1,444.10	7,610.03	7,757.34	7,558.08	199.26	38.931	
5,800.00	5,795.18	6,093.63	6,090.18	20.61	182.59	-93.94	-1,444.53	7,610.03	7,757.69	7,554.49	203.20	38.177	
5,900.00	5,895.08	6,193.53	6,190.08	20.97	185.59	-93.97	-1,444.53	7,610.03	7,758.00	7,551.44	206.56	37.559	
5,956.38	5,951.40	6,249.85	6,246.36	21.18	187.27	-94.01	-1,442.35	7,610.03	7,757.83	7,549.38	208.45	37.217	
6,000.00	5,994.98	6,290.01	6,286.51	21.34	188.48	-94.02	-1,442.40	7,610.03	7,757.98	7,548.17	209.81	36.976	
6,100.00	6,094.88	6,382.13	6,378.61	21.70	191.24	-94.05	-1,442.96	7,610.03	7,758.39	7,545.46	212.94	36.435	
6,200.00	6,194.77	6,474.32	6,470.78	22.06	194.00	-94.07	-1,444.10	7,610.03	7,758.91	7,542.85	216.06	35.911	
6,300.00	6,294.67	6,593.43	6,589.67	22.43	197.57	-94.11	-1,444.53	7,610.03	7,759.28	7,539.28	219.99	35.270	
6,314.74	6,309.40	6,608.15	6,604.40	22.48	198.01	-94.11	-1,444.53	7,610.03	7,759.32	7,538.84	220.49	35.191	
6,350.00	6,344.59	6,643.35	6,639.59	22.61	199.06	-137.26	-1,444.53	7,610.03	7,760.40	7,538.73	221.67	35.009 ES	
6,400.00	6,394.26	6,693.01	6,689.26	22.79	200.55	-154.13	-1,444.53	7,610.03	7,765.24	7,541.90	223.34	34.769	
6,450.00	6,443.36	6,742.12	6,738.36	22.97	202.02	-159.82	-1,444.53	7,610.03	7,773.91	7,548.92	224.99	34.552	
6,500.00	6,491.60	6,787.23	6,783.43	23.15	203.38	-162.53	-1,442.39	7,610.03	7,786.05	7,559.54	226.52	34.373	
6,550.00	6,538.67	6,830.69	6,826.88	23.32	204.68	-163.99	-1,442.57	7,610.03	7,802.27	7,574.28	227.99	34.222	
6,600.00	6,584.29	6,872.82	6,869.00	23.49	205.94	-164.80	-1,442.87	7,610.03	7,822.12	7,592.71	229.42	34.096	
6,650.00	6,628.18	6,913.36	6,909.54	23.66	207.16	-165.20	-1,443.28	7,610.03	7,845.49	7,614.70	230.79	33.994	
6,700.00	6,670.06	6,952.07	6,948.23	23.83	208.32	-165.30	-1,443.77	7,610.03	7,872.22	7,640.12	232.10	33.918	
6,750.00	6,709.68	7,008.74	7,004.68	24.00	210.01	-165.18	-1,444.53	7,610.03	7,902.16	7,668.22	233.94	33.779	
6,800.00	6,746.79	7,045.85	7,041.79	24.17	211.13	-164.81	-1,444.53	7,610.03	7,935.00	7,699.83	235.18	33.741	
6,850.00	6,781.17	7,080.23	7,076.17	24.35	212.16	-164.18	-1,444.53	7,610.03	7,970.66	7,734.33	236.33	33.727 SF	
6,900.00	6,812.60	7,111.66	7,107.60	24.54	213.10	-163.26	-1,444.53	7,610.03	8,008.89	7,771.52	237.37	33.739	
6,950.00	6,840.88	7,139.94	7,135.88	24.74	213.94	-161.96	-1,444.53	7,610.03	8,049.48	7,811.16	238.32	33.776	
7,000.00	6,865.85	7,164.91	7,160.85	24.96	214.69	-160.15	-1,444.53	7,610.03	8,092.16	7,853.01	239.15	33.837	
7,050.00	6,887.35	7,186.41	7,182.35	25.19	215.34	-157.59	-1,444.53	7,610.03	8,136.69	7,896.82	239.87	33.921	
7,100.00	6,905.25	7,204.31	7,200.25	25.43	215.87	-153.86	-1,444.53	7,610.03	8,182.78	7,942.31	240.47	34.029	
7,150.00	6,919.43	7,218.49	7,214.43	25.69	216.30	-148.14	-1,444.53	7,610.03	8,230.14	7,989.20	240.94	34.158	
7,200.00	6,929.81	7,228.88	7,224.81	25.96	216.61	-138.78	-1,444.53	7,610.03	8,278.49	8,037.20	241.29	34.309	
7,250.00	6,936.33	7,235.39	7,231.33	26.25	216.81	-122.46	-1,444.53	7,610.03	8,327.53	8,086.01	241.52	34.479	
7,300.00	6,938.95	7,238.01	7,233.95	26.55	216.88	-95.36	-1,444.53	7,610.03	8,376.96	8,135.33	241.63	34.669	
7,309.56	6,939.00	7,238.06	7,234.00	26.60	216.89	-89.21	-1,444.53	7,610.03	8,386.43	8,144.79	241.63	34.707	
7,400.00	6,938.83	7,237.89	7,233.83	27.19	216.88	-89.20	-1,444.53	7,610.03	8,476.02	8,234.36	241.67	35.073	
7,500.00	6,938.64	7,237.70	7,233.64	27.91	216.87	-89.19	-1,444.53	7,610.03	8,575.11	8,333.40	241.71	35.477	
7,600.00	6,938.44	7,237.51	7,233.44	28.70	216.87	-89.18	-1,444.53	7,610.03	8,674.21	8,432.47	241.75	35.882	
7,700.00	6,938.25	7,237.31	7,233.25	29.55	216.86	-89.17	-1,444.53	7,610.03	8,773.34	8,531.55	241.79	36.285	
7,800.00	6,938.06	7,237.12	7,233.06	30.47	216.86	-89.16	-1,444.53	7,610.03	8,872.49	8,630.65	241.83	36.689	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
7,900.00	6,937.87	7,236.93	7,232.87	31.44	216.85	-89.15	-1,444.53	7,610.03	8,971.65	8,729.77	241.88	37.092	
8,000.00	6,937.68	7,236.74	7,232.68	32.46	216.85	-89.14	-1,444.53	7,610.03	9,070.83	8,828.91	241.92	37.495	
8,100.00	6,937.49	7,236.55	7,232.49	33.53	216.84	-89.13	-1,444.53	7,610.03	9,170.03	8,928.07	241.97	37.898	
8,200.00	6,937.30	7,236.36	7,232.30	34.64	216.83	-89.12	-1,444.53	7,610.03	9,269.25	9,027.24	242.02	38.300	
8,300.00	6,937.10	7,236.17	7,232.10	35.78	216.83	-89.11	-1,444.53	7,610.03	9,368.49	9,126.42	242.07	38.702	
8,400.00	6,936.91	7,235.97	7,231.91	36.96	216.82	-89.10	-1,444.53	7,610.03	9,467.74	9,225.62	242.12	39.104	
8,500.00	6,936.72	7,235.78	7,231.72	38.17	216.82	-89.09	-1,444.53	7,610.03	9,567.00	9,324.84	242.17	39.506	
8,600.00	6,936.53	7,235.59	7,231.53	39.41	216.81	-89.09	-1,444.53	7,610.03	9,666.28	9,424.07	242.22	39.907	
8,700.00	6,936.34	7,235.40	7,231.34	40.68	216.81	-89.08	-1,444.53	7,610.03	9,765.58	9,523.31	242.27	40.308	
8,800.00	6,936.15	7,235.21	7,231.15	41.97	216.80	-89.07	-1,444.53	7,610.03	9,864.89	9,622.56	242.33	40.709	
8,900.00	6,935.96	7,235.02	7,230.96	43.27	216.79	-89.06	-1,444.53	7,610.03	9,964.21	9,721.83	242.38	41.110	
9,000.00	6,935.76	7,234.83	7,230.76	44.60	216.79	-89.05	-1,444.53	7,610.03	10,063.55	9,821.12	242.44	41.510	
9,100.00	6,935.57	7,234.63	7,230.57	45.95	216.78	-89.04	-1,444.53	7,610.03	10,162.90	9,920.41	242.49	41.910	
9,200.00	6,935.38	7,234.44	7,230.38	47.31	216.78	-89.03	-1,444.53	7,610.03	10,262.27	10,019.72	242.55	42.310	
9,300.00	6,935.19	7,234.25	7,230.19	48.69	216.77	-89.02	-1,444.53	7,610.03	10,361.64	10,119.03	242.61	42.709	
9,400.00	6,935.00	7,234.06	7,230.00	50.08	216.77	-89.01	-1,444.53	7,610.03	10,461.03	10,218.36	242.67	43.109	
9,500.00	6,934.81	7,233.87	7,229.81	51.48	216.76	-89.00	-1,444.53	7,610.03	10,560.43	10,317.70	242.73	43.508	
9,600.00	6,934.62	7,233.68	7,229.62	52.89	216.75	-88.99	-1,444.53	7,610.03	10,659.84	10,417.05	242.79	43.906	
9,700.00	6,934.43	7,233.49	7,229.43	54.32	216.75	-88.98	-1,444.53	7,610.03	10,759.26	10,516.41	242.85	44.305	
9,800.00	6,934.23	7,233.30	7,229.23	55.75	216.74	-88.97	-1,444.53	7,610.03	10,858.69	10,615.78	242.91	44.703	
9,900.00	6,934.04	7,233.10	7,229.04	57.19	216.74	-88.96	-1,444.53	7,610.03	10,958.13	10,715.16	242.97	45.101	
10,000.00	6,933.85	7,232.91	7,228.85	58.65	216.73	-88.95	-1,444.53	7,610.03	11,057.58	10,814.55	243.03	45.498	
10,100.00	6,933.66	7,232.72	7,228.66	60.10	216.73	-88.94	-1,444.53	7,610.03	11,157.04	10,913.95	243.09	45.896	
10,200.00	6,933.47	7,232.53	7,228.47	61.57	216.72	-88.93	-1,444.53	7,610.03	11,256.52	11,013.36	243.16	46.293	
10,300.00	6,933.28	7,232.34	7,228.28	63.04	216.71	-88.92	-1,444.53	7,610.03	11,356.00	11,112.77	243.22	46.690	
10,400.00	6,933.09	7,232.15	7,228.09	64.52	216.71	-88.91	-1,444.53	7,610.03	11,455.49	11,212.20	243.29	47.086	
10,500.00	6,932.89	7,231.96	7,227.89	66.01	216.70	-88.90	-1,444.53	7,610.03	11,554.98	11,311.63	243.35	47.483	
10,600.00	6,932.70	7,231.76	7,227.70	67.50	216.70	-88.89	-1,444.53	7,610.03	11,654.49	11,411.07	243.42	47.879	
10,700.00	6,932.51	7,231.57	7,227.51	68.99	216.69	-88.89	-1,444.53	7,610.03	11,754.01	11,510.52	243.48	48.274	
10,800.00	6,932.32	7,231.38	7,227.32	70.50	216.68	-88.88	-1,444.53	7,610.03	11,853.53	11,609.98	243.55	48.670	
10,900.00	6,932.13	7,231.19	7,227.13	72.00	216.68	-88.87	-1,444.53	7,610.03	11,953.06	11,709.44	243.62	49.065	
11,000.00	6,931.94	7,231.00	7,226.94	73.51	216.67	-88.86	-1,444.53	7,610.03	12,052.60	11,808.92	243.69	49.460	
11,100.00	6,931.75	7,230.81	7,226.75	75.02	216.67	-88.85	-1,444.53	7,610.03	12,152.15	11,908.39	243.75	49.854	
11,200.00	6,931.55	7,230.62	7,226.55	76.54	216.66	-88.84	-1,444.53	7,610.03	12,251.70	12,007.88	243.82	50.249	
11,300.00	6,931.36	7,230.42	7,226.36	78.06	216.66	-88.83	-1,444.53	7,610.03	12,351.26	12,107.37	243.89	50.643	
11,400.00	6,931.17	7,230.23	7,226.17	79.58	216.65	-88.82	-1,444.53	7,610.03	12,450.83	12,206.87	243.96	51.036	
11,500.00	6,930.98	7,230.04	7,225.98	81.11	216.64	-88.81	-1,444.53	7,610.03	12,550.41	12,306.38	244.03	51.430	
11,600.00	6,930.79	7,229.85	7,225.79	82.64	216.64	-88.80	-1,444.53	7,610.03	12,649.99	12,405.89	244.10	51.823	
11,700.00	6,930.60	7,229.66	7,225.60	84.17	216.63	-88.79	-1,444.53	7,610.03	12,749.58	12,505.41	244.17	52.216	
11,800.00	6,930.41	7,229.47	7,225.41	85.70	216.63	-88.78	-1,444.53	7,610.03	12,849.17	12,604.93	244.24	52.608	
11,900.00	6,930.21	7,229.28	7,225.21	87.24	216.62	-88.77	-1,444.53	7,610.03	12,948.77	12,704.46	244.31	53.000	
12,000.00	6,930.02	7,229.08	7,225.02	88.78	216.62	-88.76	-1,444.53	7,610.03	13,048.38	12,804.00	244.39	53.392	
12,100.00	6,929.83	7,228.89	7,224.83	90.32	216.61	-88.75	-1,444.53	7,610.03	13,147.99	12,903.54	244.46	53.784	
12,200.00	6,929.64	7,228.70	7,224.64	91.87	216.60	-88.74	-1,444.53	7,610.03	13,247.61	13,003.08	244.53	54.176	
12,300.00	6,929.45	7,228.51	7,224.45	93.41	216.60	-88.73	-1,444.53	7,610.03	13,347.24	13,102.63	244.60	54.567	
12,400.00	6,929.26	7,228.32	7,224.26	94.96	216.59	-88.72	-1,444.53	7,610.03	13,446.87	13,202.19	244.68	54.957	
12,500.00	6,929.07	7,228.13	7,224.07	96.51	216.59	-88.71	-1,444.53	7,610.03	13,546.50	13,301.75	244.75	55.348	
12,600.00	6,928.88	7,227.94	7,223.88	98.06	216.58	-88.70	-1,444.53	7,610.03	13,646.15	13,401.32	244.83	55.738	
12,700.00	6,928.68	7,227.74	7,223.68	99.62	216.58	-88.69	-1,444.53	7,610.03	13,745.79	13,500.89	244.90	56.128	
12,800.00	6,928.49	7,227.55	7,223.49	101.17	216.57	-88.69	-1,444.53	7,610.03	13,845.44	13,600.47	244.98	56.517	
12,900.00	6,928.30	7,227.36	7,223.30	102.73	216.56	-88.68	-1,444.53	7,610.03	13,945.10	13,700.05	245.05	56.907	
13,000.00	6,928.11	7,227.17	7,223.11	104.28	216.56	-88.67	-1,444.53	7,610.03	14,044.76	13,799.63	245.13	57.296	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
13,100.00	6,927.92	7,226.98	7,222.92	105.84	216.55	-88.66	-1,444.53	7,610.03	14,144.43	13,899.22	245.20	57.684	
13,200.00	6,927.73	7,226.79	7,222.73	107.40	216.55	-88.65	-1,444.53	7,610.03	14,244.10	13,998.82	245.28	58.073	
13,300.00	6,927.54	7,226.60	7,222.54	108.97	216.54	-88.64	-1,444.53	7,610.03	14,343.77	14,098.41	245.36	58.461	
13,400.00	6,927.34	7,226.41	7,222.34	110.53	216.54	-88.63	-1,444.53	7,610.03	14,443.45	14,198.02	245.44	58.848	
13,500.00	6,927.15	7,226.21	7,222.15	112.09	216.53	-88.62	-1,444.53	7,610.03	14,543.14	14,297.62	245.51	59.236	
13,600.00	6,926.96	7,226.02	7,221.96	113.66	216.52	-88.61	-1,444.53	7,610.03	14,642.82	14,397.23	245.59	59.623	
13,700.00	6,926.77	7,225.83	7,221.77	115.22	216.52	-88.60	-1,444.53	7,610.03	14,742.52	14,496.85	245.67	60.010	
13,800.00	6,926.58	7,225.64	7,221.58	116.79	216.51	-88.59	-1,444.53	7,610.03	14,842.21	14,596.47	245.75	60.396	
13,900.00	6,926.39	7,225.45	7,221.39	118.36	216.51	-88.58	-1,444.53	7,610.03	14,941.92	14,696.09	245.83	60.782	
14,000.00	6,926.20	7,225.26	7,221.20	119.93	216.50	-88.57	-1,444.53	7,610.03	15,041.62	14,795.71	245.91	61.168	
14,100.00	6,926.00	7,225.07	7,221.00	121.50	216.50	-88.56	-1,444.53	7,610.03	15,141.33	14,895.34	245.99	61.553	
14,200.00	6,925.81	7,224.87	7,220.81	123.07	216.49	-88.55	-1,444.53	7,610.03	15,241.04	14,994.97	246.07	61.939	
14,300.00	6,925.62	7,224.68	7,220.62	124.64	216.48	-88.54	-1,444.53	7,610.03	15,340.76	15,094.61	246.15	62.323	
14,400.00	6,925.43	7,224.49	7,220.43	126.21	216.48	-88.53	-1,444.53	7,610.03	15,440.48	15,194.25	246.23	62.708	
14,500.00	6,925.24	7,224.30	7,220.24	127.79	216.47	-88.52	-1,444.53	7,610.03	15,540.20	15,293.89	246.31	63.092	
14,600.00	6,925.05	7,224.11	7,220.05	129.36	216.47	-88.51	-1,444.53	7,610.03	15,639.93	15,393.54	246.39	63.476	
14,700.00	6,924.86	7,223.92	7,219.86	130.93	216.46	-88.50	-1,444.53	7,610.03	15,739.66	15,493.19	246.47	63.859	
14,800.00	6,924.66	7,223.73	7,219.66	132.51	216.46	-88.49	-1,444.53	7,610.03	15,839.39	15,592.84	246.56	64.243	
14,900.00	6,924.47	7,223.53	7,219.47	134.09	216.45	-88.49	-1,444.53	7,610.03	15,939.13	15,692.49	246.64	64.625	
15,000.00	6,924.28	7,223.34	7,219.28	135.66	216.44	-88.48	-1,444.53	7,610.03	16,038.87	15,792.15	246.72	65.008	
15,100.00	6,924.09	7,223.15	7,219.09	137.24	216.44	-88.47	-1,444.53	7,610.03	16,138.61	15,891.81	246.80	65.390	
15,200.00	6,923.90	7,222.96	7,218.90	138.82	216.43	-88.46	-1,444.53	7,610.03	16,238.36	15,991.47	246.89	65.772	
15,300.00	6,923.71	7,222.77	7,218.71	140.40	216.43	-88.45	-1,444.53	7,610.03	16,338.11	16,091.14	246.97	66.154	
15,400.00	6,923.52	7,222.58	7,218.52	141.97	216.42	-88.44	-1,444.53	7,610.03	16,437.86	16,190.81	247.06	66.535	
15,500.00	6,923.33	7,222.39	7,218.33	143.55	216.42	-88.43	-1,444.53	7,610.03	16,537.62	16,290.48	247.14	66.916	
15,600.00	6,923.13	7,222.19	7,218.13	145.13	216.41	-88.42	-1,444.53	7,610.03	16,637.38	16,390.15	247.23	67.296	
15,700.00	6,922.94	7,222.00	7,217.94	146.72	216.40	-88.41	-1,444.53	7,610.03	16,737.14	16,489.83	247.31	67.676	
15,800.00	6,922.75	7,221.81	7,217.75	148.30	216.40	-88.40	-1,444.53	7,610.03	16,836.91	16,589.51	247.40	68.056	
15,900.00	6,922.56	7,221.62	7,217.56	149.88	216.39	-88.39	-1,444.53	7,610.03	16,936.67	16,689.19	247.48	68.436	
16,000.00	6,922.37	7,221.43	7,217.37	151.46	216.39	-88.38	-1,444.53	7,610.03	17,036.44	16,788.87	247.57	68.815	
16,100.00	6,922.18	7,221.24	7,217.18	153.04	216.38	-88.37	-1,444.53	7,610.03	17,136.22	16,888.56	247.66	69.194	
16,200.00	6,921.99	7,221.05	7,216.99	154.63	216.38	-88.36	-1,444.53	7,610.03	17,235.99	16,988.25	247.74	69.572	
16,300.00	6,921.79	7,220.86	7,216.79	156.21	216.37	-88.35	-1,444.53	7,610.03	17,335.77	17,087.94	247.83	69.950	
16,400.00	6,921.60	7,220.66	7,216.60	157.79	216.36	-88.34	-1,444.53	7,610.03	17,435.55	17,187.63	247.92	70.328	
16,500.00	6,921.41	7,220.47	7,216.41	159.38	216.36	-88.33	-1,444.53	7,610.03	17,535.33	17,287.33	248.01	70.705	
16,600.00	6,921.22	7,220.28	7,216.22	160.96	216.35	-88.32	-1,444.53	7,610.03	17,635.12	17,387.02	248.09	71.082	
16,700.00	6,921.03	7,220.09	7,216.03	162.55	216.35	-88.31	-1,444.53	7,610.03	17,734.91	17,486.72	248.18	71.459	
16,800.00	6,920.84	7,219.90	7,215.84	164.13	216.34	-88.30	-1,444.53	7,610.03	17,834.70	17,586.42	248.27	71.835	
16,900.00	6,920.65	7,219.71	7,215.65	165.72	216.34	-88.29	-1,444.53	7,610.03	17,934.49	17,686.13	248.36	72.212	
17,000.00	6,920.45	7,219.52	7,215.45	167.30	216.33	-88.29	-1,444.53	7,610.03	18,034.28	17,785.83	248.45	72.587	
17,100.00	6,920.26	7,219.32	7,215.26	168.89	216.32	-88.28	-1,444.53	7,610.03	18,134.08	17,885.54	248.54	72.963	
17,200.00	6,920.07	7,219.13	7,215.07	170.48	216.32	-88.27	-1,444.53	7,610.03	18,233.88	17,985.25	248.63	73.338	
17,300.00	6,919.88	7,218.94	7,214.88	172.06	216.31	-88.26	-1,444.53	7,610.03	18,333.68	18,084.96	248.72	73.712	
17,400.00	6,919.69	7,218.75	7,214.69	173.65	216.31	-88.25	-1,444.53	7,610.03	18,433.49	18,184.68	248.81	74.086	
17,500.00	6,919.50	7,218.56	7,214.50	175.24	216.30	-88.24	-1,444.53	7,610.03	18,533.29	18,284.39	248.90	74.460	
17,600.00	6,919.31	7,218.37	7,214.31	176.83	216.29	-88.23	-1,444.53	7,610.03	18,633.10	18,384.11	248.99	74.834	
17,700.00	6,919.11	7,218.18	7,214.11	178.41	216.29	-88.22	-1,444.53	7,610.03	18,732.91	18,483.83	249.08	75.207	
17,759.55	6,919.00	7,218.06	7,214.00	179.36	216.29	-88.21	-1,444.53	7,610.03	18,792.35	18,543.21	249.14	75.429	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	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	-70.98	1,139.80	-3,306.40	3,497.56				
100.00	100.00	61.00	61.00	0.25	1.20	-70.98	1,139.80	-3,306.40	3,497.35	3,495.89	1.45	2,407.479	
200.00	200.00	161.00	161.00	0.61	3.41	-70.98	1,139.80	-3,306.40	3,497.35	3,493.33	4.01	871.134	
300.00	300.00	261.00	261.00	0.97	5.91	-70.98	1,139.80	-3,306.40	3,497.35	3,490.47	6.87	508.778	
400.00	400.00	363.06	363.05	1.33	8.46	-70.97	1,140.39	-3,306.40	3,497.54	3,487.75	9.78	357.445	
500.00	500.00	467.10	467.09	1.68	11.06	-70.98	1,140.02	-3,306.40	3,497.42	3,484.67	12.75	274.414	
600.00	600.00	561.15	561.00	2.04	13.74	-70.98	1,139.80	-3,306.40	3,497.35	3,481.56	15.79	221.538	
700.00	700.00	669.81	669.63	2.40	17.08	-70.96	1,140.81	-3,306.40	3,497.68	3,478.20	19.48	179.542	
800.00	800.00	761.31	761.00	2.76	19.81	-70.98	1,139.80	-3,306.40	3,497.35	3,474.77	22.57	154.925	
900.00	900.00	861.31	861.00	3.12	22.45	-70.98	1,139.80	-3,306.40	3,497.35	3,471.77	25.57	136.767	
1,000.00	1,000.00	978.91	978.55	3.48	25.56	-70.98	1,140.05	-3,306.40	3,497.47	3,468.44	29.03	120.468	
1,032.40	1,032.40	1,017.50	1,017.12	3.59	26.57	95.91	1,139.35	-3,306.40	3,497.30	3,467.14	30.16	115.956	
1,100.00	1,099.98	1,061.39	1,060.98	3.82	27.51	95.93	1,139.80	-3,306.40	3,497.53	3,466.20	31.32	111.655	
1,129.54	1,129.49	1,090.91	1,090.49	3.92	28.19	95.95	1,139.80	-3,306.40	3,497.65	3,465.55	32.10	108.960	
1,200.00	1,199.88	1,161.30	1,160.88	4.15	29.81	96.00	1,139.80	-3,306.40	3,497.98	3,464.03	33.95	103.022	
1,300.00	1,299.78	1,262.23	1,261.80	4.48	32.13	96.10	1,141.15	-3,306.40	3,498.90	3,462.29	36.61	95.566	
1,400.00	1,399.68	1,367.51	1,367.07	4.82	34.56	96.17	1,140.81	-3,306.40	3,499.28	3,459.90	39.38	88.869	
1,500.00	1,499.58	1,472.85	1,472.40	5.16	36.99	96.23	1,139.98	-3,306.40	3,499.50	3,457.36	42.14	83.037	
1,600.00	1,599.48	1,561.01	1,560.48	5.50	38.95	96.30	1,139.80	-3,306.40	3,499.92	3,455.47	44.45	78.741	
1,700.00	1,699.37	1,660.91	1,660.37	5.85	41.15	96.37	1,139.80	-3,306.40	3,500.42	3,453.42	47.00	74.483	
1,800.00	1,799.27	1,761.99	1,761.44	6.20	43.38	96.46	1,141.15	-3,306.40	3,501.37	3,451.80	49.57	70.632	
1,900.00	1,899.17	1,867.36	1,866.80	6.55	45.70	96.54	1,140.80	-3,306.40	3,501.77	3,449.53	52.24	67.028	
2,000.00	1,999.07	1,972.78	1,972.21	6.90	48.02	96.60	1,139.96	-3,306.40	3,502.02	3,447.11	54.92	63.768	
2,100.00	2,098.96	2,060.59	2,059.96	7.25	49.81	96.66	1,139.80	-3,306.40	3,502.47	3,445.41	57.06	61.381	
2,200.00	2,198.86	2,160.49	2,159.86	7.61	51.81	96.74	1,139.80	-3,306.40	3,503.00	3,443.58	59.42	58.957	
2,300.00	2,298.76	2,262.32	2,261.68	7.96	53.85	96.83	1,140.78	-3,306.40	3,503.87	3,442.05	61.81	56.687	
2,400.00	2,398.66	2,366.98	2,366.34	8.32	55.94	96.90	1,140.40	-3,306.40	3,504.28	3,440.02	64.26	54.530	
2,500.00	2,498.56	2,460.24	2,459.56	8.68	57.81	96.96	1,139.80	-3,306.40	3,504.62	3,438.13	66.49	52.710	
2,600.00	2,598.45	2,560.14	2,559.45	9.03	59.83	97.03	1,139.80	-3,306.40	3,505.17	3,436.31	68.86	50.904	
2,700.00	2,698.35	2,660.03	2,659.35	9.39	61.84	97.10	1,139.80	-3,306.40	3,505.72	3,434.49	71.23	49.217	
2,800.00	2,798.25	2,761.72	2,761.03	9.75	63.89	97.19	1,140.59	-3,306.40	3,506.56	3,432.92	73.64	47.619	
2,900.00	2,898.15	2,864.88	2,864.18	10.11	65.97	97.26	1,140.31	-3,306.40	3,507.03	3,430.96	76.08	46.100	
3,000.00	2,998.04	2,959.79	2,959.04	10.47	67.88	97.32	1,139.80	-3,306.40	3,507.43	3,429.08	78.35	44.768	
3,100.00	3,097.94	3,059.69	3,058.94	10.83	69.80	97.40	1,139.80	-3,306.40	3,508.01	3,427.38	80.63	43.507	
3,200.00	3,197.84	3,159.58	3,158.84	11.19	71.73	97.47	1,139.80	-3,306.40	3,508.59	3,425.68	82.92	42.314	
3,300.00	3,297.74	3,260.29	3,259.53	11.55	73.67	97.56	1,141.02	-3,306.40	3,509.61	3,424.40	85.22	41.184	
3,400.00	3,397.64	3,364.22	3,363.47	11.91	75.67	97.63	1,140.79	-3,306.40	3,510.13	3,422.55	87.58	40.078	
3,500.00	3,497.53	3,468.20	3,467.43	12.27	77.68	97.70	1,140.21	-3,306.40	3,510.54	3,420.59	89.95	39.029	
3,600.00	3,597.43	3,559.22	3,558.43	12.63	79.51	97.76	1,139.80	-3,306.40	3,510.99	3,418.85	92.14	38.105	
3,700.00	3,697.33	3,660.15	3,659.36	12.99	81.65	97.84	1,140.05	-3,306.40	3,511.69	3,417.05	94.65	37.104	
3,800.00	3,797.23	3,759.06	3,758.23	13.35	83.80	97.91	1,139.80	-3,306.40	3,512.23	3,415.08	97.15	36.153	
3,900.00	3,897.12	3,858.96	3,858.12	13.72	87.30	97.98	1,139.80	-3,306.40	3,512.85	3,411.84	101.01	34.776	
4,000.00	3,997.02	3,958.85	3,958.02	14.08	90.80	98.05	1,139.80	-3,306.40	3,513.48	3,408.60	104.88	33.501	
4,100.00	4,096.92	4,062.61	4,061.76	14.44	94.44	98.15	1,141.35	-3,306.40	3,514.68	3,405.80	108.88	32.281	
4,200.00	4,196.82	4,169.77	4,168.90	14.80	98.20	98.22	1,140.72	-3,306.40	3,515.11	3,402.12	113.00	31.109	
4,300.00	4,296.72	4,259.16	4,257.72	15.16	101.39	98.27	1,139.80	-3,306.40	3,515.41	3,398.86	116.55	30.163	
4,400.00	4,396.61	4,359.14	4,357.61	15.53	106.22	98.34	1,139.80	-3,306.40	3,516.06	3,394.32	121.74	28.882	
4,500.00	4,496.51	4,476.00	4,473.95	15.89	111.92	98.43	1,139.80	-3,306.40	3,516.76	3,388.95	127.81	27.516	
4,600.00	4,596.41	4,571.00	4,568.71	16.25	116.41	98.50	1,139.80	-3,306.40	3,517.40	3,384.75	132.66	26.515	
4,700.00	4,696.31	4,706.05	4,703.66	16.61	123.15	98.60	1,139.76	-3,306.40	3,518.35	3,378.60	139.75	25.176	
4,708.45	4,704.75	4,668.11	4,665.75	16.64	121.26	98.57	1,139.80	-3,306.40	3,518.11	3,380.22	137.90	25.512	
4,800.00	4,796.20	4,800.00	4,797.08	16.98	127.88	98.66	1,139.80	-3,306.40	3,518.96	3,374.12	144.84	24.295	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,815.93	4,812.12	4,800.00	4,797.08	17.03	127.88	98.66	1,139.80	-3,306.40	3,518.92	3,374.02	144.91	24.284	
4,900.00	4,896.10	4,860.02	4,857.10	17.34	130.85	98.71	1,139.80	-3,306.40	3,519.42	3,371.23	148.19	23.749	
5,000.00	4,996.00	4,960.30	4,957.00	17.70	135.84	98.78	1,139.80	-3,306.40	3,520.10	3,366.56	153.54	22.926	
5,100.00	5,095.90	5,060.30	5,056.90	18.07	140.95	98.85	1,139.80	-3,306.40	3,520.80	3,361.78	159.02	22.141	
5,200.00	5,195.80	5,160.44	5,156.80	18.43	145.91	98.93	1,139.80	-3,306.40	3,521.50	3,357.16	164.33	21.429	
5,300.00	5,295.69	5,260.33	5,256.69	18.79	150.83	99.00	1,139.80	-3,306.40	3,522.20	3,352.58	169.62	20.765	
5,400.00	5,395.59	5,380.94	5,377.08	19.16	156.78	99.14	1,143.16	-3,306.40	3,524.24	3,348.32	175.92	20.033	
5,500.00	5,495.49	5,510.92	5,506.87	19.52	163.18	99.18	1,139.74	-3,306.40	3,523.97	3,341.29	182.68	19.291	
5,545.00	5,540.44	5,569.55	5,565.38	19.68	166.07	99.18	1,137.27	-3,306.40	3,523.57	3,337.85	185.72	18.973	
5,600.00	5,595.39	5,561.10	5,556.39	19.88	165.56	99.22	1,139.80	-3,306.40	3,524.35	3,338.92	185.43	19.006	
5,700.00	5,695.28	5,660.99	5,656.28	20.25	170.29	99.29	1,139.80	-3,306.40	3,525.08	3,334.55	190.53	18.502	
5,800.00	5,795.18	5,760.89	5,756.18	20.61	175.02	99.36	1,139.80	-3,306.40	3,525.81	3,330.19	195.62	18.024	
5,900.00	5,895.08	5,860.79	5,856.08	20.97	179.75	99.43	1,139.80	-3,306.40	3,526.55	3,325.84	200.71	17.570	
6,000.00	5,994.98	5,949.00	5,943.35	21.34	183.92	99.50	1,139.80	-3,306.40	3,527.32	3,322.06	205.25	17.185	
6,100.00	6,094.88	5,949.00	5,943.35	21.70	183.92	99.50	1,139.80	-3,306.40	3,529.84	3,324.32	205.51	17.176	
6,200.00	6,194.77	5,949.00	5,943.35	22.06	183.92	99.50	1,139.80	-3,306.40	3,535.19	3,329.57	205.61	17.193	
6,300.00	6,294.67	5,949.00	5,943.35	22.43	183.92	99.50	1,139.80	-3,306.40	3,543.35	3,337.80	205.56	17.238	
6,314.74	6,309.40	5,949.00	5,943.35	22.48	183.92	99.50	1,139.80	-3,306.40	3,544.79	3,339.26	205.53	17.247	
6,350.00	6,344.59	5,949.00	5,943.35	22.61	183.92	56.25	1,139.80	-3,306.40	3,547.58	3,342.12	205.47	17.266	
6,400.00	6,394.26	5,949.00	5,943.35	22.79	183.92	39.28	1,139.80	-3,306.40	3,549.05	3,343.71	205.34	17.284	
6,450.00	6,443.36	5,949.00	5,943.35	22.97	183.92	33.55	1,139.80	-3,306.40	3,547.58	3,342.41	205.17	17.291	
6,500.00	6,491.60	5,949.00	5,943.35	23.15	183.92	30.86	1,139.80	-3,306.40	3,543.19	3,338.22	204.97	17.287	
6,550.00	6,538.67	5,949.00	5,943.35	23.32	183.92	29.44	1,139.80	-3,306.40	3,535.89	3,331.16	204.73	17.271	
6,600.00	6,584.29	5,949.00	5,943.35	23.49	183.92	28.71	1,139.80	-3,306.40	3,525.71	3,321.25	204.45	17.245	
6,650.00	6,628.18	5,949.00	5,943.35	23.66	183.92	28.42	1,139.80	-3,306.40	3,512.68	3,308.53	204.15	17.206	
6,700.00	6,670.06	5,949.00	5,943.35	23.83	183.92	28.47	1,139.80	-3,306.40	3,496.86	3,293.04	203.82	17.157	
6,750.00	6,709.68	5,949.00	5,943.35	24.00	183.92	28.79	1,139.80	-3,306.40	3,478.30	3,274.84	203.46	17.096	
6,800.00	6,746.79	5,949.00	5,943.35	24.17	183.92	29.36	1,139.80	-3,306.40	3,457.08	3,253.99	203.09	17.022	
6,850.00	6,781.17	5,949.00	5,943.35	24.35	183.92	30.18	1,139.80	-3,306.40	3,433.28	3,230.58	202.71	16.937	
6,900.00	6,812.60	5,949.00	5,943.35	24.54	183.92	31.26	1,139.80	-3,306.40	3,407.00	3,204.69	202.31	16.840	
6,950.00	6,840.88	5,949.00	5,943.35	24.74	183.92	32.61	1,139.80	-3,306.40	3,378.33	3,176.41	201.92	16.731	
7,000.00	6,865.85	5,949.00	5,943.35	24.96	183.92	34.28	1,139.80	-3,306.40	3,347.40	3,145.87	201.54	16.609	
7,050.00	6,887.35	5,949.00	5,943.35	25.19	183.92	36.31	1,139.80	-3,306.40	3,314.34	3,113.18	201.16	16.476	
7,100.00	6,905.25	5,949.00	5,943.35	25.43	183.92	38.75	1,139.80	-3,306.40	3,279.29	3,078.48	200.82	16.330	
7,150.00	6,919.43	5,949.00	5,943.35	25.69	183.92	41.69	1,139.80	-3,306.40	3,242.41	3,041.91	200.50	16.172	
7,200.00	6,929.81	5,949.00	5,943.35	25.96	183.92	45.21	1,139.80	-3,306.40	3,203.86	3,003.64	200.21	16.002	
7,250.00	6,936.33	5,949.00	5,943.35	26.25	183.92	49.42	1,139.80	-3,306.40	3,163.82	2,963.84	199.98	15.821	
7,300.00	6,938.95	5,949.00	5,943.35	26.55	183.92	54.43	1,139.80	-3,306.40	3,122.49	2,922.70	199.79	15.629	
7,309.56	6,939.00	5,949.00	5,943.35	26.60	183.92	55.49	1,139.80	-3,306.40	3,114.46	2,914.70	199.77	15.590	
7,400.00	6,938.83	5,949.00	5,943.35	27.19	183.92	55.49	1,139.80	-3,306.40	3,038.69	2,839.19	199.50	15.231	
7,500.00	6,938.64	5,949.00	5,943.35	27.91	183.92	55.49	1,139.80	-3,306.40	2,955.87	2,756.66	199.21	14.838	
7,600.00	6,938.44	5,949.00	5,943.35	28.70	183.92	55.49	1,139.80	-3,306.40	2,874.14	2,675.22	198.93	14.448	
7,700.00	6,938.25	5,949.00	5,943.35	29.55	183.92	55.49	1,139.80	-3,306.40	2,793.61	2,594.96	198.65	14.063	
7,800.00	6,938.06	5,949.00	5,943.35	30.47	183.92	55.49	1,139.80	-3,306.40	2,714.36	2,515.99	198.37	13.683	
7,900.00	6,937.87	5,949.00	5,943.35	31.44	183.92	55.49	1,139.80	-3,306.40	2,636.53	2,438.42	198.11	13.309	
8,000.00	6,937.68	5,949.00	5,943.35	32.46	183.92	55.49	1,139.80	-3,306.40	2,560.24	2,362.39	197.85	12.940	
8,100.00	6,937.49	5,949.00	5,943.35	33.53	183.92	55.49	1,139.80	-3,306.40	2,485.63	2,288.02	197.61	12.579	
8,200.00	6,937.30	5,949.00	5,943.35	34.64	183.92	55.49	1,139.80	-3,306.40	2,412.86	2,215.48	197.38	12.224	
8,300.00	6,937.10	5,949.00	5,943.35	35.78	183.92	55.49	1,139.80	-3,306.40	2,342.10	2,144.93	197.17	11.879	
8,400.00	6,936.91	5,949.00	5,943.35	36.96	183.92	55.49	1,139.80	-3,306.40	2,273.53	2,076.55	196.98	11.542	
8,500.00	6,936.72	5,949.00	5,943.35	38.17	183.92	55.49	1,139.80	-3,306.40	2,207.37	2,010.56	196.81	11.216	
8,600.00	6,936.53	5,949.00	5,943.35	39.41	183.92	55.49	1,139.80	-3,306.40	2,143.83	1,947.16	196.67	10.901	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,700.00	6,936.34	5,949.00	5,943.35	40.68	183.92	55.49	1,139.80	-3,306.40	2,083.15	1,886.59	196.56	10.598	
8,800.00	6,936.15	5,949.00	5,943.35	41.97	183.92	55.49	1,139.80	-3,306.40	2,025.60	1,829.12	196.49	10.309	
8,900.00	6,935.96	5,949.00	5,943.35	43.27	183.92	55.49	1,139.80	-3,306.40	1,971.44	1,774.99	196.46	10.035	
9,000.00	6,935.76	5,949.00	5,943.35	44.60	183.92	55.49	1,139.80	-3,306.40	1,920.97	1,724.49	196.48	9.777	
9,100.00	6,935.57	5,949.00	5,943.35	45.95	183.92	55.49	1,139.80	-3,306.40	1,874.47	1,677.92	196.56	9.537	
9,200.00	6,935.38	5,949.00	5,943.35	47.31	183.92	55.49	1,139.80	-3,306.40	1,832.26	1,635.55	196.71	9.314	
9,300.00	6,935.19	5,949.00	5,943.35	48.69	183.92	55.49	1,139.80	-3,306.40	1,794.63	1,597.68	196.95	9.112	
9,400.00	6,935.00	5,949.00	5,943.35	50.08	183.92	55.49	1,139.80	-3,306.40	1,761.89	1,564.59	197.29	8.930	
9,500.00	6,934.81	5,949.00	5,943.35	51.48	183.92	55.49	1,139.80	-3,306.40	1,734.29	1,536.55	197.74	8.770	
9,600.00	6,934.62	5,949.00	5,943.35	52.89	183.92	55.49	1,139.80	-3,306.40	1,712.10	1,513.78	198.33	8.633	
9,700.00	6,934.43	5,949.00	5,943.35	54.32	183.92	55.49	1,139.80	-3,306.40	1,695.53	1,496.49	199.04	8.518	
9,800.00	6,934.23	5,949.00	5,943.35	55.75	183.92	55.49	1,139.80	-3,306.40	1,684.74	1,484.84	199.90	8.428	
9,900.00	6,934.04	5,949.00	5,943.35	57.19	183.92	55.49	1,139.80	-3,306.40	1,679.85	1,478.95	200.90	8.362	
9,932.35	6,933.98	5,949.00	5,943.35	57.66	183.92	55.49	1,139.80	-3,306.40	1,679.54	1,478.29	201.25	8.346	CC, ES
10,000.00	6,933.85	5,949.00	5,943.35	58.65	183.92	55.49	1,139.80	-3,306.40	1,680.90	1,478.87	202.03	8.320	
10,100.00	6,933.66	5,949.00	5,943.35	60.10	183.92	55.49	1,139.80	-3,306.40	1,687.88	1,484.61	203.27	8.304	SF
10,200.00	6,933.47	5,949.00	5,943.35	61.57	183.92	55.49	1,139.80	-3,306.40	1,700.73	1,496.13	204.60	8.312	
10,300.00	6,933.28	5,949.00	5,943.35	63.04	183.92	55.49	1,139.80	-3,306.40	1,719.30	1,513.30	206.00	8.346	
10,400.00	6,933.09	5,949.00	5,943.35	64.52	183.92	55.49	1,139.80	-3,306.40	1,743.43	1,535.99	207.44	8.405	
10,500.00	6,932.89	5,949.00	5,943.35	66.01	183.92	55.49	1,139.80	-3,306.40	1,772.87	1,563.99	208.88	8.488	
10,600.00	6,932.70	5,949.00	5,943.35	67.50	183.92	55.49	1,139.80	-3,306.40	1,807.37	1,597.08	210.29	8.594	
10,700.00	6,932.51	5,949.00	5,943.35	68.99	183.92	55.49	1,139.80	-3,306.40	1,846.65	1,634.99	211.67	8.724	
10,800.00	6,932.32	5,949.00	5,943.35	70.50	183.92	55.49	1,139.80	-3,306.40	1,890.41	1,677.44	212.98	8.876	
10,900.00	6,932.13	5,949.00	5,943.35	72.00	183.92	55.49	1,139.80	-3,306.40	1,938.35	1,724.14	214.21	9.049	
11,000.00	6,931.94	5,949.00	5,943.35	73.51	183.92	55.49	1,139.80	-3,306.40	1,990.15	1,774.81	215.35	9.242	
11,100.00	6,931.75	5,949.00	5,943.35	75.02	183.92	55.49	1,139.80	-3,306.40	2,045.54	1,829.14	216.40	9.453	
11,200.00	6,931.55	5,949.00	5,943.35	76.54	183.92	55.49	1,139.80	-3,306.40	2,104.23	1,886.87	217.36	9.681	
11,300.00	6,931.36	5,949.00	5,943.35	78.06	183.92	55.49	1,139.80	-3,306.40	2,165.94	1,947.72	218.22	9.925	
11,400.00	6,931.17	5,949.00	5,943.35	79.58	183.92	55.49	1,139.80	-3,306.40	2,230.43	2,011.44	219.00	10.185	
11,500.00	6,930.98	5,949.00	5,943.35	81.11	183.92	55.49	1,139.80	-3,306.40	2,297.47	2,077.78	219.69	10.458	
11,600.00	6,930.79	5,949.00	5,943.35	82.64	183.92	55.49	1,139.80	-3,306.40	2,366.83	2,146.53	220.30	10.744	
11,700.00	6,930.60	5,949.00	5,943.35	84.17	183.92	55.49	1,139.80	-3,306.40	2,438.32	2,217.48	220.85	11.041	
11,800.00	6,930.41	5,949.00	5,943.35	85.70	183.92	55.49	1,139.80	-3,306.40	2,511.76	2,290.44	221.32	11.349	
11,900.00	6,930.21	5,949.00	5,943.35	87.24	183.92	55.49	1,139.80	-3,306.40	2,586.98	2,365.24	221.74	11.667	
12,000.00	6,930.02	5,949.00	5,943.35	88.78	183.92	55.49	1,139.80	-3,306.40	2,663.83	2,441.73	222.10	11.994	
12,100.00	6,929.83	5,949.00	5,943.35	90.32	183.92	55.49	1,139.80	-3,306.40	2,742.18	2,519.76	222.42	12.329	
12,200.00	6,929.64	5,949.00	5,943.35	91.87	183.92	55.49	1,139.80	-3,306.40	2,821.89	2,599.20	222.69	12.672	
12,300.00	6,929.45	5,949.00	5,943.35	93.41	183.92	55.49	1,139.80	-3,306.40	2,902.86	2,679.93	222.93	13.021	
12,400.00	6,929.26	5,949.00	5,943.35	94.96	183.92	55.49	1,139.80	-3,306.40	2,984.98	2,761.85	223.14	13.377	
12,500.00	6,929.07	5,949.00	5,943.35	96.51	183.92	55.49	1,139.80	-3,306.40	3,068.17	2,844.86	223.31	13.739	
12,600.00	6,928.88	5,949.00	5,943.35	98.06	183.92	55.49	1,139.80	-3,306.40	3,152.33	2,928.87	223.46	14.107	
12,700.00	6,928.68	5,949.00	5,943.35	99.62	183.92	55.49	1,139.80	-3,306.40	3,237.39	3,013.81	223.59	14.479	
12,800.00	6,928.49	5,949.00	5,943.35	101.17	183.92	55.49	1,139.80	-3,306.40	3,323.29	3,099.60	223.69	14.856	
12,900.00	6,928.30	5,949.00	5,943.35	102.73	183.92	55.49	1,139.80	-3,306.40	3,409.95	3,186.17	223.78	15.238	
13,000.00	6,928.11	5,949.00	5,943.35	104.28	183.92	55.49	1,139.80	-3,306.40	3,497.33	3,273.47	223.86	15.623	
13,100.00	6,927.92	5,949.00	5,943.35	105.84	183.92	55.49	1,139.80	-3,306.40	3,585.37	3,361.44	223.92	16.012	
13,200.00	6,927.73	5,949.00	5,943.35	107.40	183.92	55.49	1,139.80	-3,306.40	3,674.01	3,450.04	223.97	16.404	
13,300.00	6,927.54	5,949.00	5,943.35	108.97	183.92	55.49	1,139.80	-3,306.40	3,763.23	3,539.22	224.01	16.799	
13,400.00	6,927.34	5,949.00	5,943.35	110.53	183.92	55.49	1,139.80	-3,306.40	3,852.98	3,628.93	224.05	17.197	
13,500.00	6,927.15	5,949.00	5,943.35	112.09	183.92	55.49	1,139.80	-3,306.40	3,943.22	3,719.15	224.07	17.598	
13,600.00	6,926.96	5,949.00	5,943.35	113.66	183.92	55.49	1,139.80	-3,306.40	4,033.92	3,809.83	224.09	18.001	
13,700.00	6,926.77	5,949.00	5,943.35	115.22	183.92	55.49	1,139.80	-3,306.40	4,125.05	3,900.94	224.11	18.407	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
13,800.00	6,926.58	5,949.00	5,943.35	116.79	183.92	55.49	1,139.80	-3,306.40	4,216.58	3,992.46	224.12	18.814	
13,900.00	6,926.39	5,949.00	5,943.35	118.36	183.92	55.49	1,139.80	-3,306.40	4,308.49	4,084.37	224.12	19.224	
14,000.00	6,926.20	5,949.00	5,943.35	119.93	183.92	55.49	1,139.80	-3,306.40	4,400.75	4,176.62	224.13	19.635	
14,100.00	6,926.00	5,949.00	5,943.35	121.50	183.92	55.49	1,139.80	-3,306.40	4,493.34	4,269.22	224.13	20.048	
14,200.00	6,925.81	5,949.00	5,943.35	123.07	183.92	55.49	1,139.80	-3,306.40	4,586.25	4,362.12	224.13	20.463	
14,300.00	6,925.62	5,949.00	5,943.35	124.64	183.92	55.49	1,139.80	-3,306.40	4,679.44	4,455.32	224.12	20.879	
14,400.00	6,925.43	5,949.00	5,943.35	126.21	183.92	55.49	1,139.80	-3,306.40	4,772.92	4,548.80	224.12	21.296	
14,500.00	6,925.24	5,949.00	5,943.35	127.79	183.92	55.49	1,139.80	-3,306.40	4,866.65	4,642.53	224.12	21.715	
14,600.00	6,925.05	5,949.00	5,943.35	129.36	183.92	55.49	1,139.80	-3,306.40	4,960.62	4,736.51	224.11	22.135	
14,700.00	6,924.86	5,949.00	5,943.35	130.93	183.92	55.49	1,139.80	-3,306.40	5,054.83	4,830.72	224.11	22.555	
14,800.00	6,924.66	5,949.00	5,943.35	132.51	183.92	55.49	1,139.80	-3,306.40	5,149.26	4,925.16	224.10	22.977	
14,900.00	6,924.47	5,949.00	5,943.35	134.09	183.92	55.49	1,139.80	-3,306.40	5,243.89	5,019.79	224.10	23.400	
15,000.00	6,924.28	5,949.00	5,943.35	135.66	183.92	55.49	1,139.80	-3,306.40	5,338.72	5,114.63	224.09	23.824	
15,100.00	6,924.09	5,949.00	5,943.35	137.24	183.92	55.49	1,139.80	-3,306.40	5,433.73	5,209.65	224.09	24.248	
15,200.00	6,923.90	5,949.00	5,943.35	138.82	183.92	55.49	1,139.80	-3,306.40	5,528.92	5,304.84	224.08	24.674	
15,300.00	6,923.71	5,949.00	5,943.35	140.40	183.92	55.49	1,139.80	-3,306.40	5,624.28	5,400.20	224.08	25.100	
15,400.00	6,923.52	5,949.00	5,943.35	141.97	183.92	55.49	1,139.80	-3,306.40	5,719.79	5,495.72	224.08	25.526	
15,500.00	6,923.33	5,949.00	5,943.35	143.55	183.92	55.49	1,139.80	-3,306.40	5,815.46	5,591.38	224.07	25.953	
15,600.00	6,923.13	5,949.00	5,943.35	145.13	183.92	55.49	1,139.80	-3,306.40	5,911.27	5,687.19	224.07	26.381	
15,700.00	6,922.94	5,949.00	5,943.35	146.72	183.92	55.49	1,139.80	-3,306.40	6,007.21	5,783.14	224.07	26.809	
15,800.00	6,922.75	5,949.00	5,943.35	148.30	183.92	55.49	1,139.80	-3,306.40	6,103.29	5,879.21	224.08	27.238	
15,900.00	6,922.56	5,949.00	5,943.35	149.88	183.92	55.49	1,139.80	-3,306.40	6,199.49	5,975.41	224.08	27.667	
16,000.00	6,922.37	5,949.00	5,943.35	151.46	183.92	55.49	1,139.80	-3,306.40	6,295.81	6,071.73	224.08	28.096	
16,100.00	6,922.18	5,949.00	5,943.35	153.04	183.92	55.49	1,139.80	-3,306.40	6,392.24	6,168.15	224.09	28.526	
16,200.00	6,921.99	5,949.00	5,943.35	154.63	183.92	55.49	1,139.80	-3,306.40	6,488.78	6,264.69	224.09	28.956	
16,300.00	6,921.79	5,949.00	5,943.35	156.21	183.92	55.49	1,139.80	-3,306.40	6,585.42	6,361.32	224.10	29.386	
16,400.00	6,921.60	5,949.00	5,943.35	157.79	183.92	55.49	1,139.80	-3,306.40	6,682.16	6,458.06	224.11	29.817	
16,500.00	6,921.41	5,949.00	5,943.35	159.38	183.92	55.49	1,139.80	-3,306.40	6,779.00	6,554.88	224.12	30.248	
16,600.00	6,921.22	5,949.00	5,943.35	160.96	183.92	55.49	1,139.80	-3,306.40	6,875.93	6,651.80	224.13	30.679	
16,700.00	6,921.03	5,949.00	5,943.35	162.55	183.92	55.49	1,139.80	-3,306.40	6,972.94	6,748.80	224.14	31.110	
16,800.00	6,920.84	5,949.00	5,943.35	164.13	183.92	55.49	1,139.80	-3,306.40	7,070.04	6,845.89	224.15	31.541	
16,900.00	6,920.65	5,949.00	5,943.35	165.72	183.92	55.49	1,139.80	-3,306.40	7,167.22	6,943.05	224.17	31.973	
17,000.00	6,920.45	5,949.00	5,943.35	167.30	183.92	55.49	1,139.80	-3,306.40	7,264.47	7,040.29	224.18	32.404	
17,100.00	6,920.26	5,949.00	5,943.35	168.89	183.92	55.49	1,139.80	-3,306.40	7,361.80	7,137.60	224.20	32.836	
17,200.00	6,920.07	5,949.00	5,943.35	170.48	183.92	55.49	1,139.80	-3,306.40	7,459.19	7,234.98	224.22	33.268	
17,300.00	6,919.88	5,949.00	5,943.35	172.06	183.92	55.49	1,139.80	-3,306.40	7,556.66	7,332.42	224.24	33.699	
17,400.00	6,919.69	5,949.00	5,943.35	173.65	183.92	55.49	1,139.80	-3,306.40	7,654.19	7,429.93	224.26	34.131	
17,500.00	6,919.50	5,949.00	5,943.35	175.24	183.92	55.49	1,139.80	-3,306.40	7,751.78	7,527.50	224.28	34.563	
17,600.00	6,919.31	5,949.00	5,943.35	176.83	183.92	55.49	1,139.80	-3,306.40	7,849.44	7,625.13	224.30	34.995	
17,700.00	6,919.11	5,949.00	5,943.35	178.41	183.92	55.49	1,139.80	-3,306.40	7,947.15	7,722.82	224.33	35.426	
17,759.55	6,919.00	5,949.00	5,943.35	179.36	183.92	55.49	1,139.80	-3,306.40	8,005.37	7,781.03	224.34	35.684	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-80.96	759.16	-4,773.44	4,833.61				
100.00	100.00	59.00	59.00	0.25	1.05	-80.96	759.16	-4,773.44	4,833.43	4,832.14	1.30	3,728.398	
200.00	200.00	159.00	159.00	0.61	2.82	-80.96	759.16	-4,773.44	4,833.43	4,830.01	3.43	1,410.616	
300.00	300.00	259.00	259.00	0.97	4.59	-80.96	759.16	-4,773.44	4,833.43	4,827.88	5.56	869.857	
400.00	400.00	359.00	359.00	1.33	6.36	-80.96	759.16	-4,773.44	4,833.43	4,825.75	7.69	628.801	
500.00	500.00	460.35	460.35	1.68	8.16	-80.96	759.20	-4,773.44	4,833.44	4,823.60	9.84	491.158	
565.94	565.94	524.94	524.94	1.92	9.33	-80.96	759.16	-4,773.44	4,833.43	4,822.18	11.25	429.711	
600.00	600.00	559.00	559.00	2.04	9.95	-80.96	759.16	-4,773.44	4,833.43	4,821.44	11.99	402.967	
700.00	700.00	659.40	659.40	2.40	11.79	-80.96	759.31	-4,773.44	4,833.46	4,819.26	14.19	340.534	
800.00	800.00	760.57	760.57	2.76	13.65	-80.96	759.18	-4,773.44	4,833.44	4,817.03	16.41	294.595	
840.06	840.06	799.08	799.06	2.90	14.37	-80.96	759.16	-4,773.44	4,833.43	4,816.16	17.27	279.825	
900.00	900.00	859.01	859.00	3.12	15.50	-80.96	759.16	-4,773.44	4,833.43	4,814.81	18.62	259.600	
1,000.00	1,000.00	959.01	959.00	3.48	17.39	-80.96	759.16	-4,773.44	4,833.43	4,812.57	20.86	231.666	
1,100.00	1,099.98	1,059.88	1,059.86	3.82	19.29	85.96	759.95	-4,773.44	4,833.43	4,810.33	23.11	209.176	
1,129.54	1,129.49	1,090.00	1,089.98	3.92	19.86	85.97	759.90	-4,773.44	4,833.34	4,809.57	23.77	203.327	
1,200.00	1,199.88	1,161.86	1,161.83	4.15	21.21	86.01	759.69	-4,773.44	4,833.09	4,807.73	25.36	190.593	
1,300.00	1,299.78	1,263.86	1,263.83	4.48	23.14	86.06	759.16	-4,773.44	4,832.69	4,805.08	27.62	175.000	
1,400.00	1,399.68	1,358.72	1,358.68	4.82	24.94	86.11	759.16	-4,773.44	4,832.38	4,802.63	29.75	162.420	
1,500.00	1,499.58	1,458.62	1,458.58	5.16	26.83	86.16	759.16	-4,773.44	4,832.07	4,800.09	31.99	151.057	
1,600.00	1,599.48	1,559.17	1,559.12	5.50	28.74	86.22	759.68	-4,773.44	4,831.86	4,797.62	34.24	141.118	
1,700.00	1,699.37	1,660.48	1,660.43	5.85	30.66	86.27	759.51	-4,773.44	4,831.53	4,795.03	36.51	132.341	
1,800.00	1,799.27	1,761.81	1,761.76	6.20	32.58	86.32	759.15	-4,773.44	4,831.18	4,792.41	38.78	124.583	
1,900.00	1,899.17	1,858.24	1,858.17	6.55	34.64	86.37	759.16	-4,773.44	4,830.90	4,789.71	41.19	117.290	
2,000.00	1,999.07	1,958.14	1,958.07	6.90	36.77	86.43	759.16	-4,773.44	4,830.61	4,786.94	43.67	110.623	
2,100.00	2,098.96	2,059.08	2,059.00	7.25	38.92	86.49	759.95	-4,773.44	4,830.46	4,784.29	46.17	104.622	
2,200.00	2,198.86	2,161.16	2,161.07	7.61	41.09	86.54	759.68	-4,773.44	4,830.14	4,781.45	48.70	99.184	
2,300.00	2,298.76	2,263.26	2,263.17	7.96	43.27	86.59	759.14	-4,773.44	4,829.78	4,778.56	51.23	94.278	
2,400.00	2,398.66	2,357.83	2,357.66	8.32	45.32	86.64	759.16	-4,773.44	4,829.52	4,775.88	53.63	90.045	
2,500.00	2,498.56	2,457.73	2,457.56	8.68	47.48	86.70	759.16	-4,773.44	4,829.25	4,773.10	56.15	85.999	
2,544.00	2,542.51	2,501.68	2,501.51	8.83	48.43	86.72	759.16	-4,773.44	4,829.14	4,771.88	57.26	84.332	
2,600.00	2,598.45	2,560.05	2,559.85	9.03	49.70	86.77	760.69	-4,773.44	4,829.26	4,770.53	58.73	82.231	
2,700.00	2,698.35	2,664.65	2,664.44	9.39	51.96	86.82	760.09	-4,773.44	4,828.91	4,767.56	61.35	78.709	
2,800.00	2,798.25	2,757.52	2,757.25	9.75	53.96	86.86	759.16	-4,773.44	4,828.49	4,764.78	63.71	75.786	
2,900.00	2,898.15	2,857.42	2,857.15	10.11	56.00	86.91	759.16	-4,773.44	4,828.25	4,762.14	66.11	73.034	
3,000.00	2,998.04	2,957.32	2,957.04	10.47	58.04	86.96	759.16	-4,773.44	4,828.00	4,759.50	68.51	70.476	
3,100.00	3,097.94	3,058.58	3,058.30	10.83	60.10	87.03	759.92	-4,773.44	4,827.90	4,756.97	70.93	68.064	
3,200.00	3,197.84	3,160.81	3,160.53	11.19	62.19	87.08	759.62	-4,773.44	4,827.61	4,754.24	73.38	65.792	
3,300.00	3,297.74	3,257.07	3,256.74	11.55	64.14	87.12	759.16	-4,773.44	4,827.30	4,751.61	75.69	63.776	
3,400.00	3,397.64	3,356.97	3,356.64	11.91	66.11	87.18	759.16	-4,773.44	4,827.08	4,749.06	78.02	61.869	
3,500.00	3,497.53	3,456.86	3,456.53	12.27	68.08	87.23	759.16	-4,773.44	4,826.86	4,746.51	80.35	60.073	
3,560.40	3,557.87	3,517.20	3,516.87	12.49	69.27	87.26	759.16	-4,773.44	4,826.73	4,744.97	81.76	59.038	
3,600.00	3,597.43	3,557.31	3,556.96	12.63	70.06	87.30	760.43	-4,773.44	4,826.87	4,744.18	82.69	58.374	
3,700.00	3,697.33	3,659.92	3,659.57	12.99	72.08	87.35	760.20	-4,773.44	4,826.62	4,741.55	85.07	56.736	
3,800.00	3,797.23	3,762.56	3,762.20	13.35	74.10	87.40	759.67	-4,773.44	4,826.32	4,738.86	87.46	55.186	
3,900.00	3,897.12	3,856.51	3,856.12	13.72	75.95	87.44	759.16	-4,773.44	4,826.02	4,736.35	89.67	53.821	
4,000.00	3,997.02	3,956.40	3,956.02	14.08	77.92	87.50	759.16	-4,773.44	4,825.82	4,733.82	92.00	52.456	
4,100.00	4,096.92	4,056.30	4,055.92	14.44	79.89	87.55	759.16	-4,773.44	4,825.62	4,731.29	94.33	51.158	
4,200.00	4,196.82	4,157.77	4,157.39	14.80	81.89	87.61	759.59	-4,773.44	4,825.51	4,728.82	96.69	49.908	
4,300.00	4,296.72	4,259.38	4,258.99	15.16	83.89	87.66	759.32	-4,773.44	4,825.27	4,726.22	99.05	48.714	
4,400.00	4,396.61	4,356.04	4,355.61	15.53	85.83	87.71	759.16	-4,773.44	4,825.06	4,723.70	101.36	47.604	
4,500.00	4,496.51	4,455.94	4,455.51	15.89	87.87	87.77	759.16	-4,773.44	4,824.88	4,721.12	103.76	46.500	
4,560.50	4,556.95	4,516.37	4,515.95	16.11	89.11	87.80	759.16	-4,773.44	4,824.78	4,719.56	105.21	45.857	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
4,600.00	4,596.41	4,556.13	4,555.70	16.25	89.92	87.83	760.24	-4,773.44	4,824.91	4,718.74	106.17	45.446	
4,700.00	4,696.31	4,659.39	4,658.95	16.61	92.02	87.89	760.02	-4,773.44	4,824.70	4,716.07	108.64	44.411	
4,800.00	4,796.20	4,762.69	4,762.24	16.98	94.13	87.93	759.42	-4,773.44	4,824.43	4,713.32	111.11	43.421	
4,900.00	4,896.10	4,855.58	4,855.10	17.34	95.94	87.98	759.16	-4,773.44	4,824.21	4,710.93	113.28	42.586	
5,000.00	4,996.00	4,955.48	4,955.00	17.70	97.84	88.03	759.16	-4,773.44	4,824.05	4,708.51	115.54	41.751	
5,070.50	5,066.43	5,025.91	5,025.43	17.96	99.18	88.07	759.16	-4,773.44	4,823.95	4,706.81	117.14	41.183	
5,100.00	5,095.90	5,055.67	5,055.18	18.07	99.74	88.10	759.97	-4,773.44	4,824.06	4,706.25	117.81	40.949	
5,200.00	5,195.80	5,158.11	5,157.62	18.43	101.69	88.15	759.80	-4,773.44	4,823.88	4,703.76	120.12	40.160	
5,300.00	5,295.69	5,260.58	5,260.09	18.79	103.63	88.20	759.36	-4,773.44	4,823.65	4,701.22	122.43	39.401	
5,400.00	5,395.59	5,355.10	5,354.59	19.16	105.52	88.25	759.16	-4,773.44	4,823.47	4,698.80	124.67	38.689	
5,500.00	5,495.49	5,455.00	5,454.49	19.52	107.56	88.30	759.16	-4,773.44	4,823.33	4,696.26	127.07	37.957	
5,600.00	5,595.39	5,555.16	5,554.64	19.88	109.60	88.36	759.70	-4,773.44	4,823.31	4,693.82	129.48	37.251	
5,700.00	5,695.28	5,656.79	5,656.27	20.25	111.67	88.42	759.58	-4,773.44	4,823.15	4,691.24	131.92	36.562	
5,800.00	5,795.18	5,758.44	5,757.92	20.61	113.75	88.47	759.28	-4,773.44	4,822.97	4,688.62	134.36	35.897	
5,900.00	5,895.08	5,854.65	5,854.08	20.97	115.96	88.52	759.16	-4,773.44	4,822.83	4,685.90	136.93	35.221	
6,000.00	5,994.98	5,954.55	5,953.98	21.34	118.36	88.57	759.16	-4,773.44	4,822.71	4,683.02	139.69	34.524	
6,050.77	6,045.70	6,000.00	5,999.35	21.52	119.45	88.59	759.16	-4,773.44	4,822.66	4,681.69	140.97	34.210	
6,100.00	6,094.88	6,000.00	5,999.35	21.70	119.45	88.59	759.16	-4,773.44	4,822.91	4,681.77	141.14	34.171	
6,200.00	6,194.77	6,000.00	5,999.35	22.06	119.45	88.59	759.16	-4,773.44	4,824.97	4,683.52	141.44	34.112	
6,300.00	6,294.67	6,000.00	5,999.35	22.43	119.45	88.59	759.16	-4,773.44	4,829.09	4,687.40	141.69	34.082	
6,314.74	6,309.40	6,000.00	5,999.35	22.48	119.45	88.59	759.16	-4,773.44	4,829.88	4,688.16	141.72	34.080	
6,350.00	6,344.59	6,000.00	5,999.35	22.61	119.45	45.42	759.16	-4,773.44	4,830.98	4,689.19	141.79	34.071	
6,400.00	6,394.26	6,000.00	5,999.35	22.79	119.45	28.53	759.16	-4,773.44	4,829.70	4,687.82	141.88	34.042	
6,450.00	6,443.36	6,000.00	5,999.35	22.97	119.45	22.83	759.16	-4,773.44	4,825.09	4,683.14	141.95	33.992	
6,500.00	6,491.60	6,000.00	5,999.35	23.15	119.45	20.13	759.16	-4,773.44	4,817.18	4,675.17	142.00	33.923	
6,550.00	6,538.67	6,000.00	5,999.35	23.32	119.45	18.67	759.16	-4,773.44	4,805.99	4,663.95	142.04	33.835	
6,600.00	6,584.29	6,000.00	5,999.35	23.49	119.45	17.86	759.16	-4,773.44	4,791.58	4,649.51	142.07	33.728	
6,650.00	6,628.18	6,000.00	5,999.35	23.66	119.45	17.46	759.16	-4,773.44	4,773.99	4,631.92	142.08	33.602	
6,700.00	6,670.06	6,000.00	5,999.35	23.83	119.45	17.35	759.16	-4,773.44	4,753.32	4,611.25	142.07	33.457	
6,750.00	6,709.68	6,000.00	5,999.35	24.00	119.45	17.48	759.16	-4,773.44	4,729.64	4,587.59	142.05	33.295	
6,800.00	6,746.79	6,000.00	5,999.35	24.17	119.45	17.83	759.16	-4,773.44	4,703.05	4,561.03	142.03	33.114	
6,850.00	6,781.17	6,000.00	5,999.35	24.35	119.45	18.39	759.16	-4,773.44	4,673.68	4,531.70	141.99	32.916	
6,900.00	6,812.60	6,000.00	5,999.35	24.54	119.45	19.19	759.16	-4,773.44	4,641.65	4,499.71	141.94	32.702	
6,950.00	6,840.88	6,000.00	5,999.35	24.74	119.45	20.26	759.16	-4,773.44	4,607.11	4,465.22	141.89	32.470	
7,000.00	6,865.85	6,000.00	5,999.35	24.96	119.45	21.65	759.16	-4,773.44	4,570.21	4,428.38	141.83	32.223	
7,050.00	6,887.35	6,000.00	5,999.35	25.19	119.45	23.45	759.16	-4,773.44	4,531.13	4,389.35	141.77	31.960	
7,100.00	6,905.25	6,000.00	5,999.35	25.43	119.45	25.79	759.16	-4,773.44	4,490.05	4,348.33	141.72	31.683	
7,150.00	6,919.43	6,000.00	5,999.35	25.69	119.45	28.87	759.16	-4,773.44	4,447.18	4,305.51	141.67	31.392	
7,200.00	6,929.81	6,000.00	5,999.35	25.96	119.45	32.97	759.16	-4,773.44	4,402.73	4,261.11	141.62	31.088	
7,250.00	6,936.33	6,000.00	5,999.35	26.25	119.45	38.58	759.16	-4,773.44	4,356.94	4,215.35	141.59	30.772	
7,300.00	6,938.95	6,000.00	5,999.35	26.55	119.45	46.39	759.16	-4,773.44	4,310.04	4,168.47	141.57	30.445	
7,309.56	6,939.00	6,000.00	5,999.35	26.60	119.45	48.21	759.16	-4,773.44	4,300.97	4,159.40	141.57	30.382	
7,400.00	6,938.83	6,000.00	5,999.35	27.19	119.45	48.21	759.16	-4,773.44	4,215.10	4,073.56	141.54	29.780	
7,500.00	6,938.64	6,000.00	5,999.35	27.91	119.45	48.21	759.16	-4,773.44	4,120.38	3,978.86	141.52	29.116	
7,600.00	6,938.44	6,000.00	5,999.35	28.70	119.45	48.21	759.16	-4,773.44	4,025.92	3,884.42	141.50	28.452	
7,700.00	6,938.25	6,000.00	5,999.35	29.55	119.45	48.21	759.16	-4,773.44	3,931.73	3,790.24	141.49	27.788	
7,800.00	6,938.06	6,000.00	5,999.35	30.47	119.45	48.21	759.16	-4,773.44	3,837.84	3,696.36	141.48	27.126	
7,900.00	6,937.87	6,000.00	5,999.35	31.44	119.45	48.21	759.16	-4,773.44	3,744.26	3,602.78	141.49	26.464	
8,000.00	6,937.68	6,000.00	5,999.35	32.46	119.45	48.21	759.16	-4,773.44	3,651.03	3,509.53	141.50	25.803	
8,100.00	6,937.49	6,000.00	5,999.35	33.53	119.45	48.21	759.16	-4,773.44	3,558.16	3,416.64	141.52	25.143	
8,200.00	6,937.30	6,000.00	5,999.35	34.64	119.45	48.21	759.16	-4,773.44	3,465.69	3,324.14	141.55	24.484	
8,300.00	6,937.10	6,000.00	5,999.35	35.78	119.45	48.21	759.16	-4,773.44	3,373.65	3,232.06	141.59	23.827	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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
8,400.00	6,936.91	6,000.00	5,999.35	36.96	119.45	48.21	759.16	-4,773.44	3,282.07	3,140.43	141.64	23.172	
8,500.00	6,936.72	6,000.00	5,999.35	38.17	119.45	48.21	759.16	-4,773.44	3,191.00	3,049.29	141.71	22.518	
8,600.00	6,936.53	6,000.00	5,999.35	39.41	119.45	48.21	759.16	-4,773.44	3,100.48	2,958.69	141.79	21.867	
8,700.00	6,936.34	6,000.00	5,999.35	40.68	119.45	48.21	759.16	-4,773.44	3,010.56	2,868.67	141.89	21.218	
8,800.00	6,936.15	6,000.00	5,999.35	41.97	119.45	48.21	759.16	-4,773.44	2,921.29	2,779.29	142.00	20.572	
8,900.00	6,935.96	6,000.00	5,999.35	43.27	119.45	48.21	759.16	-4,773.44	2,832.75	2,690.61	142.14	19.930	
9,000.00	6,935.76	6,000.00	5,999.35	44.60	119.45	48.21	759.16	-4,773.44	2,744.99	2,602.69	142.29	19.291	
9,100.00	6,935.57	6,000.00	5,999.35	45.95	119.45	48.21	759.16	-4,773.44	2,658.09	2,515.62	142.47	18.657	
9,200.00	6,935.38	6,000.00	5,999.35	47.31	119.45	48.21	759.16	-4,773.44	2,572.15	2,429.47	142.67	18.029	
9,300.00	6,935.19	6,000.00	5,999.35	48.69	119.45	48.21	759.16	-4,773.44	2,487.25	2,344.36	142.90	17.406	
9,400.00	6,935.00	6,000.00	5,999.35	50.08	119.45	48.21	759.16	-4,773.44	2,403.52	2,260.38	143.15	16.791	
9,500.00	6,934.81	6,000.00	5,999.35	51.48	119.45	48.21	759.16	-4,773.44	2,321.08	2,177.65	143.42	16.183	
9,600.00	6,934.62	6,000.00	5,999.35	52.89	119.45	48.21	759.16	-4,773.44	2,240.07	2,096.34	143.73	15.585	
9,700.00	6,934.43	6,000.00	5,999.35	54.32	119.45	48.21	759.16	-4,773.44	2,160.65	2,016.58	144.06	14.998	
9,800.00	6,934.23	6,000.00	5,999.35	55.75	119.45	48.21	759.16	-4,773.44	2,083.00	1,938.57	144.43	14.423	
9,900.00	6,934.04	6,000.00	5,999.35	57.19	119.45	48.21	759.16	-4,773.44	2,007.33	1,862.52	144.81	13.861	
10,000.00	6,933.85	6,000.00	5,999.35	58.65	119.45	48.21	759.16	-4,773.44	1,933.88	1,788.65	145.23	13.316	
10,100.00	6,933.66	6,000.00	5,999.35	60.10	119.45	48.21	759.16	-4,773.44	1,862.89	1,717.23	145.67	12.789	
10,200.00	6,933.47	6,000.00	5,999.35	61.57	119.45	48.21	759.16	-4,773.44	1,794.68	1,648.55	146.12	12.282	
10,300.00	6,933.28	6,000.00	5,999.35	63.04	119.45	48.21	759.16	-4,773.44	1,729.55	1,582.95	146.60	11.798	
10,400.00	6,933.09	6,000.00	5,999.35	64.52	119.45	48.21	759.16	-4,773.44	1,667.89	1,520.79	147.09	11.339	
10,500.00	6,932.89	6,000.00	5,999.35	66.01	119.45	48.21	759.16	-4,773.44	1,610.08	1,462.48	147.60	10.908	
10,600.00	6,932.70	6,000.00	5,999.35	67.50	119.45	48.21	759.16	-4,773.44	1,556.55	1,408.43	148.12	10.509	
10,700.00	6,932.51	6,000.00	5,999.35	68.99	119.45	48.21	759.16	-4,773.44	1,507.76	1,359.10	148.66	10.142	
10,800.00	6,932.32	6,000.00	5,999.35	70.50	119.45	48.21	759.16	-4,773.44	1,464.18	1,314.96	149.22	9.812	
10,900.00	6,932.13	6,000.00	5,999.35	72.00	119.45	48.21	759.16	-4,773.44	1,426.30	1,276.48	149.82	9.520	
11,000.00	6,931.94	6,000.00	5,999.35	73.51	119.45	48.21	759.16	-4,773.44	1,394.57	1,244.11	150.46	9.269	
11,100.00	6,931.75	6,000.00	5,999.35	75.02	119.45	48.21	759.16	-4,773.44	1,369.42	1,218.25	151.17	9.059	
11,200.00	6,931.55	6,000.00	5,999.35	76.54	119.45	48.21	759.16	-4,773.44	1,351.22	1,199.25	151.97	8.891	
11,300.00	6,931.36	6,000.00	5,999.35	78.06	119.45	48.21	759.16	-4,773.44	1,340.26	1,187.39	152.87	8.768	
11,397.53	6,931.18	6,000.00	5,999.35	79.54	119.45	48.21	759.16	-4,773.44	1,336.71	1,182.87	153.83	8.689	CC
11,400.00	6,931.17	6,000.00	5,999.35	79.58	119.45	48.21	759.16	-4,773.44	1,336.71	1,182.85	153.86	8.688	ES
11,500.00	6,930.98	6,000.00	5,999.35	81.11	119.45	48.21	759.16	-4,773.44	1,340.63	1,185.69	154.93	8.653	SF
11,600.00	6,930.79	6,000.00	5,999.35	82.64	119.45	48.21	759.16	-4,773.44	1,351.95	1,195.89	156.07	8.663	
11,700.00	6,930.60	6,000.00	5,999.35	84.17	119.45	48.21	759.16	-4,773.44	1,370.50	1,213.28	157.22	8.717	
11,800.00	6,930.41	6,000.00	5,999.35	85.70	119.45	48.21	759.16	-4,773.44	1,395.98	1,237.63	158.35	8.816	
11,900.00	6,930.21	6,000.00	5,999.35	87.24	119.45	48.21	759.16	-4,773.44	1,428.03	1,268.61	159.42	8.958	
12,000.00	6,930.02	6,000.00	5,999.35	88.78	119.45	48.21	759.16	-4,773.44	1,466.20	1,305.81	160.39	9.141	
12,100.00	6,929.83	6,000.00	5,999.35	90.32	119.45	48.21	759.16	-4,773.44	1,510.05	1,348.80	161.25	9.365	
12,200.00	6,929.64	6,000.00	5,999.35	91.87	119.45	48.21	759.16	-4,773.44	1,559.08	1,397.11	161.98	9.625	
12,300.00	6,929.45	6,000.00	5,999.35	93.41	119.45	48.21	759.16	-4,773.44	1,612.83	1,450.27	162.57	9.921	
12,400.00	6,929.26	6,000.00	5,999.35	94.96	119.45	48.21	759.16	-4,773.44	1,670.85	1,507.81	163.03	10.249	
12,500.00	6,929.07	6,000.00	5,999.35	96.51	119.45	48.21	759.16	-4,773.44	1,732.69	1,569.31	163.38	10.605	
12,600.00	6,928.88	6,000.00	5,999.35	98.06	119.45	48.21	759.16	-4,773.44	1,797.97	1,634.36	163.62	10.989	
12,700.00	6,928.68	6,000.00	5,999.35	99.62	119.45	48.21	759.16	-4,773.44	1,866.34	1,702.57	163.76	11.397	
12,800.00	6,928.49	6,000.00	5,999.35	101.17	119.45	48.21	759.16	-4,773.44	1,937.45	1,773.62	163.83	11.826	
12,900.00	6,928.30	6,000.00	5,999.35	102.73	119.45	48.21	759.16	-4,773.44	2,011.02	1,847.19	163.83	12.275	
13,000.00	6,928.11	6,000.00	5,999.35	104.28	119.45	48.21	759.16	-4,773.44	2,086.79	1,923.01	163.78	12.742	
13,100.00	6,927.92	6,000.00	5,999.35	105.84	119.45	48.21	759.16	-4,773.44	2,164.53	2,000.85	163.68	13.224	
13,200.00	6,927.73	6,000.00	5,999.35	107.40	119.45	48.21	759.16	-4,773.44	2,244.03	2,080.48	163.55	13.721	
13,300.00	6,927.54	6,000.00	5,999.35	108.97	119.45	48.21	759.16	-4,773.44	2,325.12	2,161.72	163.39	14.230	
13,400.00	6,927.34	6,000.00	5,999.35	110.53	119.45	48.21	759.16	-4,773.44	2,407.63	2,244.41	163.22	14.751	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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	6,927.15	6,000.00	5,999.35	112.09	119.45	48.21	759.16	-4,773.44	2,491.42	2,328.39	163.02	15.282	
13,600.00	6,926.96	6,000.00	5,999.35	113.66	119.45	48.21	759.16	-4,773.44	2,576.36	2,413.54	162.82	15.823	
13,700.00	6,926.77	6,000.00	5,999.35	115.22	119.45	48.21	759.16	-4,773.44	2,662.36	2,499.74	162.62	16.372	
13,800.00	6,926.58	6,000.00	5,999.35	116.79	119.45	48.21	759.16	-4,773.44	2,749.30	2,586.89	162.41	16.929	
13,900.00	6,926.39	6,000.00	5,999.35	118.36	119.45	48.21	759.16	-4,773.44	2,837.10	2,674.90	162.19	17.492	
14,000.00	6,926.20	6,000.00	5,999.35	119.93	119.45	48.21	759.16	-4,773.44	2,925.68	2,763.70	161.98	18.061	
14,100.00	6,926.00	6,000.00	5,999.35	121.50	119.45	48.21	759.16	-4,773.44	3,014.98	2,853.20	161.78	18.637	
14,200.00	6,925.81	6,000.00	5,999.35	123.07	119.45	48.21	759.16	-4,773.44	3,104.93	2,943.36	161.57	19.217	
14,300.00	6,925.62	6,000.00	5,999.35	124.64	119.45	48.21	759.16	-4,773.44	3,195.48	3,034.11	161.38	19.801	
14,400.00	6,925.43	6,000.00	5,999.35	126.21	119.45	48.21	759.16	-4,773.44	3,286.58	3,125.40	161.18	20.390	
14,500.00	6,925.24	6,000.00	5,999.35	127.79	119.45	48.21	759.16	-4,773.44	3,378.18	3,217.18	161.00	20.983	
14,600.00	6,925.05	6,000.00	5,999.35	129.36	119.45	48.21	759.16	-4,773.44	3,470.24	3,309.43	160.82	21.579	
14,700.00	6,924.86	6,000.00	5,999.35	130.93	119.45	48.21	759.16	-4,773.44	3,562.73	3,402.09	160.64	22.178	
14,800.00	6,924.66	6,000.00	5,999.35	132.51	119.45	48.21	759.16	-4,773.44	3,655.62	3,495.15	160.48	22.780	
14,900.00	6,924.47	6,000.00	5,999.35	134.09	119.45	48.21	759.16	-4,773.44	3,748.88	3,588.56	160.32	23.384	
15,000.00	6,924.28	6,000.00	5,999.35	135.66	119.45	48.21	759.16	-4,773.44	3,842.47	3,682.30	160.16	23.991	
15,100.00	6,924.09	6,000.00	5,999.35	137.24	119.45	48.21	759.16	-4,773.44	3,936.38	3,776.36	160.02	24.600	
15,200.00	6,923.90	6,000.00	5,999.35	138.82	119.45	48.21	759.16	-4,773.44	4,030.58	3,870.70	159.88	25.210	
15,300.00	6,923.71	6,000.00	5,999.35	140.40	119.45	48.21	759.16	-4,773.44	4,125.05	3,965.30	159.75	25.823	
15,400.00	6,923.52	6,000.00	5,999.35	141.97	119.45	48.21	759.16	-4,773.44	4,219.78	4,060.16	159.62	26.436	
15,500.00	6,923.33	6,000.00	5,999.35	143.55	119.45	48.21	759.16	-4,773.44	4,314.75	4,155.24	159.50	27.052	
15,600.00	6,923.13	6,000.00	5,999.35	145.13	119.45	48.21	759.16	-4,773.44	4,409.93	4,250.55	159.39	27.668	
15,700.00	6,922.94	6,000.00	5,999.35	146.72	119.45	48.21	759.16	-4,773.44	4,505.33	4,346.05	159.28	28.285	
15,800.00	6,922.75	6,000.00	5,999.35	148.30	119.45	48.21	759.16	-4,773.44	4,600.92	4,441.75	159.18	28.904	
15,900.00	6,922.56	6,000.00	5,999.35	149.88	119.45	48.21	759.16	-4,773.44	4,696.70	4,537.62	159.08	29.523	
16,000.00	6,922.37	6,000.00	5,999.35	151.46	119.45	48.21	759.16	-4,773.44	4,792.65	4,633.66	158.99	30.143	
16,100.00	6,922.18	6,000.00	5,999.35	153.04	119.45	48.21	759.16	-4,773.44	4,888.76	4,729.85	158.91	30.764	
16,200.00	6,921.99	6,000.00	5,999.35	154.63	119.45	48.21	759.16	-4,773.44	4,985.03	4,826.19	158.83	31.386	
16,300.00	6,921.79	6,000.00	5,999.35	156.21	119.45	48.21	759.16	-4,773.44	5,081.43	4,922.68	158.76	32.007	
16,400.00	6,921.60	6,000.00	5,999.35	157.79	119.45	48.21	759.16	-4,773.44	5,177.98	5,019.29	158.69	32.630	
16,500.00	6,921.41	6,000.00	5,999.35	159.38	119.45	48.21	759.16	-4,773.44	5,274.65	5,116.03	158.62	33.252	
16,600.00	6,921.22	6,000.00	5,999.35	160.96	119.45	48.21	759.16	-4,773.44	5,371.45	5,212.88	158.57	33.875	
16,700.00	6,921.03	6,000.00	5,999.35	162.55	119.45	48.21	759.16	-4,773.44	5,468.36	5,309.85	158.51	34.498	
16,800.00	6,920.84	6,000.00	5,999.35	164.13	119.45	48.21	759.16	-4,773.44	5,565.38	5,406.92	158.46	35.122	
16,900.00	6,920.65	6,000.00	5,999.35	165.72	119.45	48.21	759.16	-4,773.44	5,662.50	5,504.09	158.41	35.745	
17,000.00	6,920.45	6,000.00	5,999.35	167.30	119.45	48.21	759.16	-4,773.44	5,759.73	5,601.35	158.37	36.369	
17,100.00	6,920.26	6,000.00	5,999.35	168.89	119.45	48.21	759.16	-4,773.44	5,857.04	5,698.71	158.33	36.992	
17,200.00	6,920.07	6,000.00	5,999.35	170.48	119.45	48.21	759.16	-4,773.44	5,954.45	5,796.15	158.30	37.616	
17,300.00	6,919.88	6,000.00	5,999.35	172.06	119.45	48.21	759.16	-4,773.44	6,051.93	5,893.67	158.27	38.239	
17,400.00	6,919.69	6,000.00	5,999.35	173.65	119.45	48.21	759.16	-4,773.44	6,149.50	5,991.27	158.24	38.862	
17,500.00	6,919.50	6,000.00	5,999.35	175.24	119.45	48.21	759.16	-4,773.44	6,247.15	6,088.94	158.21	39.485	
17,600.00	6,919.31	6,000.00	5,999.35	176.83	119.45	48.21	759.16	-4,773.44	6,344.87	6,186.68	158.19	40.108	
17,700.00	6,919.11	6,000.00	5,999.35	178.41	119.45	48.21	759.16	-4,773.44	6,442.66	6,284.49	158.18	40.731	
17,759.55	6,919.00	6,000.00	5,999.35	179.36	119.45	48.21	759.16	-4,773.44	6,500.93	6,342.77	158.17	41.102	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 520-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	96.00	96.00	0.00	2.04	-79.30	1,251.73	-6,625.92	6,743.12				
100.00	100.00	196.00	196.00	0.25	4.17	-79.30	1,251.73	-6,625.92	6,743.12	6,738.70	4.42	1,524.706	
200.00	200.00	296.00	296.00	0.61	6.30	-79.30	1,251.73	-6,625.92	6,743.12	6,736.21	6.91	975.944	
300.00	300.00	396.00	396.00	0.97	8.43	-79.30	1,251.73	-6,625.92	6,743.12	6,733.72	9.40	717.652	
400.00	400.00	496.00	496.00	1.33	10.56	-79.30	1,251.73	-6,625.92	6,743.12	6,731.24	11.88	567.467	
500.00	500.00	596.03	596.00	1.68	12.69	-79.30	1,251.73	-6,625.92	6,743.12	6,728.75	14.37	469.243	
600.00	600.00	696.03	696.00	2.04	14.81	-79.30	1,251.73	-6,625.92	6,743.12	6,726.26	16.86	400.019	
700.00	700.00	797.83	797.80	2.40	16.98	-79.29	1,252.74	-6,625.92	6,743.31	6,723.92	19.38	347.911	
800.00	800.00	902.65	902.61	2.76	19.21	-79.30	1,252.39	-6,625.92	6,743.24	6,721.27	21.97	306.907	
900.00	900.00	1,007.48	1,007.43	3.12	21.44	-79.30	1,251.64	-6,625.92	6,743.11	6,718.55	24.56	274.544	
930.55	930.55	1,026.65	1,026.55	3.23	21.90	-79.30	1,251.73	-6,625.92	6,743.12	6,717.99	25.13	268.311	
1,000.00	1,000.00	1,096.10	1,096.00	3.48	23.51	-79.30	1,251.73	-6,625.92	6,743.12	6,716.14	26.98	249.902	
1,100.00	1,099.98	1,196.08	1,195.98	3.82	25.81	87.60	1,251.73	-6,625.92	6,743.05	6,713.41	29.63	227.573	
1,129.54	1,129.49	1,225.59	1,225.49	3.92	26.49	87.61	1,251.73	-6,625.92	6,743.00	6,712.59	30.41	221.757	
1,147.15	1,147.09	1,243.19	1,243.09	3.97	26.90	87.62	1,251.73	-6,625.92	6,742.96	6,712.09	30.87	218.424	
1,200.00	1,199.88	1,298.27	1,298.16	4.15	28.17	87.65	1,252.77	-6,625.92	6,743.06	6,710.74	32.32	208.665	
1,300.00	1,299.78	1,402.81	1,402.69	4.48	30.58	87.69	1,252.39	-6,625.92	6,742.81	6,707.75	35.06	192.320	
1,400.00	1,399.68	1,507.39	1,507.27	4.82	33.00	87.72	1,251.63	-6,625.92	6,742.49	6,704.68	37.81	178.322	
1,500.00	1,499.58	1,595.80	1,595.58	5.16	35.23	87.75	1,251.73	-6,625.92	6,742.32	6,701.93	40.39	166.942	
1,600.00	1,599.48	1,695.69	1,695.48	5.50	37.73	87.79	1,251.73	-6,625.92	6,742.14	6,698.91	43.23	155.952	
1,650.20	1,649.62	1,745.84	1,745.62	5.68	38.99	87.81	1,251.73	-6,625.92	6,742.06	6,697.39	44.66	150.959	
1,700.00	1,699.37	1,799.18	1,798.93	5.85	40.32	87.85	1,253.29	-6,625.92	6,742.27	6,696.10	46.17	146.034	
1,800.00	1,799.27	1,906.34	1,906.08	6.20	43.00	87.88	1,252.69	-6,625.92	6,741.99	6,692.79	49.20	137.032	
1,900.00	1,899.17	2,013.58	2,013.30	6.55	45.69	87.91	1,251.49	-6,625.92	6,741.61	6,689.38	52.23	129.063	
2,000.00	1,999.07	2,095.46	2,095.07	6.90	47.85	87.95	1,251.73	-6,625.92	6,741.47	6,686.72	54.75	123.139	
2,100.00	2,098.96	2,195.35	2,194.96	7.25	50.46	87.99	1,251.73	-6,625.92	6,741.31	6,683.60	57.71	116.811	
2,144.00	2,142.92	2,239.31	2,238.92	7.41	51.61	88.00	1,251.73	-6,625.92	6,741.24	6,682.22	59.02	114.227	
2,200.00	2,198.86	2,299.38	2,298.97	7.61	53.18	88.04	1,253.24	-6,625.92	6,741.44	6,680.66	60.78	110.907	
2,300.00	2,298.76	2,406.86	2,406.43	7.96	55.99	88.07	1,252.59	-6,625.92	6,741.17	6,677.22	63.95	105.415	
2,400.00	2,398.66	2,495.25	2,494.66	8.32	58.28	88.10	1,251.73	-6,625.92	6,740.85	6,674.25	66.60	101.221	
2,500.00	2,498.56	2,595.14	2,594.56	8.68	60.69	88.14	1,251.73	-6,625.92	6,740.70	6,671.33	69.37	97.174	
2,600.00	2,598.45	2,695.04	2,694.45	9.03	63.11	88.18	1,251.73	-6,625.92	6,740.55	6,668.41	72.14	93.438	
2,644.00	2,642.41	2,739.00	2,738.41	9.19	64.17	88.19	1,251.73	-6,625.92	6,740.49	6,667.13	73.36	91.883	
2,700.00	2,698.35	2,799.44	2,798.82	9.39	65.63	88.23	1,253.60	-6,625.92	6,740.78	6,665.76	75.02	89.851	
2,800.00	2,798.25	2,907.97	2,907.33	9.75	68.25	88.27	1,252.89	-6,625.92	6,740.51	6,662.51	78.00	86.413	
2,900.00	2,898.15	3,016.59	3,015.91	10.11	70.88	88.30	1,251.47	-6,625.92	6,740.12	6,659.13	80.99	83.224	
3,000.00	2,998.04	3,094.78	3,094.04	10.47	72.48	88.33	1,251.73	-6,625.92	6,740.00	6,657.05	82.95	81.253	
3,100.00	3,097.94	3,194.68	3,193.94	10.83	74.60	88.37	1,251.73	-6,625.92	6,739.87	6,654.45	85.42	78.899	
3,200.00	3,197.84	3,294.58	3,293.84	11.19	76.71	88.41	1,251.73	-6,625.92	6,739.74	6,651.85	87.90	76.678	
3,250.40	3,248.19	3,344.93	3,344.19	11.37	77.77	88.43	1,251.73	-6,625.92	6,739.68	6,650.54	89.14	75.605	
3,300.00	3,297.74	3,395.41	3,394.66	11.55	78.84	88.46	1,253.32	-6,625.92	6,739.94	6,649.55	90.39	74.565	
3,400.00	3,397.64	3,498.66	3,497.90	11.91	81.02	88.50	1,253.12	-6,625.92	6,739.78	6,646.84	92.93	72.522	
3,500.00	3,497.53	3,601.94	3,601.17	12.27	83.21	88.53	1,252.67	-6,625.92	6,739.57	6,644.09	95.48	70.587	
3,600.00	3,597.43	3,705.24	3,704.47	12.63	85.39	88.57	1,251.96	-6,625.92	6,739.32	6,641.30	98.02	68.751	
3,700.00	3,697.33	3,794.18	3,793.33	12.99	87.52	88.60	1,251.73	-6,625.92	6,739.15	6,638.64	100.51	67.047	
3,800.00	3,797.23	3,894.08	3,893.23	13.35	90.04	88.64	1,251.73	-6,625.92	6,739.04	6,635.65	103.39	65.179	
3,900.00	3,897.12	3,993.98	3,993.12	13.72	92.55	88.68	1,251.73	-6,625.92	6,738.94	6,632.67	106.27	63.413	
4,000.00	3,997.02	4,093.87	4,093.02	14.08	95.07	88.71	1,251.73	-6,625.92	6,738.83	6,629.68	109.15	61.740	
4,100.00	4,096.92	4,193.77	4,192.92	14.44	97.59	88.75	1,251.73	-6,625.92	6,738.73	6,626.71	112.03	60.153	
4,200.00	4,196.82	4,293.67	4,292.82	14.80	100.10	88.79	1,251.73	-6,625.92	6,738.64	6,623.73	114.91	58.645	
4,300.00	4,296.72	4,393.57	4,392.72	15.16	102.62	88.83	1,251.73	-6,625.92	6,738.54	6,620.76	117.78	57.211	
4,400.00	4,396.61	4,493.46	4,492.61	15.53	105.14	88.87	1,251.73	-6,625.92	6,738.45	6,617.79	120.66	55.845	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #149B - OH - OH-INC — **Offset Site Error:** 0.00 usft

Survey Program: 520-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,500.00	4,496.51	4,593.36	4,592.51	15.89	107.65	88.91	1,251.73	-6,625.92	6,738.36	6,614.82	123.54	54.543	
4,600.00	4,596.41	4,693.26	4,692.41	16.25	110.17	88.94	1,251.73	-6,625.92	6,738.28	6,611.86	126.42	53.300	
4,650.50	4,646.86	4,743.71	4,742.86	16.43	111.44	88.96	1,251.73	-6,625.92	6,738.24	6,610.36	127.88	52.694	
4,700.00	4,696.31	4,793.76	4,792.87	16.61	112.70	89.02	1,256.14	-6,625.92	6,739.12	6,609.80	129.32	52.114	
4,800.00	4,796.20	4,894.92	4,894.02	16.98	115.25	89.06	1,256.05	-6,625.92	6,739.03	6,606.80	132.23	50.966	
4,900.00	4,896.10	4,996.08	4,995.18	17.34	117.80	89.10	1,255.87	-6,625.92	6,738.92	6,603.78	135.14	49.867	
5,000.00	4,996.00	5,097.25	5,096.34	17.70	120.35	89.13	1,255.61	-6,625.92	6,738.79	6,600.74	138.05	48.814	
5,100.00	5,095.90	5,198.43	5,197.52	18.07	122.90	89.17	1,255.26	-6,625.92	6,738.65	6,597.69	140.96	47.805	
5,200.00	5,195.80	5,299.62	5,298.70	18.43	125.44	89.20	1,254.82	-6,625.92	6,738.49	6,594.62	143.87	46.836	
5,300.00	5,295.69	5,400.82	5,399.90	18.79	127.99	89.24	1,254.29	-6,625.92	6,738.32	6,591.53	146.79	45.906	
5,400.00	5,395.59	5,502.03	5,501.10	19.16	130.54	89.27	1,253.67	-6,625.92	6,738.13	6,588.43	149.70	45.011	
5,500.00	5,495.49	5,603.25	5,602.31	19.52	133.09	89.30	1,252.97	-6,625.92	6,737.92	6,585.31	152.61	44.151	
5,600.00	5,595.39	5,704.48	5,703.53	19.88	135.64	89.34	1,252.17	-6,625.92	6,737.70	6,582.18	155.52	43.322	
5,700.00	5,695.28	5,792.86	5,791.28	20.25	138.03	89.37	1,251.73	-6,625.92	6,737.54	6,579.27	158.27	42.570	
5,800.00	5,795.18	5,892.75	5,891.18	20.61	140.98	89.41	1,251.73	-6,625.92	6,737.50	6,575.91	161.58	41.696	
5,900.00	5,895.08	5,992.65	5,991.08	20.97	143.93	89.44	1,251.73	-6,625.92	6,737.45	6,572.55	164.90	40.858	
6,000.00	5,994.98	6,092.55	6,090.98	21.34	146.88	89.48	1,251.73	-6,625.92	6,737.41	6,569.19	168.21	40.053	
6,100.00	6,094.88	6,192.45	6,190.88	21.70	149.83	89.52	1,251.73	-6,625.92	6,737.37	6,565.84	171.53	39.278	
6,200.00	6,194.77	6,292.34	6,290.77	22.06	152.78	89.56	1,251.73	-6,625.92	6,737.33	6,562.49	174.84	38.534	
6,300.00	6,294.67	6,392.24	6,390.67	22.43	155.73	89.60	1,251.73	-6,625.92	6,737.30	6,559.14	178.16	37.817	
6,314.74	6,309.40	6,406.97	6,405.40	22.48	156.17	89.60	1,251.73	-6,625.92	6,737.29	6,558.65	178.65	37.713	
6,350.00	6,344.59	6,442.16	6,440.59	22.61	157.21	46.48	1,251.73	-6,625.92	6,736.33	6,556.52	179.81	37.463	
6,400.00	6,394.26	6,491.83	6,490.26	22.79	158.67	29.69	1,251.73	-6,625.92	6,731.70	6,550.24	181.46	37.097	
6,450.00	6,443.36	6,540.93	6,539.36	22.97	160.12	24.11	1,251.73	-6,625.92	6,723.28	6,540.19	183.09	36.721	
6,500.00	6,491.60	6,589.17	6,587.60	23.15	161.55	21.56	1,251.73	-6,625.92	6,711.12	6,526.42	184.69	36.337	
6,550.00	6,538.67	6,636.24	6,634.67	23.32	162.94	20.28	1,251.73	-6,625.92	6,695.28	6,509.03	186.26	35.947	
6,600.00	6,584.29	6,681.86	6,680.29	23.49	164.29	19.70	1,251.73	-6,625.92	6,675.89	6,488.12	187.77	35.554	
6,650.00	6,628.18	6,725.75	6,724.18	23.66	165.58	19.58	1,251.73	-6,625.92	6,653.05	6,463.82	189.23	35.159	
6,700.00	6,670.06	6,767.63	6,766.06	23.83	166.82	19.81	1,251.73	-6,625.92	6,626.91	6,436.29	190.62	34.766	
6,750.00	6,709.68	6,807.25	6,805.68	24.00	167.99	20.37	1,251.73	-6,625.92	6,597.63	6,405.69	191.93	34.375	
6,800.00	6,746.79	6,844.36	6,842.79	24.17	169.09	21.25	1,251.73	-6,625.92	6,565.39	6,372.23	193.16	33.989	
6,850.00	6,781.17	6,878.74	6,877.17	24.35	170.10	22.50	1,251.73	-6,625.92	6,530.40	6,336.10	194.31	33.609	
6,900.00	6,812.60	6,910.17	6,908.60	24.54	171.03	24.18	1,251.73	-6,625.92	6,492.88	6,297.53	195.35	33.237	
6,950.00	6,840.88	6,938.45	6,936.88	24.74	171.87	26.40	1,251.73	-6,625.92	6,453.05	6,256.76	196.29	32.875	
7,000.00	6,865.85	6,963.42	6,961.85	24.96	172.60	29.35	1,251.73	-6,625.92	6,411.18	6,214.05	197.13	32.523	
7,050.00	6,887.35	6,984.92	6,983.35	25.19	173.24	33.28	1,251.73	-6,625.92	6,367.50	6,169.65	197.85	32.184	
7,100.00	6,905.25	7,002.82	7,001.25	25.43	173.77	38.63	1,251.73	-6,625.92	6,322.30	6,123.85	198.46	31.857	
7,150.00	6,919.43	7,017.00	7,015.43	25.69	174.19	46.00	1,251.73	-6,625.92	6,275.87	6,076.92	198.95	31.546	
7,200.00	6,929.81	7,027.38	7,025.81	25.96	174.49	56.21	1,251.73	-6,625.92	6,228.47	6,029.15	199.32	31.249	
7,250.00	6,936.33	7,033.90	7,032.33	26.25	174.69	70.00	1,251.73	-6,625.92	6,180.41	5,980.85	199.56	30.970	
7,300.00	6,938.95	7,036.52	7,034.95	26.55	174.76	87.00	1,251.73	-6,625.92	6,131.99	5,932.30	199.69	30.707	
7,309.56	6,939.00	7,036.57	7,035.00	26.60	174.76	90.44	1,251.73	-6,625.92	6,122.71	5,923.01	199.70	30.659	
7,400.00	6,938.83	7,036.40	7,034.83	27.19	174.76	90.43	1,251.73	-6,625.92	6,035.00	5,835.21	199.79	30.207	
7,500.00	6,938.64	7,036.21	7,034.64	27.91	174.75	90.43	1,251.73	-6,625.92	5,938.10	5,738.21	199.89	29.706	
7,600.00	6,938.44	7,036.01	7,034.44	28.70	174.75	90.42	1,251.73	-6,625.92	5,841.32	5,641.31	200.01	29.205	
7,700.00	6,938.25	7,035.82	7,034.25	29.55	174.74	90.41	1,251.73	-6,625.92	5,744.64	5,544.50	200.14	28.703	
7,800.00	6,938.06	7,035.63	7,034.06	30.47	174.74	90.40	1,251.73	-6,625.92	5,648.08	5,447.79	200.28	28.201	
7,900.00	6,937.87	7,035.44	7,033.87	31.44	174.73	90.40	1,251.73	-6,625.92	5,551.64	5,351.20	200.44	27.697	
8,000.00	6,937.68	7,035.25	7,033.68	32.46	174.73	90.39	1,251.73	-6,625.92	5,455.32	5,254.71	200.61	27.193	
8,100.00	6,937.49	7,035.06	7,033.49	33.53	174.72	90.38	1,251.73	-6,625.92	5,359.15	5,158.34	200.80	26.689	
8,200.00	6,937.30	7,034.87	7,033.30	34.64	174.71	90.37	1,251.73	-6,625.92	5,263.11	5,062.10	201.01	26.183	
8,300.00	6,937.10	7,034.68	7,033.10	35.78	174.71	90.37	1,251.73	-6,625.92	5,167.23	4,965.99	201.23	25.678	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 520-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	6,936.91	7,034.48	7,032.91	36.96	174.70	90.36	1,251.73	-6,625.92	5,071.50	4,870.02	201.48	25.171	
8,500.00	6,936.72	7,034.29	7,032.72	38.17	174.70	90.35	1,251.73	-6,625.92	4,975.95	4,774.20	201.75	24.664	
8,600.00	6,936.53	7,034.10	7,032.53	39.41	174.69	90.34	1,251.73	-6,625.92	4,880.57	4,678.53	202.04	24.157	
8,700.00	6,936.34	7,033.91	7,032.34	40.68	174.69	90.34	1,251.73	-6,625.92	4,785.38	4,583.03	202.35	23.649	
8,800.00	6,936.15	7,033.72	7,032.15	41.97	174.68	90.33	1,251.73	-6,625.92	4,690.39	4,487.69	202.69	23.140	
8,900.00	6,935.96	7,033.53	7,031.96	43.27	174.67	90.32	1,251.73	-6,625.92	4,595.61	4,392.55	203.06	22.632	
9,000.00	6,935.76	7,033.34	7,031.76	44.60	174.67	90.31	1,251.73	-6,625.92	4,501.06	4,297.60	203.46	22.123	
9,100.00	6,935.57	7,033.14	7,031.57	45.95	174.66	90.31	1,251.73	-6,625.92	4,406.75	4,202.86	203.89	21.613	
9,200.00	6,935.38	7,032.95	7,031.38	47.31	174.66	90.30	1,251.73	-6,625.92	4,312.69	4,108.34	204.35	21.104	
9,300.00	6,935.19	7,032.76	7,031.19	48.69	174.65	90.29	1,251.73	-6,625.92	4,218.91	4,014.06	204.85	20.595	
9,400.00	6,935.00	7,032.57	7,031.00	50.08	174.65	90.29	1,251.73	-6,625.92	4,125.42	3,920.03	205.39	20.085	
9,500.00	6,934.81	7,032.38	7,030.81	51.48	174.64	90.28	1,251.73	-6,625.92	4,032.25	3,826.27	205.97	19.576	
9,600.00	6,934.62	7,032.19	7,030.62	52.89	174.64	90.27	1,251.73	-6,625.92	3,939.40	3,732.80	206.60	19.068	
9,700.00	6,934.43	7,032.00	7,030.43	54.32	174.63	90.26	1,251.73	-6,625.92	3,846.92	3,639.65	207.27	18.560	
9,800.00	6,934.23	7,031.80	7,030.23	55.75	174.62	90.26	1,251.73	-6,625.92	3,754.82	3,546.83	208.00	18.052	
9,900.00	6,934.04	7,031.61	7,030.04	57.19	174.62	90.25	1,251.73	-6,625.92	3,663.14	3,454.37	208.77	17.546	
10,000.00	6,933.85	7,031.42	7,029.85	58.65	174.61	90.24	1,251.73	-6,625.92	3,571.90	3,362.30	209.61	17.041	
10,100.00	6,933.66	7,031.23	7,029.66	60.10	174.61	90.23	1,251.73	-6,625.92	3,481.15	3,270.64	210.50	16.537	
10,200.00	6,933.47	7,031.04	7,029.47	61.57	174.60	90.23	1,251.73	-6,625.92	3,390.91	3,179.45	211.46	16.035	
10,300.00	6,933.28	7,030.85	7,029.28	63.04	174.60	90.22	1,251.73	-6,625.92	3,301.24	3,088.74	212.50	15.535	
10,400.00	6,933.09	7,030.66	7,029.09	64.52	174.59	90.21	1,251.73	-6,625.92	3,212.18	2,998.57	213.60	15.038	
10,500.00	6,932.89	7,030.46	7,028.89	66.01	174.58	90.20	1,251.73	-6,625.92	3,123.77	2,908.98	214.79	14.543	
10,600.00	6,932.70	7,030.27	7,028.70	67.50	174.58	90.20	1,251.73	-6,625.92	3,036.09	2,820.03	216.06	14.052	
10,700.00	6,932.51	7,030.08	7,028.51	68.99	174.57	90.19	1,251.73	-6,625.92	2,949.20	2,731.77	217.42	13.564	
10,800.00	6,932.32	7,029.89	7,028.32	70.50	174.57	90.18	1,251.73	-6,625.92	2,863.15	2,644.27	218.88	13.081	
10,900.00	6,932.13	7,029.70	7,028.13	72.00	174.56	90.17	1,251.73	-6,625.92	2,778.05	2,557.60	220.45	12.602	
11,000.00	6,931.94	7,029.51	7,027.94	73.51	174.56	90.17	1,251.73	-6,625.92	2,693.96	2,471.85	222.12	12.129	
11,100.00	6,931.75	7,029.32	7,027.75	75.02	174.55	90.16	1,251.73	-6,625.92	2,611.00	2,387.10	223.90	11.661	
11,200.00	6,931.55	7,029.13	7,027.55	76.54	174.54	90.15	1,251.73	-6,625.92	2,529.28	2,303.47	225.81	11.201	
11,300.00	6,931.36	7,028.93	7,027.36	78.06	174.54	90.14	1,251.73	-6,625.92	2,448.90	2,221.06	227.84	10.748	
11,400.00	6,931.17	7,028.74	7,027.17	79.58	174.53	90.14	1,251.73	-6,625.92	2,370.03	2,140.02	230.01	10.304	
11,500.00	6,930.98	7,028.55	7,026.98	81.11	174.53	90.13	1,251.73	-6,625.92	2,292.80	2,060.48	232.32	9.869	
11,600.00	6,930.79	7,028.36	7,026.79	82.64	174.52	90.12	1,251.73	-6,625.92	2,217.39	1,982.62	234.77	9.445	
11,700.00	6,930.60	7,028.17	7,026.60	84.17	174.52	90.11	1,251.73	-6,625.92	2,143.99	1,906.63	237.36	9.033	
11,800.00	6,930.41	7,027.98	7,026.41	85.70	174.51	90.11	1,251.73	-6,625.92	2,072.83	1,832.73	240.10	8.633	
11,900.00	6,930.21	7,027.79	7,026.21	87.24	174.51	90.10	1,251.73	-6,625.92	2,004.12	1,761.14	242.98	8.248	
12,000.00	6,930.02	7,027.59	7,026.02	88.78	174.50	90.09	1,251.73	-6,625.92	1,938.14	1,692.14	246.00	7.879	
12,100.00	6,929.83	7,027.40	7,025.83	90.32	174.49	90.09	1,251.73	-6,625.92	1,875.18	1,626.03	249.15	7.526	
12,200.00	6,929.64	7,027.21	7,025.64	91.87	174.49	90.08	1,251.73	-6,625.92	1,815.54	1,563.14	252.40	7.193	
12,300.00	6,929.45	7,027.02	7,025.45	93.41	174.48	90.07	1,251.73	-6,625.92	1,759.57	1,503.83	255.74	6.880	
12,400.00	6,929.26	7,026.83	7,025.26	94.96	174.48	90.06	1,251.73	-6,625.92	1,707.62	1,448.49	259.13	6.590	
12,500.00	6,929.07	7,026.64	7,025.07	96.51	174.47	90.06	1,251.73	-6,625.92	1,660.08	1,397.54	262.54	6.323	
12,600.00	6,928.88	7,026.45	7,024.88	98.06	174.47	90.05	1,251.73	-6,625.92	1,617.33	1,351.42	265.91	6.082	
12,700.00	6,928.68	7,026.25	7,024.68	99.62	174.46	90.04	1,251.73	-6,625.92	1,579.76	1,310.58	269.18	5.869	
12,800.00	6,928.49	7,026.06	7,024.49	101.17	174.45	90.03	1,251.73	-6,625.92	1,547.76	1,275.46	272.30	5.684	
12,900.00	6,928.30	7,025.87	7,024.30	102.73	174.45	90.03	1,251.73	-6,625.92	1,521.66	1,246.47	275.18	5.530	
13,000.00	6,928.11	7,025.68	7,024.11	104.28	174.44	90.02	1,251.73	-6,625.92	1,501.78	1,224.00	277.78	5.406	
13,100.00	6,927.92	7,025.49	7,023.92	105.84	174.44	90.01	1,251.73	-6,625.92	1,488.36	1,208.35	280.01	5.315	
13,200.00	6,927.73	7,025.30	7,023.73	107.40	174.43	90.00	1,251.73	-6,625.92	1,481.59	1,199.76	281.83	5.257	
13,250.53	6,927.63	7,025.20	7,023.63	108.19	174.43	90.00	1,251.73	-6,625.92	1,480.73	1,198.15	282.58	5.240	CC, ES
13,300.00	6,927.54	7,025.11	7,023.54	108.97	174.43	90.00	1,251.73	-6,625.92	1,481.56	1,198.35	283.21	5.231	SF
13,400.00	6,927.34	7,024.91	7,023.34	110.53	174.42	89.99	1,251.73	-6,625.92	1,488.26	1,204.15	284.11	5.238	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 520-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

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
13,500.00	6,927.15	7,024.72	7,023.15	112.09	174.41	89.98	1,251.73	-6,625.92	1,501.60	1,217.05	284.55	5.277	
13,600.00	6,926.96	7,024.53	7,022.96	113.66	174.41	89.97	1,251.73	-6,625.92	1,521.41	1,236.88	284.53	5.347	
13,700.00	6,926.77	7,024.34	7,022.77	115.22	174.40	89.97	1,251.73	-6,625.92	1,547.45	1,263.34	284.10	5.447	
13,800.00	6,926.58	7,024.15	7,022.58	116.79	174.40	89.96	1,251.73	-6,625.92	1,579.39	1,296.09	283.31	5.575	
13,900.00	6,926.39	7,023.96	7,022.39	118.36	174.39	89.95	1,251.73	-6,625.92	1,616.90	1,334.71	282.19	5.730	
14,000.00	6,926.20	7,023.77	7,022.20	119.93	174.39	89.94	1,251.73	-6,625.92	1,659.60	1,378.78	280.82	5.910	
14,100.00	6,926.00	7,023.57	7,022.00	121.50	174.38	89.94	1,251.73	-6,625.92	1,707.09	1,427.85	279.24	6.113	
14,200.00	6,925.81	7,023.38	7,021.81	123.07	174.37	89.93	1,251.73	-6,625.92	1,758.99	1,481.49	277.50	6.339	
14,300.00	6,925.62	7,023.19	7,021.62	124.64	174.37	89.92	1,251.73	-6,625.92	1,814.92	1,539.26	275.67	6.584	
14,400.00	6,925.43	7,023.00	7,021.43	126.21	174.36	89.91	1,251.73	-6,625.92	1,874.52	1,600.76	273.76	6.847	
14,500.00	6,925.24	7,022.81	7,021.24	127.79	174.36	89.91	1,251.73	-6,625.92	1,937.45	1,665.63	271.82	7.128	
14,600.00	6,925.05	7,022.62	7,021.05	129.36	174.35	89.90	1,251.73	-6,625.92	2,003.40	1,733.52	269.88	7.423	
14,700.00	6,924.86	7,022.43	7,020.86	130.93	174.35	89.89	1,251.73	-6,625.92	2,072.08	1,804.13	267.95	7.733	
14,800.00	6,924.66	7,022.24	7,020.66	132.51	174.34	89.89	1,251.73	-6,625.92	2,143.22	1,877.17	266.06	8.056	
14,900.00	6,924.47	7,022.04	7,020.47	134.09	174.34	89.88	1,251.73	-6,625.92	2,216.60	1,952.39	264.21	8.390	
15,000.00	6,924.28	7,021.85	7,020.28	135.66	174.33	89.87	1,251.73	-6,625.92	2,291.98	2,029.57	262.41	8.734	
15,100.00	6,924.09	7,021.66	7,020.09	137.24	174.32	89.86	1,251.73	-6,625.92	2,369.20	2,108.52	260.68	9.089	
15,200.00	6,923.90	7,021.47	7,019.90	138.82	174.32	89.86	1,251.73	-6,625.92	2,448.06	2,189.05	259.01	9.452	
15,300.00	6,923.71	7,021.28	7,019.71	140.40	174.31	89.85	1,251.73	-6,625.92	2,528.41	2,271.01	257.41	9.823	
15,400.00	6,923.52	7,021.09	7,019.52	141.97	174.31	89.84	1,251.73	-6,625.92	2,610.13	2,354.26	255.87	10.201	
15,500.00	6,923.33	7,020.90	7,019.33	143.55	174.30	89.83	1,251.73	-6,625.92	2,693.08	2,438.67	254.40	10.586	
15,600.00	6,923.13	7,020.70	7,019.13	145.13	174.30	89.83	1,251.73	-6,625.92	2,777.15	2,524.15	253.00	10.977	
15,700.00	6,922.94	7,020.51	7,018.94	146.72	174.29	89.82	1,251.73	-6,625.92	2,862.24	2,610.58	251.66	11.373	
15,800.00	6,922.75	7,020.32	7,018.75	148.30	174.28	89.81	1,251.73	-6,625.92	2,948.28	2,697.89	250.39	11.775	
15,900.00	6,922.56	7,020.13	7,018.56	149.88	174.28	89.80	1,251.73	-6,625.92	3,035.16	2,785.99	249.17	12.181	
16,000.00	6,922.37	7,019.94	7,018.37	151.46	174.27	89.80	1,251.73	-6,625.92	3,122.84	2,874.83	248.01	12.592	
16,100.00	6,922.18	7,019.75	7,018.18	153.04	174.27	89.79	1,251.73	-6,625.92	3,211.23	2,964.32	246.91	13.006	
16,200.00	6,921.99	7,019.56	7,017.99	154.63	174.26	89.78	1,251.73	-6,625.92	3,300.29	3,054.43	245.86	13.424	
16,300.00	6,921.79	7,019.36	7,017.79	156.21	174.26	89.77	1,251.73	-6,625.92	3,389.95	3,145.10	244.86	13.845	
16,400.00	6,921.60	7,019.17	7,017.60	157.79	174.25	89.77	1,251.73	-6,625.92	3,480.18	3,236.28	243.90	14.269	
16,500.00	6,921.41	7,018.98	7,017.41	159.38	174.24	89.76	1,251.73	-6,625.92	3,570.93	3,327.94	242.99	14.696	
16,600.00	6,921.22	7,018.79	7,017.22	160.96	174.24	89.75	1,251.73	-6,625.92	3,662.17	3,420.04	242.13	15.125	
16,700.00	6,921.03	7,018.60	7,017.03	162.55	174.23	89.74	1,251.73	-6,625.92	3,753.84	3,512.54	241.30	15.556	
16,800.00	6,920.84	7,018.41	7,016.84	164.13	174.23	89.74	1,251.73	-6,625.92	3,845.94	3,605.42	240.52	15.990	
16,900.00	6,920.65	7,018.22	7,016.65	165.72	174.22	89.73	1,251.73	-6,625.92	3,938.42	3,698.65	239.77	16.426	
17,000.00	6,920.45	7,018.02	7,016.45	167.30	174.22	89.72	1,251.73	-6,625.92	4,031.26	3,792.20	239.05	16.863	
17,100.00	6,920.26	7,017.83	7,016.26	168.89	174.21	89.71	1,251.73	-6,625.92	4,124.43	3,886.06	238.37	17.303	
17,200.00	6,920.07	7,017.64	7,016.07	170.48	174.21	89.71	1,251.73	-6,625.92	4,217.91	3,980.20	237.72	17.743	
17,300.00	6,919.88	7,017.45	7,015.88	172.06	174.20	89.70	1,251.73	-6,625.92	4,311.69	4,074.60	237.10	18.185	
17,400.00	6,919.69	7,017.26	7,015.69	173.65	174.19	89.69	1,251.73	-6,625.92	4,405.74	4,169.24	236.50	18.629	
17,500.00	6,919.50	7,017.07	7,015.50	175.24	174.19	89.69	1,251.73	-6,625.92	4,500.05	4,264.12	235.94	19.073	
17,600.00	6,919.31	7,016.88	7,015.31	176.83	174.18	89.68	1,251.73	-6,625.92	4,594.60	4,359.21	235.39	19.519	
17,700.00	6,919.11	7,016.69	7,015.11	178.41	174.18	89.67	1,251.73	-6,625.92	4,689.38	4,454.50	234.88	19.965	
17,759.55	6,919.00	7,016.57	7,015.00	179.36	174.17	89.67	1,251.73	-6,625.92	4,745.92	4,511.34	234.58	20.232	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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	-80.76	770.78	-4,736.68	4,799.05				
100.00	100.00	85.27	85.27	0.25	0.10	-80.75	771.00	-4,736.56	4,798.91	4,798.56	0.35	N/A	
200.00	200.00	1,456.24	1,397.12	0.61	6.32	-77.65	986.97	-4,508.54	4,774.12	4,767.82	6.29	758.629	
300.00	300.00	1,495.97	1,433.37	0.97	6.62	-77.49	997.96	-4,496.56	4,749.16	4,742.34	6.82	696.153	
400.00	400.00	1,609.55	1,537.11	1.33	7.49	-77.01	1,029.51	-4,462.77	4,724.87	4,716.99	7.89	599.036	
500.00	500.00	1,729.53	1,646.21	1.68	8.41	-76.49	1,063.20	-4,425.94	4,699.86	4,690.85	9.01	521.446	
600.00	600.00	1,779.21	1,691.51	2.04	8.79	-76.28	1,077.00	-4,410.92	4,675.52	4,665.83	9.69	482.502	
700.00	700.00	1,871.79	1,776.05	2.40	9.49	-75.88	1,102.75	-4,383.33	4,651.86	4,641.20	10.65	436.639	
800.00	800.00	2,013.00	1,904.36	2.76	10.61	-75.25	1,142.40	-4,339.69	4,627.22	4,615.25	11.97	386.484	
900.00	900.00	2,076.00	1,961.44	3.12	11.12	-74.96	1,160.62	-4,320.22	4,603.21	4,590.43	12.79	359.992	
1,000.00	1,000.00	2,148.81	2,027.65	3.48	11.68	-74.63	1,181.33	-4,298.12	4,579.89	4,566.23	13.66	335.333	
1,100.00	1,099.98	2,257.49	2,126.75	3.82	12.52	93.24	1,211.50	-4,265.25	4,556.85	4,542.11	14.74	309.078	
1,129.54	1,129.49	2,279.58	2,146.81	3.92	12.69	93.49	1,217.83	-4,258.51	4,550.13	4,535.13	15.00	303.347	
1,200.00	1,199.88	2,365.35	2,224.89	4.15	13.35	93.93	1,241.88	-4,232.40	4,534.20	4,518.37	15.83	286.430	
1,300.00	1,299.78	2,493.57	2,341.77	4.48	14.34	94.58	1,275.88	-4,192.13	4,510.49	4,493.45	17.04	264.705	
1,400.00	1,399.68	2,555.22	2,398.07	4.82	14.82	94.89	1,292.25	-4,173.06	4,487.69	4,469.85	17.84	251.597	
1,500.00	1,499.58	2,618.87	2,455.96	5.16	15.33	95.23	1,310.01	-4,153.45	4,465.64	4,446.97	18.67	239.203	
1,600.00	1,599.48	2,659.72	2,493.07	5.50	15.65	95.45	1,321.79	-4,141.07	4,444.66	4,425.30	19.36	229.638	
1,700.00	1,699.37	2,687.61	2,518.59	5.85	15.86	95.59	1,329.66	-4,133.06	4,425.21	4,405.27	19.95	221.839	
1,800.00	1,799.27	2,707.00	2,536.45	6.20	16.00	95.69	1,335.03	-4,127.74	4,407.41	4,386.93	20.48	215.194	
1,900.00	1,899.17	2,738.00	2,565.17	6.55	16.22	95.85	1,343.50	-4,119.73	4,391.23	4,370.15	21.08	208.278	
2,000.00	1,999.07	2,769.82	2,594.88	6.90	16.42	96.01	1,351.96	-4,112.12	4,376.72	4,355.05	21.68	201.897	
2,100.00	2,098.96	2,801.10	2,624.32	7.25	16.62	96.15	1,359.96	-4,105.20	4,363.82	4,341.55	22.27	195.975	
2,200.00	2,198.86	2,977.38	2,792.43	7.61	17.62	96.89	1,397.31	-4,067.64	4,350.54	4,326.96	23.57	184.541	
2,300.00	2,298.76	3,019.00	2,832.38	7.96	17.84	97.05	1,405.20	-4,059.06	4,337.58	4,313.40	24.18	179.379	
2,400.00	2,398.66	3,097.96	2,908.70	8.32	18.23	97.33	1,418.63	-4,043.94	4,325.60	4,300.67	24.93	173.511	
2,500.00	2,498.56	3,158.41	2,967.24	8.68	18.52	97.55	1,428.77	-4,032.78	4,314.34	4,288.74	25.60	168.554	
2,600.00	2,598.45	3,237.25	3,043.97	9.03	18.87	97.81	1,440.74	-4,019.22	4,303.87	4,277.56	26.31	163.567	
2,700.00	2,698.35	3,290.74	3,096.31	9.39	19.09	97.97	1,447.90	-4,010.80	4,294.23	4,267.32	26.91	159.591	
2,800.00	2,798.25	3,333.00	3,137.76	9.75	19.25	98.09	1,453.32	-4,004.62	4,285.66	4,258.21	27.45	156.102	
2,900.00	2,898.15	3,394.00	3,197.72	10.11	19.48	98.26	1,461.09	-3,996.50	4,278.32	4,250.26	28.06	152.478	
3,000.00	2,998.04	3,458.00	3,260.86	10.47	19.69	98.43	1,468.12	-3,988.82	4,271.74	4,243.10	28.65	149.117	
3,100.00	3,097.94	3,503.39	3,305.85	10.83	19.81	98.52	1,472.03	-3,984.28	4,266.27	4,237.12	29.15	146.349	
3,200.00	3,197.84	3,550.00	3,352.18	11.19	19.93	98.61	1,475.58	-3,980.58	4,262.23	4,232.59	29.64	143.785	
3,300.00	3,297.74	3,582.00	3,384.03	11.55	20.00	98.67	1,477.91	-3,978.59	4,259.60	4,229.52	30.09	141.569	
3,400.00	3,397.64	3,644.00	3,445.86	11.91	20.11	98.77	1,481.44	-3,975.84	4,258.23	4,227.65	30.58	139.267	
3,500.00	3,497.53	3,716.54	3,518.38	12.27	20.19	98.83	1,482.12	-3,974.51	4,257.56	4,226.54	31.02	137.265	
3,545.93	3,543.42	3,747.16	3,549.00	12.44	20.21	98.84	1,481.85	-3,974.30	4,257.45	4,226.25	31.21	136.430	
3,600.00	3,597.43	3,769.00	3,570.84	12.63	20.23	98.85	1,481.70	-3,974.28	4,257.65	4,226.23	31.42	135.527	
3,700.00	3,697.33	3,840.00	3,641.84	12.99	20.27	98.89	1,481.59	-3,974.60	4,258.71	4,226.88	31.83	133.793	
3,800.00	3,797.23	3,952.15	3,753.99	13.35	20.38	98.96	1,481.48	-3,975.17	4,259.84	4,227.51	32.32	131.794	
3,900.00	3,897.12	4,051.05	3,852.89	13.72	20.48	99.01	1,481.37	-3,975.71	4,261.01	4,228.21	32.80	129.922	
4,000.00	3,997.02	4,149.95	3,951.78	14.08	20.58	99.07	1,481.27	-3,976.27	4,262.20	4,228.93	33.27	128.103	
4,100.00	4,096.92	4,248.85	4,050.68	14.44	20.68	99.12	1,481.15	-3,976.86	4,263.43	4,229.68	33.75	126.334	
4,200.00	4,196.82	4,347.75	4,149.58	14.80	20.77	99.18	1,481.03	-3,977.48	4,264.68	4,230.46	34.22	124.615	
4,300.00	4,296.72	4,446.65	4,248.47	15.16	20.87	99.23	1,480.91	-3,978.13	4,265.96	4,231.27	34.70	122.942	
4,400.00	4,396.61	4,545.55	4,347.37	15.53	20.97	99.29	1,480.78	-3,978.80	4,267.27	4,232.10	35.18	121.315	
4,500.00	4,496.51	4,644.45	4,446.27	15.89	21.07	99.34	1,480.65	-3,979.50	4,268.61	4,232.96	35.65	119.731	
4,600.00	4,596.41	4,743.35	4,545.17	16.25	21.17	99.39	1,480.51	-3,980.23	4,269.97	4,233.84	36.13	118.188	
4,700.00	4,696.31	4,842.25	4,644.07	16.61	21.27	99.45	1,480.36	-3,980.99	4,271.36	4,234.76	36.61	116.686	
4,800.00	4,796.20	4,941.15	4,742.97	16.98	21.37	99.50	1,480.21	-3,981.77	4,272.78	4,235.70	37.08	115.222	
4,900.00	4,896.10	5,040.06	4,841.87	17.34	21.47	99.55	1,480.06	-3,982.58	4,274.23	4,236.67	37.56	113.796	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Rule Assigned: Warning
5,000.00	4,996.00	5,138.96	4,940.77	17.70	21.57	99.61	1,479.89	-3,983.42	4,275.70	4,237.66	38.04	112.406	
5,100.00	5,095.90	5,237.86	5,039.67	18.07	21.67	99.66	1,479.73	-3,984.29	4,277.20	4,238.68	38.52	111.050	
5,200.00	5,195.80	5,336.77	5,138.57	18.43	21.77	99.71	1,479.56	-3,985.18	4,278.72	4,239.73	38.99	109.727	
5,300.00	5,295.69	5,435.67	5,237.47	18.79	21.87	99.76	1,479.38	-3,986.10	4,280.28	4,240.81	39.47	108.437	
5,400.00	5,395.59	5,534.58	5,336.37	19.16	21.98	99.81	1,479.20	-3,987.05	4,281.86	4,241.91	39.95	107.177	
5,500.00	5,495.49	5,633.49	5,435.27	19.52	22.08	99.87	1,479.01	-3,988.02	4,283.47	4,243.04	40.43	105.948	
5,600.00	5,595.39	5,732.39	5,534.17	19.88	22.18	99.92	1,478.82	-3,989.03	4,285.10	4,244.19	40.91	104.748	
5,700.00	5,695.28	5,831.30	5,633.07	20.25	22.28	99.97	1,478.62	-3,990.06	4,286.76	4,245.38	41.39	103.575	
5,800.00	5,795.18	5,930.21	5,731.98	20.61	22.39	100.02	1,478.42	-3,991.11	4,288.45	4,246.59	41.87	102.430	
5,900.00	5,895.08	6,029.12	5,830.88	20.97	22.49	100.07	1,478.21	-3,992.20	4,290.17	4,247.82	42.35	101.311	
6,000.00	5,994.98	6,128.02	5,929.78	21.34	22.59	100.12	1,477.99	-3,993.31	4,291.91	4,249.09	42.83	100.217	
6,100.00	6,094.88	6,226.93	6,028.68	21.70	22.70	100.17	1,477.78	-3,994.45	4,293.68	4,250.37	43.31	99.147	
6,200.00	6,194.77	6,325.84	6,127.58	22.06	22.80	100.22	1,477.55	-3,995.62	4,295.48	4,251.69	43.79	98.102	
6,300.00	6,294.67	6,424.75	6,226.49	22.43	22.90	100.27	1,477.32	-3,996.81	4,297.30	4,253.03	44.27	97.079	
6,314.74	6,309.40	6,439.33	6,241.06	22.48	22.92	100.28	1,477.29	-3,996.99	4,297.57	4,253.23	44.34	96.930	
6,350.00	6,344.59	6,474.19	6,275.92	22.61	22.95	57.15	1,477.21	-3,997.42	4,297.32	4,252.82	44.51	96.555	
6,400.00	6,394.26	6,523.42	6,325.15	22.79	23.01	40.41	1,477.09	-3,998.03	4,293.90	4,249.16	44.75	95.957	
6,450.00	6,443.36	6,572.15	6,373.87	22.97	23.06	34.95	1,476.97	-3,998.65	4,286.91	4,241.92	44.99	95.285	
6,500.00	6,491.60	6,620.07	6,421.79	23.15	23.11	32.59	1,476.85	-3,999.26	4,276.39	4,231.16	45.23	94.544	
6,550.00	6,538.67	6,666.89	6,468.60	23.32	23.16	31.57	1,476.74	-3,999.86	4,262.42	4,216.95	45.47	93.739	
6,600.00	6,584.29	6,712.32	6,514.03	23.49	23.21	31.32	1,476.62	-4,000.45	4,245.09	4,199.38	45.71	92.877	
6,650.00	6,628.18	6,756.09	6,557.79	23.66	23.25	31.61	1,476.51	-4,001.02	4,224.51	4,178.57	45.94	91.962	
6,700.00	6,670.06	6,797.92	6,599.62	23.83	23.30	32.34	1,476.41	-4,001.57	4,200.82	4,154.66	46.16	91.001	
6,750.00	6,709.68	6,837.55	6,639.25	24.00	23.34	33.49	1,476.31	-4,002.10	4,174.19	4,127.81	46.38	89.998	
6,800.00	6,746.79	6,874.75	6,676.45	24.17	23.38	35.06	1,476.21	-4,002.60	4,144.78	4,098.19	46.59	88.959	
6,850.00	6,781.17	6,909.29	6,710.98	24.35	23.42	37.08	1,476.12	-4,003.07	4,112.79	4,066.00	46.80	87.889	
6,900.00	6,812.60	6,940.95	6,742.64	24.54	23.45	39.61	1,476.04	-4,003.50	4,078.43	4,031.44	46.99	86.791	
6,950.00	6,840.88	6,969.53	6,771.21	24.74	23.48	42.72	1,475.96	-4,003.89	4,041.93	3,994.75	47.18	85.671	
7,000.00	6,865.85	6,994.86	6,796.54	24.96	23.51	46.53	1,475.90	-4,004.24	4,003.52	3,956.16	47.36	84.533	
7,050.00	6,887.35	7,016.79	6,818.47	25.19	23.53	51.11	1,475.84	-4,004.54	3,963.45	3,915.91	47.53	83.382	
7,100.00	6,905.25	7,035.17	6,836.84	25.43	23.55	56.59	1,475.79	-4,004.80	3,921.98	3,874.27	47.70	82.221	
7,150.00	6,919.43	7,049.89	6,851.56	25.69	23.57	63.02	1,475.75	-4,005.00	3,879.37	3,831.51	47.86	81.055	
7,200.00	6,929.81	7,060.86	6,862.53	25.96	23.58	70.39	1,475.72	-4,005.16	3,835.91	3,787.89	48.02	79.888	
7,250.00	6,936.33	7,068.01	6,869.68	26.25	23.58	78.54	1,475.70	-4,005.26	3,791.86	3,743.69	48.17	78.723	
7,300.00	6,938.95	7,071.30	6,872.97	26.55	23.59	87.15	1,475.69	-4,005.30	3,747.50	3,699.19	48.31	77.565	
7,309.56	6,939.00	7,071.48	6,873.16	26.60	23.59	88.82	1,475.69	-4,005.31	3,739.01	3,690.67	48.34	77.344	
7,400.00	6,938.83	7,072.57	6,874.24	27.19	23.59	88.85	1,475.69	-4,005.32	3,658.91	3,610.29	48.62	75.255	
7,500.00	6,938.64	7,073.77	6,875.44	27.91	23.59	88.89	1,475.69	-4,005.34	3,570.91	3,521.94	48.97	72.927	
7,600.00	6,938.44	7,074.97	6,876.65	28.70	23.59	88.93	1,475.68	-4,005.35	3,483.56	3,434.20	49.35	70.584	
7,700.00	6,938.25	7,076.18	6,877.85	29.55	23.59	88.97	1,475.68	-4,005.37	3,396.90	3,347.12	49.79	68.226	
7,800.00	6,938.06	7,077.38	6,879.05	30.47	23.59	89.01	1,475.68	-4,005.39	3,311.00	3,260.73	50.28	65.857	
7,900.00	6,937.87	7,078.58	6,880.26	31.44	23.60	89.05	1,475.67	-4,005.40	3,225.91	3,175.10	50.82	63.481	
8,000.00	6,937.68	7,079.79	6,881.46	32.46	23.60	89.09	1,475.67	-4,005.42	3,141.70	3,090.29	51.42	61.102	
8,100.00	6,937.49	7,080.99	6,882.67	33.53	23.60	89.13	1,475.67	-4,005.44	3,058.44	3,006.36	52.08	58.725	
8,200.00	6,937.30	7,082.20	6,883.87	34.64	23.60	89.17	1,475.66	-4,005.46	2,976.21	2,923.40	52.81	56.355	
8,300.00	6,937.10	7,083.41	6,885.08	35.78	23.60	89.21	1,475.66	-4,005.47	2,895.10	2,841.49	53.61	53.998	
8,400.00	6,936.91	7,084.62	6,886.29	36.96	23.60	89.25	1,475.66	-4,005.49	2,815.20	2,760.71	54.49	51.662	
8,500.00	6,936.72	7,085.82	6,887.50	38.17	23.60	89.29	1,475.65	-4,005.51	2,736.63	2,681.18	55.45	49.353	
8,600.00	6,936.53	7,087.03	6,888.71	39.41	23.60	89.33	1,475.65	-4,005.52	2,659.49	2,603.00	56.49	47.078	
8,700.00	6,936.34	7,088.24	6,889.92	40.68	23.61	89.37	1,475.65	-4,005.54	2,583.92	2,526.30	57.62	44.847	
8,800.00	6,936.15	7,089.45	6,891.13	41.97	23.61	89.42	1,475.64	-4,005.56	2,510.06	2,451.23	58.83	42.666	
8,900.00	6,935.96	7,090.67	6,892.34	43.27	23.61	89.46	1,475.64	-4,005.57	2,438.06	2,377.93	60.13	40.544	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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
9,000.00	6,935.76	7,091.88	6,893.55	44.60	23.61	89.50	1,475.64	-4,005.59	2,368.10	2,306.57	61.53	38.488	
9,100.00	6,935.57	7,093.09	6,894.76	45.95	23.61	89.54	1,475.63	-4,005.61	2,300.36	2,237.34	63.01	36.508	
9,200.00	6,935.38	7,094.30	6,895.98	47.31	23.61	89.58	1,475.63	-4,005.63	2,235.03	2,170.45	64.58	34.609	
9,300.00	6,935.19	7,095.52	6,897.19	48.69	23.61	89.62	1,475.63	-4,005.64	2,172.35	2,106.12	66.23	32.801	
9,400.00	6,935.00	7,096.73	6,898.40	50.08	23.62	89.66	1,475.62	-4,005.66	2,112.54	2,044.59	67.95	31.088	
9,500.00	6,934.81	7,097.95	6,899.62	51.48	23.62	89.70	1,475.62	-4,005.68	2,055.86	1,986.12	69.74	29.478	
9,600.00	6,934.62	7,099.16	6,900.84	52.89	23.62	89.74	1,475.62	-4,005.69	2,002.57	1,930.99	71.58	27.975	
9,700.00	6,934.43	7,100.38	6,902.05	54.32	23.62	89.78	1,475.61	-4,005.71	1,952.95	1,879.49	73.46	26.585	
9,800.00	6,934.23	7,101.60	6,903.27	55.75	23.62	89.82	1,475.61	-4,005.73	1,907.29	1,831.94	75.35	25.311	
9,900.00	6,934.04	7,102.82	6,904.49	57.19	23.62	89.86	1,475.61	-4,005.75	1,865.87	1,788.63	77.24	24.157	
10,000.00	6,933.85	7,104.03	6,905.71	58.65	23.62	89.90	1,475.60	-4,005.76	1,828.99	1,749.89	79.09	23.124	
10,100.00	6,933.66	7,105.25	6,906.92	60.10	23.62	89.94	1,475.60	-4,005.78	1,796.92	1,716.03	80.89	22.215	
10,200.00	6,933.47	7,106.47	6,908.14	61.57	23.63	89.98	1,475.60	-4,005.80	1,769.92	1,687.33	82.59	21.430	
10,300.00	6,933.28	7,107.69	6,909.37	63.04	23.63	90.02	1,475.59	-4,005.82	1,748.23	1,664.06	84.18	20.768	
10,400.00	6,933.09	7,108.92	6,910.59	64.52	23.63	90.06	1,475.59	-4,005.83	1,732.06	1,646.44	85.62	20.230	
10,500.00	6,932.89	7,110.14	6,911.81	66.01	23.63	90.11	1,475.59	-4,005.85	1,721.55	1,634.66	86.89	19.814	
10,600.00	6,932.70	7,111.36	6,913.03	67.50	23.63	90.15	1,475.58	-4,005.87	1,716.81	1,628.84	87.97	19.517	
10,631.52	6,932.64	7,111.75	6,913.42	67.97	23.63	90.16	1,475.58	-4,005.87	1,716.52	1,628.25	88.26	19.447	CC, ES
10,700.00	6,932.51	7,112.58	6,914.25	68.99	23.63	90.19	1,475.58	-4,005.88	1,717.88	1,629.04	88.84	19.336	
10,800.00	6,932.32	7,113.81	6,915.48	70.50	23.63	90.23	1,475.58	-4,005.90	1,724.77	1,635.26	89.51	19.269	SF
10,900.00	6,932.13	7,115.03	6,916.70	72.00	23.63	90.27	1,475.57	-4,005.92	1,737.39	1,647.42	89.97	19.311	
11,000.00	6,931.94	7,116.26	6,917.93	73.51	23.64	90.31	1,475.57	-4,005.94	1,755.62	1,665.39	90.23	19.457	
11,100.00	6,931.75	7,117.49	6,919.16	75.02	23.64	90.35	1,475.57	-4,005.95	1,779.29	1,688.99	90.30	19.703	
11,200.00	6,931.55	7,118.71	6,920.38	76.54	23.64	90.39	1,475.56	-4,005.97	1,808.19	1,717.98	90.21	20.045	
11,300.00	6,931.36	7,119.94	6,921.61	78.06	23.64	90.43	1,475.56	-4,005.99	1,842.07	1,752.11	89.96	20.476	
11,400.00	6,931.17	7,121.17	6,922.84	79.58	23.64	90.47	1,475.56	-4,006.01	1,880.67	1,791.07	89.59	20.991	
11,500.00	6,930.98	7,122.40	6,924.07	81.11	23.64	90.51	1,475.55	-4,006.02	1,923.69	1,834.57	89.12	21.586	
11,600.00	6,930.79	7,123.63	6,925.30	82.64	23.64	90.56	1,475.55	-4,006.04	1,970.85	1,882.29	88.56	22.255	
11,700.00	6,930.60	7,124.86	6,926.53	84.17	23.65	90.60	1,475.55	-4,006.06	2,021.86	1,933.92	87.94	22.993	
11,800.00	6,930.41	7,126.09	6,927.76	85.70	23.65	90.64	1,475.54	-4,006.08	2,076.43	1,989.17	87.26	23.795	
11,900.00	6,930.21	7,127.32	6,928.99	87.24	23.65	90.68	1,475.54	-4,006.09	2,134.30	2,047.74	86.56	24.657	
12,000.00	6,930.02	7,128.55	6,930.22	88.78	23.65	90.72	1,475.54	-4,006.11	2,195.20	2,109.36	85.84	25.574	
12,100.00	6,929.83	7,129.79	6,931.45	90.32	23.65	90.76	1,475.53	-4,006.13	2,258.88	2,173.78	85.10	26.543	
12,200.00	6,929.64	7,131.02	6,932.69	91.87	23.65	90.80	1,475.53	-4,006.15	2,325.12	2,240.76	84.37	27.559	
12,300.00	6,929.45	7,132.25	6,933.92	93.41	23.65	90.84	1,475.53	-4,006.16	2,393.71	2,310.07	83.64	28.620	
12,400.00	6,929.26	7,133.49	6,935.16	94.96	23.65	90.89	1,475.52	-4,006.18	2,464.45	2,381.53	82.92	29.721	
12,500.00	6,929.07	7,134.73	6,936.39	96.51	23.66	90.93	1,475.52	-4,006.20	2,537.15	2,454.94	82.22	30.860	
12,600.00	6,928.88	7,135.96	6,937.63	98.06	23.66	90.97	1,475.52	-4,006.22	2,611.66	2,530.13	81.53	32.034	
12,700.00	6,928.68	7,137.20	6,938.87	99.62	23.66	91.01	1,475.51	-4,006.23	2,687.83	2,606.96	80.86	33.240	
12,800.00	6,928.49	7,138.44	6,940.11	101.17	23.66	91.05	1,475.51	-4,006.25	2,765.51	2,685.29	80.22	34.476	
12,900.00	6,928.30	7,139.68	6,941.34	102.73	23.66	91.09	1,475.51	-4,006.27	2,844.59	2,764.99	79.59	35.739	
13,000.00	6,928.11	7,140.92	6,942.58	104.28	23.66	91.13	1,475.50	-4,006.29	2,924.94	2,845.95	78.99	37.029	
13,100.00	6,927.92	7,142.16	6,943.82	105.84	23.66	91.17	1,475.50	-4,006.30	3,006.48	2,928.07	78.41	38.341	
13,200.00	6,927.73	7,143.40	6,945.06	107.40	23.67	91.22	1,475.50	-4,006.32	3,089.10	3,011.24	77.86	39.676	
13,300.00	6,927.54	7,144.64	6,946.31	108.97	23.67	91.26	1,475.49	-4,006.34	3,172.72	3,095.40	77.32	41.031	
13,400.00	6,927.34	7,145.88	6,947.55	110.53	23.67	91.30	1,475.49	-4,006.36	3,257.26	3,180.45	76.81	42.405	
13,500.00	6,927.15	7,147.12	6,948.79	112.09	23.67	91.34	1,475.49	-4,006.37	3,342.66	3,266.34	76.32	43.796	
13,600.00	6,926.96	7,148.37	6,950.03	113.66	23.67	91.38	1,475.48	-4,006.39	3,428.85	3,352.99	75.85	45.203	
13,700.00	6,926.77	7,149.61	6,951.28	115.22	23.67	91.42	1,475.48	-4,006.41	3,515.76	3,440.36	75.40	46.625	
13,800.00	6,926.58	7,150.86	6,952.52	116.79	23.67	91.46	1,475.48	-4,006.43	3,603.36	3,528.38	74.98	48.061	
13,900.00	6,926.39	7,152.10	6,953.77	118.36	23.67	91.51	1,475.47	-4,006.45	3,691.58	3,617.02	74.56	49.509	
14,000.00	6,926.20	7,153.35	6,955.02	119.93	23.68	91.55	1,475.47	-4,006.46	3,780.40	3,706.23	74.17	50.969	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,100.00	6,926.00	7,154.60	6,956.26	121.50	23.68	91.59	1,475.47	-4,006.48	3,869.75	3,795.96	73.79	52.439	
14,200.00	6,925.81	7,155.84	6,957.51	123.07	23.68	91.63	1,475.46	-4,006.50	3,959.62	3,886.18	73.44	53.920	
14,300.00	6,925.62	7,157.09	6,958.76	124.64	23.68	91.67	1,475.46	-4,006.52	4,049.96	3,976.87	73.09	55.409	
14,400.00	6,925.43	7,158.34	6,960.01	126.21	23.68	91.71	1,475.46	-4,006.53	4,140.74	4,067.98	72.76	56.907	
14,500.00	6,925.24	7,159.59	6,961.26	127.79	23.68	91.76	1,475.45	-4,006.55	4,231.94	4,159.49	72.45	58.412	
14,600.00	6,925.05	7,160.84	6,962.51	129.36	23.68	91.80	1,475.45	-4,006.57	4,323.53	4,251.38	72.15	59.925	
14,700.00	6,924.86	7,162.09	6,963.76	130.93	23.69	91.84	1,475.44	-4,006.59	4,415.48	4,343.62	71.86	61.443	
14,800.00	6,924.66	7,163.35	6,965.01	132.51	23.69	91.88	1,475.44	-4,006.61	4,507.78	4,436.19	71.59	62.968	
14,900.00	6,924.47	7,164.60	6,966.26	134.09	23.69	91.92	1,475.44	-4,006.62	4,600.39	4,529.07	71.33	64.498	
15,000.00	6,924.28	7,165.85	6,967.52	135.66	23.69	91.96	1,475.43	-4,006.64	4,693.31	4,622.24	71.08	66.032	
15,100.00	6,924.09	7,167.11	6,968.77	137.24	23.69	92.01	1,475.43	-4,006.66	4,786.52	4,715.68	70.84	67.571	
15,200.00	6,923.90	7,168.36	6,970.03	138.82	23.69	92.05	1,475.43	-4,006.68	4,879.99	4,809.38	70.61	69.113	
15,300.00	6,923.71	7,169.62	6,971.28	140.40	23.69	92.09	1,475.42	-4,006.70	4,973.72	4,903.33	70.39	70.659	
15,400.00	6,923.52	7,170.87	6,972.54	141.97	23.69	92.13	1,475.42	-4,006.71	5,067.68	4,997.50	70.18	72.208	
15,500.00	6,923.33	7,172.13	6,973.80	143.55	23.70	92.17	1,475.42	-4,006.73	5,161.88	5,091.89	69.98	73.760	
15,600.00	6,923.13	7,173.39	6,975.05	145.13	23.70	92.22	1,475.41	-4,006.75	5,256.28	5,186.49	69.79	75.313	
15,700.00	6,922.94	7,174.65	6,976.31	146.72	23.70	92.26	1,475.41	-4,006.77	5,350.89	5,281.28	69.61	76.869	
15,800.00	6,922.75	7,175.91	6,977.57	148.30	23.70	92.30	1,475.41	-4,006.79	5,445.69	5,376.26	69.44	78.427	
15,900.00	6,922.56	7,177.17	6,978.83	149.88	23.70	92.34	1,475.40	-4,006.80	5,540.68	5,471.41	69.27	79.985	
16,000.00	6,922.37	7,178.43	6,980.09	151.46	23.70	92.38	1,475.40	-4,006.82	5,635.84	5,566.72	69.11	81.545	
16,100.00	6,922.18	7,179.69	6,981.35	153.04	23.70	92.43	1,475.40	-4,006.84	5,731.16	5,662.20	68.96	83.105	
16,200.00	6,921.99	7,180.95	6,982.61	154.63	23.71	92.47	1,475.39	-4,006.86	5,826.64	5,757.82	68.82	84.666	
16,300.00	6,921.79	7,182.21	6,983.88	156.21	23.71	92.51	1,475.39	-4,006.88	5,922.27	5,853.58	68.68	86.228	
16,400.00	6,921.60	7,183.48	6,985.14	157.79	23.71	92.55	1,475.39	-4,006.89	6,018.04	5,949.49	68.55	87.789	
16,500.00	6,921.41	7,184.74	6,986.41	159.38	23.71	92.59	1,475.38	-4,006.91	6,113.94	6,045.51	68.43	89.350	
16,600.00	6,921.22	7,186.01	6,987.67	160.96	23.71	92.64	1,475.38	-4,006.93	6,209.98	6,141.67	68.31	90.911	
16,700.00	6,921.03	7,187.27	6,988.94	162.55	23.71	92.68	1,475.38	-4,006.95	6,306.13	6,237.94	68.20	92.471	
16,800.00	6,920.84	7,188.54	6,990.20	164.13	23.71	92.72	1,475.37	-4,006.97	6,402.41	6,334.32	68.09	94.031	
16,900.00	6,920.65	7,189.81	6,991.47	165.72	23.71	92.76	1,475.37	-4,006.99	6,498.79	6,430.81	67.99	95.589	
17,000.00	6,920.45	7,191.07	6,992.74	167.30	23.72	92.81	1,475.37	-4,007.00	6,595.29	6,527.40	67.89	97.146	
17,100.00	6,920.26	7,192.34	6,994.01	168.89	23.72	92.85	1,475.36	-4,007.02	6,691.88	6,624.09	67.80	98.703	
17,200.00	6,920.07	7,193.61	6,995.27	170.48	23.72	92.89	1,475.36	-4,007.04	6,788.58	6,720.87	67.71	100.257	
17,300.00	6,919.88	7,194.88	6,996.54	172.06	23.72	92.93	1,475.35	-4,007.06	6,885.37	6,817.74	67.63	101.810	
17,400.00	6,919.69	7,196.15	6,997.82	173.65	23.72	92.97	1,475.35	-4,007.08	6,982.25	6,914.70	67.55	103.362	
17,500.00	6,919.50	7,197.43	6,999.09	175.24	23.72	93.02	1,475.35	-4,007.10	7,079.22	7,011.74	67.48	104.911	
17,600.00	6,919.31	7,198.70	7,000.36	176.83	23.72	93.06	1,475.34	-4,007.11	7,176.26	7,108.86	67.41	106.459	
17,700.00	6,919.11	7,199.97	7,001.63	178.41	23.73	93.10	1,475.34	-4,007.13	7,273.39	7,206.05	67.34	108.004	
17,759.55	6,919.00	7,200.73	7,002.39	179.36	23.73	93.13	1,475.34	-4,007.14	7,331.27	7,263.97	67.31	108.924	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
0.00	0.00	156.00	156.00	0.00	4.67	-142.28	-1,787.08	-1,382.07	2,259.16				
100.00	100.00	256.00	256.00	0.25	7.67	-142.28	-1,787.08	-1,382.07	2,259.16	2,251.23	7.92	285.177	
200.00	200.00	356.00	356.00	0.61	10.67	-142.28	-1,787.08	-1,382.07	2,259.16	2,247.88	11.28	200.336	
300.00	300.00	456.00	456.00	0.97	13.66	-142.28	-1,787.08	-1,382.07	2,259.16	2,244.52	14.63	154.401	
400.00	400.00	556.10	556.00	1.33	16.66	-142.28	-1,787.08	-1,382.07	2,259.16	2,241.17	17.99	125.581	
500.00	500.00	656.10	656.00	1.68	19.66	-142.28	-1,787.08	-1,382.07	2,259.16	2,237.81	21.34	105.842	
594.14	594.14	750.20	750.06	2.02	22.48	-142.25	-1,784.90	-1,382.07	2,257.43	2,232.93	24.50	92.134	
600.00	600.00	755.41	755.27	2.04	22.64	-142.25	-1,784.90	-1,382.07	2,257.43	2,232.75	24.68	91.473	
700.00	700.00	844.38	844.22	2.40	25.30	-142.25	-1,785.21	-1,382.07	2,257.71	2,230.01	27.70	81.497	
800.00	800.00	933.38	933.20	2.76	27.97	-142.27	-1,786.08	-1,382.07	2,258.48	2,227.75	30.73	73.502	
900.00	900.00	1,056.41	1,056.00	3.12	31.65	-142.28	-1,787.08	-1,382.07	2,259.16	2,224.38	34.77	64.968	
1,000.00	1,000.00	1,156.41	1,156.00	3.48	34.65	-142.28	-1,787.08	-1,382.07	2,259.16	2,221.03	38.13	59.251	
1,100.00	1,099.98	1,255.66	1,255.22	3.82	37.63	24.67	-1,784.90	-1,382.07	2,255.85	2,214.40	41.44	54.432	
1,129.54	1,129.49	1,281.92	1,281.47	3.92	38.41	24.69	-1,784.94	-1,382.07	2,254.80	2,212.48	42.33	53.271	
1,200.00	1,199.88	1,344.58	1,344.12	4.15	40.29	24.72	-1,785.22	-1,382.07	2,252.15	2,207.72	44.44	50.684	
1,300.00	1,299.78	1,433.57	1,433.09	4.48	42.96	24.74	-1,786.08	-1,382.07	2,248.82	2,201.38	47.43	47.411	
1,400.00	1,399.68	1,556.39	1,555.68	4.82	46.64	24.79	-1,787.08	-1,382.07	2,245.39	2,193.94	51.45	43.641	
1,500.00	1,499.58	1,656.29	1,655.58	5.16	49.63	24.84	-1,787.08	-1,382.07	2,241.28	2,186.50	54.78	40.911	
1,600.00	1,599.48	1,755.49	1,754.74	5.50	52.60	24.92	-1,784.90	-1,382.07	2,235.46	2,177.37	58.10	38.477	
1,700.00	1,699.37	1,844.53	1,843.76	5.85	55.27	24.96	-1,785.22	-1,382.07	2,231.64	2,170.53	61.11	36.518	
1,800.00	1,799.27	1,933.64	1,932.85	6.20	57.94	24.99	-1,786.08	-1,382.07	2,228.31	2,164.18	64.13	34.749	
1,900.00	1,899.17	2,056.18	2,055.17	6.55	61.61	25.03	-1,787.08	-1,382.07	2,224.89	2,156.74	68.15	32.648	
2,000.00	1,999.07	2,156.08	2,155.07	6.90	64.61	25.08	-1,787.08	-1,382.07	2,220.79	2,149.30	71.49	31.064	
2,100.00	2,098.96	2,255.32	2,254.26	7.25	67.58	25.17	-1,784.90	-1,382.07	2,214.98	2,140.17	74.81	29.606	
2,200.00	2,198.86	2,344.47	2,343.40	7.61	70.25	25.20	-1,785.22	-1,382.07	2,211.17	2,133.33	77.84	28.408	
2,300.00	2,298.76	2,433.71	2,432.61	7.96	72.92	25.24	-1,786.08	-1,382.07	2,207.84	2,126.98	80.86	27.304	
2,400.00	2,398.66	2,555.98	2,554.66	8.32	76.59	25.28	-1,787.08	-1,382.07	2,204.42	2,119.55	84.88	25.971	
2,500.00	2,498.56	2,655.88	2,654.56	8.68	79.58	25.33	-1,787.08	-1,382.07	2,200.34	2,112.11	88.23	24.940	
2,600.00	2,598.45	2,755.14	2,753.78	9.03	82.56	25.42	-1,784.90	-1,382.07	2,194.55	2,102.99	91.56	23.970	
2,700.00	2,698.35	2,844.42	2,843.05	9.39	85.23	25.46	-1,785.21	-1,382.07	2,190.74	2,096.15	94.58	23.162	
2,800.00	2,798.25	2,933.77	2,932.38	9.75	87.91	25.49	-1,786.08	-1,382.07	2,187.41	2,089.80	97.61	22.409	
2,900.00	2,898.15	3,055.77	3,054.15	10.11	91.56	25.53	-1,787.08	-1,382.07	2,184.01	2,082.38	101.63	21.490	
3,000.00	2,998.04	3,155.67	3,154.04	10.47	94.56	25.58	-1,787.08	-1,382.07	2,179.93	2,074.95	104.98	20.766	
3,100.00	3,097.94	3,254.96	3,253.30	10.83	97.53	25.67	-1,784.90	-1,382.07	2,174.15	2,065.84	108.31	20.074	
3,200.00	3,197.84	3,344.37	3,342.69	11.19	100.21	25.71	-1,785.21	-1,382.07	2,170.35	2,059.00	111.34	19.492	
3,300.00	3,297.74	3,433.84	3,432.14	11.55	102.89	25.75	-1,786.08	-1,382.07	2,167.03	2,052.65	114.38	18.946	
3,400.00	3,397.64	3,555.56	3,553.64	11.91	106.54	25.79	-1,787.08	-1,382.07	2,163.63	2,045.24	118.39	18.276	
3,500.00	3,497.53	3,655.46	3,653.53	12.27	109.53	25.84	-1,787.08	-1,382.07	2,159.56	2,037.82	121.74	17.740	
3,600.00	3,597.43	3,754.79	3,752.82	12.63	112.51	25.93	-1,784.90	-1,382.07	2,153.80	2,028.73	125.07	17.221	
3,700.00	3,697.33	3,844.31	3,842.33	12.99	115.19	25.97	-1,785.21	-1,382.07	2,150.00	2,021.89	128.11	16.782	
3,800.00	3,797.23	3,933.91	3,931.90	13.35	117.88	26.01	-1,786.08	-1,382.07	2,146.69	2,015.54	131.15	16.368	
3,900.00	3,897.12	4,055.36	4,053.12	13.72	121.52	26.05	-1,787.08	-1,382.07	2,143.30	2,008.15	135.15	15.859	
4,000.00	3,997.02	4,155.26	4,153.02	14.08	124.51	26.11	-1,787.08	-1,382.07	2,139.24	2,000.74	138.50	15.446	
4,100.00	4,096.92	4,254.61	4,252.33	14.44	127.49	26.20	-1,784.90	-1,382.07	2,133.49	1,991.66	141.84	15.042	
4,200.00	4,196.82	4,344.26	4,341.97	14.80	130.17	26.24	-1,785.21	-1,382.07	2,129.71	1,984.82	144.88	14.700	
4,300.00	4,296.72	4,433.98	4,431.67	15.16	132.86	26.27	-1,786.09	-1,382.07	2,126.40	1,978.48	147.93	14.375	
4,400.00	4,396.61	4,555.15	4,552.61	15.53	136.49	26.32	-1,787.08	-1,382.07	2,123.02	1,971.10	151.92	13.975	
4,500.00	4,496.51	4,655.05	4,652.51	15.89	139.49	26.38	-1,787.08	-1,382.07	2,118.96	1,963.69	155.27	13.647	
4,600.00	4,596.41	4,754.43	4,751.85	16.25	142.46	26.47	-1,784.90	-1,382.07	2,113.23	1,954.63	158.61	13.324	
4,700.00	4,696.31	4,844.20	4,841.61	16.61	145.15	26.51	-1,785.21	-1,382.07	2,109.45	1,947.80	161.66	13.049	
4,800.00	4,796.20	4,934.05	4,931.43	16.98	147.85	26.55	-1,786.09	-1,382.07	2,106.16	1,941.45	164.70	12.788	
4,900.00	4,896.10	5,054.95	5,052.10	17.34	151.47	26.60	-1,787.08	-1,382.07	2,102.78	1,934.09	168.69	12.465	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	5,154.84	5,152.00	17.70	154.46	26.65	-1,787.08	-1,382.07	2,098.74	1,926.70	172.04	12.199	
5,100.00	5,095.90	5,254.25	5,251.37	18.07	157.44	26.74	-1,784.90	-1,382.07	2,093.02	1,917.64	175.38	11.934	
5,200.00	5,195.80	5,344.15	5,341.25	18.43	160.13	26.79	-1,785.21	-1,382.07	2,089.25	1,910.82	178.43	11.709	
5,300.00	5,295.69	5,434.12	5,431.20	18.79	162.83	26.82	-1,786.09	-1,382.07	2,085.96	1,904.48	181.48	11.494	
5,400.00	5,395.59	5,554.74	5,551.59	19.16	166.45	26.87	-1,787.08	-1,382.07	2,082.59	1,897.13	185.46	11.229	
5,500.00	5,495.49	5,654.64	5,651.49	19.52	169.44	26.93	-1,787.08	-1,382.07	2,078.56	1,889.74	188.81	11.008	
5,600.00	5,595.39	5,754.07	5,750.88	19.88	172.42	27.03	-1,784.90	-1,382.07	2,072.86	1,880.71	192.15	10.788	
5,700.00	5,695.28	5,844.09	5,840.89	20.25	175.12	27.07	-1,785.21	-1,382.07	2,069.10	1,873.89	195.21	10.599	
5,800.00	5,795.18	5,934.19	5,930.96	20.61	177.82	27.11	-1,786.09	-1,382.07	2,065.81	1,867.55	198.27	10.419	
5,900.00	5,895.08	6,054.53	6,051.08	20.97	181.42	27.16	-1,787.08	-1,382.07	2,062.45	1,860.22	202.24	10.198	
6,000.00	5,994.98	6,154.43	6,150.98	21.34	184.41	27.21	-1,787.08	-1,382.07	2,058.43	1,852.84	205.59	10.012	
6,100.00	6,094.88	6,254.33	6,250.88	21.70	187.41	27.27	-1,787.08	-1,382.07	2,054.41	1,845.47	208.94	9.832	
6,200.00	6,194.77	6,341.00	6,337.34	22.06	190.01	27.32	-1,787.08	-1,382.07	2,050.44	1,838.54	211.90	9.677	
6,268.93	6,263.64	6,341.00	6,337.34	22.31	190.01	27.32	-1,787.08	-1,382.07	2,049.28	1,837.27	212.00	9.666	
6,300.00	6,294.67	6,341.00	6,337.34	22.43	190.01	27.32	-1,787.08	-1,382.07	2,049.51	1,837.54	211.98	9.669	
6,314.74	6,309.40	6,341.00	6,337.34	22.48	190.01	27.32	-1,787.08	-1,382.07	2,049.79	1,837.84	211.95	9.671	
6,350.00	6,344.59	6,341.00	6,337.34	22.61	190.01	-15.80	-1,787.08	-1,382.07	2,050.25	1,838.42	211.83	9.679	
6,400.00	6,394.26	6,341.00	6,337.34	22.79	190.01	-32.74	-1,787.08	-1,382.07	2,049.78	1,838.22	211.56	9.689	
6,450.00	6,443.36	6,341.00	6,337.34	22.97	190.01	-38.65	-1,787.08	-1,382.07	2,048.00	1,836.84	211.17	9.699	
6,500.00	6,491.60	6,341.00	6,337.34	23.15	190.01	-41.71	-1,787.08	-1,382.07	2,044.92	1,834.27	210.65	9.708	
6,550.00	6,538.67	6,341.00	6,337.34	23.32	190.01	-43.69	-1,787.08	-1,382.07	2,040.54	1,830.51	210.03	9.716	
6,600.00	6,584.29	6,341.00	6,337.34	23.49	190.01	-45.17	-1,787.08	-1,382.07	2,034.89	1,825.59	209.30	9.722	
6,650.00	6,628.18	6,341.00	6,337.34	23.66	190.01	-46.43	-1,787.08	-1,382.07	2,027.99	1,819.51	208.49	9.727	
6,700.00	6,670.06	6,341.00	6,337.34	23.83	190.01	-47.57	-1,787.08	-1,382.07	2,019.87	1,812.28	207.59	9.730	
6,750.00	6,709.68	6,341.00	6,337.34	24.00	190.01	-48.67	-1,787.08	-1,382.07	2,010.57	1,803.94	206.63	9.730	
6,800.00	6,746.79	6,341.00	6,337.34	24.17	190.01	-49.76	-1,787.08	-1,382.07	2,000.13	1,794.50	205.63	9.727	
6,850.00	6,781.17	6,341.00	6,337.34	24.35	190.01	-50.88	-1,787.08	-1,382.07	1,988.59	1,783.99	204.60	9.719	
6,900.00	6,812.60	6,341.00	6,337.34	24.54	190.01	-52.05	-1,787.08	-1,382.07	1,976.01	1,772.44	203.57	9.707	
6,950.00	6,840.88	6,341.00	6,337.34	24.74	190.01	-53.26	-1,787.08	-1,382.07	1,962.44	1,759.89	202.55	9.689	
7,000.00	6,865.85	6,341.00	6,337.34	24.96	190.01	-54.53	-1,787.08	-1,382.07	1,947.96	1,746.38	201.58	9.664	
7,050.00	6,887.35	6,341.00	6,337.34	25.19	190.01	-55.87	-1,787.08	-1,382.07	1,932.62	1,731.95	200.67	9.631	
7,100.00	6,905.25	6,341.00	6,337.34	25.43	190.01	-57.27	-1,787.08	-1,382.07	1,916.51	1,716.66	199.85	9.590	
7,150.00	6,919.43	6,341.00	6,337.34	25.69	190.01	-58.73	-1,787.08	-1,382.07	1,899.70	1,700.57	199.14	9.540	
7,200.00	6,929.81	6,341.00	6,337.34	25.96	190.01	-60.25	-1,787.08	-1,382.07	1,882.29	1,683.73	198.56	9.480	
7,250.00	6,936.33	6,341.00	6,337.34	26.25	190.01	-61.82	-1,787.08	-1,382.07	1,864.36	1,666.21	198.15	9.409	
7,300.00	6,938.95	6,341.00	6,337.34	26.55	190.01	-63.44	-1,787.08	-1,382.07	1,846.01	1,648.10	197.91	9.328	
7,309.56	6,939.00	6,341.00	6,337.34	26.60	190.01	-63.76	-1,787.08	-1,382.07	1,842.46	1,644.58	197.88	9.311	
7,400.00	6,938.83	6,341.00	6,337.34	27.19	190.01	-63.76	-1,787.08	-1,382.07	1,810.80	1,613.05	197.75	9.157	
7,500.00	6,938.64	6,341.00	6,337.34	27.91	190.01	-63.76	-1,787.08	-1,382.07	1,780.48	1,582.71	197.78	9.002	
7,600.00	6,938.44	6,341.00	6,337.34	28.70	190.01	-63.76	-1,787.08	-1,382.07	1,755.35	1,557.35	197.99	8.866	
7,700.00	6,938.25	6,341.00	6,337.34	29.55	190.01	-63.76	-1,787.08	-1,382.07	1,735.62	1,537.21	198.41	8.748	
7,800.00	6,938.06	6,341.00	6,337.34	30.47	190.01	-63.76	-1,787.08	-1,382.07	1,721.49	1,522.46	199.02	8.650	
7,900.00	6,937.87	6,341.00	6,337.34	31.44	190.01	-63.76	-1,787.08	-1,382.07	1,713.08	1,513.25	199.83	8.573	
7,994.34	6,937.69	6,341.00	6,337.34	32.40	190.01	-63.76	-1,787.08	-1,382.07	1,710.48	1,509.73	200.75	8.521	CC
8,000.00	6,937.68	6,341.00	6,337.34	32.46	190.01	-63.76	-1,787.08	-1,382.07	1,710.49	1,509.68	200.81	8.518	ES
8,100.00	6,937.49	6,341.00	6,337.34	33.53	190.01	-63.76	-1,787.08	-1,382.07	1,713.74	1,511.80	201.94	8.486	
8,200.00	6,937.30	6,341.00	6,337.34	34.64	190.01	-63.76	-1,787.08	-1,382.07	1,722.80	1,519.60	203.21	8.478	SF
8,300.00	6,937.10	6,341.00	6,337.34	35.78	190.01	-63.76	-1,787.08	-1,382.07	1,737.58	1,533.01	204.57	8.494	
8,400.00	6,936.91	6,341.00	6,337.34	36.96	190.01	-63.76	-1,787.08	-1,382.07	1,757.93	1,551.92	206.00	8.533	
8,500.00	6,936.72	6,341.00	6,337.34	38.17	190.01	-63.76	-1,787.08	-1,382.07	1,783.66	1,576.18	207.48	8.597	
8,600.00	6,936.53	6,341.00	6,337.34	39.41	190.01	-63.76	-1,787.08	-1,382.07	1,814.54	1,605.58	208.97	8.683	
8,700.00	6,936.34	6,341.00	6,337.34	40.68	190.01	-63.76	-1,787.08	-1,382.07	1,850.33	1,639.89	210.44	8.793	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,800.00	6,936.15	6,341.00	6,337.34	41.97	190.01	-63.76	-1,787.08	-1,382.07	1,890.72	1,678.85	211.88	8.924	
8,900.00	6,935.96	6,341.00	6,337.34	43.27	190.01	-63.76	-1,787.08	-1,382.07	1,935.45	1,722.19	213.26	9.075	
9,000.00	6,935.76	6,341.00	6,337.34	44.60	190.01	-63.76	-1,787.08	-1,382.07	1,984.21	1,769.63	214.59	9.247	
9,100.00	6,935.57	6,341.00	6,337.34	45.95	190.01	-63.76	-1,787.08	-1,382.07	2,036.72	1,820.88	215.84	9.436	
9,200.00	6,935.38	6,341.00	6,337.34	47.31	190.01	-63.76	-1,787.08	-1,382.07	2,092.69	1,875.69	217.01	9.643	
9,300.00	6,935.19	6,341.00	6,337.34	48.69	190.01	-63.76	-1,787.08	-1,382.07	2,151.86	1,933.76	218.10	9.866	
9,400.00	6,935.00	6,341.00	6,337.34	50.08	190.01	-63.76	-1,787.08	-1,382.07	2,213.96	1,994.85	219.11	10.104	
9,500.00	6,934.81	6,341.00	6,337.34	51.48	190.01	-63.76	-1,787.08	-1,382.07	2,278.76	2,058.72	220.04	10.356	
9,600.00	6,934.62	6,341.00	6,337.34	52.89	190.01	-63.76	-1,787.08	-1,382.07	2,346.04	2,125.14	220.90	10.621	
9,700.00	6,934.43	6,341.00	6,337.34	54.32	190.01	-63.76	-1,787.08	-1,382.07	2,415.58	2,193.90	221.68	10.897	
9,800.00	6,934.23	6,341.00	6,337.34	55.75	190.01	-63.76	-1,787.08	-1,382.07	2,487.20	2,264.80	222.40	11.184	
9,900.00	6,934.04	6,341.00	6,337.34	57.19	190.01	-63.76	-1,787.08	-1,382.07	2,560.72	2,337.67	223.05	11.480	
10,000.00	6,933.85	6,341.00	6,337.34	58.65	190.01	-63.76	-1,787.08	-1,382.07	2,635.99	2,412.34	223.65	11.786	
10,100.00	6,933.66	6,341.00	6,337.34	60.10	190.01	-63.76	-1,787.08	-1,382.07	2,712.85	2,488.66	224.19	12.100	
10,200.00	6,933.47	6,341.00	6,337.34	61.57	190.01	-63.76	-1,787.08	-1,382.07	2,791.18	2,566.49	224.69	12.422	
10,300.00	6,933.28	6,341.00	6,337.34	63.04	190.01	-63.76	-1,787.08	-1,382.07	2,870.86	2,645.72	225.14	12.751	
10,400.00	6,933.09	6,341.00	6,337.34	64.52	190.01	-63.76	-1,787.08	-1,382.07	2,951.77	2,726.22	225.55	13.087	
10,500.00	6,932.89	6,341.00	6,337.34	66.01	190.01	-63.76	-1,787.08	-1,382.07	3,033.82	2,807.89	225.93	13.428	
10,600.00	6,932.70	6,341.00	6,337.34	67.50	190.01	-63.76	-1,787.08	-1,382.07	3,116.93	2,890.65	226.27	13.775	
10,700.00	6,932.51	6,341.00	6,337.34	68.99	190.01	-63.76	-1,787.08	-1,382.07	3,200.99	2,974.41	226.59	14.127	
10,800.00	6,932.32	6,341.00	6,337.34	70.50	190.01	-63.76	-1,787.08	-1,382.07	3,285.95	3,059.08	226.87	14.484	
10,900.00	6,932.13	6,341.00	6,337.34	72.00	190.01	-63.76	-1,787.08	-1,382.07	3,371.74	3,144.60	227.14	14.845	
11,000.00	6,931.94	6,341.00	6,337.34	73.51	190.01	-63.76	-1,787.08	-1,382.07	3,458.29	3,230.91	227.38	15.209	
11,100.00	6,931.75	6,341.00	6,337.34	75.02	190.01	-63.76	-1,787.08	-1,382.07	3,545.54	3,317.95	227.60	15.578	
11,200.00	6,931.55	6,341.00	6,337.34	76.54	190.01	-63.76	-1,787.08	-1,382.07	3,633.46	3,405.66	227.80	15.950	
11,300.00	6,931.36	6,341.00	6,337.34	78.06	190.01	-63.76	-1,787.08	-1,382.07	3,721.98	3,493.99	227.99	16.325	
11,400.00	6,931.17	6,341.00	6,337.34	79.58	190.01	-63.76	-1,787.08	-1,382.07	3,811.07	3,582.91	228.16	16.703	
11,500.00	6,930.98	6,341.00	6,337.34	81.11	190.01	-63.76	-1,787.08	-1,382.07	3,900.69	3,672.37	228.32	17.084	
11,600.00	6,930.79	6,341.00	6,337.34	82.64	190.01	-63.76	-1,787.08	-1,382.07	3,990.81	3,762.34	228.47	17.467	
11,700.00	6,930.60	6,341.00	6,337.34	84.17	190.01	-63.76	-1,787.08	-1,382.07	4,081.38	3,852.77	228.61	17.853	
11,800.00	6,930.41	6,341.00	6,337.34	85.70	190.01	-63.76	-1,787.08	-1,382.07	4,172.39	3,943.65	228.74	18.241	
11,900.00	6,930.21	6,341.00	6,337.34	87.24	190.01	-63.76	-1,787.08	-1,382.07	4,263.79	4,034.94	228.86	18.631	
12,000.00	6,930.02	6,341.00	6,337.34	88.78	190.01	-63.76	-1,787.08	-1,382.07	4,355.58	4,126.61	228.97	19.023	
12,100.00	6,929.83	6,341.00	6,337.34	90.32	190.01	-63.76	-1,787.08	-1,382.07	4,447.72	4,218.65	229.07	19.416	
12,200.00	6,929.64	6,341.00	6,337.34	91.87	190.01	-63.76	-1,787.08	-1,382.07	4,540.19	4,311.02	229.17	19.811	
12,300.00	6,929.45	6,341.00	6,337.34	93.41	190.01	-63.76	-1,787.08	-1,382.07	4,632.98	4,403.71	229.26	20.208	
12,400.00	6,929.26	6,341.00	6,337.34	94.96	190.01	-63.76	-1,787.08	-1,382.07	4,726.06	4,496.70	229.35	20.606	
12,500.00	6,929.07	6,341.00	6,337.34	96.51	190.01	-63.76	-1,787.08	-1,382.07	4,819.41	4,589.98	229.44	21.006	
12,600.00	6,928.88	6,341.00	6,337.34	98.06	190.01	-63.76	-1,787.08	-1,382.07	4,913.03	4,683.52	229.51	21.406	
12,700.00	6,928.68	6,341.00	6,337.34	99.62	190.01	-63.76	-1,787.08	-1,382.07	5,006.90	4,777.31	229.59	21.808	
12,800.00	6,928.49	6,341.00	6,337.34	101.17	190.01	-63.76	-1,787.08	-1,382.07	5,100.99	4,871.33	229.66	22.211	
12,900.00	6,928.30	6,341.00	6,337.34	102.73	190.01	-63.76	-1,787.08	-1,382.07	5,195.31	4,965.58	229.73	22.615	
13,000.00	6,928.11	6,341.00	6,337.34	104.28	190.01	-63.76	-1,787.08	-1,382.07	5,289.84	5,060.04	229.80	23.020	
13,100.00	6,927.92	6,341.00	6,337.34	105.84	190.01	-63.76	-1,787.08	-1,382.07	5,384.56	5,154.71	229.86	23.425	
13,200.00	6,927.73	6,341.00	6,337.34	107.40	190.01	-63.76	-1,787.08	-1,382.07	5,479.48	5,249.56	229.92	23.832	
13,300.00	6,927.54	6,341.00	6,337.34	108.97	190.01	-63.76	-1,787.08	-1,382.07	5,574.57	5,344.59	229.98	24.239	
13,400.00	6,927.34	6,341.00	6,337.34	110.53	190.01	-63.76	-1,787.08	-1,382.07	5,669.83	5,439.79	230.04	24.647	
13,500.00	6,927.15	6,341.00	6,337.34	112.09	190.01	-63.76	-1,787.08	-1,382.07	5,765.25	5,535.15	230.09	25.056	
13,600.00	6,926.96	6,341.00	6,337.34	113.66	190.01	-63.76	-1,787.08	-1,382.07	5,860.82	5,630.67	230.15	25.465	
13,700.00	6,926.77	6,341.00	6,337.34	115.22	190.01	-63.76	-1,787.08	-1,382.07	5,956.54	5,726.34	230.20	25.875	
13,800.00	6,926.58	6,341.00	6,337.34	116.79	190.01	-63.76	-1,787.08	-1,382.07	6,052.39	5,822.14	230.25	26.286	
13,900.00	6,926.39	6,341.00	6,337.34	118.36	190.01	-63.76	-1,787.08	-1,382.07	6,148.38	5,918.08	230.30	26.697	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 — **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
14,000.00	6,926.20	6,341.00	6,337.34	119.93	190.01	-63.76	-1,787.08	-1,382.07	6,244.50	6,014.14	230.36	27.108	
14,100.00	6,926.00	6,341.00	6,337.34	121.50	190.01	-63.76	-1,787.08	-1,382.07	6,340.73	6,110.33	230.40	27.520	
14,200.00	6,925.81	6,341.00	6,337.34	123.07	190.01	-63.76	-1,787.08	-1,382.07	6,437.08	6,206.63	230.45	27.932	
14,300.00	6,925.62	6,341.00	6,337.34	124.64	190.01	-63.76	-1,787.08	-1,382.07	6,533.54	6,303.04	230.50	28.345	
14,400.00	6,925.43	6,341.00	6,337.34	126.21	190.01	-63.76	-1,787.08	-1,382.07	6,630.10	6,399.55	230.55	28.758	
14,500.00	6,925.24	6,341.00	6,337.34	127.79	190.01	-63.76	-1,787.08	-1,382.07	6,726.77	6,496.17	230.60	29.171	
14,600.00	6,925.05	6,341.00	6,337.34	129.36	190.01	-63.76	-1,787.08	-1,382.07	6,823.53	6,592.88	230.65	29.584	
14,700.00	6,924.86	6,341.00	6,337.34	130.93	190.01	-63.76	-1,787.08	-1,382.07	6,920.38	6,689.69	230.69	29.998	
14,800.00	6,924.66	6,341.00	6,337.34	132.51	190.01	-63.76	-1,787.08	-1,382.07	7,017.32	6,786.58	230.74	30.412	
14,900.00	6,924.47	6,341.00	6,337.34	134.09	190.01	-63.76	-1,787.08	-1,382.07	7,114.35	6,883.56	230.79	30.826	
15,000.00	6,924.28	6,341.00	6,337.34	135.66	190.01	-63.76	-1,787.08	-1,382.07	7,211.45	6,980.62	230.83	31.241	
15,100.00	6,924.09	6,341.00	6,337.34	137.24	190.01	-63.76	-1,787.08	-1,382.07	7,308.64	7,077.76	230.88	31.655	
15,200.00	6,923.90	6,341.00	6,337.34	138.82	190.01	-63.76	-1,787.08	-1,382.07	7,405.90	7,174.97	230.93	32.070	
15,300.00	6,923.71	6,341.00	6,337.34	140.40	190.01	-63.76	-1,787.08	-1,382.07	7,503.23	7,272.25	230.97	32.485	
15,400.00	6,923.52	6,341.00	6,337.34	141.97	190.01	-63.76	-1,787.08	-1,382.07	7,600.63	7,369.61	231.02	32.900	
15,500.00	6,923.33	6,341.00	6,337.34	143.55	190.01	-63.76	-1,787.08	-1,382.07	7,698.10	7,467.03	231.07	33.315	
15,600.00	6,923.13	6,341.00	6,337.34	145.13	190.01	-63.76	-1,787.08	-1,382.07	7,795.63	7,564.51	231.12	33.730	
15,700.00	6,922.94	6,341.00	6,337.34	146.72	190.01	-63.76	-1,787.08	-1,382.07	7,893.22	7,662.06	231.16	34.146	
15,800.00	6,922.75	6,341.00	6,337.34	148.30	190.01	-63.76	-1,787.08	-1,382.07	7,990.88	7,759.66	231.21	34.561	
15,900.00	6,922.56	6,341.00	6,337.34	149.88	190.01	-63.76	-1,787.08	-1,382.07	8,088.59	7,857.33	231.26	34.976	
16,000.00	6,922.37	6,341.00	6,337.34	151.46	190.01	-63.76	-1,787.08	-1,382.07	8,186.35	7,955.04	231.31	35.391	
16,100.00	6,922.18	6,341.00	6,337.34	153.04	190.01	-63.76	-1,787.08	-1,382.07	8,284.17	8,052.82	231.36	35.807	
16,200.00	6,921.99	6,341.00	6,337.34	154.63	190.01	-63.76	-1,787.08	-1,382.07	8,382.04	8,150.64	231.41	36.222	
16,300.00	6,921.79	6,341.00	6,337.34	156.21	190.01	-63.76	-1,787.08	-1,382.07	8,479.96	8,248.51	231.46	36.637	
16,400.00	6,921.60	6,341.00	6,337.34	157.79	190.01	-63.76	-1,787.08	-1,382.07	8,577.93	8,346.43	231.51	37.053	
16,500.00	6,921.41	6,341.00	6,337.34	159.38	190.01	-63.76	-1,787.08	-1,382.07	8,675.95	8,444.39	231.56	37.468	
16,600.00	6,921.22	6,341.00	6,337.34	160.96	190.01	-63.76	-1,787.08	-1,382.07	8,774.01	8,542.40	231.61	37.883	
16,700.00	6,921.03	6,341.00	6,337.34	162.55	190.01	-63.76	-1,787.08	-1,382.07	8,872.11	8,640.45	231.66	38.298	
16,800.00	6,920.84	6,341.00	6,337.34	164.13	190.01	-63.76	-1,787.08	-1,382.07	8,970.25	8,738.55	231.71	38.714	
16,900.00	6,920.65	6,341.00	6,337.34	165.72	190.01	-63.76	-1,787.08	-1,382.07	9,068.44	8,836.68	231.76	39.129	
17,000.00	6,920.45	6,341.00	6,337.34	167.30	190.01	-63.76	-1,787.08	-1,382.07	9,166.66	8,934.85	231.81	39.544	
17,100.00	6,920.26	6,341.00	6,337.34	168.89	190.01	-63.76	-1,787.08	-1,382.07	9,264.93	9,033.06	231.86	39.958	
17,200.00	6,920.07	6,341.00	6,337.34	170.48	190.01	-63.76	-1,787.08	-1,382.07	9,363.22	9,131.31	231.92	40.373	
17,300.00	6,919.88	6,341.00	6,337.34	172.06	190.01	-63.76	-1,787.08	-1,382.07	9,461.56	9,229.59	231.97	40.788	
17,400.00	6,919.69	6,341.00	6,337.34	173.65	190.01	-63.76	-1,787.08	-1,382.07	9,559.93	9,327.90	232.02	41.202	
17,500.00	6,919.50	6,341.00	6,337.34	175.24	190.01	-63.76	-1,787.08	-1,382.07	9,658.33	9,426.25	232.08	41.617	
17,600.00	6,919.31	6,341.00	6,337.34	176.83	190.01	-63.76	-1,787.08	-1,382.07	9,756.77	9,524.63	232.13	42.031	
17,700.00	6,919.11	6,341.00	6,337.34	178.41	190.01	-63.76	-1,787.08	-1,382.07	9,855.23	9,623.05	232.19	42.445	
17,759.55	6,919.00	6,341.00	6,337.34	179.36	190.01	-63.76	-1,787.08	-1,382.07	9,913.89	9,681.67	232.22	42.691	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	165.62	-1,687.82	432.70	1,742.40				
100.00	100.00	128.69	128.69	0.25	0.11	165.61	-1,687.67	432.91	1,742.31	1,741.99	0.32	5,499.391	
123.19	123.19	151.19	151.19	0.33	0.13	165.61	-1,687.64	432.99	1,742.30	1,741.89	0.41	4,204.274	
200.00	200.00	225.95	225.95	0.61	0.23	165.59	-1,687.57	433.46	1,742.35	1,741.61	0.74	2,360.708	
300.00	300.00	325.19	325.18	0.97	0.36	165.56	-1,687.46	434.47	1,742.50	1,741.34	1.16	1,498.765	
400.00	400.00	422.88	422.86	1.33	0.48	165.52	-1,687.36	435.75	1,742.73	1,741.14	1.59	1,096.821	
500.00	500.00	524.08	524.06	1.68	0.61	165.47	-1,687.27	437.15	1,742.99	1,740.97	2.02	863.259	
600.00	600.00	623.55	623.52	2.04	0.74	165.43	-1,687.17	438.51	1,743.23	1,740.78	2.45	711.909	
700.00	700.00	722.58	722.53	2.40	0.87	165.38	-1,687.08	439.97	1,743.52	1,740.64	2.88	605.683	
800.00	800.00	821.48	821.42	2.76	1.00	165.33	-1,687.02	441.54	1,743.86	1,740.55	3.31	526.970	
900.00	900.00	917.58	917.51	3.12	1.13	165.29	-1,687.16	443.06	1,744.40	1,740.66	3.74	466.357	
1,000.00	1,000.00	1,016.80	1,016.72	3.48	1.25	165.24	-1,687.44	444.63	1,745.07	1,740.90	4.18	417.759	
1,100.00	1,099.98	1,116.60	1,116.51	3.82	1.38	-27.95	-1,687.71	446.15	1,744.18	1,739.58	4.60	379.304	
1,129.54	1,129.49	1,145.95	1,145.85	3.92	1.42	-27.99	-1,687.81	446.56	1,743.33	1,738.61	4.72	369.329	
1,200.00	1,199.88	1,215.98	1,215.88	4.15	1.50	-28.07	-1,688.06	447.46	1,741.00	1,735.99	5.01	347.482	
1,300.00	1,299.78	1,318.53	1,318.42	4.48	1.64	-28.18	-1,688.40	448.65	1,737.63	1,732.20	5.43	319.955	
1,400.00	1,399.68	1,425.04	1,424.93	4.82	1.77	-28.29	-1,688.45	449.74	1,733.96	1,728.11	5.85	296.371	
1,500.00	1,499.58	1,527.17	1,527.05	5.16	1.91	-28.39	-1,688.29	450.66	1,730.07	1,723.81	6.26	276.298	
1,600.00	1,599.48	1,629.47	1,629.34	5.50	2.04	-28.49	-1,688.05	451.41	1,726.06	1,719.39	6.67	258.768	
1,700.00	1,699.37	1,734.24	1,734.11	5.85	2.11	-28.57	-1,687.79	451.53	1,721.87	1,714.81	7.07	243.614	
1,800.00	1,799.27	1,834.67	1,834.54	6.20	2.08	-28.63	-1,687.47	451.02	1,717.46	1,710.00	7.46	230.112	
1,900.00	1,899.17	1,940.11	1,939.98	6.55	2.09	-28.70	-1,686.91	450.63	1,712.89	1,705.02	7.87	217.710	
2,000.00	1,999.07	2,045.35	2,045.21	6.90	2.13	-28.77	-1,685.93	450.36	1,707.96	1,699.68	8.28	206.221	
2,100.00	2,098.96	2,147.78	2,147.64	7.25	2.18	-28.85	-1,684.80	450.07	1,702.85	1,694.15	8.71	195.608	
2,200.00	2,198.86	2,245.96	2,245.81	7.61	2.23	-28.92	-1,683.70	449.70	1,697.72	1,688.58	9.13	185.861	
2,300.00	2,298.76	2,342.48	2,342.32	7.96	2.26	-28.98	-1,682.88	449.19	1,692.80	1,683.23	9.57	176.919	
2,400.00	2,398.66	2,442.99	2,442.83	8.32	2.30	-29.05	-1,682.09	448.59	1,687.93	1,677.92	10.01	168.619	
2,500.00	2,498.56	2,546.86	2,546.69	8.68	2.34	-29.10	-1,681.19	447.74	1,682.92	1,672.46	10.46	160.911	
2,600.00	2,598.45	2,648.28	2,648.10	9.03	2.37	-29.14	-1,680.31	446.37	1,677.76	1,666.86	10.90	153.866	
2,700.00	2,698.35	2,742.91	2,742.71	9.39	2.39	-29.17	-1,679.60	444.83	1,672.65	1,661.31	11.34	147.460	
2,800.00	2,798.25	2,845.52	2,845.31	9.75	2.42	-29.20	-1,678.92	443.30	1,667.66	1,655.87	11.79	141.456	
2,900.00	2,898.15	2,937.85	2,937.63	10.11	2.46	-29.24	-1,678.36	442.07	1,662.76	1,650.53	12.23	135.970	
3,000.00	2,998.04	3,028.09	3,027.87	10.47	2.48	-29.28	-1,678.30	441.13	1,658.46	1,645.80	12.66	131.041	
3,100.00	3,097.94	3,113.04	3,112.81	10.83	2.48	-29.32	-1,678.75	440.66	1,654.87	1,641.81	13.06	126.751	
3,200.00	3,197.84	3,211.47	3,211.24	11.19	2.49	-29.38	-1,679.62	440.37	1,651.70	1,638.25	13.45	122.807	
3,300.00	3,297.74	3,314.67	3,314.43	11.55	2.51	-29.44	-1,680.58	440.02	1,648.55	1,634.70	13.85	119.027	
3,400.00	3,397.64	3,417.81	3,417.57	11.91	2.53	-29.49	-1,681.42	439.38	1,645.23	1,630.96	14.26	115.364	
3,500.00	3,497.53	3,521.89	3,521.65	12.27	2.56	-29.54	-1,682.11	438.74	1,641.75	1,627.07	14.68	111.853	
3,600.00	3,597.43	3,630.12	3,629.87	12.63	2.62	-29.61	-1,681.97	438.31	1,637.57	1,622.45	15.12	108.296	
3,700.00	3,697.33	3,728.53	3,728.29	12.99	2.70	-29.69	-1,681.78	438.16	1,633.41	1,617.85	15.57	104.925	
3,800.00	3,797.23	3,817.26	3,817.01	13.35	2.75	-29.75	-1,681.86	438.05	1,629.55	1,613.57	15.99	101.938	
3,900.00	3,897.12	3,902.42	3,902.16	13.72	2.78	-29.80	-1,682.72	437.81	1,626.52	1,610.14	16.39	99.252	
4,000.00	3,997.02	3,998.43	3,998.16	14.08	2.82	-29.85	-1,684.49	437.42	1,624.24	1,607.45	16.80	96.702	
4,100.00	4,096.92	4,098.36	4,098.07	14.44	2.87	-29.89	-1,686.37	436.91	1,621.98	1,604.76	17.21	94.242	
4,200.00	4,196.82	4,195.81	4,195.50	14.80	2.92	-29.93	-1,688.33	436.26	1,619.80	1,602.17	17.63	91.887	
4,300.00	4,296.72	4,290.98	4,290.63	15.16	2.97	-29.94	-1,690.69	435.13	1,617.90	1,599.85	18.05	89.644	
4,400.00	4,396.61	4,389.39	4,389.00	15.53	3.04	-29.95	-1,693.35	433.79	1,616.17	1,597.70	18.47	87.493	
4,500.00	4,496.51	4,504.11	4,503.68	15.89	3.11	-29.97	-1,695.86	432.47	1,614.03	1,595.12	18.91	85.368	
4,600.00	4,596.41	4,606.68	4,606.24	16.25	3.18	-30.00	-1,697.46	431.52	1,611.33	1,591.99	19.34	83.327	
4,700.00	4,696.31	4,711.12	4,710.66	16.61	3.26	-30.04	-1,698.82	430.61	1,608.40	1,588.63	19.77	81.353	
4,800.00	4,796.20	4,808.78	4,808.32	16.98	3.34	-30.08	-1,700.09	429.88	1,605.51	1,585.31	20.20	79.471	
4,900.00	4,896.10	4,909.58	4,909.11	17.34	3.42	-30.14	-1,701.23	429.49	1,602.57	1,581.93	20.64	77.649	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	5,009.79	5,009.31	17.70	3.50	-30.19	-1,702.38	429.06	1,599.63	1,578.56	21.08	75.898	
5,100.00	5,095.90	5,108.03	5,107.54	18.07	3.59	-30.25	-1,703.53	428.79	1,596.77	1,575.25	21.52	74.214	
5,200.00	5,195.80	5,211.05	5,210.56	18.43	3.68	-30.32	-1,704.58	428.62	1,593.79	1,571.83	21.96	72.575	
5,300.00	5,295.69	5,308.29	5,307.79	18.79	3.77	-30.39	-1,705.54	428.64	1,590.83	1,568.43	22.41	71.002	
5,400.00	5,395.59	5,409.04	5,408.53	19.16	3.86	-30.47	-1,706.56	428.79	1,587.95	1,565.09	22.86	69.478	
5,500.00	5,495.49	5,507.04	5,506.53	19.52	3.95	-30.54	-1,707.53	428.87	1,585.02	1,561.71	23.31	68.012	
5,600.00	5,595.39	5,600.48	5,599.97	19.88	4.04	-30.60	-1,708.81	428.71	1,582.39	1,558.63	23.75	66.620	
5,700.00	5,695.28	5,700.23	5,699.69	20.25	4.14	-30.64	-1,710.54	428.06	1,579.95	1,555.75	24.20	65.283	
5,800.00	5,795.18	5,802.40	5,801.84	20.61	4.24	-30.67	-1,712.32	427.04	1,577.42	1,552.77	24.65	63.993	
5,900.00	5,895.08	5,903.17	5,902.59	20.97	4.35	-30.69	-1,714.09	425.82	1,574.84	1,549.74	25.10	62.749	
6,000.00	5,994.98	6,003.13	6,002.53	21.34	4.45	-30.71	-1,715.84	424.58	1,572.25	1,546.70	25.54	61.551	
6,100.00	6,094.88	6,103.10	6,102.47	21.70	4.55	-30.74	-1,717.60	423.35	1,569.66	1,543.67	25.99	60.396	
6,162.49	6,157.30	6,125.00	6,124.37	21.93	4.57	-30.74	-1,717.98	423.08	1,568.57	1,542.33	26.24	59.769	CC, ES
6,200.00	6,194.77	6,125.00	6,124.37	22.06	4.57	-30.74	-1,717.98	423.08	1,569.02	1,542.63	26.39	59.465	
6,300.00	6,294.67	6,125.00	6,124.37	22.43	4.57	-30.74	-1,717.98	423.08	1,574.59	1,547.84	26.75	58.864	
6,314.74	6,309.40	6,125.00	6,124.37	22.48	4.57	-30.74	-1,717.98	423.08	1,575.94	1,549.14	26.80	58.801	
6,350.00	6,344.59	6,125.00	6,124.37	22.61	4.57	-73.54	-1,717.98	423.08	1,580.03	1,553.11	26.92	58.689	
6,400.00	6,394.26	6,125.00	6,124.37	22.79	4.57	-89.75	-1,717.98	423.08	1,588.15	1,561.07	27.09	58.631	SF
6,450.00	6,443.36	6,125.00	6,124.37	22.97	4.57	-94.58	-1,717.98	423.08	1,598.90	1,571.66	27.24	58.689	
6,500.00	6,491.60	6,125.00	6,124.37	23.15	4.57	-96.23	-1,717.98	423.08	1,612.17	1,584.78	27.39	58.855	
6,550.00	6,538.67	6,125.00	6,124.37	23.32	4.57	-96.46	-1,717.98	423.08	1,627.81	1,600.28	27.53	59.123	
6,600.00	6,584.29	6,125.00	6,124.37	23.49	4.57	-95.88	-1,717.98	423.08	1,645.66	1,617.99	27.67	59.483	
6,650.00	6,628.18	6,125.00	6,124.37	23.66	4.57	-94.72	-1,717.98	423.08	1,665.53	1,637.74	27.79	59.924	
6,700.00	6,670.06	6,125.00	6,124.37	23.83	4.57	-93.14	-1,717.98	423.08	1,687.25	1,659.33	27.92	60.434	
6,750.00	6,709.68	6,125.00	6,124.37	24.00	4.57	-91.20	-1,717.98	423.08	1,710.61	1,682.56	28.04	61.000	
6,800.00	6,746.79	6,125.00	6,124.37	24.17	4.57	-88.97	-1,717.98	423.08	1,735.39	1,707.22	28.17	61.610	
6,850.00	6,781.17	6,125.00	6,124.37	24.35	4.57	-86.49	-1,717.98	423.08	1,761.39	1,733.10	28.29	62.251	
6,900.00	6,812.60	6,125.00	6,124.37	24.54	4.57	-83.80	-1,717.98	423.08	1,788.41	1,759.98	28.43	62.910	
6,950.00	6,840.88	6,125.00	6,124.37	24.74	4.57	-80.97	-1,717.98	423.08	1,816.23	1,787.66	28.57	63.576	
7,000.00	6,865.85	6,125.00	6,124.37	24.96	4.57	-78.02	-1,717.98	423.08	1,844.64	1,815.93	28.72	64.238	
7,050.00	6,887.35	6,125.00	6,124.37	25.19	4.57	-75.01	-1,717.98	423.08	1,873.46	1,844.59	28.87	64.887	
7,100.00	6,905.25	6,125.00	6,124.37	25.43	4.57	-71.97	-1,717.98	423.08	1,902.49	1,873.45	29.04	65.515	
7,150.00	6,919.43	6,125.00	6,124.37	25.69	4.57	-68.96	-1,717.98	423.08	1,931.54	1,902.32	29.21	66.115	
7,200.00	6,929.81	6,125.00	6,124.37	25.96	4.57	-66.01	-1,717.98	423.08	1,960.43	1,931.03	29.40	66.683	
7,250.00	6,936.33	6,125.00	6,124.37	26.25	4.57	-63.15	-1,717.98	423.08	1,989.01	1,959.42	29.59	67.215	
7,300.00	6,938.95	6,125.00	6,124.37	26.55	4.57	-60.40	-1,717.98	423.08	2,017.11	1,987.32	29.79	67.707	
7,309.56	6,939.00	6,125.00	6,124.37	26.60	4.57	-59.89	-1,717.98	423.08	2,022.41	1,992.59	29.83	67.800	
7,400.00	6,938.83	6,125.00	6,124.37	27.19	4.57	-59.89	-1,717.98	423.08	2,073.86	2,043.65	30.21	68.650	
7,500.00	6,938.64	6,125.00	6,124.37	27.91	4.57	-59.89	-1,717.98	423.08	2,133.77	2,103.14	30.63	69.654	
7,600.00	6,938.44	6,125.00	6,124.37	28.70	4.57	-59.89	-1,717.98	423.08	2,196.60	2,165.54	31.06	70.732	
7,700.00	6,938.25	6,125.00	6,124.37	29.55	4.57	-59.89	-1,717.98	423.08	2,262.10	2,230.63	31.47	71.885	
7,800.00	6,938.06	6,125.00	6,124.37	30.47	4.57	-59.89	-1,717.98	423.08	2,330.06	2,298.19	31.87	73.113	
7,900.00	6,937.87	6,125.00	6,124.37	31.44	4.57	-59.89	-1,717.98	423.08	2,400.25	2,368.00	32.26	74.413	
8,000.00	6,937.68	6,125.00	6,124.37	32.46	4.57	-59.89	-1,717.98	423.08	2,472.51	2,439.88	32.63	75.783	
8,100.00	6,937.49	6,125.00	6,124.37	33.53	4.57	-59.89	-1,717.98	423.08	2,546.63	2,513.65	32.98	77.218	
8,200.00	6,937.30	6,125.00	6,124.37	34.64	4.57	-59.89	-1,717.98	423.08	2,622.48	2,589.17	33.32	78.715	
8,300.00	6,937.10	6,125.00	6,124.37	35.78	4.57	-59.89	-1,717.98	423.08	2,699.90	2,666.27	33.64	80.269	
8,400.00	6,936.91	6,125.00	6,124.37	36.96	4.57	-59.89	-1,717.98	423.08	2,778.76	2,744.83	33.94	81.876	
8,500.00	6,936.72	6,125.00	6,124.37	38.17	4.57	-59.89	-1,717.98	423.08	2,858.95	2,824.72	34.23	83.532	
8,600.00	6,936.53	6,125.00	6,124.37	39.41	4.57	-59.89	-1,717.98	423.08	2,940.35	2,905.85	34.50	85.233	
8,700.00	6,936.34	6,125.00	6,124.37	40.68	4.57	-59.89	-1,717.98	423.08	3,022.87	2,988.11	34.76	86.976	
8,800.00	6,936.15	6,125.00	6,124.37	41.97	4.57	-59.89	-1,717.98	423.08	3,106.41	3,071.41	35.00	88.756	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
8,900.00	6,935.96	6,125.00	6,124.37	43.27	4.57	-59.89	-1,717.98	423.08	3,190.90	3,155.67	35.23	90.572	
9,000.00	6,935.76	6,125.00	6,124.37	44.60	4.57	-59.89	-1,717.98	423.08	3,276.26	3,240.81	35.45	92.419	
9,100.00	6,935.57	6,125.00	6,124.37	45.95	4.57	-59.89	-1,717.98	423.08	3,362.44	3,326.78	35.66	94.296	
9,200.00	6,935.38	6,125.00	6,124.37	47.31	4.57	-59.89	-1,717.98	423.08	3,449.35	3,413.50	35.86	96.199	
9,300.00	6,935.19	6,125.00	6,124.37	48.69	4.57	-59.89	-1,717.98	423.08	3,536.96	3,500.92	36.04	98.127	
9,400.00	6,935.00	6,125.00	6,124.37	50.08	4.57	-59.89	-1,717.98	423.08	3,625.21	3,588.99	36.22	100.076	
9,500.00	6,934.81	6,125.00	6,124.37	51.48	4.57	-59.89	-1,717.98	423.08	3,714.06	3,677.66	36.40	102.046	
9,600.00	6,934.62	6,125.00	6,124.37	52.89	4.57	-59.89	-1,717.98	423.08	3,803.46	3,766.90	36.56	104.035	
9,700.00	6,934.43	6,125.00	6,124.37	54.32	4.57	-59.89	-1,717.98	423.08	3,893.37	3,856.66	36.72	106.040	
9,800.00	6,934.23	6,125.00	6,124.37	55.75	4.57	-59.89	-1,717.98	423.08	3,983.77	3,946.90	36.87	108.061	
9,900.00	6,934.04	6,125.00	6,124.37	57.19	4.57	-59.89	-1,717.98	423.08	4,074.61	4,037.60	37.01	110.095	
10,000.00	6,933.85	6,125.00	6,124.37	58.65	4.57	-59.89	-1,717.98	423.08	4,165.88	4,128.73	37.15	112.142	
10,100.00	6,933.66	6,125.00	6,124.37	60.10	4.57	-59.89	-1,717.98	423.08	4,257.53	4,220.25	37.28	114.201	
10,200.00	6,933.47	6,125.00	6,124.37	61.57	4.57	-59.89	-1,717.98	423.08	4,349.56	4,312.15	37.41	116.269	
10,300.00	6,933.28	6,125.00	6,124.37	63.04	4.57	-59.89	-1,717.98	423.08	4,441.93	4,404.39	37.53	118.347	
10,400.00	6,933.09	6,125.00	6,124.37	64.52	4.57	-59.89	-1,717.98	423.08	4,534.62	4,496.97	37.65	120.433	
10,500.00	6,932.89	6,125.00	6,124.37	66.01	4.57	-59.89	-1,717.98	423.08	4,627.62	4,589.85	37.77	122.527	
10,600.00	6,932.70	6,125.00	6,124.37	67.50	4.57	-59.89	-1,717.98	423.08	4,720.90	4,683.02	37.88	124.627	
10,700.00	6,932.51	6,125.00	6,124.37	68.99	4.57	-59.89	-1,717.98	423.08	4,814.45	4,776.47	37.99	126.733	
10,800.00	6,932.32	6,125.00	6,124.37	70.50	4.57	-59.89	-1,717.98	423.08	4,908.26	4,870.17	38.09	128.843	
10,900.00	6,932.13	6,125.00	6,124.37	72.00	4.57	-59.89	-1,717.98	423.08	5,002.31	4,964.11	38.20	130.959	
11,000.00	6,931.94	6,125.00	6,124.37	73.51	4.57	-59.89	-1,717.98	423.08	5,096.58	5,058.28	38.30	133.078	
11,100.00	6,931.75	6,125.00	6,124.37	75.02	4.57	-59.89	-1,717.98	423.08	5,191.07	5,152.68	38.40	135.200	
11,200.00	6,931.55	6,125.00	6,124.37	76.54	4.57	-59.89	-1,717.98	423.08	5,285.76	5,247.27	38.49	137.325	
11,300.00	6,931.36	6,125.00	6,124.37	78.06	4.57	-59.89	-1,717.98	423.08	5,380.65	5,342.06	38.58	139.451	
11,400.00	6,931.17	6,125.00	6,124.37	79.58	4.57	-59.89	-1,717.98	423.08	5,475.71	5,437.03	38.68	141.580	
11,500.00	6,930.98	6,125.00	6,124.37	81.11	4.57	-59.89	-1,717.98	423.08	5,570.95	5,532.18	38.77	143.710	
11,600.00	6,930.79	6,125.00	6,124.37	82.64	4.57	-59.89	-1,717.98	423.08	5,666.35	5,627.50	38.85	145.840	
11,700.00	6,930.60	6,125.00	6,124.37	84.17	4.57	-59.89	-1,717.98	423.08	5,761.91	5,722.97	38.94	147.971	
11,800.00	6,930.41	6,125.00	6,124.37	85.70	4.57	-59.89	-1,717.98	423.08	5,857.62	5,818.59	39.02	150.101	
11,900.00	6,930.21	6,125.00	6,124.37	87.24	4.57	-59.89	-1,717.98	423.08	5,953.46	5,914.35	39.11	152.231	
12,000.00	6,930.02	6,125.00	6,124.37	88.78	4.57	-59.89	-1,717.98	423.08	6,049.44	6,010.25	39.19	154.361	
12,100.00	6,929.83	6,125.00	6,124.37	90.32	4.57	-59.89	-1,717.98	423.08	6,145.55	6,106.28	39.27	156.489	
12,200.00	6,929.64	6,125.00	6,124.37	91.87	4.57	-59.89	-1,717.98	423.08	6,241.79	6,202.44	39.35	158.616	
12,300.00	6,929.45	6,125.00	6,124.37	93.41	4.57	-59.89	-1,717.98	423.08	6,338.14	6,298.71	39.43	160.741	
12,400.00	6,929.26	6,125.00	6,124.37	94.96	4.57	-59.89	-1,717.98	423.08	6,434.60	6,395.09	39.51	162.864	
12,500.00	6,929.07	6,125.00	6,124.37	96.51	4.57	-59.89	-1,717.98	423.08	6,531.16	6,491.58	39.59	164.985	
12,600.00	6,928.88	6,125.00	6,124.37	98.06	4.57	-59.89	-1,717.98	423.08	6,627.83	6,588.17	39.66	167.103	
12,700.00	6,928.68	6,125.00	6,124.37	99.62	4.57	-59.89	-1,717.98	423.08	6,724.60	6,684.86	39.74	169.219	
12,800.00	6,928.49	6,125.00	6,124.37	101.17	4.57	-59.89	-1,717.98	423.08	6,821.46	6,781.64	39.81	171.331	
12,900.00	6,928.30	6,125.00	6,124.37	102.73	4.57	-59.89	-1,717.98	423.08	6,918.41	6,878.52	39.89	173.440	
13,000.00	6,928.11	6,125.00	6,124.37	104.28	4.57	-59.89	-1,717.98	423.08	7,015.44	6,975.48	39.96	175.546	
13,100.00	6,927.92	6,125.00	6,124.37	105.84	4.57	-59.89	-1,717.98	423.08	7,112.56	7,072.52	40.04	177.649	
13,200.00	6,927.73	6,125.00	6,124.37	107.40	4.57	-59.89	-1,717.98	423.08	7,209.75	7,169.64	40.11	179.747	
13,300.00	6,927.54	6,125.00	6,124.37	108.97	4.57	-59.89	-1,717.98	423.08	7,307.02	7,266.84	40.18	181.841	
13,400.00	6,927.34	6,125.00	6,124.37	110.53	4.57	-59.89	-1,717.98	423.08	7,404.37	7,364.11	40.26	183.932	
13,500.00	6,927.15	6,125.00	6,124.37	112.09	4.57	-59.89	-1,717.98	423.08	7,501.78	7,461.45	40.33	186.017	
13,600.00	6,926.96	6,125.00	6,124.37	113.66	4.57	-59.89	-1,717.98	423.08	7,599.26	7,558.86	40.40	188.099	
13,700.00	6,926.77	6,125.00	6,124.37	115.22	4.57	-59.89	-1,717.98	423.08	7,696.81	7,656.33	40.47	190.175	
13,800.00	6,926.58	6,125.00	6,124.37	116.79	4.57	-59.89	-1,717.98	423.08	7,794.41	7,753.87	40.54	192.247	
13,900.00	6,926.39	6,125.00	6,124.37	118.36	4.57	-59.89	-1,717.98	423.08	7,892.08	7,851.47	40.62	194.314	
14,000.00	6,926.20	6,125.00	6,124.37	119.93	4.57	-59.89	-1,717.98	423.08	7,989.81	7,949.12	40.69	196.376	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,100.00	6,926.00	6,125.00	6,124.37	121.50	4.57	-59.89	-1,717.98	423.08	8,087.59	8,046.83	40.76	198.432	
14,200.00	6,925.81	6,125.00	6,124.37	123.07	4.57	-59.89	-1,717.98	423.08	8,185.42	8,144.59	40.83	200.483	
14,300.00	6,925.62	6,125.00	6,124.37	124.64	4.57	-59.89	-1,717.98	423.08	8,283.31	8,242.41	40.90	202.529	
14,400.00	6,925.43	6,125.00	6,124.37	126.21	4.57	-59.89	-1,717.98	423.08	8,381.25	8,340.28	40.97	204.569	
14,500.00	6,925.24	6,125.00	6,124.37	127.79	4.57	-59.89	-1,717.98	423.08	8,479.23	8,438.19	41.04	206.603	
14,600.00	6,925.05	6,125.00	6,124.37	129.36	4.57	-59.89	-1,717.98	423.08	8,577.26	8,536.15	41.11	208.632	
14,700.00	6,924.86	6,125.00	6,124.37	130.93	4.57	-59.89	-1,717.98	423.08	8,675.34	8,634.15	41.18	210.655	
14,800.00	6,924.66	6,125.00	6,124.37	132.51	4.57	-59.89	-1,717.98	423.08	8,773.46	8,732.20	41.25	212.671	
14,900.00	6,924.47	6,125.00	6,124.37	134.09	4.57	-59.89	-1,717.98	423.08	8,871.62	8,830.29	41.32	214.682	
15,000.00	6,924.28	6,125.00	6,124.37	135.66	4.57	-59.89	-1,717.98	423.08	8,969.82	8,928.42	41.40	216.686	
15,100.00	6,924.09	6,125.00	6,124.37	137.24	4.57	-59.89	-1,717.98	423.08	9,068.06	9,026.59	41.47	218.684	
15,200.00	6,923.90	6,125.00	6,124.37	138.82	4.57	-59.89	-1,717.98	423.08	9,166.34	9,124.80	41.54	220.675	
15,300.00	6,923.71	6,125.00	6,124.37	140.40	4.57	-59.89	-1,717.98	423.08	9,264.66	9,223.05	41.61	222.660	
15,400.00	6,923.52	6,125.00	6,124.37	141.97	4.57	-59.89	-1,717.98	423.08	9,363.01	9,321.33	41.68	224.639	
15,500.00	6,923.33	6,125.00	6,124.37	143.55	4.57	-59.89	-1,717.98	423.08	9,461.39	9,419.64	41.75	226.611	
15,600.00	6,923.13	6,125.00	6,124.37	145.13	4.57	-59.89	-1,717.98	423.08	9,559.81	9,517.99	41.82	228.576	
15,700.00	6,922.94	6,125.00	6,124.37	146.72	4.57	-59.89	-1,717.98	423.08	9,658.27	9,616.37	41.90	230.534	
15,800.00	6,922.75	6,125.00	6,124.37	148.30	4.57	-59.89	-1,717.98	423.08	9,756.75	9,714.78	41.97	232.486	
15,900.00	6,922.56	6,125.00	6,124.37	149.88	4.57	-59.89	-1,717.98	423.08	9,855.26	9,813.22	42.04	234.430	
16,000.00	6,922.37	6,125.00	6,124.37	151.46	4.57	-59.89	-1,717.98	423.08	9,953.81	9,911.70	42.11	236.368	
16,100.00	6,922.18	6,125.00	6,124.37	153.04	4.57	-59.89	-1,717.98	423.08	10,052.38	10,010.20	42.18	238.299	
16,200.00	6,921.99	6,125.00	6,124.37	154.63	4.57	-59.89	-1,717.98	423.08	10,150.98	10,108.72	42.26	240.222	
16,300.00	6,921.79	6,125.00	6,124.37	156.21	4.57	-59.89	-1,717.98	423.08	10,249.61	10,207.28	42.33	242.139	
16,400.00	6,921.60	6,125.00	6,124.37	157.79	4.57	-59.89	-1,717.98	423.08	10,348.26	10,305.86	42.40	244.048	
16,500.00	6,921.41	6,125.00	6,124.37	159.38	4.57	-59.89	-1,717.98	423.08	10,446.94	10,404.47	42.48	245.950	
16,600.00	6,921.22	6,125.00	6,124.37	160.96	4.57	-59.89	-1,717.98	423.08	10,545.65	10,503.10	42.55	247.845	
16,700.00	6,921.03	6,125.00	6,124.37	162.55	4.57	-59.89	-1,717.98	423.08	10,644.37	10,601.75	42.62	249.732	
16,800.00	6,920.84	6,125.00	6,124.37	164.13	4.57	-59.89	-1,717.98	423.08	10,743.13	10,700.43	42.70	251.612	
16,900.00	6,920.65	6,125.00	6,124.37	165.72	4.57	-59.89	-1,717.98	423.08	10,841.90	10,799.13	42.77	253.485	
17,000.00	6,920.45	6,125.00	6,124.37	167.30	4.57	-59.89	-1,717.98	423.08	10,940.70	10,897.85	42.85	255.350	
17,100.00	6,920.26	6,125.00	6,124.37	168.89	4.57	-59.89	-1,717.98	423.08	11,039.52	10,996.60	42.92	257.208	
17,200.00	6,920.07	6,125.00	6,124.37	170.48	4.57	-59.89	-1,717.98	423.08	11,138.36	11,095.36	43.00	259.058	
17,300.00	6,919.88	6,125.00	6,124.37	172.06	4.57	-59.89	-1,717.98	423.08	11,237.22	11,194.15	43.07	260.900	
17,400.00	6,919.69	6,125.00	6,124.37	173.65	4.57	-59.89	-1,717.98	423.08	11,336.10	11,292.95	43.15	262.735	
17,500.00	6,919.50	6,125.00	6,124.37	175.24	4.57	-59.89	-1,717.98	423.08	11,435.00	11,391.78	43.22	264.563	
17,600.00	6,919.31	6,125.00	6,124.37	176.83	4.57	-59.89	-1,717.98	423.08	11,533.92	11,490.62	43.30	266.383	
17,700.00	6,919.11	6,125.00	6,124.37	178.41	4.57	-59.89	-1,717.98	423.08	11,632.86	11,589.48	43.37	268.195	
17,759.55	6,919.00	6,125.00	6,124.37	179.36	4.57	-59.89	-1,717.98	423.08	11,691.79	11,648.37	43.42	269.270	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
0.00	0.00	46.72	46.72	0.00	0.02	164.39	-1,641.95	458.68	1,704.81				
100.00	100.00	143.36	143.36	0.25	0.11	164.40	-1,641.98	458.52	1,704.80	1,704.48	0.31	5,430.716	
200.00	200.00	237.84	237.84	0.61	0.13	164.37	-1,642.01	459.26	1,705.05	1,704.31	0.74	2,309.272	
300.00	300.00	1,070.56	1,043.86	0.97	1.11	162.70	-1,475.72	459.61	1,695.87	1,693.57	2.31	735.315	
400.00	400.00	1,179.20	1,141.96	1.33	1.32	162.23	-1,429.07	457.99	1,654.20	1,651.48	2.71	610.078	
500.00	500.00	1,272.39	1,225.74	1.68	1.51	161.77	-1,388.27	457.19	1,611.95	1,608.83	3.11	517.633	
600.00	600.00	1,357.09	1,301.95	2.04	1.70	161.31	-1,351.31	457.14	1,570.13	1,566.61	3.52	445.796	
700.00	700.00	1,448.52	1,384.07	2.40	1.90	160.74	-1,311.12	458.20	1,528.43	1,524.48	3.96	386.162	
800.00	800.00	1,536.78	1,463.19	2.76	2.10	160.15	-1,272.04	459.33	1,486.60	1,482.20	4.40	337.861	
900.00	900.00	1,630.48	1,547.48	3.12	2.32	159.53	-1,231.09	459.46	1,445.15	1,440.29	4.86	297.556	
1,000.00	1,000.00	1,731.65	1,638.20	3.48	2.56	158.83	-1,186.32	459.46	1,403.27	1,397.94	5.33	263.340	
1,100.00	1,099.98	1,817.17	1,714.59	3.82	2.77	-35.54	-1,147.88	459.78	1,359.71	1,353.93	5.78	235.280	
1,129.54	1,129.49	1,840.72	1,735.66	3.92	2.83	-35.93	-1,137.38	459.97	1,346.52	1,340.61	5.91	227.651	
1,200.00	1,199.88	1,888.60	1,778.67	4.15	2.94	-36.40	-1,116.33	460.34	1,315.29	1,309.08	6.21	211.786	
1,300.00	1,299.78	1,966.51	1,849.26	4.48	3.12	-37.15	-1,083.34	460.44	1,272.41	1,265.76	6.65	191.470	
1,400.00	1,399.68	2,061.04	1,934.69	4.82	3.35	-38.12	-1,042.90	460.55	1,229.43	1,222.33	7.11	173.033	
1,500.00	1,499.58	2,137.75	2,004.03	5.16	3.54	-38.98	-1,010.09	461.00	1,186.92	1,179.36	7.56	156.953	
1,600.00	1,599.48	2,225.57	2,083.60	5.50	3.75	-40.05	-972.94	462.02	1,145.35	1,137.31	8.04	142.503	
1,700.00	1,699.37	2,328.53	2,176.71	5.85	4.00	-41.38	-929.00	462.72	1,103.68	1,095.15	8.53	129.432	
1,800.00	1,799.27	2,428.31	2,266.43	6.20	4.25	-42.77	-885.32	462.70	1,061.15	1,052.12	9.02	117.615	
1,900.00	1,899.17	2,510.40	2,339.95	6.55	4.46	-44.03	-848.82	462.71	1,018.51	1,008.99	9.53	106.912	
2,000.00	1,999.07	2,587.69	2,409.75	6.90	4.66	-45.27	-815.61	462.84	977.72	967.68	10.04	97.360	
2,100.00	2,098.96	2,682.47	2,495.26	7.25	4.90	-46.92	-774.76	463.16	937.49	926.92	10.57	88.690	
2,200.00	2,198.86	2,777.07	2,580.31	7.61	5.14	-48.73	-733.33	463.30	897.26	886.14	11.11	80.743	
2,300.00	2,298.76	2,866.08	2,660.07	7.96	5.38	-50.60	-693.82	463.43	857.30	845.63	11.68	73.427	
2,400.00	2,398.66	2,957.65	2,742.40	8.32	5.62	-52.62	-653.75	462.59	818.22	805.97	12.25	66.803	
2,500.00	2,498.56	3,032.93	2,810.53	8.68	5.82	-54.30	-621.80	460.61	780.21	767.37	12.85	60.737	
2,600.00	2,598.45	3,103.37	2,875.17	9.03	5.99	-55.87	-593.88	458.71	745.20	731.74	13.46	55.365	
2,700.00	2,698.35	3,173.42	2,940.23	9.39	6.15	-57.47	-567.97	457.35	713.55	699.47	14.08	50.662	
2,800.00	2,798.25	3,237.73	3,000.68	9.75	6.29	-58.98	-546.01	457.04	685.91	671.19	14.72	46.594	
2,900.00	2,898.15	3,303.78	3,063.68	10.11	6.42	-60.47	-526.22	457.51	663.01	647.67	15.34	43.208	
3,000.00	2,998.04	3,381.44	3,138.92	10.47	6.54	-62.06	-507.06	458.40	644.74	628.80	15.94	40.452	
3,100.00	3,097.94	3,470.42	3,225.57	10.83	6.68	-63.86	-486.87	459.75	628.87	612.35	16.52	38.065	
3,200.00	3,197.84	3,560.18	3,313.45	11.19	6.81	-65.58	-468.60	460.60	614.80	597.71	17.09	35.972	
3,300.00	3,297.74	3,647.92	3,399.91	11.55	6.93	-67.06	-453.68	460.76	602.77	585.13	17.64	34.172	
3,400.00	3,397.64	3,731.80	3,482.90	11.91	7.02	-68.37	-441.52	461.23	593.02	574.85	18.17	32.635	
3,500.00	3,497.53	3,821.05	3,571.85	12.27	7.08	-69.20	-434.79	459.80	585.76	567.12	18.65	31.415	
3,600.00	3,597.43	3,914.93	3,665.64	12.63	7.11	-69.70	-431.63	457.06	579.87	560.79	19.08	30.385	
3,700.00	3,697.33	4,007.09	3,757.75	12.99	7.13	-70.15	-429.52	454.91	575.11	555.59	19.52	29.465	
3,800.00	3,797.23	4,099.22	3,849.86	13.35	7.16	-70.53	-428.68	453.36	571.69	551.74	19.95	28.661	
3,900.00	3,897.12	4,194.97	3,945.60	13.72	7.18	-70.84	-429.12	452.24	569.44	549.08	20.36	27.964	
4,000.00	3,997.02	4,291.88	4,042.50	14.08	7.21	-71.11	-430.33	451.36	567.86	547.10	20.76	27.350	
4,100.00	4,096.92	4,390.97	4,141.58	14.44	7.24	-71.34	-432.02	450.48	566.56	545.40	21.16	26.778	
4,200.00	4,196.82	4,489.38	4,239.96	14.80	7.26	-71.55	-434.12	449.71	565.57	544.02	21.55	26.246	
4,300.00	4,296.72	4,589.71	4,340.25	15.16	7.29	-71.74	-436.45	448.89	564.67	542.73	21.94	25.737	
4,400.00	4,396.61	4,688.82	4,439.34	15.53	7.32	-71.95	-438.61	448.21	563.80	541.46	22.33	25.247	
4,500.00	4,496.51	4,788.58	4,539.09	15.89	7.35	-72.22	-440.28	447.82	562.93	540.21	22.72	24.772	
4,600.00	4,596.41	4,889.04	4,639.53	16.25	7.38	-72.51	-441.87	447.58	562.16	539.05	23.12	24.317	
4,700.00	4,696.31	4,989.24	4,739.72	16.61	7.41	-72.81	-443.33	447.40	561.41	537.90	23.51	23.878	
4,800.00	4,796.20	5,089.47	4,839.94	16.98	7.44	-73.12	-444.64	447.13	560.50	536.59	23.91	23.442	
4,900.00	4,896.10	5,189.52	4,939.98	17.34	7.48	-73.44	-445.84	446.82	559.53	535.22	24.31	23.017	
5,000.00	4,996.00	5,290.45	5,040.90	17.70	7.51	-73.76	-447.12	446.48	558.59	533.88	24.71	22.605	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Warning
5,100.00	5,095.90	5,389.75	5,140.19	18.07	7.54	-74.07	-448.42	446.13	557.67	532.56	25.11	22.207	
5,200.00	5,195.80	5,490.87	5,241.31	18.43	7.58	-74.38	-449.77	445.61	556.63	531.12	25.52	21.814	
5,300.00	5,295.69	5,590.93	5,341.35	18.79	7.62	-74.66	-451.18	444.93	555.49	529.57	25.92	21.428	
5,400.00	5,395.59	5,690.09	5,440.50	19.16	7.65	-74.92	-452.89	444.18	554.47	528.14	26.33	21.059	
5,500.00	5,495.49	5,787.44	5,537.82	19.52	7.69	-75.14	-454.99	443.57	553.76	527.03	26.73	20.716	
5,600.00	5,595.39	5,886.48	5,636.83	19.88	7.72	-75.35	-457.37	443.31	553.49	526.36	27.13	20.401	
5,700.00	5,695.28	5,987.89	5,738.21	20.25	7.76	-75.57	-459.87	442.96	553.20	525.67	27.53	20.094	
5,800.00	5,795.18	6,088.47	5,838.77	20.61	7.79	-75.82	-461.92	442.62	552.72	524.79	27.93	19.787	
5,900.00	5,895.08	6,188.07	5,938.36	20.97	7.83	-76.14	-463.31	442.46	552.12	523.78	28.34	19.482	
6,000.00	5,994.98	6,288.44	6,038.72	21.34	7.87	-76.46	-464.66	442.33	551.54	522.79	28.75	19.186	
6,100.00	6,094.88	6,388.13	6,138.40	21.70	7.91	-76.79	-466.02	442.19	550.98	521.82	29.15	18.899	
6,200.00	6,194.77	6,486.30	6,236.56	22.06	7.94	-77.11	-467.36	442.15	550.52	520.96	29.56	18.623	
6,300.00	6,294.67	6,587.43	6,337.68	22.43	7.98	-77.50	-468.27	442.37	550.12	520.15	29.97	18.356	
6,314.74	6,309.40	6,601.77	6,352.03	22.48	7.98	-77.56	-468.38	442.41	550.06	520.03	30.03	18.318	
6,317.21	6,311.86	6,604.17	6,354.43	22.49	7.98	-82.25	-468.39	442.42	550.05	520.02	30.04	18.311	CC, ES
6,350.00	6,344.59	6,638.25	6,388.50	22.61	7.99	-120.89	-468.56	442.56	550.80	520.63	30.17	18.255	SF
6,400.00	6,394.26	6,687.90	6,438.15	22.79	8.01	-138.08	-468.64	442.71	554.80	524.42	30.38	18.260	
6,450.00	6,443.36	6,736.43	6,486.68	22.97	8.02	-144.15	-468.80	442.87	562.41	531.81	30.60	18.380	
6,500.00	6,491.60	6,785.88	6,536.13	23.15	8.04	-147.33	-468.81	443.09	573.60	542.79	30.82	18.614	
6,550.00	6,538.67	6,831.45	6,581.70	23.32	8.05	-149.28	-468.76	443.30	588.34	557.30	31.03	18.958	
6,600.00	6,584.29	6,877.04	6,627.29	23.49	8.07	-150.62	-468.75	443.55	606.65	575.41	31.25	19.414	
6,650.00	6,628.18	6,921.62	6,671.87	23.66	8.08	-151.60	-468.67	443.80	628.41	596.95	31.46	19.978	
6,700.00	6,670.06	6,964.24	6,714.49	23.83	8.10	-152.28	-468.48	444.00	653.46	621.80	31.66	20.643	
6,750.00	6,709.68	7,003.65	6,753.90	24.00	8.11	-152.66	-468.26	444.18	681.74	649.90	31.84	21.408	
6,800.00	6,746.79	7,040.47	6,790.72	24.17	8.13	-152.74	-468.15	444.32	713.13	681.11	32.02	22.271	
6,850.00	6,781.17	7,075.67	6,825.92	24.35	8.14	-152.58	-467.93	444.48	747.42	715.24	32.18	23.224	
6,900.00	6,812.60	7,105.09	6,855.34	24.54	8.15	-151.94	-467.74	444.60	784.42	752.09	32.33	24.264	
6,950.00	6,840.88	7,131.98	6,882.23	24.74	8.16	-150.84	-467.59	444.79	823.99	791.53	32.46	25.387	
7,000.00	6,865.85	7,159.77	6,910.01	24.96	8.17	-149.37	-467.46	444.95	865.75	833.18	32.57	26.579	
7,050.00	6,887.35	7,183.16	6,933.41	25.19	8.18	-147.06	-467.32	445.01	909.39	876.72	32.67	27.833	
7,100.00	6,905.25	7,200.81	6,951.06	25.43	8.19	-143.38	-467.21	445.03	954.70	921.95	32.76	29.146	
7,150.00	6,919.43	7,214.22	6,964.46	25.69	8.20	-137.71	-467.13	445.06	1,001.42	968.60	32.82	30.511	
7,200.00	6,929.81	7,224.69	6,974.94	25.96	8.20	-128.92	-467.06	445.08	1,049.23	1,016.35	32.88	31.915	
7,250.00	6,936.33	7,231.30	6,981.54	26.25	8.20	-114.91	-467.02	445.09	1,097.81	1,064.90	32.92	33.352	
7,300.00	6,938.95	7,233.89	6,984.14	26.55	8.20	-93.86	-467.00	445.10	1,146.87	1,113.92	32.95	34.811	
7,309.56	6,939.00	7,233.93	6,984.18	26.60	8.20	-89.16	-467.00	445.10	1,156.27	1,123.32	32.95	35.091	
7,400.00	6,938.83	7,233.59	6,983.83	27.19	8.20	-89.07	-467.00	445.10	1,245.37	1,212.38	32.99	37.751	
7,500.00	6,938.64	7,233.20	6,983.45	27.91	8.20	-88.96	-467.01	445.10	1,344.10	1,311.07	33.03	40.696	
7,600.00	6,938.44	7,232.81	6,983.06	28.70	8.20	-88.85	-467.01	445.10	1,443.00	1,409.94	33.06	43.645	
7,700.00	6,938.25	7,232.42	6,982.67	29.55	8.20	-88.74	-467.01	445.10	1,542.04	1,508.95	33.09	46.595	
7,800.00	6,938.06	7,232.03	6,982.27	30.47	8.20	-88.63	-467.01	445.10	1,641.20	1,608.08	33.13	49.545	
7,900.00	6,937.87	7,231.63	6,981.88	31.44	8.20	-88.52	-467.01	445.10	1,740.46	1,707.30	33.15	52.495	
8,000.00	6,937.68	7,231.23	6,981.48	32.46	8.20	-88.41	-467.02	445.09	1,839.79	1,806.61	33.18	55.444	
8,100.00	6,937.49	7,230.83	6,981.07	33.53	8.20	-88.30	-467.02	445.09	1,939.20	1,905.99	33.21	58.391	
8,200.00	6,937.30	7,230.42	6,980.67	34.64	8.20	-88.19	-467.02	445.09	2,038.66	2,005.42	33.24	61.336	
8,300.00	6,937.10	7,230.01	6,980.26	35.78	8.20	-88.07	-467.02	445.09	2,138.17	2,104.91	33.26	64.278	
8,400.00	6,936.91	7,229.60	6,979.84	36.96	8.20	-87.96	-467.03	445.09	2,237.73	2,204.44	33.29	67.216	
8,500.00	6,936.72	7,229.18	6,979.43	38.17	8.20	-87.84	-467.03	445.09	2,337.32	2,304.00	33.32	70.151	
8,600.00	6,936.53	7,228.76	6,979.01	39.41	8.20	-87.73	-467.03	445.09	2,436.95	2,403.60	33.35	73.082	
8,700.00	6,936.34	7,228.34	6,978.58	40.68	8.20	-87.61	-467.03	445.09	2,536.60	2,503.23	33.37	76.008	
8,800.00	6,936.15	7,227.91	6,978.16	41.97	8.20	-87.49	-467.04	445.09	2,636.29	2,602.89	33.40	78.929	
8,900.00	6,935.96	7,227.48	6,977.73	43.27	8.20	-87.37	-467.04	445.09	2,735.99	2,702.56	33.43	81.846	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	7,227.05	6,977.29	44.60	8.20	-87.25	-467.04	445.09	2,835.72	2,802.26	33.46	84.756	
9,100.00	6,935.57	7,226.61	6,976.85	45.95	8.20	-87.13	-467.04	445.09	2,935.46	2,901.98	33.49	87.662	
9,200.00	6,935.38	7,226.17	6,976.41	47.31	8.20	-87.01	-467.05	445.08	3,035.22	3,001.71	33.52	90.561	
9,300.00	6,935.19	7,225.72	6,975.97	48.69	8.20	-86.88	-467.05	445.08	3,135.00	3,101.45	33.55	93.454	
9,400.00	6,935.00	7,225.28	6,975.52	50.08	8.20	-86.76	-467.05	445.08	3,234.79	3,201.21	33.58	96.340	
9,500.00	6,934.81	7,224.82	6,975.07	51.48	8.20	-86.63	-467.06	445.08	3,334.59	3,300.99	33.61	99.220	
9,600.00	6,934.62	7,224.37	6,974.61	52.89	8.20	-86.51	-467.06	445.08	3,434.41	3,400.77	33.64	102.093	
9,700.00	6,934.43	7,223.91	6,974.15	54.32	8.20	-86.38	-467.06	445.08	3,534.23	3,500.56	33.67	104.958	
9,800.00	6,934.23	7,223.44	6,973.69	55.75	8.20	-86.25	-467.06	445.08	3,634.07	3,600.36	33.71	107.816	
9,900.00	6,934.04	7,222.98	6,973.22	57.19	8.20	-86.12	-467.07	445.08	3,733.91	3,700.17	33.74	110.667	
10,000.00	6,933.85	7,222.50	6,972.75	58.65	8.20	-85.99	-467.07	445.08	3,833.76	3,799.99	33.77	113.509	
10,100.00	6,933.66	7,222.03	6,972.27	60.10	8.20	-85.86	-467.07	445.08	3,933.62	3,899.81	33.81	116.344	
10,200.00	6,933.47	7,221.55	6,971.79	61.57	8.20	-85.73	-467.08	445.07	4,033.49	3,999.64	33.85	119.170	
10,300.00	6,933.28	7,221.06	6,971.31	63.04	8.20	-85.59	-467.08	445.07	4,133.36	4,099.47	33.88	121.988	
10,400.00	6,933.09	7,220.58	6,970.82	64.52	8.20	-85.46	-467.08	445.07	4,233.24	4,199.31	33.92	124.797	
10,500.00	6,932.89	7,220.08	6,970.33	66.01	8.20	-85.32	-467.09	445.07	4,333.12	4,299.16	33.96	127.597	
10,600.00	6,932.70	7,219.59	6,969.83	67.50	8.20	-85.18	-467.09	445.07	4,433.01	4,399.01	34.00	130.388	
10,700.00	6,932.51	7,219.08	6,969.33	68.99	8.20	-85.04	-467.09	445.07	4,532.90	4,498.86	34.04	133.170	
10,800.00	6,932.32	7,218.58	6,968.82	70.50	8.20	-84.91	-467.10	445.07	4,632.80	4,598.72	34.08	135.942	
10,900.00	6,932.13	7,218.07	6,968.31	72.00	8.20	-84.76	-467.10	445.07	4,732.70	4,698.58	34.12	138.705	
11,000.00	6,931.94	7,217.55	6,967.80	73.51	8.20	-84.62	-467.10	445.07	4,832.61	4,798.45	34.16	141.458	
11,100.00	6,931.75	7,217.03	6,967.28	75.02	8.20	-84.48	-467.11	445.06	4,932.52	4,898.31	34.21	144.202	
11,200.00	6,931.55	7,216.51	6,966.75	76.54	8.20	-84.33	-467.11	445.06	5,032.43	4,998.18	34.25	146.935	
11,300.00	6,931.36	7,215.98	6,966.22	78.06	8.20	-84.19	-467.11	445.06	5,132.35	5,098.06	34.29	149.658	
11,400.00	6,931.17	7,215.45	6,965.69	79.58	8.20	-84.04	-467.12	445.06	5,232.27	5,197.93	34.34	152.371	
11,500.00	6,930.98	7,214.91	6,965.15	81.11	8.20	-83.89	-467.12	445.06	5,332.19	5,297.81	34.38	155.073	
11,600.00	6,930.79	7,214.36	6,964.61	82.64	8.20	-83.74	-467.12	445.06	5,432.12	5,397.69	34.43	157.765	
11,700.00	6,930.60	7,214.22	6,964.46	84.17	8.20	-83.71	-467.13	445.06	5,532.05	5,497.57	34.48	160.444	
11,800.00	6,930.41	7,214.22	6,964.46	85.70	8.20	-83.71	-467.13	445.06	5,631.98	5,597.45	34.53	163.113	
11,900.00	6,930.21	7,214.22	6,964.46	87.24	8.20	-83.71	-467.13	445.06	5,731.91	5,697.34	34.58	165.770	
12,000.00	6,930.02	7,214.22	6,964.46	88.78	8.20	-83.71	-467.13	445.06	5,831.85	5,797.22	34.63	168.416	
12,100.00	6,929.83	7,214.22	6,964.46	90.32	8.20	-83.71	-467.13	445.06	5,931.79	5,897.11	34.68	171.050	
12,200.00	6,929.64	7,214.22	6,964.46	91.87	8.20	-83.71	-467.13	445.06	6,031.73	5,997.00	34.73	173.673	
12,300.00	6,929.45	7,214.22	6,964.46	93.41	8.20	-83.71	-467.13	445.06	6,131.67	6,096.89	34.78	176.285	
12,400.00	6,929.26	7,214.22	6,964.46	94.96	8.20	-83.71	-467.13	445.06	6,231.61	6,196.78	34.84	178.885	
12,500.00	6,929.07	7,214.22	6,964.46	96.51	8.20	-83.71	-467.13	445.06	6,331.56	6,296.67	34.89	181.473	
12,600.00	6,928.88	7,214.22	6,964.46	98.06	8.20	-83.71	-467.13	445.06	6,431.51	6,396.56	34.94	184.050	
12,700.00	6,928.68	7,214.22	6,964.46	99.62	8.20	-83.71	-467.13	445.06	6,531.45	6,496.45	35.00	186.614	
12,800.00	6,928.49	7,214.22	6,964.46	101.17	8.20	-83.71	-467.13	445.06	6,631.40	6,596.35	35.06	189.167	
12,900.00	6,928.30	7,210.31	6,960.55	102.73	8.20	-82.63	-467.15	445.05	6,731.35	6,696.24	35.11	191.722	
13,000.00	6,928.11	7,210.02	6,960.26	104.28	8.19	-82.55	-467.15	445.05	6,831.31	6,796.14	35.17	194.251	
13,100.00	6,927.92	7,209.74	6,959.98	105.84	8.19	-82.48	-467.16	445.05	6,931.26	6,896.04	35.23	196.769	
13,200.00	6,927.73	7,209.45	6,959.70	107.40	8.19	-82.40	-467.16	445.05	7,031.22	6,995.93	35.28	199.273	
13,300.00	6,927.54	7,209.17	6,959.42	108.97	8.19	-82.32	-467.16	445.04	7,131.18	7,095.83	35.34	201.766	
13,400.00	6,927.34	7,208.90	6,959.14	110.53	8.19	-82.25	-467.16	445.04	7,231.13	7,195.73	35.40	204.246	
13,500.00	6,927.15	7,208.62	6,958.86	112.09	8.19	-82.17	-467.16	445.04	7,331.09	7,295.63	35.47	206.713	
13,600.00	6,926.96	7,208.35	6,958.59	113.66	8.19	-82.10	-467.17	445.04	7,431.05	7,395.53	35.53	209.168	
13,700.00	6,926.77	7,208.08	6,958.32	115.22	8.19	-82.02	-467.17	445.04	7,531.01	7,495.43	35.59	211.610	
13,800.00	6,926.58	7,207.81	6,958.06	116.79	8.19	-81.95	-467.17	445.04	7,630.98	7,595.32	35.65	214.040	
13,900.00	6,926.39	7,207.55	6,957.79	118.36	8.19	-81.88	-467.17	445.04	7,730.94	7,695.22	35.72	216.456	
14,000.00	6,926.20	7,207.28	6,957.53	119.93	8.19	-81.81	-467.17	445.04	7,830.90	7,795.12	35.78	218.860	
14,100.00	6,926.00	7,207.02	6,957.27	121.50	8.19	-81.74	-467.17	445.04	7,930.87	7,895.02	35.85	221.251	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	7,206.76	6,957.01	123.07	8.19	-81.67	-467.18	445.04	8,030.84	7,994.92	35.91	223.629	
14,300.00	6,925.62	7,206.51	6,956.75	124.64	8.19	-81.60	-467.18	445.04	8,130.80	8,094.82	35.98	225.995	
14,400.00	6,925.43	7,206.25	6,956.50	126.21	8.19	-81.53	-467.18	445.04	8,230.77	8,194.72	36.05	228.347	
14,500.00	6,925.24	7,206.00	6,956.25	127.79	8.19	-81.46	-467.18	445.04	8,330.74	8,294.63	36.11	230.686	
14,600.00	6,925.05	7,205.75	6,956.00	129.36	8.19	-81.39	-467.18	445.04	8,430.71	8,394.53	36.18	233.012	
14,700.00	6,924.86	7,205.51	6,955.75	130.93	8.19	-81.32	-467.18	445.04	8,530.68	8,494.43	36.25	235.325	
14,800.00	6,924.66	7,205.26	6,955.51	132.51	8.19	-81.26	-467.19	445.04	8,630.65	8,594.33	36.32	237.625	
14,900.00	6,924.47	7,205.02	6,955.26	134.09	8.19	-81.19	-467.19	445.04	8,730.62	8,694.23	36.39	239.912	
15,000.00	6,924.28	7,204.78	6,955.02	135.66	8.19	-81.13	-467.19	445.04	8,830.59	8,794.13	36.46	242.186	
15,100.00	6,924.09	7,204.54	6,954.78	137.24	8.19	-81.06	-467.19	445.04	8,930.56	8,894.03	36.53	244.447	
15,200.00	6,923.90	7,204.30	6,954.55	138.82	8.19	-81.00	-467.19	445.04	9,030.54	8,993.93	36.61	246.694	
15,300.00	6,923.71	7,204.07	6,954.31	140.40	8.19	-80.93	-467.19	445.03	9,130.51	9,093.83	36.68	248.929	
15,400.00	6,923.52	7,203.83	6,954.08	141.97	8.19	-80.87	-467.20	445.03	9,230.48	9,193.73	36.75	251.150	
15,500.00	6,923.33	7,203.60	6,953.85	143.55	8.19	-80.81	-467.20	445.03	9,330.46	9,293.63	36.83	253.358	
15,600.00	6,923.13	7,203.37	6,953.62	145.13	8.19	-80.75	-467.20	445.03	9,430.43	9,393.53	36.90	255.553	
15,700.00	6,922.94	7,203.15	6,953.39	146.72	8.19	-80.68	-467.20	445.03	9,530.41	9,493.43	36.98	257.735	
15,800.00	6,922.75	7,202.92	6,953.16	148.30	8.19	-80.62	-467.20	445.03	9,630.39	9,593.33	37.05	259.904	
15,900.00	6,922.56	7,202.70	6,952.94	149.88	8.19	-80.56	-467.20	445.03	9,730.36	9,693.23	37.13	262.059	
16,000.00	6,922.37	7,202.47	6,952.72	151.46	8.19	-80.50	-467.20	445.03	9,830.34	9,793.13	37.21	264.201	
16,100.00	6,922.18	7,202.25	6,952.50	153.04	8.19	-80.44	-467.21	445.03	9,930.32	9,893.03	37.29	266.331	
16,200.00	6,921.99	7,202.04	6,952.28	154.63	8.19	-80.38	-467.21	445.03	10,030.30	9,992.93	37.36	268.447	
16,300.00	6,921.79	7,201.82	6,952.06	156.21	8.19	-80.33	-467.21	445.03	10,130.27	10,092.83	37.44	270.550	
16,400.00	6,921.60	7,201.60	6,951.85	157.79	8.19	-80.27	-467.21	445.03	10,230.25	10,192.73	37.52	272.640	
16,500.00	6,921.41	7,201.39	6,951.64	159.38	8.19	-80.21	-467.21	445.03	10,330.23	10,292.63	37.60	274.717	
16,600.00	6,921.22	7,201.18	6,951.42	160.96	8.19	-80.15	-467.21	445.03	10,430.21	10,392.53	37.68	276.780	
16,700.00	6,921.03	7,200.97	6,951.21	162.55	8.19	-80.10	-467.21	445.03	10,530.19	10,492.43	37.77	278.831	
16,800.00	6,920.84	7,200.76	6,951.01	164.13	8.19	-80.04	-467.21	445.03	10,630.17	10,592.33	37.85	280.869	
16,900.00	6,920.65	7,200.56	6,950.80	165.72	8.19	-79.99	-467.22	445.03	10,730.15	10,692.22	37.93	282.894	
17,000.00	6,920.45	7,200.35	6,950.59	167.30	8.19	-79.93	-467.22	445.03	10,830.13	10,792.12	38.01	284.906	
17,100.00	6,920.26	7,200.15	6,950.39	168.89	8.19	-79.88	-467.22	445.03	10,930.12	10,892.02	38.10	286.905	
17,200.00	6,920.07	7,199.95	6,950.19	170.48	8.19	-79.82	-467.22	445.03	11,030.10	10,991.92	38.18	288.891	
17,300.00	6,919.88	7,199.75	6,949.99	172.06	8.19	-79.77	-467.22	445.03	11,130.08	11,091.81	38.27	290.864	
17,400.00	6,919.69	7,199.55	6,949.79	173.65	8.19	-79.71	-467.22	445.03	11,230.06	11,191.71	38.35	292.825	
17,500.00	6,919.50	7,199.35	6,949.59	175.24	8.19	-79.66	-467.22	445.03	11,330.05	11,291.61	38.44	294.772	
17,600.00	6,919.31	7,199.15	6,949.40	176.83	8.19	-79.61	-467.22	445.03	11,430.03	11,391.51	38.52	296.707	
17,700.00	6,919.11	7,198.96	6,949.20	178.41	8.19	-79.56	-467.23	445.03	11,530.01	11,491.40	38.61	298.630	
17,759.55	6,919.00	7,198.84	6,949.09	179.36	8.19	-79.52	-467.23	445.03	11,589.56	11,550.89	38.66	299.768	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	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	-11.20	777.65	-153.97	795.02				
100.00	100.00	38.29	38.29	0.25	0.70	-11.20	777.70	-153.94	792.79	791.85	0.95	835.623	
200.00	200.00	135.73	135.73	0.61	2.47	-11.17	778.21	-153.60	793.24	790.15	3.08	257.200	
300.00	300.00	237.23	237.23	0.97	4.32	-11.12	778.83	-153.10	793.74	788.45	5.28	150.205	
400.00	400.00	343.06	343.05	1.33	5.76	-11.07	778.96	-152.45	793.74	786.65	7.09	111.963	
500.00	500.00	442.70	442.69	1.68	6.86	-11.03	778.71	-151.80	793.37	784.83	8.54	92.876	
600.00	600.00	543.22	543.21	2.04	8.23	-10.99	778.48	-151.16	793.03	782.75	10.27	77.190	
700.00	700.00	642.85	642.83	2.40	9.74	-10.94	778.22	-150.47	792.64	780.50	12.14	65.292	
800.00	800.00	743.12	743.10	2.76	11.38	-10.90	777.99	-149.76	792.28	778.14	14.14	56.036	
900.00	900.00	844.05	844.03	3.12	12.97	-10.85	777.69	-149.12	791.87	775.77	16.09	49.211	
1,000.00	1,000.00	945.39	945.37	3.48	14.39	-10.82	777.16	-148.56	791.25	773.39	17.86	44.298	
1,020.08	1,020.08	965.17	965.15	3.55	14.68	156.08	777.05	-148.43	791.18	772.96	18.22	43.414	CC
1,100.00	1,099.98	1,045.72	1,045.70	3.82	15.98	156.15	776.61	-147.84	792.17	772.37	19.80	40.015	ES
1,129.54	1,129.49	1,074.88	1,074.85	3.92	16.47	156.20	776.45	-147.60	793.05	772.66	20.39	38.901	
1,200.00	1,199.88	1,146.82	1,146.78	4.15	17.70	156.33	775.98	-146.97	795.40	773.55	21.85	36.403	
1,300.00	1,299.78	1,245.90	1,245.85	4.48	19.52	156.52	775.36	-145.93	798.73	774.74	24.00	33.285	
1,400.00	1,399.68	1,347.37	1,347.32	4.82	21.39	156.72	774.69	-144.86	802.05	775.84	26.21	30.605	
1,500.00	1,499.58	1,448.40	1,448.34	5.16	23.37	156.93	773.98	-143.54	805.29	776.77	28.52	28.233	
1,600.00	1,599.48	1,548.97	1,548.89	5.50	25.47	157.17	773.06	-141.84	808.26	777.29	30.97	26.101	
1,700.00	1,699.37	1,644.84	1,644.75	5.85	27.49	157.39	772.47	-140.21	811.54	778.21	33.33	24.349	
1,800.00	1,799.27	1,743.34	1,743.24	6.20	29.44	157.60	772.10	-138.91	815.13	779.50	35.63	22.876	
1,900.00	1,899.17	1,840.33	1,840.23	6.55	31.16	157.76	771.91	-138.29	819.02	781.32	37.70	21.726	
2,000.00	1,999.07	1,939.37	1,939.27	6.90	32.75	157.90	771.94	-137.88	823.17	783.54	39.64	20.768	
2,100.00	2,098.96	2,039.34	2,039.23	7.25	34.32	158.04	771.97	-137.63	827.35	785.79	41.56	19.907	
2,200.00	2,198.86	2,138.60	2,138.49	7.61	35.50	158.16	771.98	-137.51	831.54	788.45	43.08	19.300	
2,300.00	2,298.76	2,235.52	2,235.41	7.96	34.20	158.25	772.15	-137.87	835.96	793.83	42.14	19.840	
2,400.00	2,398.66	2,335.26	2,335.15	8.32	32.89	158.32	772.47	-138.58	840.59	799.41	41.18	20.414	
2,500.00	2,498.56	2,434.40	2,434.29	8.68	31.64	158.39	772.79	-139.22	845.21	804.93	40.28	20.982	
2,600.00	2,598.45	2,534.72	2,534.60	9.03	30.48	158.46	773.17	-139.90	849.89	810.41	39.47	21.531	
2,700.00	2,698.35	2,633.69	2,633.57	9.39	29.80	158.56	773.65	-140.19	854.61	815.46	39.15	21.831	
2,800.00	2,798.25	2,733.43	2,733.31	9.75	29.95	158.67	774.25	-140.18	859.41	819.76	39.65	21.673	
2,900.00	2,898.15	2,832.62	2,832.49	10.11	30.63	158.80	774.82	-139.99	864.17	823.47	40.69	21.236	
3,000.00	2,998.04	2,931.28	2,931.15	10.47	30.76	158.91	775.56	-140.13	869.15	827.97	41.18	21.108	
3,100.00	3,097.94	3,029.98	3,029.85	10.83	30.69	158.99	776.32	-140.48	874.18	832.72	41.46	21.083	
3,200.00	3,197.84	3,131.92	3,131.79	11.19	31.58	159.12	777.12	-140.33	879.16	836.45	42.71	20.586	
3,300.00	3,297.74	3,233.37	3,233.23	11.55	33.10	159.27	777.76	-139.78	883.94	839.35	44.59	19.825	
3,400.00	3,397.64	3,333.01	3,332.87	11.91	34.72	159.42	778.37	-139.14	888.69	842.13	46.56	19.088	
3,500.00	3,497.53	3,432.84	3,432.69	12.27	36.34	159.56	779.01	-138.50	893.47	844.93	48.54	18.407	
3,600.00	3,597.43	3,532.56	3,532.42	12.63	37.97	159.71	779.65	-137.89	898.27	847.75	50.52	17.780	
3,700.00	3,697.33	3,635.58	3,635.42	12.99	39.71	159.86	780.04	-137.22	902.80	850.18	52.62	17.157	
3,800.00	3,797.23	3,735.91	3,735.76	13.35	41.23	159.98	780.39	-136.81	907.35	852.85	54.50	16.650	
3,900.00	3,897.12	3,839.42	3,839.27	13.72	41.21	160.09	780.38	-136.77	911.58	856.75	54.83	16.625	
4,000.00	3,997.02	3,940.46	3,940.31	14.08	40.05	160.15	780.07	-137.27	915.58	861.55	54.03	16.946	
4,100.00	4,096.92	4,038.69	4,038.53	14.44	39.02	160.19	779.63	-138.02	919.49	866.13	53.36	17.232	
4,200.00	4,196.82	4,140.00	4,139.84	14.80	37.98	160.24	779.30	-138.83	923.51	870.83	52.68	17.531	
4,300.00	4,296.72	4,239.74	4,239.58	15.16	37.09	160.28	778.90	-139.62	927.45	875.31	52.15	17.785	
4,400.00	4,396.61	4,338.12	4,337.95	15.53	36.26	160.32	778.50	-140.40	931.40	879.72	51.68	18.023	
4,500.00	4,496.51	4,438.99	4,438.82	15.89	35.41	160.37	778.20	-141.16	935.45	884.26	51.19	18.275	
4,600.00	4,596.41	4,543.25	4,543.07	16.25	34.72	160.42	777.70	-141.92	939.32	888.46	50.86	18.470	
4,700.00	4,696.31	4,642.00	4,641.82	16.61	34.30	160.47	777.03	-142.46	942.96	892.17	50.79	18.566	
4,800.00	4,796.20	4,743.59	4,743.41	16.98	34.05	160.53	776.23	-142.98	946.49	895.59	50.90	18.594	
4,900.00	4,896.10	4,841.55	4,841.36	17.34	34.05	160.59	775.44	-143.32	950.00	898.75	51.25	18.535	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	4,943.39	4,943.20	17.70	33.92	160.64	774.71	-143.92	953.62	902.14	51.49	18.522	
5,100.00	5,095.90	5,044.10	5,043.90	18.07	34.03	160.68	773.82	-144.60	957.07	905.12	51.95	18.423	
5,200.00	5,195.80	5,141.37	5,141.17	18.43	34.11	160.74	773.12	-145.12	960.68	908.29	52.39	18.337	
5,300.00	5,295.69	5,243.15	5,242.93	18.79	34.34	160.77	772.31	-145.98	964.25	911.27	52.98	18.201	
5,400.00	5,395.59	5,346.61	5,346.39	19.16	34.65	160.81	771.51	-146.75	967.84	914.19	53.65	18.040	
5,500.00	5,495.49	5,442.16	5,441.93	19.52	35.25	160.82	770.59	-147.85	971.27	916.66	54.61	17.784	
5,600.00	5,595.39	5,544.43	5,544.19	19.88	36.09	160.83	769.49	-149.10	974.60	918.79	55.81	17.462	
5,700.00	5,695.28	5,645.54	5,645.29	20.25	37.03	160.87	768.30	-149.92	977.79	920.68	57.11	17.122	
5,800.00	5,795.18	5,743.70	5,743.44	20.61	37.96	160.90	767.22	-150.63	981.04	922.64	58.40	16.800	
5,900.00	5,895.08	5,847.42	5,847.14	20.97	39.17	160.96	765.96	-151.01	984.13	924.16	59.97	16.411	
6,000.00	5,994.98	5,947.37	5,947.09	21.34	40.43	161.02	764.69	-151.39	987.18	925.60	61.58	16.030	
6,100.00	6,094.88	6,028.00	6,027.71	21.70	41.44	161.07	763.66	-151.69	990.42	927.48	62.94	15.735 SF	
6,200.00	6,194.77	6,028.00	6,027.71	22.06	41.44	161.07	763.66	-151.69	1,000.42	937.47	62.95	15.892	
6,300.00	6,294.67	6,028.00	6,027.71	22.43	41.44	161.07	763.66	-151.69	1,020.16	957.68	62.48	16.327	
6,314.74	6,309.40	6,028.00	6,027.71	22.48	41.44	161.07	763.66	-151.69	1,023.87	961.49	62.38	16.414	
6,350.00	6,344.59	6,028.00	6,027.71	22.61	41.44	117.02	763.66	-151.69	1,033.43	971.33	62.09	16.643	
6,400.00	6,394.26	6,028.00	6,027.71	22.79	41.44	98.70	763.66	-151.69	1,048.47	986.86	61.61	17.017	
6,450.00	6,443.36	6,028.00	6,027.71	22.97	41.44	91.35	763.66	-151.69	1,065.12	1,004.06	61.06	17.444	
6,500.00	6,491.60	6,028.00	6,027.71	23.15	41.44	86.79	763.66	-151.69	1,083.19	1,022.73	60.45	17.917	
6,550.00	6,538.67	6,028.00	6,027.71	23.32	41.44	83.28	763.66	-151.69	1,102.51	1,042.69	59.81	18.432	
6,600.00	6,584.29	6,028.00	6,027.71	23.49	41.44	80.24	763.66	-151.69	1,122.90	1,063.74	59.16	18.981	
6,650.00	6,628.18	6,028.00	6,027.71	23.66	41.44	77.45	763.66	-151.69	1,144.17	1,085.67	58.51	19.557	
6,700.00	6,670.06	6,028.00	6,027.71	23.83	41.44	74.80	763.66	-151.69	1,166.16	1,108.28	57.88	20.149	
6,750.00	6,709.68	6,028.00	6,027.71	24.00	41.44	72.25	763.66	-151.69	1,188.69	1,131.40	57.28	20.751	
6,800.00	6,746.79	6,028.00	6,027.71	24.17	41.44	69.78	763.66	-151.69	1,211.59	1,154.84	56.75	21.351	
6,850.00	6,781.17	6,028.00	6,027.71	24.35	41.44	67.39	763.66	-151.69	1,234.71	1,178.44	56.27	21.941	
6,900.00	6,812.60	6,028.00	6,027.71	24.54	41.44	65.09	763.66	-151.69	1,257.90	1,202.02	55.88	22.511	
6,950.00	6,840.88	6,028.00	6,027.71	24.74	41.44	62.87	763.66	-151.69	1,281.01	1,225.44	55.57	23.053	
7,000.00	6,865.85	6,028.00	6,027.71	24.96	41.44	60.76	763.66	-151.69	1,303.91	1,248.56	55.35	23.557	
7,050.00	6,887.35	6,028.00	6,027.71	25.19	41.44	58.74	763.66	-151.69	1,326.48	1,271.25	55.23	24.018	
7,100.00	6,905.25	6,028.00	6,027.71	25.43	41.44	56.84	763.66	-151.69	1,348.59	1,293.38	55.20	24.430	
7,150.00	6,919.43	6,028.00	6,027.71	25.69	41.44	55.06	763.66	-151.69	1,370.13	1,314.86	55.27	24.788	
7,200.00	6,929.81	6,028.00	6,027.71	25.96	41.44	53.39	763.66	-151.69	1,391.00	1,335.56	55.44	25.092	
7,250.00	6,936.33	6,028.00	6,027.71	26.25	41.44	51.85	763.66	-151.69	1,411.10	1,355.41	55.69	25.339	
7,300.00	6,938.95	6,028.00	6,027.71	26.55	41.44	50.43	763.66	-151.69	1,430.35	1,374.33	56.03	25.530	
7,309.56	6,939.00	6,028.00	6,027.71	26.60	41.44	50.18	763.66	-151.69	1,433.93	1,377.83	56.10	25.561	
7,400.00	6,938.83	6,028.00	6,027.71	27.19	41.44	50.18	763.66	-151.69	1,470.00	1,413.16	56.83	25.865	
7,500.00	6,938.64	6,028.00	6,027.71	27.91	41.44	50.18	763.66	-151.69	1,515.17	1,457.49	57.68	26.270	
7,600.00	6,938.44	6,028.00	6,027.71	28.70	41.44	50.18	763.66	-151.69	1,565.43	1,506.91	58.52	26.750	
7,700.00	6,938.25	6,028.00	6,027.71	29.55	41.44	50.18	763.66	-151.69	1,620.32	1,560.97	59.34	27.303	
7,800.00	6,938.06	6,028.00	6,027.71	30.47	41.44	50.18	763.66	-151.69	1,679.37	1,619.23	60.13	27.927	
7,900.00	6,937.87	6,028.00	6,027.71	31.44	41.44	50.18	763.66	-151.69	1,742.16	1,681.28	60.88	28.616	
8,000.00	6,937.68	6,028.00	6,027.71	32.46	41.44	50.18	763.66	-151.69	1,808.30	1,746.72	61.58	29.365	
8,100.00	6,937.49	6,028.00	6,027.71	33.53	41.44	50.18	763.66	-151.69	1,877.45	1,815.22	62.23	30.171	
8,200.00	6,937.30	6,028.00	6,027.71	34.64	41.44	50.18	763.66	-151.69	1,949.27	1,886.44	62.83	31.027	
8,300.00	6,937.10	6,028.00	6,027.71	35.78	41.44	50.18	763.66	-151.69	2,023.49	1,960.11	63.38	31.929	
8,400.00	6,936.91	6,028.00	6,027.71	36.96	41.44	50.18	763.66	-151.69	2,099.84	2,035.96	63.88	32.872	
8,500.00	6,936.72	6,028.00	6,027.71	38.17	41.44	50.18	763.66	-151.69	2,178.12	2,113.77	64.34	33.852	
8,600.00	6,936.53	6,028.00	6,027.71	39.41	41.44	50.18	763.66	-151.69	2,258.10	2,193.34	64.77	34.866	
8,700.00	6,936.34	6,028.00	6,027.71	40.68	41.44	50.18	763.66	-151.69	2,339.63	2,274.48	65.15	35.909	
8,800.00	6,936.15	6,028.00	6,027.71	41.97	41.44	50.18	763.66	-151.69	2,422.55	2,357.04	65.51	36.980	
8,900.00	6,935.96	6,028.00	6,027.71	43.27	41.44	50.18	763.66	-151.69	2,506.71	2,440.87	65.84	38.075	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	6,028.00	6,027.71	44.60	41.44	50.18	763.66	-151.69	2,591.99	2,525.85	66.14	39.191	
9,100.00	6,935.57	6,028.00	6,027.71	45.95	41.44	50.18	763.66	-151.69	2,678.30	2,611.88	66.42	40.327	
9,200.00	6,935.38	6,028.00	6,027.71	47.31	41.44	50.18	763.66	-151.69	2,765.52	2,698.85	66.67	41.480	
9,300.00	6,935.19	6,028.00	6,027.71	48.69	41.44	50.18	763.66	-151.69	2,853.59	2,786.68	66.91	42.649	
9,400.00	6,935.00	6,028.00	6,027.71	50.08	41.44	50.18	763.66	-151.69	2,942.41	2,875.29	67.13	43.832	
9,500.00	6,934.81	6,028.00	6,027.71	51.48	41.44	50.18	763.66	-151.69	3,031.94	2,964.60	67.33	45.028	
9,600.00	6,934.62	6,028.00	6,027.71	52.89	41.44	50.18	763.66	-151.69	3,122.10	3,054.57	67.53	46.235	
9,700.00	6,934.43	6,028.00	6,027.71	54.32	41.44	50.18	763.66	-151.69	3,212.84	3,145.13	67.71	47.453	
9,800.00	6,934.23	6,028.00	6,027.71	55.75	41.44	50.18	763.66	-151.69	3,304.12	3,236.24	67.87	48.680	
9,900.00	6,934.04	6,028.00	6,027.71	57.19	41.44	50.18	763.66	-151.69	3,395.89	3,327.85	68.03	49.916	
10,000.00	6,933.85	6,028.00	6,027.71	58.65	41.44	50.18	763.66	-151.69	3,488.11	3,419.92	68.18	51.159	
10,100.00	6,933.66	6,028.00	6,027.71	60.10	41.44	50.18	763.66	-151.69	3,580.74	3,512.42	68.32	52.409	
10,200.00	6,933.47	6,028.00	6,027.71	61.57	41.44	50.18	763.66	-151.69	3,673.77	3,605.31	68.46	53.665	
10,300.00	6,933.28	6,028.00	6,027.71	63.04	41.44	50.18	763.66	-151.69	3,767.15	3,698.57	68.58	54.927	
10,400.00	6,933.09	6,028.00	6,027.71	64.52	41.44	50.18	763.66	-151.69	3,860.86	3,792.16	68.71	56.194	
10,500.00	6,932.89	6,028.00	6,027.71	66.01	41.44	50.18	763.66	-151.69	3,954.88	3,886.06	68.82	57.465	
10,600.00	6,932.70	6,028.00	6,027.71	67.50	41.44	50.18	763.66	-151.69	4,049.19	3,980.26	68.93	58.740	
10,700.00	6,932.51	6,028.00	6,027.71	68.99	41.44	50.18	763.66	-151.69	4,143.77	4,074.73	69.04	60.019	
10,800.00	6,932.32	6,028.00	6,027.71	70.50	41.44	50.18	763.66	-151.69	4,238.59	4,169.45	69.14	61.301	
10,900.00	6,932.13	6,028.00	6,027.71	72.00	41.44	50.18	763.66	-151.69	4,333.65	4,264.40	69.24	62.585	
11,000.00	6,931.94	6,028.00	6,027.71	73.51	41.44	50.18	763.66	-151.69	4,428.92	4,359.58	69.34	63.872	
11,100.00	6,931.75	6,028.00	6,027.71	75.02	41.44	50.18	763.66	-151.69	4,524.40	4,454.96	69.43	65.161	
11,200.00	6,931.55	6,028.00	6,027.71	76.54	41.44	50.18	763.66	-151.69	4,620.07	4,550.54	69.53	66.452	
11,300.00	6,931.36	6,028.00	6,027.71	78.06	41.44	50.18	763.66	-151.69	4,715.92	4,646.30	69.61	67.744	
11,400.00	6,931.17	6,028.00	6,027.71	79.58	41.44	50.18	763.66	-151.69	4,811.94	4,742.24	69.70	69.037	
11,500.00	6,930.98	6,028.00	6,027.71	81.11	41.44	50.18	763.66	-151.69	4,908.11	4,838.33	69.79	70.332	
11,600.00	6,930.79	6,028.00	6,027.71	82.64	41.44	50.18	763.66	-151.69	5,004.44	4,934.57	69.87	71.627	
11,700.00	6,930.60	6,028.00	6,027.71	84.17	41.44	50.18	763.66	-151.69	5,100.91	5,030.96	69.95	72.923	
11,800.00	6,930.41	6,028.00	6,027.71	85.70	41.44	50.18	763.66	-151.69	5,197.51	5,127.48	70.03	74.219	
11,900.00	6,930.21	6,028.00	6,027.71	87.24	41.44	50.18	763.66	-151.69	5,294.24	5,224.13	70.11	75.515	
12,000.00	6,930.02	6,028.00	6,027.71	88.78	41.44	50.18	763.66	-151.69	5,391.09	5,320.90	70.19	76.812	
12,100.00	6,929.83	6,028.00	6,027.71	90.32	41.44	50.18	763.66	-151.69	5,488.05	5,417.78	70.26	78.108	
12,200.00	6,929.64	6,028.00	6,027.71	91.87	41.44	50.18	763.66	-151.69	5,585.11	5,514.78	70.34	79.404	
12,300.00	6,929.45	6,028.00	6,027.71	93.41	41.44	50.18	763.66	-151.69	5,682.28	5,611.87	70.41	80.700	
12,400.00	6,929.26	6,028.00	6,027.71	94.96	41.44	50.18	763.66	-151.69	5,779.55	5,709.06	70.49	81.995	
12,500.00	6,929.07	6,028.00	6,027.71	96.51	41.44	50.18	763.66	-151.69	5,876.91	5,806.35	70.56	83.289	
12,600.00	6,928.88	6,028.00	6,027.71	98.06	41.44	50.18	763.66	-151.69	5,974.35	5,903.72	70.63	84.583	
12,700.00	6,928.68	6,028.00	6,027.71	99.62	41.44	50.18	763.66	-151.69	6,071.88	6,001.17	70.71	85.875	
12,800.00	6,928.49	6,028.00	6,027.71	101.17	41.44	50.18	763.66	-151.69	6,169.49	6,098.71	70.78	87.167	
12,900.00	6,928.30	6,028.00	6,027.71	102.73	41.44	50.18	763.66	-151.69	6,267.17	6,196.32	70.85	88.457	
13,000.00	6,928.11	6,028.00	6,027.71	104.28	41.44	50.18	763.66	-151.69	6,364.92	6,294.00	70.92	89.746	
13,100.00	6,927.92	6,028.00	6,027.71	105.84	41.44	50.18	763.66	-151.69	6,462.75	6,391.75	70.99	91.034	
13,200.00	6,927.73	6,028.00	6,027.71	107.40	41.44	50.18	763.66	-151.69	6,560.64	6,489.57	71.06	92.320	
13,300.00	6,927.54	6,028.00	6,027.71	108.97	41.44	50.18	763.66	-151.69	6,658.59	6,587.45	71.13	93.605	
13,400.00	6,927.34	6,028.00	6,027.71	110.53	41.44	50.18	763.66	-151.69	6,756.60	6,685.39	71.21	94.888	
13,500.00	6,927.15	6,028.00	6,027.71	112.09	41.44	50.18	763.66	-151.69	6,854.67	6,783.39	71.28	96.170	
13,600.00	6,926.96	6,028.00	6,027.71	113.66	41.44	50.18	763.66	-151.69	6,952.79	6,881.45	71.35	97.449	
13,700.00	6,926.77	6,028.00	6,027.71	115.22	41.44	50.18	763.66	-151.69	7,050.97	6,979.55	71.42	98.727	
13,800.00	6,926.58	6,028.00	6,027.71	116.79	41.44	50.18	763.66	-151.69	7,149.20	7,077.71	71.49	100.003	
13,900.00	6,926.39	6,028.00	6,027.71	118.36	41.44	50.18	763.66	-151.69	7,247.47	7,175.91	71.56	101.277	
14,000.00	6,926.20	6,028.00	6,027.71	119.93	41.44	50.18	763.66	-151.69	7,345.80	7,274.16	71.63	102.549	
14,100.00	6,926.00	6,028.00	6,027.71	121.50	41.44	50.18	763.66	-151.69	7,444.16	7,372.46	71.70	103.819	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,028.00	6,027.71	123.07	41.44	50.18	763.66	-151.69	7,542.57	7,470.80	71.77	105.087	
14,300.00	6,925.62	6,028.00	6,027.71	124.64	41.44	50.18	763.66	-151.69	7,641.02	7,569.18	71.85	106.352	
14,400.00	6,925.43	6,028.00	6,027.71	126.21	41.44	50.18	763.66	-151.69	7,739.52	7,667.60	71.92	107.616	
14,500.00	6,925.24	6,028.00	6,027.71	127.79	41.44	50.18	763.66	-151.69	7,838.05	7,766.05	71.99	108.876	
14,600.00	6,925.05	6,028.00	6,027.71	129.36	41.44	50.18	763.66	-151.69	7,936.61	7,864.55	72.06	110.135	
14,700.00	6,924.86	6,028.00	6,027.71	130.93	41.44	50.18	763.66	-151.69	8,035.21	7,963.08	72.14	111.391	
14,800.00	6,924.66	6,028.00	6,027.71	132.51	41.44	50.18	763.66	-151.69	8,133.85	8,061.64	72.21	112.645	
14,900.00	6,924.47	6,028.00	6,027.71	134.09	41.44	50.18	763.66	-151.69	8,232.52	8,160.24	72.28	113.896	
15,000.00	6,924.28	6,028.00	6,027.71	135.66	41.44	50.18	763.66	-151.69	8,331.22	8,258.86	72.35	115.145	
15,100.00	6,924.09	6,028.00	6,027.71	137.24	41.44	50.18	763.66	-151.69	8,429.95	8,357.52	72.43	116.391	
15,200.00	6,923.90	6,028.00	6,027.71	138.82	41.44	50.18	763.66	-151.69	8,528.71	8,456.21	72.50	117.634	
15,300.00	6,923.71	6,028.00	6,027.71	140.40	41.44	50.18	763.66	-151.69	8,627.50	8,554.92	72.58	118.875	
15,400.00	6,923.52	6,028.00	6,027.71	141.97	41.44	50.18	763.66	-151.69	8,726.31	8,653.66	72.65	120.113	
15,500.00	6,923.33	6,028.00	6,027.71	143.55	41.44	50.18	763.66	-151.69	8,825.16	8,752.43	72.73	121.349	
15,600.00	6,923.13	6,028.00	6,027.71	145.13	41.44	50.18	763.66	-151.69	8,924.03	8,851.23	72.80	122.581	
15,700.00	6,922.94	6,028.00	6,027.71	146.72	41.44	50.18	763.66	-151.69	9,022.92	8,950.04	72.88	123.811	
15,800.00	6,922.75	6,028.00	6,027.71	148.30	41.44	50.18	763.66	-151.69	9,121.84	9,048.89	72.95	125.038	
15,900.00	6,922.56	6,028.00	6,027.71	149.88	41.44	50.18	763.66	-151.69	9,220.78	9,147.75	73.03	126.262	
16,000.00	6,922.37	6,028.00	6,027.71	151.46	41.44	50.18	763.66	-151.69	9,319.74	9,246.64	73.11	127.483	
16,100.00	6,922.18	6,028.00	6,027.71	153.04	41.44	50.18	763.66	-151.69	9,418.73	9,345.55	73.18	128.701	
16,200.00	6,921.99	6,028.00	6,027.71	154.63	41.44	50.18	763.66	-151.69	9,517.74	9,444.48	73.26	129.917	
16,300.00	6,921.79	6,028.00	6,027.71	156.21	41.44	50.18	763.66	-151.69	9,616.77	9,543.43	73.34	131.129	
16,400.00	6,921.60	6,028.00	6,027.71	157.79	41.44	50.18	763.66	-151.69	9,715.81	9,642.40	73.42	132.339	
16,500.00	6,921.41	6,028.00	6,027.71	159.38	41.44	50.18	763.66	-151.69	9,814.88	9,741.39	73.49	133.545	
16,600.00	6,921.22	6,028.00	6,027.71	160.96	41.44	50.18	763.66	-151.69	9,913.97	9,840.39	73.57	134.748	
16,700.00	6,921.03	6,028.00	6,027.71	162.55	41.44	50.18	763.66	-151.69	10,013.07	9,939.42	73.65	135.949	
16,800.00	6,920.84	6,028.00	6,027.71	164.13	41.44	50.18	763.66	-151.69	10,112.19	10,038.46	73.73	137.146	
16,900.00	6,920.65	6,028.00	6,027.71	165.72	41.44	50.18	763.66	-151.69	10,211.33	10,137.52	73.81	138.340	
17,000.00	6,920.45	6,028.00	6,027.71	167.30	41.44	50.18	763.66	-151.69	10,310.48	10,236.59	73.89	139.531	
17,100.00	6,920.26	6,028.00	6,027.71	168.89	41.44	50.18	763.66	-151.69	10,409.66	10,335.68	73.98	140.719	
17,200.00	6,920.07	6,028.00	6,027.71	170.48	41.44	50.18	763.66	-151.69	10,508.84	10,434.79	74.06	141.903	
17,300.00	6,919.88	6,028.00	6,027.71	172.06	41.44	50.18	763.66	-151.69	10,608.05	10,533.91	74.14	143.085	
17,400.00	6,919.69	6,028.00	6,027.71	173.65	41.44	50.18	763.66	-151.69	10,707.26	10,633.04	74.22	144.263	
17,500.00	6,919.50	6,028.00	6,027.71	175.24	41.44	50.18	763.66	-151.69	10,806.49	10,732.19	74.30	145.438	
17,600.00	6,919.31	6,028.00	6,027.71	176.83	41.44	50.18	763.66	-151.69	10,905.74	10,831.35	74.39	146.610	
17,700.00	6,919.11	6,028.00	6,027.71	178.41	41.44	50.18	763.66	-151.69	11,005.00	10,930.53	74.47	147.779	
17,759.55	6,919.00	6,028.00	6,027.71	179.36	41.44	50.18	763.66	-151.69	11,064.12	10,989.60	74.52	148.473	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-16.55	773.47	-229.80	809.04				
100.00	100.00	38.48	38.48	0.25	0.07	-16.56	773.46	-230.05	806.95	806.62	0.33	2,437.326	CC, ES
200.00	200.00	132.26	132.22	0.61	0.28	-16.75	773.34	-232.74	807.65	806.76	0.88	913.322	
300.00	300.00	225.78	225.57	0.97	0.48	-17.14	773.08	-238.35	809.14	807.70	1.44	563.283	
400.00	400.00	318.86	318.25	1.33	0.67	-17.72	772.69	-246.85	811.49	809.50	1.99	408.408	
500.00	500.00	411.31	410.00	1.68	0.87	-18.49	772.18	-258.15	814.78	812.24	2.54	321.401	
600.00	600.00	502.97	500.58	2.04	1.06	-19.43	771.55	-272.16	819.14	816.06	3.08	265.933	
700.00	700.00	594.25	590.31	2.40	1.32	-20.54	770.80	-288.87	824.71	821.02	3.69	223.419	
800.00	800.00	682.00	676.53	2.76	1.65	-21.62	770.06	-305.16	830.83	826.47	4.36	190.476	
900.00	900.00	742.74	735.80	3.12	1.94	-22.43	771.32	-318.36	841.04	836.07	4.97	169.219	
1,000.00	1,000.00	829.97	819.99	3.48	2.39	-23.77	774.35	-340.97	854.71	848.99	5.71	149.608	
1,100.00	1,099.98	894.00	881.22	3.82	2.76	141.90	777.29	-359.42	872.49	866.14	6.35	137.391	
1,129.54	1,129.49	914.53	900.72	3.92	2.89	141.50	778.54	-365.71	879.01	872.46	6.55	134.170	
1,200.00	1,199.88	973.96	956.96	4.15	3.28	140.58	782.14	-384.61	895.42	888.34	7.09	126.360	
1,300.00	1,299.78	1,051.84	1,029.84	4.48	3.85	139.29	786.82	-411.66	920.58	912.74	7.84	117.494	
1,400.00	1,399.68	1,130.89	1,102.93	4.82	4.46	137.90	791.56	-441.36	947.87	939.27	8.60	110.208	
1,500.00	1,499.58	1,203.00	1,169.26	5.16	5.03	136.67	796.53	-469.22	977.22	967.92	9.30	105.031	
1,600.00	1,599.48	1,270.91	1,231.10	5.50	5.61	135.52	802.05	-496.70	1,009.28	999.29	9.98	101.087	
1,700.00	1,699.37	1,433.19	1,378.01	5.85	6.95	132.67	809.75	-565.02	1,040.45	1,029.08	11.38	91.466	
1,800.00	1,799.27	1,522.78	1,459.62	6.20	7.67	131.14	810.61	-601.97	1,068.98	1,056.79	12.20	87.648	
1,900.00	1,899.17	1,601.41	1,531.02	6.55	8.34	129.84	811.59	-634.89	1,098.89	1,085.95	12.95	84.880	
2,000.00	1,999.07	1,670.00	1,592.93	6.90	8.95	128.74	813.17	-664.38	1,130.99	1,117.38	13.62	83.068	
2,100.00	2,098.96	1,744.22	1,659.54	7.25	9.64	127.60	815.80	-697.01	1,165.26	1,150.94	14.32	81.388	
2,200.00	2,198.86	1,814.08	1,721.93	7.61	10.30	126.58	819.22	-728.25	1,201.54	1,186.57	14.97	80.283	
2,300.00	2,298.76	1,876.93	1,777.75	7.96	10.91	125.72	823.24	-756.85	1,239.95	1,224.41	15.54	79.790	
2,400.00	2,398.66	1,929.92	1,824.34	8.32	11.44	125.02	827.73	-781.70	1,281.13	1,265.12	16.01	80.014	
2,500.00	2,498.56	2,004.87	1,889.60	8.68	12.20	124.09	835.37	-817.74	1,324.64	1,307.98	16.67	79.473	
2,600.00	2,598.45	2,091.02	1,964.59	9.03	13.08	123.08	844.17	-859.24	1,368.67	1,351.26	17.41	78.615	
2,700.00	2,698.35	2,178.66	2,040.97	9.39	13.94	122.14	853.59	-901.17	1,413.12	1,394.98	18.14	77.895	
2,800.00	2,798.25	2,315.98	2,162.07	9.75	15.23	120.89	869.36	-963.92	1,456.96	1,437.70	19.27	75.624	
2,900.00	2,898.15	2,395.89	2,233.13	10.11	15.98	120.20	877.31	-999.59	1,499.04	1,479.14	19.90	75.316	
3,000.00	2,998.04	2,530.37	2,353.47	10.47	17.21	119.09	888.82	-1,058.48	1,539.60	1,518.61	20.98	73.375	
3,100.00	3,097.94	2,598.00	2,413.60	10.83	17.84	118.54	894.46	-1,088.91	1,581.18	1,559.66	21.52	73.472	
3,200.00	3,197.84	2,672.74	2,479.62	11.19	18.56	117.94	900.92	-1,123.34	1,624.08	1,601.95	22.12	73.412	
3,300.00	3,297.74	2,767.32	2,563.42	11.55	19.46	117.19	908.13	-1,166.57	1,666.46	1,643.58	22.88	72.839	
3,400.00	3,397.64	2,846.90	2,633.95	11.91	20.22	116.60	914.46	-1,202.89	1,709.18	1,685.68	23.51	72.710	
3,500.00	3,497.53	3,107.18	2,870.72	12.27	22.34	115.24	938.39	-1,307.77	1,749.64	1,724.26	25.38	68.928	
3,600.00	3,597.43	3,343.68	3,094.95	12.63	23.79	114.46	954.54	-1,380.92	1,780.22	1,753.44	26.77	66.489	SF
3,700.00	3,697.33	3,337.00	3,088.56	12.99	23.75	114.48	954.30	-1,379.01	1,809.89	1,783.01	26.88	67.343	
3,800.00	3,797.23	3,337.00	3,088.56	13.35	23.75	114.48	954.30	-1,379.01	1,844.50	1,817.56	26.95	68.454	
3,900.00	3,897.12	3,337.00	3,088.56	13.72	23.75	114.48	954.30	-1,379.01	1,883.79	1,856.83	26.96	69.877	
4,000.00	3,997.02	3,337.00	3,088.56	14.08	23.75	114.48	954.30	-1,379.01	1,927.48	1,900.55	26.92	71.590	
4,100.00	4,096.92	3,337.00	3,088.56	14.44	23.75	114.48	954.30	-1,379.01	1,975.26	1,948.41	26.85	73.571	
4,200.00	4,196.82	3,337.00	3,088.56	14.80	23.75	114.48	954.30	-1,379.01	2,026.86	2,000.12	26.74	75.799	
4,300.00	4,296.72	3,337.00	3,088.56	15.16	23.75	114.48	954.30	-1,379.01	2,081.98	2,055.38	26.61	78.255	
4,400.00	4,396.61	3,337.00	3,088.56	15.53	23.75	114.48	954.30	-1,379.01	2,140.36	2,113.91	26.45	80.918	
4,500.00	4,496.51	3,337.00	3,088.56	15.89	23.75	114.48	954.30	-1,379.01	2,201.73	2,175.45	26.28	83.772	
4,600.00	4,596.41	3,337.00	3,088.56	16.25	23.75	114.48	954.30	-1,379.01	2,265.86	2,239.76	26.11	86.797	
4,700.00	4,696.31	3,337.00	3,088.56	16.61	23.75	114.48	954.30	-1,379.01	2,332.51	2,306.59	25.92	89.977	
4,800.00	4,796.20	3,337.00	3,088.56	16.98	23.75	114.48	954.30	-1,379.01	2,401.48	2,375.74	25.74	93.295	
4,900.00	4,896.10	3,337.00	3,088.56	17.34	23.75	114.48	954.30	-1,379.01	2,472.57	2,447.01	25.56	96.737	
5,000.00	4,996.00	3,337.00	3,088.56	17.70	23.75	114.48	954.30	-1,379.01	2,545.60	2,520.22	25.38	100.288	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,100.00	5,095.90	3,337.00	3,088.56	18.07	23.75	114.48	954.30	-1,379.01	2,620.42	2,595.21	25.21	103.933	
5,200.00	5,195.80	3,337.00	3,088.56	18.43	23.75	114.48	954.30	-1,379.01	2,696.87	2,671.82	25.05	107.659	
5,300.00	5,295.69	3,337.00	3,088.56	18.79	23.75	114.48	954.30	-1,379.01	2,774.81	2,749.91	24.90	111.452	
5,400.00	5,395.59	3,337.00	3,088.56	19.16	23.75	114.48	954.30	-1,379.01	2,854.13	2,829.38	24.75	115.302	
5,500.00	5,495.49	3,337.00	3,088.56	19.52	23.75	114.48	954.30	-1,379.01	2,934.72	2,910.10	24.62	119.196	
5,600.00	5,595.39	3,337.00	3,088.56	19.88	23.75	114.48	954.30	-1,379.01	3,016.46	2,991.96	24.50	123.123	
5,700.00	5,695.28	3,337.00	3,088.56	20.25	23.75	114.48	954.30	-1,379.01	3,099.28	3,074.89	24.39	127.073	
5,800.00	5,795.18	3,337.00	3,088.56	20.61	23.75	114.48	954.30	-1,379.01	3,183.09	3,158.80	24.29	131.037	
5,900.00	5,895.08	3,337.00	3,088.56	20.97	23.75	114.48	954.30	-1,379.01	3,267.80	3,243.60	24.21	135.004	
6,000.00	5,994.98	3,337.00	3,088.56	21.34	23.75	114.48	954.30	-1,379.01	3,353.36	3,329.23	24.13	138.968	
6,100.00	6,094.88	3,337.00	3,088.56	21.70	23.75	114.48	954.30	-1,379.01	3,439.70	3,415.63	24.07	142.918	
6,200.00	6,194.77	3,337.00	3,088.56	22.06	23.75	114.48	954.30	-1,379.01	3,526.76	3,502.74	24.02	146.849	
6,300.00	6,294.67	3,337.00	3,088.56	22.43	23.75	114.48	954.30	-1,379.01	3,614.49	3,590.51	23.98	150.753	
6,314.74	6,309.40	3,337.00	3,088.56	22.48	23.75	114.48	954.30	-1,379.01	3,627.47	3,603.50	23.97	151.325	
6,350.00	6,344.59	3,337.00	3,088.56	22.61	23.75	68.03	954.30	-1,379.01	3,658.21	3,634.25	23.96	152.707	
6,400.00	6,394.26	3,337.00	3,088.56	22.79	23.75	47.32	954.30	-1,379.01	3,700.52	3,676.59	23.93	154.651	
6,450.00	6,443.36	3,337.00	3,088.56	22.97	23.75	38.52	954.30	-1,379.01	3,741.15	3,717.25	23.90	156.558	
6,500.00	6,491.60	3,337.00	3,088.56	23.15	23.75	33.25	954.30	-1,379.01	3,779.90	3,756.04	23.86	158.412	
6,550.00	6,538.67	3,337.00	3,088.56	23.32	23.75	29.62	954.30	-1,379.01	3,816.61	3,792.78	23.82	160.205	
6,600.00	6,584.29	3,337.00	3,088.56	23.49	23.75	26.91	954.30	-1,379.01	3,851.09	3,827.31	23.78	161.931	
6,650.00	6,628.18	3,337.00	3,088.56	23.66	23.75	24.82	954.30	-1,379.01	3,883.21	3,859.48	23.74	163.581	
6,700.00	6,670.06	3,337.00	3,088.56	23.83	23.75	23.17	954.30	-1,379.01	3,912.83	3,889.14	23.69	165.145	
6,750.00	6,709.68	3,337.00	3,088.56	24.00	23.75	21.83	954.30	-1,379.01	3,939.82	3,916.17	23.65	166.613	
6,800.00	6,746.79	3,337.00	3,088.56	24.17	23.75	20.75	954.30	-1,379.01	3,964.07	3,940.47	23.60	167.970	
6,850.00	6,781.17	3,337.00	3,088.56	24.35	23.75	19.88	954.30	-1,379.01	3,985.48	3,961.92	23.55	169.204	
6,900.00	6,812.60	3,337.00	3,088.56	24.54	23.75	19.17	954.30	-1,379.01	4,003.96	3,980.45	23.51	170.297	
6,950.00	6,840.88	3,337.00	3,088.56	24.74	23.75	18.60	954.30	-1,379.01	4,019.45	3,995.98	23.47	171.235	
7,000.00	6,865.85	3,337.00	3,088.56	24.96	23.75	18.16	954.30	-1,379.01	4,031.89	4,008.44	23.44	172.000	
7,050.00	6,887.35	3,337.00	3,088.56	25.19	23.75	17.83	954.30	-1,379.01	4,041.21	4,017.80	23.42	172.577	
7,100.00	6,905.25	3,337.00	3,088.56	25.43	23.75	17.61	954.30	-1,379.01	4,047.40	4,024.00	23.40	172.950	
7,150.00	6,919.43	3,337.00	3,088.56	25.69	23.75	17.48	954.30	-1,379.01	4,050.42	4,027.02	23.40	173.108	
7,200.00	6,929.81	3,337.00	3,088.56	25.96	23.75	17.44	954.30	-1,379.01	4,050.27	4,026.86	23.41	173.041	
7,250.00	6,936.33	3,337.00	3,088.56	26.25	23.75	17.49	954.30	-1,379.01	4,046.94	4,023.51	23.43	172.743	
7,300.00	6,938.95	3,337.00	3,088.56	26.55	23.75	17.63	954.30	-1,379.01	4,040.45	4,016.98	23.46	172.211	
7,309.56	6,939.00	3,337.00	3,088.56	26.60	23.75	17.67	954.30	-1,379.01	4,038.85	4,015.38	23.47	172.069	
7,400.00	6,938.83	3,337.00	3,088.56	27.19	23.75	17.67	954.30	-1,379.01	4,024.16	4,000.59	23.57	170.715	
7,500.00	6,938.64	3,337.00	3,088.56	27.91	23.75	17.67	954.30	-1,379.01	4,010.23	3,986.48	23.75	168.875	
7,600.00	6,938.44	3,337.00	3,088.56	28.70	23.75	17.67	954.30	-1,379.01	3,998.75	3,974.77	23.99	166.711	
7,700.00	6,938.25	3,337.00	3,088.56	29.55	23.75	17.67	954.30	-1,379.01	3,989.75	3,965.46	24.29	164.272	
7,800.00	6,938.06	3,337.00	3,088.56	30.47	23.75	17.67	954.30	-1,379.01	3,983.24	3,958.59	24.65	161.614	
7,900.00	6,937.87	3,337.00	3,088.56	31.44	23.75	17.67	954.30	-1,379.01	3,979.23	3,954.17	25.06	158.796	
8,000.00	6,937.68	3,337.00	3,088.56	32.46	23.75	17.67	954.30	-1,379.01	3,977.73	3,952.22	25.52	155.876	
8,009.57	6,937.66	3,337.00	3,088.56	32.56	23.75	17.67	954.30	-1,379.01	3,977.72	3,952.16	25.57	155.586	
8,100.00	6,937.49	3,337.00	3,088.56	33.53	23.75	17.67	954.30	-1,379.01	3,978.75	3,952.73	26.02	152.908	
8,200.00	6,937.30	3,337.00	3,088.56	34.64	23.75	17.67	954.30	-1,379.01	3,982.28	3,955.72	26.56	149.941	
8,300.00	6,937.10	3,337.00	3,088.56	35.78	23.75	17.67	954.30	-1,379.01	3,988.31	3,961.18	27.13	147.014	
8,400.00	6,936.91	3,337.00	3,088.56	36.96	23.75	17.67	954.30	-1,379.01	3,996.84	3,969.11	27.72	144.163	
8,500.00	6,936.72	3,337.00	3,088.56	38.17	23.75	17.67	954.30	-1,379.01	4,007.84	3,979.50	28.34	141.415	
8,600.00	6,936.53	3,337.00	3,088.56	39.41	23.75	17.67	954.30	-1,379.01	4,021.30	3,992.33	28.97	138.790	
8,700.00	6,936.34	3,337.00	3,088.56	40.68	23.75	17.67	954.30	-1,379.01	4,037.20	4,007.58	29.62	136.304	
8,800.00	6,936.15	3,337.00	3,088.56	41.97	23.75	17.67	954.30	-1,379.01	4,055.50	4,025.22	30.27	133.966	
8,900.00	6,935.96	3,337.00	3,088.56	43.27	23.75	17.67	954.30	-1,379.01	4,076.17	4,045.24	30.93	131.784	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
9,000.00	6,935.76	3,337.00	3,088.56	44.60	23.75	17.67	954.30	-1,379.01	4,099.17	4,067.58	31.59	129.759	
9,100.00	6,935.57	3,337.00	3,088.56	45.95	23.75	17.67	954.30	-1,379.01	4,124.48	4,092.23	32.25	127.893	
9,200.00	6,935.38	3,337.00	3,088.56	47.31	23.75	17.67	954.30	-1,379.01	4,152.04	4,119.13	32.90	126.184	
9,300.00	6,935.19	3,337.00	3,088.56	48.69	23.75	17.67	954.30	-1,379.01	4,181.80	4,148.25	33.55	124.630	
9,400.00	6,935.00	3,337.00	3,088.56	50.08	23.75	17.67	954.30	-1,379.01	4,213.74	4,179.54	34.20	123.225	
9,500.00	6,934.81	3,337.00	3,088.56	51.48	23.75	17.67	954.30	-1,379.01	4,247.78	4,212.96	34.83	121.966	
9,600.00	6,934.62	3,337.00	3,088.56	52.89	23.75	17.67	954.30	-1,379.01	4,283.89	4,248.44	35.45	120.846	
9,700.00	6,934.43	3,337.00	3,088.56	54.32	23.75	17.67	954.30	-1,379.01	4,322.02	4,285.96	36.06	119.860	
9,800.00	6,934.23	3,337.00	3,088.56	55.75	23.75	17.67	954.30	-1,379.01	4,362.10	4,325.45	36.66	119.003	
9,900.00	6,934.04	3,337.00	3,088.56	57.19	23.75	17.67	954.30	-1,379.01	4,404.09	4,366.85	37.24	118.267	
10,000.00	6,933.85	3,337.00	3,088.56	58.65	23.75	17.67	954.30	-1,379.01	4,447.93	4,410.12	37.81	117.648	
10,100.00	6,933.66	3,337.00	3,088.56	60.10	23.75	17.67	954.30	-1,379.01	4,493.57	4,455.21	38.36	117.139	
10,200.00	6,933.47	3,337.00	3,088.56	61.57	23.75	17.67	954.30	-1,379.01	4,540.95	4,502.05	38.90	116.735	
10,300.00	6,933.28	3,337.00	3,088.56	63.04	23.75	17.67	954.30	-1,379.01	4,590.03	4,550.60	39.42	116.430	
10,400.00	6,933.09	3,337.00	3,088.56	64.52	23.75	17.67	954.30	-1,379.01	4,640.74	4,600.81	39.93	116.218	
10,500.00	6,932.89	3,337.00	3,088.56	66.01	23.75	17.67	954.30	-1,379.01	4,693.03	4,652.61	40.42	116.096	
10,600.00	6,932.70	3,337.00	3,088.56	67.50	23.75	17.67	954.30	-1,379.01	4,746.85	4,705.95	40.90	116.058	
10,700.00	6,932.51	3,337.00	3,088.56	68.99	23.75	17.67	954.30	-1,379.01	4,802.16	4,760.79	41.36	116.099	
10,800.00	6,932.32	3,337.00	3,088.56	70.50	23.75	17.67	954.30	-1,379.01	4,858.89	4,817.08	41.81	116.215	
10,900.00	6,932.13	3,337.00	3,088.56	72.00	23.75	17.67	954.30	-1,379.01	4,917.00	4,874.76	42.24	116.402	
11,000.00	6,931.94	3,337.00	3,088.56	73.51	23.75	17.67	954.30	-1,379.01	4,976.44	4,933.78	42.66	116.657	
11,100.00	6,931.75	3,337.00	3,088.56	75.02	23.75	17.67	954.30	-1,379.01	5,037.17	4,994.10	43.06	116.975	
11,200.00	6,931.55	3,337.00	3,088.56	76.54	23.75	17.67	954.30	-1,379.01	5,099.13	5,055.68	43.45	117.353	
11,300.00	6,931.36	3,337.00	3,088.56	78.06	23.75	17.67	954.30	-1,379.01	5,162.29	5,118.46	43.83	117.788	
11,400.00	6,931.17	3,337.00	3,088.56	79.58	23.75	17.67	954.30	-1,379.01	5,226.60	5,182.41	44.19	118.276	
11,500.00	6,930.98	3,337.00	3,088.56	81.11	23.75	17.67	954.30	-1,379.01	5,292.01	5,247.47	44.54	118.816	
11,600.00	6,930.79	3,337.00	3,088.56	82.64	23.75	17.67	954.30	-1,379.01	5,358.50	5,313.62	44.88	119.403	
11,700.00	6,930.60	3,337.00	3,088.56	84.17	23.75	17.67	954.30	-1,379.01	5,426.01	5,380.80	45.20	120.035	
11,800.00	6,930.41	3,337.00	3,088.56	85.70	23.75	17.67	954.30	-1,379.01	5,494.51	5,448.99	45.52	120.711	
11,900.00	6,930.21	3,337.00	3,088.56	87.24	23.75	17.67	954.30	-1,379.01	5,563.97	5,518.15	45.82	121.427	
12,000.00	6,930.02	3,337.00	3,088.56	88.78	23.75	17.67	954.30	-1,379.01	5,634.34	5,588.23	46.11	122.182	
12,100.00	6,929.83	3,337.00	3,088.56	90.32	23.75	17.67	954.30	-1,379.01	5,705.60	5,659.21	46.40	122.974	
12,200.00	6,929.64	3,337.00	3,088.56	91.87	23.75	17.67	954.30	-1,379.01	5,777.72	5,731.05	46.67	123.800	
12,300.00	6,929.45	3,337.00	3,088.56	93.41	23.75	17.67	954.30	-1,379.01	5,850.65	5,803.71	46.93	124.659	
12,400.00	6,929.26	3,337.00	3,088.56	94.96	23.75	17.67	954.30	-1,379.01	5,924.37	5,877.18	47.19	125.548	
12,500.00	6,929.07	3,337.00	3,088.56	96.51	23.75	17.67	954.30	-1,379.01	5,998.85	5,951.42	47.43	126.468	
12,600.00	6,928.88	3,337.00	3,088.56	98.06	23.75	17.67	954.30	-1,379.01	6,074.07	6,026.40	47.67	127.415	
12,700.00	6,928.68	3,337.00	3,088.56	99.62	23.75	17.67	954.30	-1,379.01	6,149.99	6,102.09	47.90	128.388	
12,800.00	6,928.49	3,337.00	3,088.56	101.17	23.75	17.67	954.30	-1,379.01	6,226.60	6,178.47	48.12	129.387	
12,900.00	6,928.30	3,337.00	3,088.56	102.73	23.75	17.67	954.30	-1,379.01	6,303.86	6,255.52	48.34	130.409	
13,000.00	6,928.11	3,337.00	3,088.56	104.28	23.75	17.67	954.30	-1,379.01	6,381.75	6,333.20	48.55	131.454	
13,100.00	6,927.92	3,337.00	3,088.56	105.84	23.75	17.67	954.30	-1,379.01	6,460.25	6,411.50	48.75	132.520	
13,200.00	6,927.73	3,337.00	3,088.56	107.40	23.75	17.67	954.30	-1,379.01	6,539.33	6,490.39	48.94	133.607	
13,300.00	6,927.54	3,337.00	3,088.56	108.97	23.75	17.67	954.30	-1,379.01	6,618.98	6,569.85	49.13	134.713	
13,400.00	6,927.34	3,337.00	3,088.56	110.53	23.75	17.67	954.30	-1,379.01	6,699.18	6,649.86	49.32	135.836	
13,500.00	6,927.15	3,337.00	3,088.56	112.09	23.75	17.67	954.30	-1,379.01	6,779.91	6,730.41	49.50	136.978	
13,600.00	6,926.96	3,337.00	3,088.56	113.66	23.75	17.67	954.30	-1,379.01	6,861.14	6,811.47	49.67	138.135	
13,700.00	6,926.77	3,337.00	3,088.56	115.22	23.75	17.67	954.30	-1,379.01	6,942.86	6,893.02	49.84	139.309	
13,800.00	6,926.58	3,337.00	3,088.56	116.79	23.75	17.67	954.30	-1,379.01	7,025.05	6,975.05	50.00	140.496	
13,900.00	6,926.39	3,337.00	3,088.56	118.36	23.75	17.67	954.30	-1,379.01	7,107.70	7,057.54	50.16	141.698	
14,000.00	6,926.20	3,337.00	3,088.56	119.93	23.75	17.67	954.30	-1,379.01	7,190.80	7,140.48	50.32	142.913	
14,100.00	6,926.00	3,337.00	3,088.56	121.50	23.75	17.67	954.30	-1,379.01	7,274.31	7,223.85	50.47	144.141	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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

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
14,200.00	6,925.81	3,337.00	3,088.56	123.07	23.75	17.67	954.30	-1,379.01	7,358.24	7,307.63	50.61	145.380	
14,300.00	6,925.62	3,337.00	3,088.56	124.64	23.75	17.67	954.30	-1,379.01	7,442.57	7,391.81	50.76	146.631	
14,400.00	6,925.43	3,337.00	3,088.56	126.21	23.75	17.67	954.30	-1,379.01	7,527.28	7,476.38	50.90	147.892	
14,500.00	6,925.24	3,337.00	3,088.56	127.79	23.75	17.67	954.30	-1,379.01	7,612.36	7,561.32	51.03	149.164	
14,600.00	6,925.05	3,337.00	3,088.56	129.36	23.75	17.67	954.30	-1,379.01	7,697.80	7,646.63	51.17	150.445	
14,700.00	6,924.86	3,337.00	3,088.56	130.93	23.75	17.67	954.30	-1,379.01	7,783.58	7,732.28	51.30	151.734	
14,800.00	6,924.66	3,337.00	3,088.56	132.51	23.75	17.67	954.30	-1,379.01	7,869.70	7,818.28	51.43	153.033	
14,900.00	6,924.47	3,337.00	3,088.56	134.09	23.75	17.67	954.30	-1,379.01	7,956.15	7,904.60	51.55	154.339	
15,000.00	6,924.28	3,337.00	3,088.56	135.66	23.75	17.67	954.30	-1,379.01	8,042.91	7,991.24	51.67	155.653	
15,100.00	6,924.09	3,337.00	3,088.56	137.24	23.75	17.67	954.30	-1,379.01	8,129.98	8,078.18	51.79	156.973	
15,200.00	6,923.90	3,337.00	3,088.56	138.82	23.75	17.67	954.30	-1,379.01	8,217.33	8,165.42	51.91	158.301	
15,300.00	6,923.71	3,337.00	3,088.56	140.40	23.75	17.67	954.30	-1,379.01	8,304.98	8,252.95	52.02	159.635	
15,400.00	6,923.52	3,337.00	3,088.56	141.97	23.75	17.67	954.30	-1,379.01	8,392.90	8,340.76	52.14	160.974	
15,500.00	6,923.33	3,337.00	3,088.56	143.55	23.75	17.67	954.30	-1,379.01	8,481.09	8,428.84	52.25	162.319	
15,600.00	6,923.13	3,337.00	3,088.56	145.13	23.75	17.67	954.30	-1,379.01	8,569.54	8,517.18	52.36	163.670	
15,700.00	6,922.94	3,337.00	3,088.56	146.72	23.75	17.67	954.30	-1,379.01	8,658.23	8,605.77	52.47	165.025	
15,800.00	6,922.75	3,337.00	3,088.56	148.30	23.75	17.67	954.30	-1,379.01	8,747.18	8,694.60	52.57	166.384	
15,900.00	6,922.56	3,337.00	3,088.56	149.88	23.75	17.67	954.30	-1,379.01	8,836.36	8,783.68	52.68	167.748	
16,000.00	6,922.37	3,337.00	3,088.56	151.46	23.75	17.67	954.30	-1,379.01	8,925.76	8,872.99	52.78	169.115	
16,100.00	6,922.18	3,337.00	3,088.56	153.04	23.75	17.67	954.30	-1,379.01	9,015.40	8,962.52	52.88	170.486	
16,200.00	6,921.99	3,337.00	3,088.56	154.63	23.75	17.67	954.30	-1,379.01	9,105.24	9,052.26	52.98	171.860	
16,300.00	6,921.79	3,337.00	3,088.56	156.21	23.75	17.67	954.30	-1,379.01	9,195.30	9,142.22	53.08	173.238	
16,400.00	6,921.60	3,337.00	3,088.56	157.79	23.75	17.67	954.30	-1,379.01	9,285.56	9,232.38	53.18	174.618	
16,500.00	6,921.41	3,337.00	3,088.56	159.38	23.75	17.67	954.30	-1,379.01	9,376.02	9,322.75	53.27	176.000	
16,600.00	6,921.22	3,337.00	3,088.56	160.96	23.75	17.67	954.30	-1,379.01	9,466.67	9,413.30	53.37	177.385	
16,700.00	6,921.03	3,337.00	3,088.56	162.55	23.75	17.67	954.30	-1,379.01	9,557.50	9,504.04	53.46	178.772	
16,800.00	6,920.84	3,337.00	3,088.56	164.13	23.75	17.67	954.30	-1,379.01	9,648.52	9,594.97	53.56	180.161	
16,900.00	6,920.65	3,337.00	3,088.56	165.72	23.75	17.67	954.30	-1,379.01	9,739.72	9,686.07	53.65	181.551	
17,000.00	6,920.45	3,337.00	3,088.56	167.30	23.75	17.67	954.30	-1,379.01	9,831.08	9,777.34	53.74	182.942	
17,100.00	6,920.26	3,337.00	3,088.56	168.89	23.75	17.67	954.30	-1,379.01	9,922.61	9,868.78	53.83	184.335	
17,200.00	6,920.07	3,337.00	3,088.56	170.48	23.75	17.67	954.30	-1,379.01	10,014.31	9,960.39	53.92	185.729	
17,300.00	6,919.88	3,337.00	3,088.56	172.06	23.75	17.67	954.30	-1,379.01	10,106.16	10,052.15	54.01	187.124	
17,400.00	6,919.69	3,337.00	3,088.56	173.65	23.75	17.67	954.30	-1,379.01	10,198.16	10,144.06	54.10	188.519	
17,500.00	6,919.50	3,337.00	3,088.56	175.24	23.75	17.67	954.30	-1,379.01	10,290.31	10,236.13	54.18	189.914	
17,600.00	6,919.31	3,337.00	3,088.56	176.83	23.75	17.67	954.30	-1,379.01	10,382.61	10,328.34	54.27	191.310	
17,700.00	6,919.11	3,337.00	3,088.56	178.41	23.75	17.67	954.30	-1,379.01	10,475.05	10,420.70	54.36	192.706	
17,759.55	6,919.00	3,337.00	3,088.56	179.36	23.75	17.67	954.30	-1,379.01	10,530.17	10,475.76	54.41	193.538	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
0.00	0.00	0.00	0.00	0.00	0.00	-90.76	-144.11	-10,840.35	10,841.49				
100.00	100.00	111.27	111.27	0.25	0.13	-90.76	-143.91	-10,839.96	10,841.18	10,840.80	0.38	N/A	
200.00	200.00	420.26	420.20	0.61	0.49	-90.75	-141.34	-10,834.87	10,839.52	10,838.43	1.09	9,943.913	
300.00	300.00	583.00	582.84	0.97	0.71	-90.74	-139.05	-10,829.80	10,836.25	10,834.59	1.66	6,518.364	
400.00	400.00	613.00	612.83	1.33	0.77	-90.73	-138.77	-10,828.87	10,833.29	10,831.22	2.08	5,213.587	
500.00	500.00	643.00	642.81	1.68	0.83	-90.73	-138.14	-10,828.23	10,831.08	10,828.59	2.50	4,340.868	
600.00	600.00	643.00	642.81	2.04	0.83	-90.73	-138.14	-10,828.23	10,829.64	10,826.78	2.85	3,794.986	
700.00	700.00	673.00	672.81	2.40	0.89	-90.73	-137.68	-10,828.10	10,829.04	10,825.77	3.27	3,312.386	
736.81	736.81	673.00	672.81	2.53	0.89	-90.73	-137.68	-10,828.10	10,828.98	10,825.58	3.40	3,183.855	
800.00	800.00	673.00	672.81	2.76	0.89	-90.73	-137.68	-10,828.10	10,829.16	10,825.53	3.63	2,984.972	
900.00	900.00	673.00	672.81	3.12	0.89	-90.73	-137.68	-10,828.10	10,830.21	10,826.22	3.99	2,716.431	
1,000.00	1,000.00	688.62	688.42	3.48	0.92	-90.73	-137.51	-10,828.35	10,832.05	10,827.67	4.38	2,474.825	
1,100.00	1,099.98	704.00	703.79	3.82	0.95	76.12	-137.19	-10,828.81	10,834.36	10,829.61	4.74	2,283.374	
1,129.54	1,129.49	704.00	703.79	3.92	0.95	76.11	-137.19	-10,828.81	10,835.02	10,830.18	4.84	2,238.393	
1,200.00	1,199.88	704.00	703.79	4.15	0.95	76.11	-137.19	-10,828.81	10,836.84	10,831.77	5.07	2,136.888	
1,300.00	1,299.78	733.00	732.76	4.48	1.00	76.12	-136.59	-10,830.16	10,840.16	10,834.70	5.46	1,985.373	
1,400.00	1,399.68	733.00	732.76	4.82	1.00	76.12	-136.59	-10,830.16	10,844.18	10,838.39	5.80	1,871.061	
1,500.00	1,499.58	733.00	732.76	5.16	1.00	76.12	-136.59	-10,830.16	10,849.12	10,842.99	6.14	1,768.395	
1,600.00	1,599.48	764.00	763.66	5.50	1.07	76.13	-135.55	-10,832.36	10,854.93	10,848.39	6.54	1,659.871	
1,700.00	1,699.37	764.00	763.66	5.85	1.07	76.13	-135.55	-10,832.36	10,861.42	10,854.54	6.88	1,578.091	
1,800.00	1,799.27	764.00	763.66	6.20	1.07	76.13	-135.55	-10,832.36	10,868.83	10,861.60	7.23	1,503.860	
1,900.00	1,899.17	764.00	763.66	6.55	1.07	76.13	-135.55	-10,832.36	10,877.16	10,869.58	7.57	1,436.272	
2,000.00	1,999.07	794.00	793.47	6.90	1.15	76.14	-134.03	-10,835.36	10,886.19	10,878.21	7.98	1,363.712	
2,100.00	2,098.96	794.00	793.47	7.25	1.15	76.14	-134.03	-10,835.36	10,896.07	10,887.74	8.33	1,308.223	
2,200.00	2,198.86	794.00	793.47	7.61	1.15	76.14	-134.03	-10,835.36	10,906.85	10,898.17	8.68	1,257.217	
2,300.00	2,298.76	825.00	824.18	7.96	1.22	76.16	-132.46	-10,839.30	10,918.41	10,909.32	9.09	1,201.397	
2,400.00	2,398.66	825.00	824.18	8.32	1.22	76.16	-132.46	-10,839.30	10,930.72	10,921.29	9.43	1,158.699	
2,500.00	2,498.56	825.00	824.18	8.68	1.22	76.16	-132.46	-10,839.30	10,943.93	10,934.15	9.78	1,119.137	
2,600.00	2,598.45	855.00	853.80	9.03	1.29	76.17	-131.46	-10,843.89	10,957.99	10,947.80	10.19	1,075.569	
2,700.00	2,698.35	855.00	853.80	9.39	1.29	76.17	-131.46	-10,843.89	10,972.72	10,962.19	10.53	1,041.890	
2,800.00	2,798.25	855.00	853.80	9.75	1.29	76.17	-131.46	-10,843.89	10,988.34	10,977.46	10.87	1,010.482	
2,900.00	2,898.15	886.00	884.33	10.11	1.37	76.18	-130.96	-10,849.28	11,004.69	10,993.41	11.28	975.306	
3,000.00	2,998.04	886.00	884.33	10.47	1.37	76.18	-130.96	-10,849.28	11,021.80	11,010.18	11.62	948.200	
3,100.00	3,097.94	886.00	884.33	10.83	1.37	76.18	-130.96	-10,849.28	11,039.79	11,027.83	11.96	922.786	
3,200.00	3,197.84	886.00	884.33	11.19	1.37	76.18	-130.96	-10,849.28	11,058.66	11,046.36	12.30	898.924	
3,300.00	3,297.74	886.00	884.33	11.55	1.37	76.18	-130.96	-10,849.28	11,078.40	11,065.76	12.64	876.488	
3,400.00	3,397.64	948.00	944.86	11.91	1.53	76.21	-129.30	-10,862.54	11,098.74	11,085.62	13.12	845.815	
3,500.00	3,497.53	948.00	944.86	12.27	1.53	76.21	-129.30	-10,862.54	11,119.66	11,106.20	13.46	826.373	
3,600.00	3,597.43	948.00	944.86	12.63	1.53	76.21	-129.30	-10,862.54	11,141.44	11,127.65	13.79	808.015	
3,700.00	3,697.33	948.00	944.86	12.99	1.53	76.21	-129.30	-10,862.54	11,164.07	11,149.95	14.12	790.662	
3,800.00	3,797.23	948.00	944.86	13.35	1.53	76.21	-129.30	-10,862.54	11,187.55	11,173.10	14.45	774.242	
3,900.00	3,897.12	978.00	973.87	13.72	1.64	76.22	-127.97	-10,870.05	11,211.70	11,196.84	14.86	754.728	
4,000.00	3,997.02	978.00	973.87	14.08	1.64	76.22	-127.97	-10,870.05	11,236.60	11,221.42	15.18	740.172	
4,100.00	4,096.92	1,010.00	1,004.69	14.44	1.76	76.24	-126.18	-10,878.47	11,262.11	11,246.52	15.59	722.265	
4,200.00	4,196.82	1,010.00	1,004.69	14.80	1.76	76.24	-126.18	-10,878.47	11,288.40	11,272.49	15.92	709.282	
4,300.00	4,296.72	1,010.00	1,004.69	15.16	1.76	76.24	-126.18	-10,878.47	11,315.51	11,299.28	16.24	696.938	
4,400.00	4,396.61	1,041.00	1,034.33	15.53	1.90	76.26	-124.11	-10,887.32	11,343.25	11,326.61	16.64	681.505	
4,500.00	4,496.51	1,041.00	1,034.33	15.89	1.90	76.26	-124.11	-10,887.32	11,371.73	11,354.77	16.96	670.448	
4,600.00	4,596.41	1,071.00	1,062.83	16.25	2.05	76.28	-121.78	-10,896.39	11,400.96	11,383.59	17.37	656.429	
4,700.00	4,696.31	1,071.00	1,062.83	16.61	2.05	76.28	-121.78	-10,896.39	11,430.80	11,413.11	17.68	646.486	
4,800.00	4,796.20	1,086.52	1,077.51	16.98	2.13	76.29	-120.43	-10,901.22	11,461.31	11,443.27	18.04	635.225	
4,900.00	4,896.10	1,101.00	1,091.15	17.34	2.21	76.30	-119.04	-10,905.90	11,492.59	11,474.19	18.40	624.625	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
5,000.00	4,996.00	1,101.00	1,091.15	17.70	2.21	76.30	-119.04	-10,905.90	11,524.55	11,505.84	18.71	616.057	
5,100.00	5,095.90	1,132.00	1,120.15	18.07	2.40	76.32	-115.51	-10,916.26	11,557.20	11,538.08	19.12	604.462	
5,200.00	5,195.80	1,132.00	1,120.15	18.43	2.40	76.32	-115.51	-10,916.26	11,590.45	11,571.03	19.42	596.716	
5,300.00	5,295.69	1,163.00	1,148.95	18.79	2.60	76.35	-111.34	-10,926.94	11,624.34	11,604.50	19.84	585.910	
5,400.00	5,395.59	1,163.00	1,148.95	19.16	2.60	76.35	-111.34	-10,926.94	11,658.87	11,638.73	20.14	578.889	
5,500.00	5,495.49	1,194.00	1,177.60	19.52	2.82	76.38	-106.98	-10,937.95	11,693.98	11,673.42	20.56	568.857	
5,600.00	5,595.39	1,194.00	1,177.60	19.88	2.82	76.38	-106.98	-10,937.95	11,729.77	11,708.92	20.85	562.482	
5,700.00	5,695.28	1,225.00	1,206.03	20.25	3.04	76.41	-102.42	-10,949.44	11,766.25	11,744.98	21.27	553.121	
5,800.00	5,795.18	1,225.00	1,206.03	20.61	3.04	76.41	-102.42	-10,949.44	11,803.28	11,781.71	21.57	547.327	
5,900.00	5,895.08	1,225.00	1,206.03	20.97	3.04	76.41	-102.42	-10,949.44	11,841.03	11,819.18	21.86	541.767	
6,000.00	5,994.98	1,257.00	1,235.10	21.34	3.29	76.45	-97.32	-10,961.80	11,879.38	11,857.10	22.28	533.148	
6,100.00	6,094.88	1,297.00	1,271.28	21.70	3.61	76.49	-90.51	-10,977.44	11,918.23	11,895.48	22.75	523.976	
6,200.00	6,194.77	1,328.00	1,299.18	22.06	3.87	76.53	-84.77	-10,989.67	11,957.53	11,934.36	23.18	515.960	
6,300.00	6,294.67	1,328.00	1,299.18	22.43	3.87	76.53	-84.77	-10,989.67	11,997.36	11,973.90	23.46	511.407	
6,314.74	6,309.40	1,328.00	1,299.18	22.48	3.87	76.53	-84.77	-10,989.67	12,003.29	11,979.79	23.50	510.751	
6,350.00	6,344.59	1,341.87	1,311.60	22.61	3.98	33.40	-82.10	-10,995.25	12,016.60	11,992.94	23.66	507.793	
6,400.00	6,394.26	1,359.00	1,326.92	22.79	4.13	16.53	-78.93	-11,002.21	12,032.49	12,008.61	23.88	503.842	
6,450.00	6,443.36	1,359.00	1,326.92	22.97	4.13	10.75	-78.93	-11,002.21	12,044.74	12,020.72	24.02	501.505	
6,500.00	6,491.60	1,359.00	1,326.92	23.15	4.13	7.92	-78.93	-11,002.21	12,053.35	12,029.20	24.15	499.056	
6,550.00	6,538.67	1,374.99	1,341.19	23.32	4.27	6.26	-75.99	-11,008.81	12,058.20	12,033.84	24.36	494.936	
6,600.00	6,584.29	1,391.00	1,355.41	23.49	4.41	5.19	-72.99	-11,015.53	12,059.36	12,034.79	24.57	490.805	
6,650.00	6,628.18	1,391.00	1,355.41	23.66	4.41	4.42	-72.99	-11,015.53	12,056.73	12,032.03	24.70	488.187	
6,700.00	6,670.06	1,391.00	1,355.41	23.83	4.41	3.86	-72.99	-11,015.53	12,050.39	12,025.57	24.82	485.543	
6,750.00	6,709.68	1,422.00	1,382.82	24.00	4.70	3.46	-67.07	-11,028.74	12,040.34	12,015.25	25.09	479.872	
6,800.00	6,746.79	1,422.00	1,382.82	24.17	4.70	3.12	-67.07	-11,028.74	12,026.59	12,001.39	25.20	477.249	
6,850.00	6,781.17	1,422.00	1,382.82	24.35	4.70	2.84	-67.07	-11,028.74	12,009.30	11,984.00	25.30	474.642	
6,900.00	6,812.60	1,436.87	1,395.91	24.54	4.84	2.64	-64.17	-11,035.17	11,988.51	11,963.03	25.47	470.620	
6,950.00	6,840.88	1,452.00	1,409.17	24.74	4.99	2.47	-61.13	-11,041.79	11,964.38	11,938.74	25.64	466.662	
7,000.00	6,865.85	1,452.00	1,409.17	24.96	4.99	2.31	-61.13	-11,041.79	11,936.98	11,911.26	25.72	464.193	
7,050.00	6,887.35	1,452.00	1,409.17	25.19	4.99	2.17	-61.13	-11,041.79	11,906.52	11,880.74	25.78	461.780	
7,100.00	6,905.25	1,452.00	1,409.17	25.43	4.99	2.05	-61.13	-11,041.79	11,873.17	11,847.33	25.84	459.432	
7,150.00	6,919.43	1,464.93	1,420.45	25.69	5.12	1.95	-58.50	-11,047.52	11,837.05	11,811.09	25.96	455.933	
7,200.00	6,929.81	1,481.00	1,434.42	25.96	5.28	1.88	-55.22	-11,054.76	11,798.47	11,772.39	26.09	452.261	
7,250.00	6,936.33	1,481.00	1,434.42	26.25	5.28	1.77	-55.22	-11,054.76	11,757.52	11,731.40	26.12	450.157	
7,300.00	6,938.95	1,481.00	1,434.42	26.55	5.28	1.65	-55.22	-11,054.76	11,714.51	11,688.37	26.14	448.131	
7,309.56	6,939.00	1,481.00	1,434.42	26.60	5.28	1.62	-55.22	-11,054.76	11,706.07	11,679.92	26.15	447.697	
7,400.00	6,938.83	1,481.00	1,434.42	27.19	5.28	1.62	-55.22	-11,054.76	11,625.99	11,599.83	26.17	444.315	
7,500.00	6,938.64	1,481.00	1,434.42	27.91	5.28	1.62	-55.22	-11,054.76	11,537.63	11,511.44	26.19	440.488	
7,600.00	6,938.44	1,497.67	1,448.84	28.70	5.45	1.66	-51.78	-11,062.39	11,449.39	11,423.08	26.32	435.039	
7,700.00	6,938.25	1,511.00	1,460.32	29.55	5.59	1.70	-48.98	-11,068.56	11,361.34	11,334.91	26.43	429.848	
7,800.00	6,938.06	1,511.00	1,460.32	30.47	5.59	1.70	-48.98	-11,068.56	11,273.45	11,246.97	26.48	425.734	
7,900.00	6,937.87	1,511.00	1,460.32	31.44	5.59	1.70	-48.98	-11,068.56	11,185.75	11,159.22	26.54	421.517	
8,000.00	6,937.68	1,528.33	1,475.18	32.46	5.78	1.74	-45.30	-11,076.67	11,098.19	11,071.49	26.70	415.671	
8,100.00	6,937.49	1,542.00	1,486.85	33.53	5.93	1.78	-42.35	-11,083.16	11,010.83	10,983.99	26.85	410.137	
8,200.00	6,937.30	1,542.00	1,486.85	34.64	5.93	1.78	-42.35	-11,083.16	10,923.65	10,896.72	26.93	405.655	
8,300.00	6,937.10	1,554.24	1,497.27	35.78	6.06	1.81	-39.70	-11,089.02	10,836.65	10,809.55	27.09	399.969	
8,400.00	6,936.91	1,573.00	1,513.17	36.96	6.27	1.86	-35.61	-11,098.08	10,749.84	10,722.55	27.29	393.894	
8,500.00	6,936.72	1,573.00	1,513.17	38.17	6.27	1.86	-35.61	-11,098.08	10,663.20	10,635.80	27.40	389.176	
8,600.00	6,936.53	1,573.00	1,513.17	39.41	6.27	1.86	-35.61	-11,098.08	10,576.78	10,549.27	27.52	384.369	
8,700.00	6,936.34	1,573.00	1,513.17	40.68	6.27	1.86	-35.61	-11,098.08	10,490.61	10,462.97	27.64	379.476	
8,800.00	6,936.15	1,590.00	1,527.48	41.97	6.46	1.90	-31.81	-11,106.43	10,404.56	10,376.69	27.88	373.245	
8,900.00	6,935.96	1,605.00	1,539.99	43.27	6.64	1.94	-28.32	-11,113.94	10,318.84	10,290.73	28.11	367.092	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
9,000.00	6,935.76	1,605.00	1,539.99	44.60	6.64	1.94	-28.32	-11,113.94	10,233.27	10,205.00	28.27	362.022	
9,100.00	6,935.57	1,605.00	1,539.99	45.95	6.64	1.94	-28.32	-11,113.94	10,147.97	10,119.53	28.44	356.882	
9,200.00	6,935.38	1,605.00	1,539.99	47.31	6.64	1.94	-28.32	-11,113.94	10,062.94	10,034.32	28.61	351.676	
9,300.00	6,935.19	1,636.00	1,565.59	48.69	7.01	2.03	-20.88	-11,129.77	9,978.10	9,949.12	28.98	344.321	
9,400.00	6,935.00	1,636.00	1,565.59	50.08	7.01	2.03	-20.88	-11,129.77	9,893.46	9,864.29	29.18	339.060	
9,500.00	6,934.81	1,636.00	1,565.59	51.48	7.01	2.03	-20.88	-11,129.77	9,809.12	9,779.73	29.39	333.748	
9,600.00	6,934.62	1,649.62	1,576.73	52.89	7.18	2.07	-17.55	-11,136.85	9,725.01	9,695.32	29.69	327.547	
9,700.00	6,934.43	1,666.00	1,590.05	54.32	7.38	2.12	-13.50	-11,145.48	9,641.21	9,611.19	30.02	321.194	
9,800.00	6,934.23	1,666.00	1,590.05	55.75	7.38	2.12	-13.50	-11,145.48	9,557.62	9,527.35	30.26	315.821	
9,900.00	6,934.04	1,666.00	1,590.05	57.19	7.38	2.12	-13.50	-11,145.48	9,474.34	9,443.82	30.52	310.418	
10,000.00	6,933.85	1,696.00	1,614.26	58.65	7.77	2.21	-6.05	-11,161.55	9,391.30	9,360.35	30.96	303.373	
10,100.00	6,933.66	1,696.00	1,614.26	60.10	7.77	2.21	-6.05	-11,161.55	9,308.52	9,277.28	31.24	297.987	
10,200.00	6,933.47	1,696.00	1,614.26	61.57	7.77	2.21	-6.05	-11,161.55	9,226.07	9,194.54	31.53	292.587	
10,300.00	6,933.28	1,727.00	1,639.04	63.04	8.17	2.30	1.66	-11,178.52	9,143.87	9,111.86	32.01	285.691	
10,400.00	6,933.09	1,727.00	1,639.04	64.52	8.17	2.30	1.66	-11,178.52	9,061.95	9,029.62	32.33	280.338	
10,500.00	6,932.89	1,727.00	1,639.04	66.01	8.17	2.30	1.66	-11,178.52	8,980.39	8,947.73	32.66	274.987	
10,600.00	6,932.70	1,743.56	1,652.14	67.50	8.39	2.36	5.81	-11,187.76	8,899.11	8,866.02	33.09	268.935	
10,700.00	6,932.51	1,757.00	1,662.69	68.99	8.58	2.40	9.21	-11,195.35	8,818.19	8,784.67	33.52	263.085	
10,800.00	6,932.32	1,757.00	1,662.69	70.50	8.58	2.40	9.21	-11,195.35	8,737.60	8,703.71	33.89	257.824	
10,900.00	6,932.13	1,757.00	1,662.69	72.00	8.58	2.40	9.21	-11,195.35	8,657.41	8,623.14	34.28	252.584	
11,000.00	6,931.94	1,787.00	1,685.99	73.51	9.00	2.49	16.88	-11,212.63	8,577.50	8,542.67	34.83	246.292	
11,100.00	6,931.75	1,787.00	1,685.99	75.02	9.00	2.49	16.88	-11,212.63	8,497.95	8,462.72	35.24	241.157	
11,200.00	6,931.55	1,804.15	1,699.17	76.54	9.24	2.55	21.31	-11,222.66	8,418.78	8,383.03	35.75	235.492	
11,300.00	6,931.36	1,818.00	1,709.77	78.06	9.44	2.59	24.94	-11,230.81	8,339.94	8,303.69	36.26	230.021	
11,400.00	6,931.17	1,818.00	1,709.77	79.58	9.44	2.59	24.94	-11,230.81	8,261.52	8,224.81	36.71	225.046	
11,500.00	6,930.98	1,850.00	1,733.98	81.11	9.91	2.70	33.61	-11,249.86	8,183.43	8,146.10	37.34	219.189	
11,600.00	6,930.79	1,850.00	1,733.98	82.64	9.91	2.70	33.61	-11,249.86	8,105.73	8,067.91	37.82	214.352	
11,700.00	6,930.60	1,850.00	1,733.98	84.17	9.91	2.70	33.61	-11,249.86	8,028.52	7,990.21	38.31	209.564	
11,800.00	6,930.41	1,881.00	1,757.03	85.70	10.38	2.81	42.28	-11,268.68	7,951.65	7,912.68	38.97	204.047	
11,900.00	6,930.21	6,896.00	6,053.19	87.24	54.34	54.72	928.34	-13,015.02	7,862.06	7,808.24	53.82	146.092	
12,000.00	6,930.02	6,896.00	6,053.19	88.78	54.34	54.72	928.34	-13,015.02	7,763.63	7,709.62	54.02	143.724	
12,100.00	6,929.83	6,896.00	6,053.19	90.32	54.34	54.72	928.34	-13,015.02	7,665.25	7,611.02	54.23	141.353	
12,200.00	6,929.64	6,896.00	6,053.19	91.87	54.34	54.72	928.34	-13,015.02	7,566.91	7,512.47	54.45	138.978	
12,300.00	6,929.45	6,896.00	6,053.19	93.41	54.34	54.72	928.34	-13,015.02	7,468.62	7,413.94	54.68	136.600	
12,400.00	6,929.26	6,896.00	6,053.19	94.96	54.34	54.72	928.34	-13,015.02	7,370.37	7,315.46	54.91	134.219	
12,500.00	6,929.07	6,896.00	6,053.19	96.51	54.34	54.72	928.34	-13,015.02	7,272.17	7,217.01	55.16	131.837	
12,600.00	6,928.88	6,896.00	6,053.19	98.06	54.34	54.72	928.34	-13,015.02	7,174.01	7,118.60	55.42	129.452	
12,700.00	6,928.68	6,896.00	6,053.19	99.62	54.34	54.72	928.34	-13,015.02	7,075.91	7,020.23	55.69	127.065	
12,800.00	6,928.49	6,896.00	6,053.19	101.17	54.34	54.72	928.34	-13,015.02	6,977.87	6,921.90	55.97	124.677	
12,900.00	6,928.30	6,896.00	6,053.19	102.73	54.34	54.72	928.34	-13,015.02	6,879.88	6,823.62	56.26	122.288	
13,000.00	6,928.11	6,896.00	6,053.19	104.28	54.34	54.72	928.34	-13,015.02	6,781.94	6,725.38	56.56	119.898	
13,100.00	6,927.92	6,896.00	6,053.19	105.84	54.34	54.72	928.34	-13,015.02	6,684.07	6,627.19	56.88	117.508	
13,200.00	6,927.73	6,896.00	6,053.19	107.40	54.34	54.72	928.34	-13,015.02	6,586.27	6,529.05	57.21	115.118	
13,300.00	6,927.54	6,896.00	6,053.19	108.97	54.34	54.72	928.34	-13,015.02	6,488.53	6,430.97	57.56	112.729	
13,400.00	6,927.34	6,896.00	6,053.19	110.53	54.34	54.72	928.34	-13,015.02	6,390.86	6,332.94	57.92	110.341	
13,500.00	6,927.15	6,896.00	6,053.19	112.09	54.34	54.72	928.34	-13,015.02	6,293.26	6,234.97	58.30	107.955	
13,600.00	6,926.96	6,896.00	6,053.19	113.66	54.34	54.72	928.34	-13,015.02	6,195.74	6,137.05	58.69	105.571	
13,700.00	6,926.77	6,896.00	6,053.19	115.22	54.34	54.72	928.34	-13,015.02	6,098.30	6,039.20	59.10	103.190	
13,800.00	6,926.58	6,896.00	6,053.19	116.79	54.34	54.72	928.34	-13,015.02	6,000.95	5,941.42	59.53	100.811	
13,900.00	6,926.39	6,896.00	6,053.19	118.36	54.34	54.72	928.34	-13,015.02	5,903.68	5,843.71	59.97	98.437	
14,000.00	6,926.20	6,896.00	6,053.19	119.93	54.34	54.72	928.34	-13,015.02	5,806.51	5,746.06	60.44	96.068	
14,100.00	6,926.00	6,896.00	6,053.19	121.50	54.34	54.72	928.34	-13,015.02	5,709.43	5,648.50	60.93	93.703	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,200.00	6,925.81	6,896.00	6,053.19	123.07	54.34	54.72	928.34	-13,015.02	5,612.46	5,551.01	61.44	91.345	
14,300.00	6,925.62	6,896.00	6,053.19	124.64	54.34	54.72	928.34	-13,015.02	5,515.59	5,453.61	61.98	88.993	
14,400.00	6,925.43	6,896.00	6,053.19	126.21	54.34	54.72	928.34	-13,015.02	5,418.84	5,356.30	62.54	86.648	
14,500.00	6,925.24	6,896.00	6,053.19	127.79	54.34	54.72	928.34	-13,015.02	5,322.21	5,259.08	63.13	84.312	
14,600.00	6,925.05	6,896.00	6,053.19	129.36	54.34	54.72	928.34	-13,015.02	5,225.70	5,161.96	63.74	81.984	
14,700.00	6,924.86	6,896.00	6,053.19	130.93	54.34	54.72	928.34	-13,015.02	5,129.33	5,064.94	64.39	79.666	
14,800.00	6,924.66	6,896.00	6,053.19	132.51	54.34	54.72	928.34	-13,015.02	5,033.10	4,968.04	65.06	77.359	
14,900.00	6,924.47	6,896.00	6,053.19	134.09	54.34	54.72	928.34	-13,015.02	4,937.02	4,871.25	65.77	75.064	
15,000.00	6,924.28	6,896.00	6,053.19	135.66	54.34	54.72	928.34	-13,015.02	4,841.10	4,774.58	66.52	72.781	
15,100.00	6,924.09	6,896.00	6,053.19	137.24	54.34	54.72	928.34	-13,015.02	4,745.35	4,678.05	67.30	70.512	
15,200.00	6,923.90	6,896.00	6,053.19	138.82	54.34	54.72	928.34	-13,015.02	4,649.77	4,581.65	68.12	68.258	
15,300.00	6,923.71	6,896.00	6,053.19	140.40	54.34	54.72	928.34	-13,015.02	4,554.39	4,485.40	68.99	66.019	
15,400.00	6,923.52	6,896.00	6,053.19	141.97	54.34	54.72	928.34	-13,015.02	4,459.21	4,389.31	69.90	63.797	
15,500.00	6,923.33	6,896.00	6,053.19	143.55	54.34	54.72	928.34	-13,015.02	4,364.24	4,293.39	70.86	61.593	
15,600.00	6,923.13	6,896.00	6,053.19	145.13	54.34	54.72	928.34	-13,015.02	4,269.51	4,197.64	71.87	59.409	
15,700.00	6,922.94	6,896.00	6,053.19	146.72	54.34	54.72	928.34	-13,015.02	4,175.02	4,102.08	72.93	57.245	
15,800.00	6,922.75	6,896.00	6,053.19	148.30	54.34	54.72	928.34	-13,015.02	4,080.79	4,006.73	74.06	55.102	
15,900.00	6,922.56	6,896.00	6,053.19	149.88	54.34	54.72	928.34	-13,015.02	3,986.84	3,911.60	75.25	52.983	
16,000.00	6,922.37	6,896.00	6,053.19	151.46	54.34	54.72	928.34	-13,015.02	3,893.20	3,816.69	76.50	50.889	
16,100.00	6,922.18	6,896.00	6,053.19	153.04	54.34	54.72	928.34	-13,015.02	3,799.88	3,722.04	77.83	48.820	
16,200.00	6,921.99	6,896.00	6,053.19	154.63	54.34	54.72	928.34	-13,015.02	3,706.90	3,627.66	79.24	46.779	
16,300.00	6,921.79	6,896.00	6,053.19	156.21	54.34	54.72	928.34	-13,015.02	3,614.31	3,533.57	80.74	44.767	
16,400.00	6,921.60	6,896.00	6,053.19	157.79	54.34	54.72	928.34	-13,015.02	3,522.11	3,439.79	82.32	42.785	
16,500.00	6,921.41	6,896.00	6,053.19	159.38	54.34	54.72	928.34	-13,015.02	3,430.36	3,346.35	84.00	40.835	
16,600.00	6,921.22	6,896.00	6,053.19	160.96	54.34	54.72	928.34	-13,015.02	3,339.08	3,253.28	85.79	38.919	
16,700.00	6,921.03	6,896.00	6,053.19	162.55	54.34	54.72	928.34	-13,015.02	3,248.31	3,160.61	87.70	37.039	
16,800.00	6,920.84	6,896.00	6,053.19	164.13	54.34	54.72	928.34	-13,015.02	3,158.10	3,068.37	89.73	35.196	
16,900.00	6,920.65	6,896.00	6,053.19	165.72	54.34	54.72	928.34	-13,015.02	3,068.49	2,976.60	91.89	33.392	
17,000.00	6,920.45	6,896.00	6,053.19	167.30	54.34	54.72	928.34	-13,015.02	2,979.55	2,885.35	94.20	31.628	
17,100.00	6,920.26	6,896.00	6,053.19	168.89	54.34	54.72	928.34	-13,015.02	2,891.33	2,794.66	96.67	29.908	
17,200.00	6,920.07	6,896.00	6,053.19	170.48	54.34	54.72	928.34	-13,015.02	2,803.90	2,704.59	99.32	28.232	
17,300.00	6,919.88	6,896.00	6,053.19	172.06	54.34	54.72	928.34	-13,015.02	2,717.34	2,615.20	102.14	26.603	
17,400.00	6,919.69	6,896.00	6,053.19	173.65	54.34	54.72	928.34	-13,015.02	2,631.73	2,526.56	105.17	25.023	
17,500.00	6,919.50	6,896.00	6,053.19	175.24	54.34	54.72	928.34	-13,015.02	2,547.17	2,438.75	108.42	23.493	
17,600.00	6,919.31	6,896.00	6,053.19	176.83	54.34	54.72	928.34	-13,015.02	2,463.77	2,351.87	111.90	22.017	
17,700.00	6,919.11	6,896.00	6,053.19	178.41	54.34	54.72	928.34	-13,015.02	2,381.65	2,266.01	115.64	20.595	
17,759.55	6,919.00	6,896.00	6,053.19	179.36	54.34	54.72	928.34	-13,015.02	2,333.40	2,215.41	117.99	19.776	CC, ES, SF

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	-47.28	438.78	-475.14	649.71				
100.00	100.00	38.73	38.73	0.25	0.04	-47.28	438.77	-475.12	646.73	646.43	0.29	2,194.593	
200.00	200.00	140.65	140.65	0.61	0.16	-47.28	438.57	-474.94	646.47	645.70	0.77	841.997	
300.00	300.00	242.57	242.56	0.97	0.27	-47.28	438.14	-474.56	645.91	644.67	1.24	520.524	
400.00	400.00	344.48	344.47	1.33	0.39	-47.29	437.49	-473.97	645.05	643.34	1.71	376.325	
457.05	457.05	395.06	395.05	1.53	0.48	-47.30	437.20	-473.79	644.69	642.68	2.01	320.722	CC, ES
500.00	500.00	429.24	429.23	1.68	0.54	-47.31	437.31	-474.00	644.97	642.74	2.23	289.465	
600.00	600.00	505.00	504.94	2.04	0.70	-47.30	439.14	-475.96	648.44	645.70	2.74	236.830	
700.00	700.00	567.00	566.74	2.40	0.85	-47.30	442.47	-479.50	656.34	653.11	3.23	203.419	
800.00	800.00	638.92	638.08	2.76	1.03	-47.29	448.71	-486.07	669.02	665.29	3.73	179.158	
900.00	900.00	707.43	705.58	3.12	1.22	-47.25	456.94	-494.34	686.08	681.84	4.24	161.970	
1,000.00	1,000.00	774.73	771.32	3.48	1.48	-47.20	467.17	-504.53	707.52	702.79	4.73	149.717	
1,100.00	1,099.98	842.00	836.27	3.82	1.78	119.37	479.66	-516.74	734.17	728.97	5.20	141.125	
1,129.54	1,129.49	856.67	850.32	3.92	1.86	119.26	482.69	-519.67	743.16	737.83	5.32	139.573	
1,200.00	1,199.88	905.00	896.29	4.15	2.12	119.48	493.38	-530.06	766.29	760.64	5.65	135.560	
1,300.00	1,299.78	968.00	955.55	4.48	2.51	119.74	508.61	-545.07	802.16	796.06	6.10	131.486	
1,400.00	1,399.68	1,031.00	1,014.04	4.82	2.94	120.00	525.39	-561.37	841.30	834.75	6.55	128.400	
1,500.00	1,499.58	1,085.44	1,063.88	5.16	3.35	120.22	541.18	-576.56	883.70	876.73	6.96	126.881	
1,600.00	1,599.48	1,143.26	1,115.86	5.50	3.83	120.45	559.43	-594.08	929.56	922.17	7.39	125.701	
1,700.00	1,699.37	1,197.40	1,163.64	5.85	4.33	120.67	577.97	-611.51	978.57	970.76	7.81	125.288	
1,800.00	1,799.27	1,257.29	1,215.63	6.20	4.91	120.94	599.98	-631.51	1,030.20	1,021.94	8.26	124.730	
1,900.00	1,899.17	1,311.00	1,261.52	6.55	5.46	121.18	620.78	-650.11	1,084.12	1,075.44	8.67	124.976	
2,000.00	1,999.07	1,374.00	1,314.38	6.90	6.15	121.42	646.10	-673.20	1,140.37	1,131.21	9.16	124.493	
2,100.00	2,098.96	1,422.36	1,354.42	7.25	6.70	121.59	665.97	-691.67	1,198.33	1,188.78	9.55	125.524	
2,200.00	2,198.86	1,482.87	1,403.80	7.61	7.41	121.74	691.14	-715.92	1,258.03	1,248.01	10.03	125.488	
2,300.00	2,298.76	1,546.19	1,454.99	7.96	8.17	121.82	717.04	-742.72	1,318.79	1,308.26	10.53	125.219	
2,400.00	2,398.66	1,605.09	1,502.18	8.32	8.91	121.87	741.34	-768.25	1,380.55	1,369.53	11.01	125.362	
2,500.00	2,498.56	1,661.65	1,546.97	8.68	9.64	121.93	765.37	-793.08	1,443.51	1,432.03	11.48	125.742	
2,600.00	2,598.45	1,728.07	1,599.03	9.03	10.49	122.01	794.33	-822.44	1,507.45	1,495.42	12.03	125.323	
2,700.00	2,698.35	1,783.65	1,642.38	9.39	11.20	122.08	818.78	-847.19	1,571.95	1,559.46	12.49	125.827	
2,800.00	2,798.25	1,862.99	1,703.75	9.75	12.23	122.17	854.26	-882.80	1,637.19	1,624.03	13.16	124.433	
2,900.00	2,898.15	1,975.61	1,791.65	10.11	13.62	122.37	905.12	-931.47	1,701.74	1,687.66	14.09	120.815	
3,000.00	2,998.04	2,088.14	1,881.24	10.47	15.00	122.52	953.91	-978.97	1,764.16	1,749.16	15.01	117.565	
3,100.00	3,097.94	2,214.02	1,983.42	10.83	16.46	122.72	1,007.20	-1,029.59	1,824.36	1,808.35	16.01	113.934	
3,200.00	3,197.84	2,349.84	2,094.74	11.19	18.01	122.98	1,065.06	-1,081.59	1,884.21	1,867.13	17.08	110.310	
3,300.00	3,297.74	3,253.00	2,925.31	11.55	24.19	123.97	1,296.04	-1,302.50	1,917.85	1,896.60	21.25	90.263	
3,400.00	3,397.64	3,253.00	2,925.31	11.91	24.19	123.97	1,296.04	-1,302.50	1,939.03	1,917.38	21.64	89.584	
3,500.00	3,497.53	3,253.00	2,925.31	12.27	24.19	123.97	1,296.04	-1,302.50	1,965.07	1,943.08	21.99	89.358	SF
3,600.00	3,597.43	3,253.00	2,925.31	12.63	24.19	123.97	1,296.04	-1,302.50	1,995.79	1,973.50	22.29	89.548	
3,700.00	3,697.33	3,253.00	2,925.31	12.99	24.19	123.97	1,296.04	-1,302.50	2,030.97	2,008.43	22.54	90.120	
3,800.00	3,797.23	3,253.00	2,925.31	13.35	24.19	123.97	1,296.04	-1,302.50	2,070.39	2,047.65	22.74	91.040	
3,900.00	3,897.12	3,253.00	2,925.31	13.72	24.19	123.97	1,296.04	-1,302.50	2,113.81	2,090.90	22.91	92.278	
4,000.00	3,997.02	3,253.00	2,925.31	14.08	24.19	123.97	1,296.04	-1,302.50	2,160.99	2,137.95	23.04	93.806	
4,100.00	4,096.92	3,253.00	2,925.31	14.44	24.19	123.97	1,296.04	-1,302.50	2,211.68	2,188.55	23.14	95.599	
4,200.00	4,196.82	3,253.00	2,925.31	14.80	24.19	123.97	1,296.04	-1,302.50	2,265.66	2,242.45	23.21	97.631	
4,300.00	4,296.72	3,253.00	2,925.31	15.16	24.19	123.97	1,296.04	-1,302.50	2,322.69	2,299.44	23.25	99.880	
4,400.00	4,396.61	3,253.00	2,925.31	15.53	24.19	123.97	1,296.04	-1,302.50	2,382.55	2,359.27	23.28	102.324	
4,500.00	4,496.51	3,253.00	2,925.31	15.89	24.19	123.97	1,296.04	-1,302.50	2,445.04	2,421.75	23.30	104.945	
4,600.00	4,596.41	3,253.00	2,925.31	16.25	24.19	123.97	1,296.04	-1,302.50	2,509.96	2,486.66	23.30	107.722	
4,700.00	4,696.31	3,253.00	2,925.31	16.61	24.19	123.97	1,296.04	-1,302.50	2,577.13	2,553.83	23.29	110.640	
4,800.00	4,796.20	3,253.00	2,925.31	16.98	24.19	123.97	1,296.04	-1,302.50	2,646.37	2,623.09	23.28	113.681	
4,900.00	4,896.10	3,253.00	2,925.31	17.34	24.19	123.97	1,296.04	-1,302.50	2,717.52	2,694.26	23.26	116.831	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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	Rule Assigned: Warning
5,000.00	4,996.00	3,253.00	2,925.31	17.70	24.19	123.97	1,296.04	-1,302.50	2,790.45	2,767.21	23.24	120.075	
5,100.00	5,095.90	3,253.00	2,925.31	18.07	24.19	123.97	1,296.04	-1,302.50	2,865.01	2,841.79	23.22	123.400	
5,200.00	5,195.80	3,253.00	2,925.31	18.43	24.19	123.97	1,296.04	-1,302.50	2,941.08	2,917.89	23.20	126.793	
5,300.00	5,295.69	3,253.00	2,925.31	18.79	24.19	123.97	1,296.04	-1,302.50	3,018.55	2,995.37	23.18	130.242	
5,400.00	5,395.59	3,253.00	2,925.31	19.16	24.19	123.97	1,296.04	-1,302.50	3,097.31	3,074.15	23.16	133.737	
5,500.00	5,495.49	3,253.00	2,925.31	19.52	24.19	123.97	1,296.04	-1,302.50	3,177.26	3,154.11	23.15	137.267	
5,600.00	5,595.39	3,253.00	2,925.31	19.88	24.19	123.97	1,296.04	-1,302.50	3,258.32	3,235.18	23.14	140.822	
5,700.00	5,695.28	3,253.00	2,925.31	20.25	24.19	123.97	1,296.04	-1,302.50	3,340.41	3,317.28	23.13	144.394	
5,800.00	5,795.18	3,253.00	2,925.31	20.61	24.19	123.97	1,296.04	-1,302.50	3,423.45	3,400.31	23.14	147.973	
5,900.00	5,895.08	3,253.00	2,925.31	20.97	24.19	123.97	1,296.04	-1,302.50	3,507.38	3,484.23	23.14	151.552	
6,000.00	5,994.98	3,253.00	2,925.31	21.34	24.19	123.97	1,296.04	-1,302.50	3,592.12	3,568.97	23.16	155.124	
6,100.00	6,094.88	3,253.00	2,925.31	21.70	24.19	123.97	1,296.04	-1,302.50	3,677.64	3,654.46	23.18	158.681	
6,200.00	6,194.77	3,253.00	2,925.31	22.06	24.19	123.97	1,296.04	-1,302.50	3,763.87	3,740.67	23.20	162.217	
6,300.00	6,294.67	3,253.00	2,925.31	22.43	24.19	123.97	1,296.04	-1,302.50	3,850.76	3,827.53	23.24	165.726	
6,314.74	6,309.40	3,253.00	2,925.31	22.48	24.19	123.97	1,296.04	-1,302.50	3,863.63	3,840.38	23.24	166.241	
6,350.00	6,344.59	3,253.00	2,925.31	22.61	24.19	76.96	1,296.04	-1,302.50	3,894.11	3,870.86	23.25	167.484	
6,400.00	6,394.26	3,253.00	2,925.31	22.79	24.19	55.48	1,296.04	-1,302.50	3,936.19	3,912.94	23.26	169.234	
6,450.00	6,443.36	3,253.00	2,925.31	22.97	24.19	45.97	1,296.04	-1,302.50	3,976.75	3,953.49	23.26	170.949	
6,500.00	6,491.60	3,253.00	2,925.31	23.15	24.19	40.10	1,296.04	-1,302.50	4,015.58	3,992.32	23.26	172.611	
6,550.00	6,538.67	3,253.00	2,925.31	23.32	24.19	35.93	1,296.04	-1,302.50	4,052.50	4,029.23	23.26	174.211	
6,600.00	6,584.29	3,253.00	2,925.31	23.49	24.19	32.78	1,296.04	-1,302.50	4,087.32	4,064.07	23.26	175.740	
6,650.00	6,628.18	3,253.00	2,925.31	23.66	24.19	30.30	1,296.04	-1,302.50	4,119.90	4,096.65	23.25	177.184	
6,700.00	6,670.06	3,253.00	2,925.31	23.83	24.19	28.32	1,296.04	-1,302.50	4,150.09	4,126.85	23.25	178.532	
6,750.00	6,709.68	3,253.00	2,925.31	24.00	24.19	26.71	1,296.04	-1,302.50	4,177.76	4,154.52	23.24	179.767	
6,800.00	6,746.79	3,253.00	2,925.31	24.17	24.19	25.40	1,296.04	-1,302.50	4,202.78	4,179.54	23.24	180.873	
6,850.00	6,781.17	3,253.00	2,925.31	24.35	24.19	24.32	1,296.04	-1,302.50	4,225.05	4,201.81	23.24	181.831	
6,900.00	6,812.60	3,253.00	2,925.31	24.54	24.19	23.45	1,296.04	-1,302.50	4,244.48	4,221.23	23.24	182.621	
6,950.00	6,840.88	3,253.00	2,925.31	24.74	24.19	22.74	1,296.04	-1,302.50	4,260.98	4,237.72	23.26	183.224	
7,000.00	6,865.85	3,253.00	2,925.31	24.96	24.19	22.19	1,296.04	-1,302.50	4,274.49	4,251.22	23.28	183.622	
7,050.00	6,887.35	3,253.00	2,925.31	25.19	24.19	21.76	1,296.04	-1,302.50	4,284.96	4,261.65	23.31	183.797	
7,100.00	6,905.25	3,253.00	2,925.31	25.43	24.19	21.46	1,296.04	-1,302.50	4,292.35	4,268.98	23.36	183.733	
7,150.00	6,919.43	3,253.00	2,925.31	25.69	24.19	21.28	1,296.04	-1,302.50	4,296.61	4,273.19	23.42	183.421	
7,200.00	6,929.81	3,253.00	2,925.31	25.96	24.19	21.20	1,296.04	-1,302.50	4,297.74	4,274.24	23.50	182.853	
7,250.00	6,936.33	3,253.00	2,925.31	26.25	24.19	21.24	1,296.04	-1,302.50	4,295.74	4,272.14	23.60	182.026	
7,300.00	6,938.95	3,253.00	2,925.31	26.55	24.19	21.37	1,296.04	-1,302.50	4,290.60	4,266.89	23.71	180.944	
7,309.56	6,939.00	3,253.00	2,925.31	26.60	24.19	21.41	1,296.04	-1,302.50	4,289.26	4,265.53	23.74	180.697	
7,400.00	6,938.83	3,253.00	2,925.31	27.19	24.19	21.41	1,296.04	-1,302.50	4,277.01	4,253.02	23.99	178.278	
7,500.00	6,938.64	3,253.00	2,925.31	27.91	24.19	21.41	1,296.04	-1,302.50	4,265.66	4,241.31	24.35	175.200	
7,600.00	6,938.44	3,253.00	2,925.31	28.70	24.19	21.41	1,296.04	-1,302.50	4,256.63	4,231.84	24.78	171.770	
7,700.00	6,938.25	3,253.00	2,925.31	29.55	24.19	21.41	1,296.04	-1,302.50	4,249.93	4,224.64	25.29	168.068	
7,800.00	6,938.06	3,253.00	2,925.31	30.47	24.19	21.41	1,296.04	-1,302.50	4,245.57	4,219.71	25.86	164.177	
7,900.00	6,937.87	3,253.00	2,925.31	31.44	24.19	21.41	1,296.04	-1,302.50	4,243.57	4,217.08	26.49	160.177	
7,934.95	6,937.80	3,253.00	2,925.31	31.80	24.19	21.41	1,296.04	-1,302.50	4,243.43	4,216.70	26.73	158.745	
8,000.00	6,937.68	3,253.00	2,925.31	32.46	24.19	21.41	1,296.04	-1,302.50	4,243.93	4,216.75	27.18	156.138	
8,100.00	6,937.49	3,253.00	2,925.31	33.53	24.19	21.41	1,296.04	-1,302.50	4,246.64	4,218.72	27.92	152.122	
8,200.00	6,937.30	3,253.00	2,925.31	34.64	24.19	21.41	1,296.04	-1,302.50	4,251.70	4,223.01	28.69	148.182	
8,300.00	6,937.10	3,253.00	2,925.31	35.78	24.19	21.41	1,296.04	-1,302.50	4,259.10	4,229.60	29.50	144.358	
8,400.00	6,936.91	3,253.00	2,925.31	36.96	24.19	21.41	1,296.04	-1,302.50	4,268.84	4,238.50	30.34	140.682	
8,500.00	6,936.72	3,253.00	2,925.31	38.17	24.19	21.41	1,296.04	-1,302.50	4,280.89	4,249.68	31.21	137.177	
8,600.00	6,936.53	3,253.00	2,925.31	39.41	24.19	21.41	1,296.04	-1,302.50	4,295.23	4,263.14	32.09	133.857	
8,700.00	6,936.34	3,253.00	2,925.31	40.68	24.19	21.41	1,296.04	-1,302.50	4,311.85	4,278.87	32.98	130.733	
8,800.00	6,936.15	3,253.00	2,925.31	41.97	24.19	21.41	1,296.04	-1,302.50	4,330.71	4,296.83	33.88	127.809	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
8,900.00	6,935.96	3,253.00	2,925.31	43.27	24.19	21.41	1,296.04	-1,302.50	4,351.79	4,317.00	34.79	125.085	
9,000.00	6,935.76	3,253.00	2,925.31	44.60	24.19	21.41	1,296.04	-1,302.50	4,375.05	4,339.35	35.70	122.559	
9,100.00	6,935.57	3,253.00	2,925.31	45.95	24.19	21.41	1,296.04	-1,302.50	4,400.47	4,363.86	36.60	120.227	
9,200.00	6,935.38	3,253.00	2,925.31	47.31	24.19	21.41	1,296.04	-1,302.50	4,427.99	4,390.49	37.50	118.081	
9,300.00	6,935.19	3,253.00	2,925.31	48.69	24.19	21.41	1,296.04	-1,302.50	4,457.59	4,419.20	38.39	116.117	
9,400.00	6,935.00	3,253.00	2,925.31	50.08	24.19	21.41	1,296.04	-1,302.50	4,489.22	4,449.96	39.27	114.324	
9,500.00	6,934.81	3,253.00	2,925.31	51.48	24.19	21.41	1,296.04	-1,302.50	4,522.85	4,482.72	40.13	112.696	
9,600.00	6,934.62	3,253.00	2,925.31	52.89	24.19	21.41	1,296.04	-1,302.50	4,558.42	4,517.43	40.98	111.224	
9,700.00	6,934.43	3,253.00	2,925.31	54.32	24.19	21.41	1,296.04	-1,302.50	4,595.89	4,554.07	41.82	109.900	
9,800.00	6,934.23	3,253.00	2,925.31	55.75	24.19	21.41	1,296.04	-1,302.50	4,635.21	4,592.58	42.64	108.715	
9,900.00	6,934.04	3,253.00	2,925.31	57.19	24.19	21.41	1,296.04	-1,302.50	4,676.35	4,632.91	43.44	107.663	
10,000.00	6,933.85	3,253.00	2,925.31	58.65	24.19	21.41	1,296.04	-1,302.50	4,719.24	4,675.03	44.21	106.735	
10,100.00	6,933.66	3,253.00	2,925.31	60.10	24.19	21.41	1,296.04	-1,302.50	4,763.85	4,718.87	44.97	105.923	
10,200.00	6,933.47	3,253.00	2,925.31	61.57	24.19	21.41	1,296.04	-1,302.50	4,810.12	4,764.41	45.71	105.222	
10,300.00	6,933.28	3,253.00	2,925.31	63.04	24.19	21.41	1,296.04	-1,302.50	4,858.01	4,811.58	46.43	104.625	
10,400.00	6,933.09	3,253.00	2,925.31	64.52	24.19	21.41	1,296.04	-1,302.50	4,907.47	4,860.34	47.13	104.125	
10,500.00	6,932.89	3,253.00	2,925.31	66.01	24.19	21.41	1,296.04	-1,302.50	4,958.46	4,910.65	47.81	103.717	
10,600.00	6,932.70	3,253.00	2,925.31	67.50	24.19	21.41	1,296.04	-1,302.50	5,010.92	4,962.46	48.46	103.395	
10,700.00	6,932.51	3,253.00	2,925.31	68.99	24.19	21.41	1,296.04	-1,302.50	5,064.81	5,015.71	49.10	103.155	
10,800.00	6,932.32	3,253.00	2,925.31	70.50	24.19	21.41	1,296.04	-1,302.50	5,120.09	5,070.38	49.71	102.991	
10,900.00	6,932.13	3,253.00	2,925.31	72.00	24.19	21.41	1,296.04	-1,302.50	5,176.71	5,126.41	50.31	102.899	
11,000.00	6,931.94	3,253.00	2,925.31	73.51	24.19	21.41	1,296.04	-1,302.50	5,234.63	5,183.75	50.88	102.875	
11,100.00	6,931.75	3,253.00	2,925.31	75.02	24.19	21.41	1,296.04	-1,302.50	5,293.81	5,242.37	51.44	102.915	
11,200.00	6,931.55	3,253.00	2,925.31	76.54	24.19	21.41	1,296.04	-1,302.50	5,354.20	5,302.22	51.97	103.015	
11,300.00	6,931.36	3,253.00	2,925.31	78.06	24.19	21.41	1,296.04	-1,302.50	5,415.76	5,363.27	52.49	103.172	
11,400.00	6,931.17	3,253.00	2,925.31	79.58	24.19	21.41	1,296.04	-1,302.50	5,478.45	5,425.46	52.99	103.383	
11,500.00	6,930.98	3,253.00	2,925.31	81.11	24.19	21.41	1,296.04	-1,302.50	5,542.24	5,488.77	53.47	103.644	
11,600.00	6,930.79	3,253.00	2,925.31	82.64	24.19	21.41	1,296.04	-1,302.50	5,607.09	5,553.15	53.94	103.953	
11,700.00	6,930.60	3,253.00	2,925.31	84.17	24.19	21.41	1,296.04	-1,302.50	5,672.96	5,618.57	54.39	104.308	
11,800.00	6,930.41	3,253.00	2,925.31	85.70	24.19	21.41	1,296.04	-1,302.50	5,739.82	5,685.00	54.82	104.705	
11,900.00	6,930.21	3,253.00	2,925.31	87.24	24.19	21.41	1,296.04	-1,302.50	5,807.63	5,752.39	55.24	105.142	
12,000.00	6,930.02	3,253.00	2,925.31	88.78	24.19	21.41	1,296.04	-1,302.50	5,876.35	5,820.72	55.64	105.618	
12,100.00	6,929.83	3,253.00	2,925.31	90.32	24.19	21.41	1,296.04	-1,302.50	5,945.97	5,889.94	56.03	106.130	
12,200.00	6,929.64	3,253.00	2,925.31	91.87	24.19	21.41	1,296.04	-1,302.50	6,016.44	5,960.04	56.40	106.676	
12,300.00	6,929.45	3,253.00	2,925.31	93.41	24.19	21.41	1,296.04	-1,302.50	6,087.74	6,030.98	56.76	107.255	
12,400.00	6,929.26	3,253.00	2,925.31	94.96	24.19	21.41	1,296.04	-1,302.50	6,159.84	6,102.73	57.11	107.864	
12,500.00	6,929.07	3,253.00	2,925.31	96.51	24.19	21.41	1,296.04	-1,302.50	6,232.71	6,175.26	57.44	108.503	
12,600.00	6,928.88	3,253.00	2,925.31	98.06	24.19	21.41	1,296.04	-1,302.50	6,306.32	6,248.55	57.77	109.170	
12,700.00	6,928.68	3,253.00	2,925.31	99.62	24.19	21.41	1,296.04	-1,302.50	6,380.65	6,322.57	58.08	109.863	
12,800.00	6,928.49	3,253.00	2,925.31	101.17	24.19	21.41	1,296.04	-1,302.50	6,455.67	6,397.29	58.38	110.581	
12,900.00	6,928.30	3,253.00	2,925.31	102.73	24.19	21.41	1,296.04	-1,302.50	6,531.36	6,472.69	58.67	111.322	
13,000.00	6,928.11	3,253.00	2,925.31	104.28	24.19	21.41	1,296.04	-1,302.50	6,607.70	6,548.75	58.95	112.086	
13,100.00	6,927.92	3,253.00	2,925.31	105.84	24.19	21.41	1,296.04	-1,302.50	6,684.66	6,625.44	59.22	112.872	
13,200.00	6,927.73	3,253.00	2,925.31	107.40	24.19	21.41	1,296.04	-1,302.50	6,762.23	6,702.74	59.49	113.678	
13,300.00	6,927.54	3,253.00	2,925.31	108.97	24.19	21.41	1,296.04	-1,302.50	6,840.38	6,780.64	59.74	114.503	
13,400.00	6,927.34	3,253.00	2,925.31	110.53	24.19	21.41	1,296.04	-1,302.50	6,919.09	6,859.10	59.98	115.347	
13,500.00	6,927.15	3,253.00	2,925.31	112.09	24.19	21.41	1,296.04	-1,302.50	6,998.34	6,938.12	60.22	116.208	
13,600.00	6,926.96	3,253.00	2,925.31	113.66	24.19	21.41	1,296.04	-1,302.50	7,078.12	7,017.67	60.45	117.087	
13,700.00	6,926.77	3,253.00	2,925.31	115.22	24.19	21.41	1,296.04	-1,302.50	7,158.41	7,097.73	60.67	117.980	
13,800.00	6,926.58	3,253.00	2,925.31	116.79	24.19	21.41	1,296.04	-1,302.50	7,239.19	7,178.30	60.89	118.890	
13,900.00	6,926.39	3,253.00	2,925.31	118.36	24.19	21.41	1,296.04	-1,302.50	7,320.44	7,259.34	61.10	119.813	
14,000.00	6,926.20	3,253.00	2,925.31	119.93	24.19	21.41	1,296.04	-1,302.50	7,402.15	7,340.85	61.30	120.750	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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
14,100.00	6,926.00	3,253.00	2,925.31	121.50	24.19	21.41	1,296.04	-1,302.50	7,484.31	7,422.81	61.50	121.700	
14,200.00	6,925.81	3,253.00	2,925.31	123.07	24.19	21.41	1,296.04	-1,302.50	7,566.89	7,505.20	61.69	122.663	
14,300.00	6,925.62	3,253.00	2,925.31	124.64	24.19	21.41	1,296.04	-1,302.50	7,649.89	7,588.02	61.87	123.637	
14,400.00	6,925.43	3,253.00	2,925.31	126.21	24.19	21.41	1,296.04	-1,302.50	7,733.30	7,671.25	62.05	124.623	
14,500.00	6,925.24	3,253.00	2,925.31	127.79	24.19	21.41	1,296.04	-1,302.50	7,817.09	7,754.86	62.23	125.620	
14,600.00	6,925.05	3,253.00	2,925.31	129.36	24.19	21.41	1,296.04	-1,302.50	7,901.26	7,838.86	62.40	126.626	
14,700.00	6,924.86	3,253.00	2,925.31	130.93	24.19	21.41	1,296.04	-1,302.50	7,985.80	7,923.23	62.56	127.643	
14,800.00	6,924.66	3,253.00	2,925.31	132.51	24.19	21.41	1,296.04	-1,302.50	8,070.69	8,007.96	62.72	128.668	
14,900.00	6,924.47	3,253.00	2,925.31	134.09	24.19	21.41	1,296.04	-1,302.50	8,155.92	8,093.04	62.88	129.703	
15,000.00	6,924.28	3,253.00	2,925.31	135.66	24.19	21.41	1,296.04	-1,302.50	8,241.48	8,178.45	63.03	130.746	
15,100.00	6,924.09	3,253.00	2,925.31	137.24	24.19	21.41	1,296.04	-1,302.50	8,327.37	8,264.18	63.18	131.797	
15,200.00	6,923.90	3,253.00	2,925.31	138.82	24.19	21.41	1,296.04	-1,302.50	8,413.56	8,350.23	63.33	132.855	
15,300.00	6,923.71	3,253.00	2,925.31	140.40	24.19	21.41	1,296.04	-1,302.50	8,500.06	8,436.59	63.47	133.920	
15,400.00	6,923.52	3,253.00	2,925.31	141.97	24.19	21.41	1,296.04	-1,302.50	8,586.85	8,523.24	63.61	134.993	
15,500.00	6,923.33	3,253.00	2,925.31	143.55	24.19	21.41	1,296.04	-1,302.50	8,673.93	8,610.19	63.75	136.072	
15,600.00	6,923.13	3,253.00	2,925.31	145.13	24.19	21.41	1,296.04	-1,302.50	8,761.28	8,697.41	63.88	137.157	
15,700.00	6,922.94	3,253.00	2,925.31	146.72	24.19	21.41	1,296.04	-1,302.50	8,848.90	8,784.90	64.01	138.248	
15,800.00	6,922.75	3,253.00	2,925.31	148.30	24.19	21.41	1,296.04	-1,302.50	8,936.78	8,872.65	64.13	139.345	
15,900.00	6,922.56	3,253.00	2,925.31	149.88	24.19	21.41	1,296.04	-1,302.50	9,024.92	8,960.66	64.26	140.446	
16,000.00	6,922.37	3,253.00	2,925.31	151.46	24.19	21.41	1,296.04	-1,302.50	9,113.30	9,048.91	64.38	141.553	
16,100.00	6,922.18	3,253.00	2,925.31	153.04	24.19	21.41	1,296.04	-1,302.50	9,201.91	9,137.41	64.50	142.665	
16,200.00	6,921.99	3,253.00	2,925.31	154.63	24.19	21.41	1,296.04	-1,302.50	9,290.76	9,226.14	64.62	143.781	
16,300.00	6,921.79	3,253.00	2,925.31	156.21	24.19	21.41	1,296.04	-1,302.50	9,379.83	9,315.10	64.73	144.901	
16,400.00	6,921.60	3,253.00	2,925.31	157.79	24.19	21.41	1,296.04	-1,302.50	9,469.12	9,404.27	64.85	146.025	
16,500.00	6,921.41	3,253.00	2,925.31	159.38	24.19	21.41	1,296.04	-1,302.50	9,558.62	9,493.66	64.96	147.153	
16,600.00	6,921.22	3,253.00	2,925.31	160.96	24.19	21.41	1,296.04	-1,302.50	9,648.33	9,583.26	65.07	148.284	
16,700.00	6,921.03	3,253.00	2,925.31	162.55	24.19	21.41	1,296.04	-1,302.50	9,738.24	9,673.06	65.17	149.419	
16,800.00	6,920.84	3,253.00	2,925.31	164.13	24.19	21.41	1,296.04	-1,302.50	9,828.34	9,763.06	65.28	150.557	
16,900.00	6,920.65	3,253.00	2,925.31	165.72	24.19	21.41	1,296.04	-1,302.50	9,918.63	9,853.25	65.38	151.698	
17,000.00	6,920.45	3,253.00	2,925.31	167.30	24.19	21.41	1,296.04	-1,302.50	10,009.11	9,943.62	65.49	152.841	
17,100.00	6,920.26	3,253.00	2,925.31	168.89	24.19	21.41	1,296.04	-1,302.50	10,099.77	10,034.18	65.59	153.987	
17,200.00	6,920.07	3,253.00	2,925.31	170.48	24.19	21.41	1,296.04	-1,302.50	10,190.60	10,124.91	65.69	155.135	
17,300.00	6,919.88	3,253.00	2,925.31	172.06	24.19	21.41	1,296.04	-1,302.50	10,281.60	10,215.82	65.79	156.286	
17,400.00	6,919.69	3,253.00	2,925.31	173.65	24.19	21.41	1,296.04	-1,302.50	10,372.77	10,306.89	65.88	157.439	
17,500.00	6,919.50	3,253.00	2,925.31	175.24	24.19	21.41	1,296.04	-1,302.50	10,464.10	10,398.12	65.98	158.593	
17,600.00	6,919.31	3,253.00	2,925.31	176.83	24.19	21.41	1,296.04	-1,302.50	10,555.59	10,489.51	66.08	159.749	
17,700.00	6,919.11	3,253.00	2,925.31	178.41	24.19	21.41	1,296.04	-1,302.50	10,647.23	10,581.06	66.17	160.907	
17,759.55	6,919.00	3,253.00	2,925.31	179.36	24.19	21.41	1,296.04	-1,302.50	10,701.87	10,635.65	66.23	161.597	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Prelim 7 — **Offset Site Error:** 0.00 usft

Survey Program: 0-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	-35.09	20.39	-14.32	24.92				
100.00	100.00	100.00	100.00	0.25	0.25	-35.09	20.39	-14.32	24.92	24.42	0.50	49.650	
200.00	200.00	200.00	200.00	0.61	0.61	-35.09	20.39	-14.32	24.92	23.70	1.22	20.444	
300.00	300.00	300.00	300.00	0.97	0.97	-35.09	20.39	-14.32	24.92	22.98	1.94	12.872	
400.00	400.00	400.00	400.00	1.33	1.33	-35.09	20.39	-14.32	24.92	22.26	2.65	9.393	
500.00	500.00	500.00	500.00	1.68	1.68	-35.09	20.39	-14.32	24.92	21.55	3.37	7.395	CC, ES
600.00	600.00	599.37	599.35	2.04	2.04	-32.32	22.07	-13.97	26.13	22.04	4.08	6.398	
700.00	700.00	698.50	698.35	2.40	2.40	-25.44	27.11	-12.90	30.07	25.27	4.80	6.269	
800.00	800.00	797.16	796.63	2.76	2.76	-17.42	35.45	-11.12	37.31	31.80	5.50	6.779	
900.00	900.00	895.12	893.87	3.12	3.11	-10.45	47.00	-8.67	48.18	41.98	6.20	7.769	
1,000.00	1,000.00	992.16	989.74	3.48	3.47	-5.15	61.64	-5.56	62.73	55.84	6.89	9.105	
1,100.00	1,099.98	1,087.70	1,083.59	3.82	3.84	165.76	79.15	-1.84	82.50	74.95	7.55	10.926	
1,129.54	1,129.49	1,115.98	1,111.25	3.92	3.95	166.78	84.87	-0.62	89.60	81.85	7.75	11.556	
1,200.00	1,199.88	1,184.17	1,177.95	4.15	4.23	168.80	98.74	2.33	107.03	98.80	8.23	13.011	
1,300.00	1,299.78	1,280.94	1,272.61	4.48	4.62	170.76	118.42	6.51	131.91	123.01	8.91	14.812	
1,400.00	1,399.68	1,377.72	1,367.27	4.82	5.02	172.09	138.10	10.70	156.90	147.30	9.59	16.355	
1,500.00	1,499.58	1,474.49	1,461.93	5.16	5.42	173.05	157.78	14.88	181.93	171.65	10.28	17.689	
1,600.00	1,599.48	1,571.27	1,556.59	5.50	5.83	173.79	177.46	19.06	207.01	196.03	10.98	18.852	
1,700.00	1,699.37	1,668.04	1,651.25	5.85	6.24	174.36	197.14	23.25	232.11	220.43	11.68	19.872	
1,800.00	1,799.27	1,764.82	1,745.92	6.20	6.65	174.82	216.83	27.43	257.23	244.85	12.38	20.773	
1,900.00	1,899.17	1,861.60	1,840.58	6.55	7.06	175.20	236.51	31.61	282.36	269.27	13.09	21.574	
2,000.00	1,999.07	1,958.37	1,935.24	6.90	7.47	175.52	256.19	35.80	307.50	293.71	13.79	22.291	
2,100.00	2,098.96	2,055.15	2,029.90	7.25	7.89	175.79	275.87	39.98	332.65	318.15	14.50	22.936	
2,200.00	2,198.86	2,151.92	2,124.56	7.61	8.31	176.02	295.55	44.16	357.80	342.59	15.21	23.518	
2,300.00	2,298.76	2,248.70	2,219.22	7.96	8.72	176.22	315.23	48.35	382.96	367.04	15.93	24.047	
2,400.00	2,398.66	2,345.47	2,313.88	8.32	9.14	176.40	334.91	52.53	408.13	391.49	16.64	24.529	
2,500.00	2,498.56	2,442.25	2,408.54	8.68	9.56	176.55	354.59	56.71	433.29	415.94	17.35	24.971	
2,600.00	2,598.45	2,539.02	2,503.20	9.03	9.98	176.69	374.27	60.90	458.46	440.39	18.07	25.376	
2,700.00	2,698.35	2,635.80	2,597.86	9.39	10.40	176.82	393.95	65.08	483.63	464.85	18.78	25.749	
2,800.00	2,798.25	2,732.57	2,692.52	9.75	10.82	176.93	413.64	69.26	508.81	489.31	19.50	26.094	
2,900.00	2,898.15	2,829.35	2,787.18	10.11	11.24	177.03	433.32	73.45	533.98	513.76	20.22	26.414	
3,000.00	2,998.04	2,926.12	2,881.84	10.47	11.67	177.12	453.00	77.63	559.16	538.22	20.93	26.711	
3,100.00	3,097.94	3,022.90	2,976.50	10.83	12.09	177.21	472.68	81.81	584.33	562.68	21.65	26.988	
3,200.00	3,197.84	3,119.67	3,071.16	11.19	12.51	177.28	492.36	86.00	609.51	587.14	22.37	27.247	
3,300.00	3,297.74	3,216.45	3,165.82	11.55	12.93	177.36	512.04	90.18	634.69	611.60	23.09	27.489	
3,400.00	3,397.64	3,313.22	3,260.48	11.91	13.36	177.42	531.72	94.36	659.87	636.06	23.81	27.716	
3,500.00	3,497.53	3,410.00	3,355.14	12.27	13.78	177.48	551.40	98.55	685.05	660.52	24.53	27.929	
3,600.00	3,597.43	3,506.77	3,449.80	12.63	14.20	177.54	571.08	102.73	710.23	684.99	25.25	28.130	
3,700.00	3,697.33	3,603.55	3,544.46	12.99	14.62	177.59	590.76	106.91	735.42	709.45	25.97	28.319	
3,800.00	3,797.23	3,700.32	3,639.12	13.35	15.05	177.64	610.45	111.10	760.60	733.91	26.69	28.498	
3,900.00	3,897.12	3,797.10	3,733.78	13.72	15.47	177.69	630.13	115.28	785.78	758.37	27.41	28.667	
4,000.00	3,997.02	3,893.87	3,828.44	14.08	15.90	177.73	649.81	119.46	810.97	782.83	28.13	28.827	
4,100.00	4,096.92	3,990.65	3,923.10	14.44	16.32	177.77	669.49	123.65	836.15	807.30	28.85	28.978	
4,200.00	4,196.82	4,087.42	4,017.77	14.80	16.74	177.81	689.17	127.83	861.34	831.76	29.58	29.123	
4,300.00	4,296.72	4,184.20	4,112.43	15.16	17.17	177.85	708.85	132.01	886.52	856.22	30.30	29.260	
4,400.00	4,396.61	4,280.97	4,207.09	15.53	17.59	177.88	728.53	136.20	911.71	880.68	31.02	29.390	
4,500.00	4,496.51	4,377.75	4,301.75	15.89	18.02	177.91	748.21	140.38	936.89	905.15	31.74	29.514	
4,600.00	4,596.41	4,474.53	4,396.41	16.25	18.44	177.94	767.89	144.56	962.08	929.61	32.47	29.633	
4,700.00	4,696.31	4,571.30	4,491.07	16.61	18.87	177.97	787.57	148.75	987.26	954.07	33.19	29.746	
4,800.00	4,796.20	4,668.08	4,585.73	16.98	19.29	178.00	807.26	152.93	1,012.45	978.54	33.91	29.855	
4,900.00	4,896.10	4,764.85	4,680.39	17.34	19.72	178.03	826.94	157.11	1,037.64	1,003.00	34.64	29.958	
5,000.00	4,996.00	4,861.63	4,775.05	17.70	20.14	178.05	846.62	161.30	1,062.82	1,027.46	35.36	30.058	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Prelim 7 — **Offset Site Error:** 0.00 usft

Survey Program: 0-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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,095.90	4,958.40	4,869.71	18.07	20.56	178.08	866.30	165.48	1,088.01	1,051.93	36.08	30.153	
5,200.00	5,195.80	5,055.18	4,964.37	18.43	20.99	178.10	885.98	169.66	1,113.20	1,076.39	36.81	30.244	
5,300.00	5,295.69	5,151.95	5,059.03	18.79	21.41	178.12	905.66	173.85	1,138.38	1,100.85	37.53	30.332	
5,400.00	5,395.59	5,248.73	5,153.69	19.16	21.84	178.14	925.34	178.03	1,163.57	1,125.32	38.26	30.416	
5,500.00	5,495.49	5,345.50	5,248.35	19.52	22.26	178.16	945.02	182.21	1,188.76	1,149.78	38.98	30.497	
5,600.00	5,595.39	5,442.28	5,343.01	19.88	22.69	178.18	964.70	186.40	1,213.95	1,174.24	39.70	30.575	
5,700.00	5,695.28	5,539.05	5,437.67	20.25	23.12	178.20	984.38	190.58	1,239.13	1,198.70	40.43	30.650	
5,800.00	5,795.18	5,635.83	5,532.33	20.61	23.54	178.22	1,004.07	194.76	1,264.32	1,223.17	41.15	30.722	
5,900.00	5,895.08	5,732.60	5,626.99	20.97	23.97	178.23	1,023.75	198.95	1,289.51	1,247.63	41.88	30.792	
6,000.00	5,994.98	5,829.38	5,721.65	21.34	24.39	178.25	1,043.43	203.13	1,314.70	1,272.09	42.60	30.859	
6,100.00	6,094.88	5,926.15	5,816.31	21.70	24.82	178.26	1,063.11	207.31	1,339.88	1,296.56	43.33	30.924	
6,200.00	6,194.77	6,022.93	5,910.97	22.06	25.24	178.28	1,082.79	211.50	1,365.07	1,321.02	44.05	30.986	
6,300.00	6,294.67	6,119.70	6,005.63	22.43	25.67	178.29	1,102.47	215.68	1,390.26	1,345.48	44.78	31.047	
6,314.74	6,309.40	6,133.97	6,019.59	22.48	25.73	178.30	1,105.37	216.30	1,393.97	1,349.09	44.89	31.056	
6,350.00	6,344.59	6,168.02	6,052.90	22.61	25.88	134.36	1,112.30	217.77	1,403.03	1,357.89	45.14	31.081	
6,400.00	6,394.26	6,215.94	6,099.76	22.79	26.09	116.41	1,122.04	219.84	1,416.46	1,370.96	45.50	31.132	
6,450.00	6,443.36	6,263.14	6,145.93	22.97	26.30	109.67	1,131.64	221.88	1,430.54	1,384.69	45.85	31.200	
6,500.00	6,491.60	6,309.34	6,191.13	23.15	26.50	105.95	1,141.04	223.88	1,445.24	1,399.04	46.19	31.286	
6,550.00	6,538.67	6,354.26	6,235.06	23.32	26.70	103.45	1,150.17	225.82	1,460.56	1,414.03	46.53	31.389	
6,600.00	6,584.29	6,397.61	6,277.47	23.49	26.89	101.57	1,158.99	227.69	1,476.52	1,429.67	46.86	31.511	
6,650.00	6,628.18	6,487.86	6,365.75	23.66	27.27	100.81	1,177.13	225.35	1,492.19	1,444.68	47.51	31.409	
6,700.00	6,670.06	6,653.12	6,523.44	23.83	27.90	100.95	1,208.42	189.34	1,505.94	1,457.48	48.46	31.074	
6,750.00	6,709.68	6,785.65	6,639.93	24.00	28.30	100.28	1,230.43	130.72	1,516.91	1,467.83	49.08	30.909	
6,800.00	6,746.79	6,976.07	6,781.86	24.17	28.74	99.18	1,255.44	7.45	1,524.77	1,475.08	49.69	30.688	
6,850.00	6,781.17	7,137.20	6,869.63	24.35	29.05	97.37	1,268.91	-126.49	1,529.26	1,479.07	50.19	30.471	
6,900.00	6,812.60	7,283.45	6,918.65	24.54	29.36	95.18	1,274.26	-263.83	1,530.79	1,480.03	50.76	30.157	
6,950.00	6,840.88	7,410.23	6,935.42	24.74	29.73	92.94	1,273.36	-389.29	1,530.01	1,478.60	51.41	29.763	
7,000.00	6,865.85	7,468.43	6,935.79	24.96	29.94	91.89	1,271.42	-447.45	1,528.10	1,476.15	51.95	29.414	
7,050.00	6,887.35	7,513.53	6,935.75	25.19	30.12	91.21	1,269.85	-492.52	1,526.44	1,473.96	52.48	29.089	
7,100.00	6,905.25	7,560.17	6,935.70	25.43	30.33	90.63	1,268.22	-539.14	1,524.93	1,471.90	53.02	28.759	
7,150.00	6,919.43	7,608.08	6,935.65	25.69	30.56	90.19	1,266.55	-587.01	1,523.45	1,469.86	53.58	28.432	
7,200.00	6,929.81	7,656.94	6,935.60	25.96	30.82	89.91	1,264.84	-635.84	1,521.90	1,467.73	54.18	28.091	
7,250.00	6,936.33	7,706.46	6,935.54	26.25	31.10	89.79	1,263.11	-685.34	1,520.23	1,465.45	54.78	27.751	
7,300.00	6,938.95	7,756.35	6,935.49	26.55	31.40	89.84	1,261.37	-735.19	1,518.38	1,462.97	55.42	27.400	
7,309.56	6,939.00	7,765.90	6,935.48	26.60	31.46	89.87	1,261.04	-744.73	1,518.01	1,462.47	55.54	27.333	
7,400.00	6,938.83	7,856.27	6,935.39	27.19	32.06	89.87	1,257.89	-835.05	1,514.44	1,457.68	56.76	26.682	
7,500.00	6,938.64	7,956.19	6,935.28	27.91	32.79	89.88	1,254.40	-934.91	1,510.50	1,452.25	58.25	25.931	
7,600.00	6,938.44	8,056.11	6,935.18	28.70	33.57	89.88	1,250.91	-1,034.77	1,506.55	1,446.68	59.87	25.162	
7,700.00	6,938.25	8,156.03	6,935.07	29.55	34.41	89.88	1,247.43	-1,134.63	1,502.61	1,440.98	61.62	24.384	
7,800.00	6,938.06	8,255.96	6,934.97	30.47	35.31	89.89	1,243.94	-1,234.50	1,498.66	1,435.18	63.48	23.607	
7,900.00	6,937.87	8,355.88	6,934.86	31.44	36.25	89.89	1,240.45	-1,334.36	1,494.72	1,429.26	65.45	22.837	
8,000.00	6,937.68	8,455.80	6,934.76	32.46	37.23	89.89	1,236.96	-1,434.22	1,490.77	1,423.26	67.51	22.082	
8,100.00	6,937.49	8,555.72	6,934.65	33.53	38.26	89.90	1,233.48	-1,534.08	1,486.83	1,417.17	69.66	21.344	
8,200.00	6,937.30	8,655.65	6,934.55	34.64	39.32	89.90	1,229.99	-1,633.94	1,482.88	1,410.99	71.89	20.628	
8,300.00	6,937.10	8,755.57	6,934.45	35.78	40.42	89.90	1,226.50	-1,733.80	1,478.94	1,404.75	74.18	19.936	
8,400.00	6,936.91	8,855.49	6,934.34	36.96	41.55	89.90	1,223.02	-1,833.66	1,474.99	1,398.44	76.55	19.269	
8,500.00	6,936.72	8,955.41	6,934.24	38.17	42.71	89.91	1,219.53	-1,933.52	1,471.04	1,392.08	78.97	18.628	
8,600.00	6,936.53	9,055.33	6,934.13	39.41	43.90	89.91	1,216.04	-2,033.39	1,467.10	1,385.66	81.44	18.014	
8,700.00	6,936.34	9,155.26	6,934.03	40.68	45.11	89.91	1,212.55	-2,133.25	1,463.15	1,379.19	83.97	17.425	
8,800.00	6,936.15	9,255.18	6,933.92	41.97	46.34	89.92	1,209.07	-2,233.11	1,459.21	1,372.67	86.54	16.862	
8,900.00	6,935.96	9,355.10	6,933.82	43.27	47.60	89.92	1,205.58	-2,332.97	1,455.26	1,366.11	89.15	16.324	
9,000.00	6,935.76	9,455.02	6,933.71	44.60	48.88	89.92	1,202.09	-2,432.83	1,451.32	1,359.52	91.80	15.810	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Prelim 7

Offset Site Error: 0.00 usft

Survey Program: 0-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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,935.57	9,554.94	6,933.61	45.95	50.17	89.93	1,198.60	-2,532.69	1,447.37	1,352.89	94.48	15.319	
9,200.00	6,935.38	9,654.87	6,933.50	47.31	51.48	89.93	1,195.12	-2,632.55	1,443.43	1,346.23	97.19	14.851	
9,300.00	6,935.19	9,754.79	6,933.40	48.69	52.81	89.93	1,191.63	-2,732.41	1,439.48	1,339.55	99.94	14.404	
9,400.00	6,935.00	9,854.71	6,933.29	50.08	54.15	89.94	1,188.14	-2,832.27	1,435.54	1,332.83	102.71	13.977	
9,500.00	6,934.81	9,954.63	6,933.19	51.48	55.51	89.94	1,184.66	-2,932.14	1,431.59	1,326.09	105.50	13.570	
9,600.00	6,934.62	10,054.56	6,933.09	52.89	56.87	89.94	1,181.17	-3,032.00	1,427.65	1,319.33	108.32	13.180	
9,700.00	6,934.43	10,154.48	6,932.98	54.32	58.25	89.95	1,177.68	-3,131.86	1,423.70	1,312.55	111.15	12.808	
9,800.00	6,934.23	10,254.40	6,932.88	55.75	59.64	89.95	1,174.19	-3,231.72	1,419.76	1,305.75	114.01	12.453	
9,900.00	6,934.04	10,354.32	6,932.77	57.19	61.04	89.95	1,170.71	-3,331.58	1,415.81	1,298.93	116.89	12.113	
10,000.00	6,933.85	10,454.24	6,932.67	58.65	62.45	89.96	1,167.22	-3,431.44	1,411.87	1,292.09	119.78	11.788	
10,100.00	6,933.66	10,554.17	6,932.56	60.10	63.87	89.96	1,163.73	-3,531.30	1,407.92	1,285.24	122.68	11.476	
10,200.00	6,933.47	10,654.09	6,932.46	61.57	65.30	89.96	1,160.25	-3,631.16	1,403.98	1,278.37	125.60	11.178	
10,300.00	6,933.28	10,754.01	6,932.35	63.04	66.73	89.97	1,156.76	-3,731.03	1,400.03	1,271.50	128.54	10.892	
10,400.00	6,933.09	10,853.93	6,932.25	64.52	68.17	89.97	1,153.27	-3,830.89	1,396.09	1,264.60	131.48	10.618	
10,500.00	6,932.89	10,953.85	6,932.14	66.01	69.62	89.97	1,149.78	-3,930.75	1,392.14	1,257.70	134.44	10.355	
10,600.00	6,932.70	11,053.78	6,932.04	67.50	71.08	89.98	1,146.30	-4,030.61	1,388.20	1,250.79	137.41	10.102	
10,700.00	6,932.51	11,153.70	6,931.93	68.99	72.54	89.98	1,142.81	-4,130.47	1,384.25	1,243.86	140.39	9.860	
10,800.00	6,932.32	11,253.62	6,931.83	70.50	74.01	89.98	1,139.32	-4,230.33	1,380.31	1,236.93	143.38	9.627	
10,900.00	6,932.13	11,353.54	6,931.72	72.00	75.48	89.99	1,135.84	-4,330.19	1,376.36	1,229.98	146.38	9.403	
11,000.00	6,931.94	11,453.46	6,931.62	73.51	76.96	89.99	1,132.35	-4,430.05	1,372.42	1,223.03	149.39	9.187	
11,100.00	6,931.75	11,553.39	6,931.52	75.02	78.44	89.99	1,128.86	-4,529.91	1,368.47	1,216.07	152.40	8.979	
11,200.00	6,931.55	11,653.31	6,931.41	76.54	79.92	90.00	1,125.37	-4,629.78	1,364.53	1,209.11	155.42	8.780	
11,300.00	6,931.36	11,753.23	6,931.31	78.06	81.41	90.00	1,121.89	-4,729.64	1,360.58	1,202.13	158.45	8.587	
11,400.00	6,931.17	11,853.15	6,931.20	79.58	82.91	90.01	1,118.40	-4,829.50	1,356.64	1,195.15	161.49	8.401	
11,500.00	6,930.98	11,953.08	6,931.10	81.11	84.41	90.01	1,114.91	-4,929.36	1,352.69	1,188.16	164.53	8.222	
11,600.00	6,930.79	12,053.00	6,930.99	82.64	85.91	90.01	1,111.43	-5,029.22	1,348.75	1,181.17	167.58	8.049	
11,700.00	6,930.60	12,152.92	6,930.89	84.17	87.42	90.02	1,107.94	-5,129.08	1,344.80	1,174.17	170.63	7.881	
11,800.00	6,930.41	12,252.84	6,930.78	85.70	88.92	90.02	1,104.45	-5,228.94	1,340.86	1,167.17	173.69	7.720	
11,900.00	6,930.21	12,352.76	6,930.68	87.24	90.44	90.02	1,100.96	-5,328.80	1,336.91	1,160.16	176.75	7.564	
12,000.00	6,930.02	12,452.69	6,930.57	88.78	91.95	90.03	1,097.48	-5,428.67	1,332.97	1,153.15	179.82	7.413	
12,100.00	6,929.83	12,552.61	6,930.47	90.32	93.47	90.03	1,093.99	-5,528.53	1,329.02	1,146.13	182.89	7.267	
12,200.00	6,929.64	12,652.53	6,930.36	91.87	94.99	90.04	1,090.50	-5,628.39	1,325.08	1,139.11	185.97	7.125	
12,300.00	6,929.45	12,752.45	6,930.26	93.41	96.51	90.04	1,087.02	-5,728.25	1,321.13	1,132.08	189.05	6.988	
12,400.00	6,929.26	12,852.37	6,930.16	94.96	98.04	90.04	1,083.53	-5,828.11	1,317.19	1,125.05	192.14	6.855	
12,500.00	6,929.07	12,952.30	6,930.05	96.51	99.57	90.05	1,080.04	-5,927.97	1,313.24	1,118.02	195.23	6.727	
12,600.00	6,928.88	13,038.63	6,929.96	98.06	100.89	90.05	1,077.18	-6,014.26	1,309.52	1,111.28	198.24	6.606	
12,700.00	6,928.68	13,107.27	6,929.89	99.62	101.94	90.05	1,076.32	-6,082.89	1,307.81	1,106.74	201.07	6.504	
12,721.39	6,928.64	13,121.95	6,929.88	99.95	102.17	90.05	1,076.35	-6,097.57	1,307.76	1,106.09	201.67	6.485	
12,800.00	6,928.49	13,192.41	6,929.81	101.17	103.26	90.06	1,077.05	-6,168.02	1,308.17	1,104.15	204.01	6.412	
12,900.00	6,928.30	13,292.40	6,929.71	102.73	104.80	90.06	1,078.13	-6,268.01	1,308.79	1,101.67	207.12	6.319	
13,000.00	6,928.11	13,392.40	6,929.61	104.28	106.35	90.07	1,079.21	-6,368.01	1,309.41	1,099.18	210.23	6.228	
13,100.00	6,927.92	13,492.40	6,929.52	105.84	107.90	90.07	1,080.29	-6,468.00	1,310.04	1,096.69	213.35	6.140	
13,200.00	6,927.73	13,592.40	6,929.42	107.40	109.45	90.07	1,081.37	-6,567.99	1,310.66	1,094.20	216.46	6.055	
13,300.00	6,927.54	13,692.40	6,929.32	108.97	111.01	90.08	1,082.45	-6,667.98	1,311.29	1,091.70	219.58	5.972	
13,400.00	6,927.34	13,792.39	6,929.23	110.53	112.56	90.08	1,083.53	-6,767.98	1,311.91	1,089.21	222.70	5.891	
13,500.00	6,927.15	13,892.39	6,929.13	112.09	114.12	90.09	1,084.61	-6,867.97	1,312.53	1,086.71	225.83	5.812	
13,600.00	6,926.96	13,992.39	6,929.03	113.66	115.67	90.09	1,085.69	-6,967.96	1,313.16	1,084.20	228.95	5.735	
13,700.00	6,926.77	14,092.39	6,928.94	115.22	117.23	90.09	1,086.76	-7,067.95	1,313.78	1,081.70	232.08	5.661	
13,800.00	6,926.58	14,192.39	6,928.84	116.79	118.79	90.10	1,087.84	-7,167.94	1,314.40	1,079.19	235.21	5.588	
13,900.00	6,926.39	14,292.38	6,928.74	118.36	120.35	90.10	1,088.92	-7,267.94	1,315.03	1,076.68	238.34	5.517	
14,000.00	6,926.20	14,392.38	6,928.65	119.93	121.91	90.11	1,090.00	-7,367.93	1,315.65	1,074.17	241.48	5.448	
14,100.00	6,926.00	14,492.38	6,928.55	121.50	123.48	90.11	1,091.08	-7,467.92	1,316.28	1,071.66	244.62	5.381	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 700H - OH - Prelim 7

Offset Site Error: 0.00 usft

Survey Program: 0-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
14,200.00	6,925.81	14,592.38	6,928.45	123.07	125.04	90.11	1,092.16	-7,567.91	1,316.90	1,069.15	247.75	5.315	
14,300.00	6,925.62	14,692.38	6,928.36	124.64	126.60	90.12	1,093.24	-7,667.90	1,317.52	1,066.63	250.89	5.251	
14,400.00	6,925.43	14,792.37	6,928.26	126.21	128.17	90.12	1,094.32	-7,767.90	1,318.15	1,064.11	254.04	5.189	
14,500.00	6,925.24	14,892.37	6,928.16	127.79	129.74	90.13	1,095.40	-7,867.89	1,318.77	1,061.59	257.18	5.128	
14,600.00	6,925.05	14,992.37	6,928.07	129.36	131.31	90.13	1,096.48	-7,967.88	1,319.39	1,059.07	260.32	5.068	
14,700.00	6,924.86	15,092.37	6,927.97	130.93	132.87	90.13	1,097.55	-8,067.87	1,320.02	1,056.55	263.47	5.010	
14,800.00	6,924.66	15,192.37	6,927.87	132.51	134.44	90.14	1,098.63	-8,167.87	1,320.64	1,054.02	266.62	4.953	
14,900.00	6,924.47	15,292.36	6,927.78	134.09	136.01	90.14	1,099.71	-8,267.86	1,321.27	1,051.50	269.77	4.898	
15,000.00	6,924.28	15,392.36	6,927.68	135.66	137.58	90.15	1,100.79	-8,367.85	1,321.89	1,048.97	272.92	4.844	
15,100.00	6,924.09	15,492.36	6,927.58	137.24	139.16	90.15	1,101.87	-8,467.84	1,322.51	1,046.44	276.07	4.791	
15,200.00	6,923.90	15,592.36	6,927.49	138.82	140.73	90.15	1,102.95	-8,567.83	1,323.14	1,043.92	279.22	4.739	
15,300.00	6,923.71	15,692.36	6,927.39	140.40	142.30	90.16	1,104.03	-8,667.83	1,323.76	1,041.38	282.38	4.688	
15,400.00	6,923.52	15,792.35	6,927.29	141.97	143.88	90.16	1,105.11	-8,767.82	1,324.39	1,038.85	285.53	4.638	
15,500.00	6,923.33	15,892.35	6,927.20	143.55	145.45	90.17	1,106.19	-8,867.81	1,325.01	1,036.32	288.69	4.590	
15,600.00	6,923.13	15,992.35	6,927.10	145.13	147.03	90.17	1,107.26	-8,967.80	1,325.63	1,033.79	291.85	4.542	
15,700.00	6,922.94	16,092.35	6,927.00	146.72	148.60	90.17	1,108.34	-9,067.79	1,326.26	1,031.25	295.00	4.496	
15,800.00	6,922.75	16,192.35	6,926.90	148.30	150.18	90.18	1,109.42	-9,167.79	1,326.88	1,028.72	298.16	4.450	
15,900.00	6,922.56	16,292.34	6,926.81	149.88	151.75	90.18	1,110.50	-9,267.78	1,327.50	1,026.18	301.33	4.406	
16,000.00	6,922.37	16,392.34	6,926.71	151.46	153.33	90.19	1,111.58	-9,367.77	1,328.13	1,023.64	304.49	4.362	
16,100.00	6,922.18	16,492.34	6,926.61	153.04	154.91	90.19	1,112.66	-9,467.76	1,328.75	1,021.10	307.65	4.319	
16,200.00	6,921.99	16,592.34	6,926.52	154.63	156.49	90.19	1,113.74	-9,567.76	1,329.38	1,018.56	310.81	4.277	
16,300.00	6,921.79	16,692.34	6,926.42	156.21	158.07	90.20	1,114.82	-9,667.75	1,330.00	1,016.02	313.98	4.236	
16,400.00	6,921.60	16,792.33	6,926.32	157.79	159.65	90.20	1,115.90	-9,767.74	1,330.62	1,013.48	317.14	4.196	
16,500.00	6,921.41	16,892.33	6,926.23	159.38	161.23	90.21	1,116.98	-9,867.73	1,331.25	1,010.94	320.31	4.156	
16,600.00	6,921.22	16,992.33	6,926.13	160.96	162.81	90.21	1,118.05	-9,967.72	1,331.87	1,008.40	323.48	4.117	
16,700.00	6,921.03	17,092.33	6,926.03	162.55	164.39	90.21	1,119.13	-10,067.72	1,332.50	1,005.85	326.64	4.079	
16,800.00	6,920.84	17,192.33	6,925.94	164.13	165.97	90.22	1,120.21	-10,167.71	1,333.12	1,003.31	329.81	4.042	
16,900.00	6,920.65	17,292.32	6,925.84	165.72	167.55	90.22	1,121.29	-10,267.70	1,333.74	1,000.76	332.98	4.005	
17,000.00	6,920.45	17,392.32	6,925.74	167.30	169.13	90.23	1,122.37	-10,367.69	1,334.37	998.22	336.15	3.970	
17,100.00	6,920.26	17,492.32	6,925.65	168.89	170.72	90.23	1,123.45	-10,467.68	1,334.99	995.67	339.32	3.934	
17,200.00	6,920.07	17,592.32	6,925.55	170.48	172.30	90.23	1,124.53	-10,567.68	1,335.62	993.12	342.49	3.900	
17,300.00	6,919.88	17,692.32	6,925.45	172.06	173.88	90.24	1,125.61	-10,667.67	1,336.24	990.57	345.67	3.866	
17,400.00	6,919.69	17,792.31	6,925.36	173.65	175.47	90.24	1,126.69	-10,767.66	1,336.86	988.03	348.84	3.832	
17,500.00	6,919.50	17,892.31	6,925.26	175.24	177.05	90.25	1,127.77	-10,867.65	1,337.49	985.48	352.01	3.800	
17,600.00	6,919.31	17,992.31	6,925.16	176.83	178.64	90.25	1,128.84	-10,967.65	1,338.11	982.93	355.19	3.767	
17,700.00	6,919.11	18,092.31	6,925.07	178.41	180.22	90.25	1,129.92	-11,067.64	1,338.74	980.38	358.36	3.736	
17,759.55	6,919.00	18,151.86	6,925.01	179.36	181.16	90.26	1,130.57	-11,127.19	1,339.11	978.86	360.25	3.717 SF	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - Prelim #2 — **Offset Site Error:** 0.00 usft

Survey Program: 0-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	144.36	-20.39	14.62	25.09				
100.00	100.00	100.00	100.00	0.25	0.25	144.36	-20.39	14.62	25.09	24.58	0.50	49.987	
200.00	200.00	200.00	200.00	0.61	0.61	144.36	-20.39	14.62	25.09	23.87	1.22	20.583	
300.00	300.00	300.00	300.00	0.97	0.97	144.36	-20.39	14.62	25.09	23.15	1.94	12.960	
400.00	400.00	400.00	400.00	1.33	1.33	144.36	-20.39	14.62	25.09	22.43	2.65	9.457	
500.00	500.00	500.00	500.00	1.68	1.68	144.36	-20.39	14.62	25.09	21.72	3.37	7.445	CC, ES
600.00	600.00	599.25	599.23	2.04	2.02	146.53	-22.11	14.62	26.51	22.45	4.07	6.519	
700.00	700.00	698.27	698.11	2.40	2.36	151.78	-27.25	14.62	30.98	26.23	4.75	6.519	
800.00	800.00	796.81	796.28	2.76	2.69	157.75	-35.75	14.63	38.81	33.37	5.44	7.135	
900.00	900.00	894.66	893.41	3.12	3.04	162.88	-47.53	14.64	50.17	44.04	6.12	8.194	
1,000.00	1,000.00	991.58	989.17	3.48	3.40	166.80	-62.46	14.65	65.06	58.26	6.80	9.571	
1,100.00	1,099.98	1,087.70	1,083.59	3.82	3.77	-23.79	-80.46	14.66	81.84	74.40	7.45	10.991	
1,129.54	1,129.49	1,115.99	1,111.25	3.92	3.88	-23.32	-86.36	14.67	86.84	79.21	7.63	11.379	
1,200.00	1,199.88	1,183.12	1,176.67	4.15	4.16	-22.45	-101.45	14.68	99.58	91.50	8.08	12.328	
1,300.00	1,299.78	1,280.22	1,270.84	4.48	4.57	-21.38	-125.09	14.70	119.56	110.82	8.74	13.672	
1,400.00	1,399.68	1,378.16	1,365.80	4.82	4.99	-20.60	-149.05	14.72	139.68	130.24	9.44	14.795	
1,500.00	1,499.58	1,476.10	1,460.77	5.16	5.43	-20.02	-173.00	14.74	159.82	149.67	10.14	15.756	
1,600.00	1,599.48	1,574.04	1,555.74	5.50	5.87	-19.57	-196.95	14.75	179.96	169.11	10.85	16.585	
1,700.00	1,699.37	1,671.98	1,650.70	5.85	6.31	-19.21	-220.91	14.77	200.12	188.56	11.56	17.307	
1,800.00	1,799.27	1,769.92	1,745.67	6.20	6.76	-18.92	-244.86	14.79	220.29	208.01	12.28	17.940	
1,900.00	1,899.17	1,867.86	1,840.63	6.55	7.22	-18.67	-268.82	14.81	240.45	227.45	13.00	18.499	
2,000.00	1,999.07	1,965.80	1,935.60	6.90	7.67	-18.47	-292.77	14.83	260.62	246.90	13.72	18.996	
2,100.00	2,098.96	2,063.74	2,030.57	7.25	8.13	-18.29	-316.72	14.85	280.80	266.35	14.44	19.440	
2,200.00	2,198.86	2,161.68	2,125.53	7.61	8.59	-18.14	-340.68	14.87	300.98	285.81	15.17	19.840	
2,300.00	2,298.76	2,259.62	2,220.50	7.96	9.05	-18.00	-364.63	14.88	321.15	305.26	15.90	20.201	
2,400.00	2,398.66	2,357.56	2,315.46	8.32	9.51	-17.88	-388.58	14.90	341.33	324.71	16.63	20.528	
2,500.00	2,498.56	2,455.50	2,410.43	8.68	9.97	-17.78	-412.54	14.92	361.51	344.16	17.36	20.827	
2,600.00	2,598.45	2,553.44	2,505.40	9.03	10.43	-17.69	-436.49	14.94	381.70	363.61	18.09	21.100	
2,700.00	2,698.35	2,651.38	2,600.36	9.39	10.90	-17.60	-460.44	14.96	401.88	383.06	18.82	21.351	
2,800.00	2,798.25	2,749.32	2,695.33	9.75	11.36	-17.53	-484.40	14.98	422.06	402.51	19.56	21.582	
2,900.00	2,898.15	2,847.26	2,790.29	10.11	11.83	-17.46	-508.35	15.00	442.25	421.96	20.29	21.796	
3,000.00	2,998.04	2,945.20	2,885.26	10.47	12.30	-17.39	-532.31	15.01	462.43	441.41	21.03	21.994	
3,100.00	3,097.94	3,043.14	2,980.23	10.83	12.76	-17.33	-556.26	15.03	482.62	460.86	21.76	22.178	
3,200.00	3,197.84	3,141.08	3,075.19	11.19	13.23	-17.28	-580.21	15.05	502.80	480.31	22.50	22.350	
3,300.00	3,297.74	3,239.02	3,170.16	11.55	13.70	-17.23	-604.17	15.07	522.99	499.76	23.23	22.510	
3,400.00	3,397.64	3,336.97	3,265.12	11.91	14.17	-17.19	-628.12	15.09	543.18	519.21	23.97	22.659	
3,500.00	3,497.53	3,434.91	3,360.09	12.27	14.64	-17.14	-652.07	15.11	563.36	538.65	24.71	22.800	
3,600.00	3,597.43	3,532.85	3,455.06	12.63	15.11	-17.10	-676.03	15.13	583.55	558.10	25.45	22.932	
3,700.00	3,697.33	3,630.79	3,550.02	12.99	15.58	-17.07	-699.98	15.14	603.74	577.55	26.19	23.056	
3,800.00	3,797.23	3,728.73	3,644.99	13.35	16.05	-17.03	-723.94	15.16	623.93	597.00	26.93	23.173	
3,900.00	3,897.12	3,826.67	3,739.95	13.72	16.52	-17.00	-747.89	15.18	644.11	616.45	27.66	23.283	
4,000.00	3,997.02	3,924.61	3,834.92	14.08	16.99	-16.97	-771.84	15.20	664.30	635.90	28.40	23.388	
4,100.00	4,096.92	4,022.55	3,929.89	14.44	17.46	-16.94	-795.80	15.22	684.49	655.35	29.14	23.487	
4,200.00	4,196.82	4,120.49	4,024.85	14.80	17.93	-16.92	-819.75	15.24	704.68	674.79	29.88	23.580	
4,300.00	4,296.72	4,218.43	4,119.82	15.16	18.40	-16.89	-843.70	15.26	724.87	694.24	30.62	23.670	
4,400.00	4,396.61	4,316.37	4,214.78	15.53	18.87	-16.87	-867.66	15.27	745.06	713.69	31.37	23.754	
4,500.00	4,496.51	4,414.31	4,309.75	15.89	19.34	-16.84	-891.61	15.29	765.24	733.14	32.11	23.835	
4,600.00	4,596.41	4,512.25	4,404.72	16.25	19.81	-16.82	-915.57	15.31	785.43	752.59	32.85	23.912	
4,700.00	4,696.31	4,610.19	4,499.68	16.61	20.28	-16.80	-939.52	15.33	805.62	772.03	33.59	23.985	
4,800.00	4,796.20	4,708.13	4,594.65	16.98	20.75	-16.78	-963.47	15.35	825.81	791.48	34.33	24.055	
4,900.00	4,896.10	4,806.07	4,689.61	17.34	21.22	-16.76	-987.43	15.37	846.00	810.93	35.07	24.122	
5,000.00	4,996.00	4,904.01	4,784.58	17.70	21.70	-16.75	-1,011.38	15.39	866.19	830.38	35.81	24.186	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - Prelim #2

Offset Site Error: 0.00 usft

Survey Program: 0-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
5,100.00	5,095.90	5,001.95	4,879.55	18.07	22.17	-16.73	-1,035.33	15.40	886.38	849.82	36.56	24.248	
5,200.00	5,195.80	5,099.89	4,974.51	18.43	22.64	-16.71	-1,059.29	15.42	906.57	869.27	37.30	24.307	
5,300.00	5,295.69	5,197.83	5,069.48	18.79	23.11	-16.70	-1,083.24	15.44	926.76	888.72	38.04	24.363	
5,400.00	5,395.59	5,295.77	5,164.45	19.16	23.58	-16.68	-1,107.20	15.46	946.95	908.17	38.78	24.417	
5,500.00	5,495.49	5,393.71	5,259.41	19.52	24.06	-16.67	-1,131.15	15.48	967.14	927.61	39.52	24.469	
5,600.00	5,595.39	5,491.65	5,354.38	19.88	24.53	-16.65	-1,155.10	15.50	987.33	947.06	40.27	24.519	
5,700.00	5,695.28	5,589.60	5,449.34	20.25	25.00	-16.64	-1,179.06	15.52	1,007.52	966.51	41.01	24.567	
5,800.00	5,795.18	5,687.54	5,544.31	20.61	25.47	-16.63	-1,203.01	15.53	1,027.71	985.95	41.75	24.614	
5,900.00	5,895.08	5,785.48	5,639.28	20.97	25.94	-16.62	-1,226.96	15.55	1,047.90	1,005.40	42.50	24.658	
6,000.00	5,994.98	5,883.42	5,734.24	21.34	26.42	-16.61	-1,250.92	15.57	1,068.09	1,024.85	43.24	24.701	
6,100.00	6,094.88	5,981.36	5,829.21	21.70	26.89	-16.59	-1,274.87	15.59	1,088.28	1,044.29	43.98	24.743	
6,200.00	6,194.77	6,079.30	5,924.17	22.06	27.36	-16.58	-1,298.82	15.61	1,108.47	1,063.74	44.73	24.783	
6,300.00	6,294.67	6,177.24	6,019.14	22.43	27.83	-16.57	-1,322.78	15.63	1,128.66	1,083.19	45.47	24.822	
6,314.74	6,309.40	6,191.67	6,033.14	22.48	27.90	-16.57	-1,326.31	15.63	1,131.63	1,086.05	45.58	24.827	
6,350.00	6,344.59	6,226.18	6,066.59	22.61	28.07	-59.11	-1,334.75	15.64	1,138.81	1,092.97	45.84	24.842	
6,400.00	6,394.26	6,274.87	6,113.80	22.79	28.30	-75.31	-1,346.66	15.65	1,149.17	1,102.96	46.21	24.866	
6,450.00	6,443.36	6,322.99	6,160.47	22.97	28.54	-80.54	-1,358.43	15.65	1,159.73	1,113.14	46.59	24.894	
6,500.00	6,491.60	6,370.27	6,206.31	23.15	28.77	-82.98	-1,369.99	15.66	1,170.51	1,123.55	46.96	24.926	
6,550.00	6,538.67	6,416.40	6,251.04	23.32	28.99	-84.38	-1,381.27	15.67	1,181.56	1,134.22	47.33	24.963	
6,600.00	6,584.29	6,461.10	6,294.38	23.49	29.20	-85.30	-1,392.21	15.68	1,192.94	1,145.24	47.70	25.007	
6,650.00	6,628.18	6,506.61	6,338.50	23.66	29.42	-86.01	-1,403.33	15.61	1,204.75	1,156.66	48.10	25.047	
6,700.00	6,670.06	6,565.50	6,395.49	23.83	29.70	-86.83	-1,417.69	12.00	1,216.72	1,168.12	48.61	25.032	
6,750.00	6,709.68	6,628.38	6,455.69	24.00	30.00	-87.56	-1,432.84	2.17	1,228.57	1,179.43	49.14	25.001	
6,800.00	6,746.79	6,695.80	6,518.87	24.17	30.31	-88.23	-1,448.71	-15.11	1,240.13	1,190.44	49.69	24.956	
6,850.00	6,781.17	6,768.36	6,584.47	24.35	30.62	-88.86	-1,465.16	-41.29	1,251.25	1,201.00	50.25	24.902	
6,900.00	6,812.60	6,846.58	6,651.46	24.54	30.94	-89.46	-1,481.92	-77.93	1,261.72	1,210.92	50.79	24.841	
6,950.00	6,840.88	6,930.83	6,718.15	24.74	31.26	-90.01	-1,498.56	-126.52	1,271.30	1,219.99	51.31	24.776	
7,000.00	6,865.85	7,021.17	6,782.10	24.96	31.58	-90.48	-1,514.46	-188.21	1,279.77	1,227.96	51.80	24.704	
7,050.00	6,887.35	7,117.21	6,840.08	25.19	31.90	-90.84	-1,528.81	-263.30	1,286.87	1,234.60	52.27	24.618	
7,100.00	6,905.25	7,217.93	6,888.42	25.43	32.23	-91.03	-1,540.67	-350.75	1,292.40	1,239.66	52.74	24.507	
7,150.00	6,919.43	7,321.70	6,923.61	25.69	32.56	-91.02	-1,549.18	-447.88	1,296.16	1,242.94	53.22	24.353	
7,200.00	6,929.81	7,426.40	6,943.15	25.96	32.92	-90.79	-1,553.73	-550.51	1,298.08	1,244.31	53.76	24.144	
7,250.00	6,936.33	7,514.26	6,946.95	26.25	33.25	-90.44	-1,554.36	-638.23	1,298.23	1,243.87	54.36	23.883	
7,300.00	6,938.95	7,564.17	6,946.79	26.55	33.45	-90.35	-1,554.13	-688.14	1,298.09	1,243.14	54.96	23.621	
7,309.56	6,939.00	7,573.73	6,946.76	26.60	33.49	-90.34	-1,554.09	-697.69	1,298.09	1,243.02	55.07	23.572	
7,400.00	6,938.83	7,664.17	6,946.47	27.19	33.92	-90.34	-1,553.68	-788.13	1,298.09	1,241.87	56.22	23.091	
7,500.00	6,938.64	7,764.17	6,946.15	27.91	34.45	-90.33	-1,553.22	-888.13	1,298.09	1,240.46	57.63	22.524	
7,600.00	6,938.44	7,864.17	6,945.82	28.70	35.06	-90.33	-1,552.77	-988.13	1,298.09	1,238.90	59.18	21.933	
7,700.00	6,938.25	7,964.17	6,945.50	29.55	35.73	-90.32	-1,552.31	-1,088.13	1,298.09	1,237.22	60.87	21.326	
7,800.00	6,938.06	8,064.17	6,945.18	30.47	36.47	-90.31	-1,551.86	-1,188.13	1,298.09	1,235.42	62.67	20.713	
7,900.00	6,937.87	8,164.17	6,944.85	31.44	37.26	-90.31	-1,551.40	-1,288.13	1,298.09	1,233.50	64.58	20.100	
8,000.00	6,937.68	8,264.17	6,944.53	32.46	38.11	-90.30	-1,550.95	-1,388.12	1,298.09	1,231.49	66.59	19.493	
8,100.00	6,937.49	8,364.17	6,944.21	33.53	39.01	-90.30	-1,550.49	-1,488.12	1,298.08	1,229.39	68.70	18.896	
8,200.00	6,937.30	8,464.17	6,943.88	34.64	39.96	-90.29	-1,550.04	-1,588.12	1,298.08	1,227.20	70.88	18.313	
8,300.00	6,937.10	8,564.17	6,943.56	35.78	40.96	-90.28	-1,549.58	-1,688.12	1,298.08	1,224.94	73.14	17.747	
8,400.00	6,936.91	8,664.17	6,943.24	36.96	41.99	-90.28	-1,549.13	-1,788.12	1,298.08	1,222.61	75.47	17.200	
8,500.00	6,936.72	8,764.17	6,942.91	38.17	43.06	-90.27	-1,548.67	-1,888.12	1,298.08	1,220.22	77.86	16.671	
8,600.00	6,936.53	8,864.17	6,942.59	39.41	44.16	-90.27	-1,548.22	-1,988.11	1,298.08	1,217.77	80.31	16.163	
8,700.00	6,936.34	8,964.17	6,942.27	40.68	45.30	-90.26	-1,547.76	-2,088.11	1,298.08	1,215.27	82.81	15.675	
8,800.00	6,936.15	9,064.17	6,941.95	41.97	46.46	-90.26	-1,547.31	-2,188.11	1,298.08	1,212.72	85.36	15.207	
8,900.00	6,935.96	9,164.17	6,941.62	43.27	47.66	-90.25	-1,546.85	-2,288.11	1,298.08	1,210.13	87.95	14.759	
9,000.00	6,935.76	9,264.17	6,941.30	44.60	48.87	-90.24	-1,546.40	-2,388.11	1,298.08	1,207.50	90.58	14.330	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - Prelim #2

Offset Site Error: 0.00 usft

Survey Program: 0-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
9,100.00	6,935.57	9,364.17	6,940.98	45.95	50.11	-90.24	-1,545.94	-2,488.11	1,298.08	1,204.83	93.25	13.921	
9,200.00	6,935.38	9,464.17	6,940.65	47.31	51.37	-90.23	-1,545.49	-2,588.10	1,298.08	1,202.13	95.95	13.529	
9,300.00	6,935.19	9,564.17	6,940.33	48.69	52.65	-90.23	-1,545.03	-2,688.10	1,298.08	1,199.40	98.68	13.155	
9,400.00	6,935.00	9,664.17	6,940.01	50.08	53.95	-90.22	-1,544.58	-2,788.10	1,298.08	1,196.64	101.44	12.797	
9,500.00	6,934.81	9,764.17	6,939.68	51.48	55.26	-90.22	-1,544.12	-2,888.10	1,298.08	1,193.86	104.22	12.455	
9,600.00	6,934.62	9,864.17	6,939.36	52.89	56.59	-90.21	-1,543.67	-2,988.10	1,298.08	1,191.05	107.03	12.128	
9,700.00	6,934.43	9,964.17	6,939.04	54.32	57.93	-90.20	-1,543.21	-3,088.10	1,298.08	1,188.22	109.86	11.816	
9,800.00	6,934.23	10,064.17	6,938.72	55.75	59.29	-90.20	-1,542.76	-3,188.09	1,298.08	1,185.37	112.71	11.517	
9,900.00	6,934.04	10,164.17	6,938.39	57.19	60.65	-90.19	-1,542.30	-3,288.09	1,298.08	1,182.50	115.58	11.231	
10,000.00	6,933.85	10,264.17	6,938.07	58.65	62.03	-90.19	-1,541.85	-3,388.09	1,298.08	1,179.62	118.46	10.958	
10,100.00	6,933.66	10,364.17	6,937.75	60.10	63.42	-90.18	-1,541.39	-3,488.09	1,298.08	1,176.71	121.37	10.696	
10,200.00	6,933.47	10,464.17	6,937.42	61.57	64.82	-90.17	-1,540.94	-3,588.09	1,298.08	1,173.80	124.28	10.445	
10,300.00	6,933.28	10,564.17	6,937.10	63.04	66.23	-90.17	-1,540.48	-3,688.09	1,298.08	1,170.87	127.21	10.204	
10,400.00	6,933.09	10,664.17	6,936.78	64.52	67.65	-90.16	-1,540.03	-3,788.08	1,298.08	1,167.92	130.16	9.973	
10,500.00	6,932.89	10,764.17	6,936.45	66.01	69.08	-90.16	-1,539.57	-3,888.08	1,298.08	1,164.96	133.11	9.752	
10,600.00	6,932.70	10,864.17	6,936.13	67.50	70.51	-90.15	-1,539.12	-3,988.08	1,298.08	1,162.00	136.08	9.539	
10,700.00	6,932.51	10,964.17	6,935.81	68.99	71.96	-90.15	-1,538.66	-4,088.08	1,298.08	1,159.02	139.06	9.335	
10,800.00	6,932.32	11,064.17	6,935.48	70.50	73.40	-90.14	-1,538.21	-4,188.08	1,298.08	1,156.03	142.05	9.138	
10,826.00	6,932.27	11,090.17	6,935.40	70.89	73.78	-90.14	-1,538.09	-4,214.08	1,298.08	1,155.25	142.83	9.088	
10,900.00	6,932.13	11,164.17	6,935.16	72.00	74.86	-90.13	-1,537.75	-4,288.08	1,298.08	1,153.03	145.05	8.949	
11,000.00	6,931.94	11,264.17	6,934.84	73.51	76.32	-90.13	-1,537.30	-4,388.07	1,298.08	1,150.03	148.05	8.768	
11,100.00	6,931.75	11,364.17	6,934.52	75.02	77.79	-90.12	-1,536.84	-4,488.07	1,298.08	1,147.01	151.07	8.593	
11,200.00	6,931.55	11,464.17	6,934.19	76.54	79.26	-90.12	-1,536.39	-4,588.07	1,298.08	1,143.99	154.09	8.424	
11,300.00	6,931.36	11,564.17	6,933.87	78.06	80.74	-90.11	-1,535.93	-4,688.07	1,298.08	1,140.96	157.12	8.262	
11,400.00	6,931.17	11,664.17	6,933.55	79.58	82.22	-90.10	-1,535.48	-4,788.07	1,298.08	1,137.92	160.16	8.105	
11,500.00	6,930.98	11,764.17	6,933.22	81.11	83.70	-90.10	-1,535.02	-4,888.07	1,298.08	1,134.88	163.20	7.954	
11,600.00	6,930.79	11,864.17	6,932.90	82.64	85.19	-90.09	-1,534.57	-4,988.07	1,298.08	1,131.83	166.25	7.808	
11,700.00	6,930.60	11,964.17	6,932.58	84.17	86.69	-90.09	-1,534.11	-5,088.06	1,298.08	1,128.77	169.31	7.667	
11,800.00	6,930.41	12,064.17	6,932.25	85.70	88.19	-90.08	-1,533.66	-5,188.06	1,298.08	1,125.71	172.37	7.531	
11,900.00	6,930.21	12,164.17	6,931.93	87.24	89.69	-90.08	-1,533.20	-5,288.06	1,298.08	1,122.65	175.43	7.399	
12,000.00	6,930.02	12,264.17	6,931.61	88.78	91.20	-90.07	-1,532.75	-5,388.06	1,298.08	1,119.57	178.51	7.272	
12,100.00	6,929.83	12,364.17	6,931.28	90.32	92.70	-90.06	-1,532.29	-5,488.06	1,298.08	1,116.50	181.58	7.149	
12,200.00	6,929.64	12,464.17	6,930.96	91.87	94.22	-90.06	-1,531.84	-5,588.06	1,298.08	1,113.42	184.66	7.029	
12,300.00	6,929.45	12,564.17	6,930.64	93.41	95.73	-90.05	-1,531.38	-5,688.05	1,298.08	1,110.33	187.75	6.914	
12,400.00	6,929.26	12,664.17	6,930.32	94.96	97.25	-90.05	-1,530.93	-5,788.05	1,298.08	1,107.25	190.84	6.802	
12,500.00	6,929.07	12,764.17	6,929.99	96.51	98.77	-90.04	-1,530.47	-5,888.05	1,298.08	1,104.15	193.93	6.694	
12,600.00	6,928.88	12,864.17	6,929.67	98.06	100.29	-90.04	-1,530.02	-5,988.05	1,298.08	1,101.06	197.03	6.588	
12,700.00	6,928.68	12,964.17	6,929.35	99.62	101.82	-90.03	-1,529.56	-6,088.05	1,298.08	1,097.96	200.13	6.486	
12,800.00	6,928.49	13,064.17	6,929.02	101.17	103.35	-90.02	-1,529.10	-6,188.05	1,298.08	1,094.85	203.23	6.387	
12,900.00	6,928.30	13,164.17	6,928.70	102.73	104.88	-90.02	-1,528.65	-6,288.04	1,298.08	1,091.75	206.33	6.291	
13,000.00	6,928.11	13,264.17	6,928.38	104.28	106.41	-90.01	-1,528.19	-6,388.04	1,298.08	1,088.64	209.44	6.198	
13,100.00	6,927.92	13,364.17	6,928.05	105.84	107.94	-90.01	-1,527.74	-6,488.04	1,298.08	1,085.53	212.56	6.107	
13,200.00	6,927.73	13,464.17	6,927.73	107.40	109.48	-90.00	-1,527.28	-6,588.04	1,298.08	1,082.41	215.67	6.019	
13,300.00	6,927.54	13,564.17	6,927.41	108.97	111.02	-89.99	-1,526.83	-6,688.04	1,298.08	1,079.29	218.79	5.933	
13,400.00	6,927.34	13,664.17	6,927.08	110.53	112.56	-89.99	-1,526.37	-6,788.04	1,298.08	1,076.17	221.91	5.850	
13,500.00	6,927.15	13,764.17	6,926.76	112.09	114.10	-89.98	-1,525.92	-6,888.03	1,298.08	1,073.05	225.03	5.768	
13,600.00	6,926.96	13,864.17	6,926.44	113.66	115.65	-89.98	-1,525.46	-6,988.03	1,298.08	1,069.93	228.16	5.689	
13,700.00	6,926.77	13,964.17	6,926.12	115.22	117.19	-89.97	-1,525.01	-7,088.03	1,298.09	1,066.80	231.29	5.612	
13,800.00	6,926.58	14,064.17	6,925.79	116.79	118.74	-89.97	-1,524.55	-7,188.03	1,298.09	1,063.67	234.42	5.538	
13,900.00	6,926.39	14,164.17	6,925.47	118.36	120.29	-89.96	-1,524.10	-7,288.03	1,298.09	1,060.54	237.55	5.465	
14,000.00	6,926.20	14,264.16	6,925.15	119.93	121.84	-89.95	-1,523.64	-7,388.03	1,298.09	1,057.41	240.68	5.393	
14,100.00	6,926.00	14,364.16	6,924.82	121.50	123.39	-89.95	-1,523.19	-7,488.02	1,298.09	1,054.27	243.82	5.324	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 702H - OH - Prelim #2

Offset Site Error: 0.00 usft

Survey Program: 0-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
14,200.00	6,925.81	14,464.16	6,924.50	123.07	124.94	-89.94	-1,522.73	-7,588.02	1,298.09	1,051.13	246.95	5.256	
14,300.00	6,925.62	14,564.16	6,924.18	124.64	126.49	-89.94	-1,522.28	-7,688.02	1,298.09	1,047.99	250.09	5.190	
14,400.00	6,925.43	14,664.16	6,923.85	126.21	128.05	-89.93	-1,521.82	-7,788.02	1,298.09	1,044.85	253.23	5.126	
14,500.00	6,925.24	14,764.16	6,923.53	127.79	129.61	-89.92	-1,521.37	-7,888.02	1,298.09	1,041.71	256.38	5.063	
14,600.00	6,925.05	14,864.16	6,923.21	129.36	131.16	-89.92	-1,520.91	-7,988.02	1,298.09	1,038.57	259.52	5.002	
14,700.00	6,924.86	14,964.16	6,922.88	130.93	132.72	-89.91	-1,520.46	-8,088.01	1,298.09	1,035.42	262.67	4.942	
14,800.00	6,924.66	15,064.16	6,922.56	132.51	134.28	-89.91	-1,520.00	-8,188.01	1,298.09	1,032.28	265.81	4.883	
14,900.00	6,924.47	15,164.16	6,922.24	134.09	135.84	-89.90	-1,519.55	-8,288.01	1,298.09	1,029.13	268.96	4.826	
15,000.00	6,924.28	15,264.16	6,921.92	135.66	137.40	-89.90	-1,519.09	-8,388.01	1,298.09	1,025.98	272.11	4.770	
15,100.00	6,924.09	15,364.16	6,921.59	137.24	138.97	-89.89	-1,518.64	-8,488.01	1,298.09	1,022.83	275.26	4.716	
15,200.00	6,923.90	15,464.16	6,921.27	138.82	140.53	-89.88	-1,518.18	-8,588.01	1,298.09	1,019.68	278.42	4.662	
15,300.00	6,923.71	15,564.16	6,920.95	140.40	142.09	-89.88	-1,517.73	-8,688.00	1,298.09	1,016.52	281.57	4.610	
15,400.00	6,923.52	15,664.16	6,920.62	141.97	143.66	-89.87	-1,517.27	-8,788.00	1,298.09	1,013.37	284.73	4.559	
15,500.00	6,923.33	15,764.16	6,920.30	143.55	145.22	-89.87	-1,516.82	-8,888.00	1,298.09	1,010.21	287.88	4.509	
15,600.00	6,923.13	15,864.16	6,919.98	145.13	146.79	-89.86	-1,516.36	-8,988.00	1,298.09	1,007.06	291.04	4.460	
15,700.00	6,922.94	15,964.16	6,919.65	146.72	148.36	-89.85	-1,515.91	-9,088.00	1,298.10	1,003.90	294.20	4.412	
15,800.00	6,922.75	16,064.16	6,919.33	148.30	149.93	-89.85	-1,515.45	-9,188.00	1,298.10	1,000.74	297.36	4.365	
15,900.00	6,922.56	16,164.16	6,919.01	149.88	151.50	-89.84	-1,515.00	-9,287.99	1,298.10	997.58	300.52	4.320	
16,000.00	6,922.37	16,264.16	6,918.68	151.46	153.07	-89.84	-1,514.54	-9,387.99	1,298.10	994.42	303.68	4.275	
16,100.00	6,922.18	16,364.16	6,918.36	153.04	154.64	-89.83	-1,514.09	-9,487.99	1,298.10	991.26	306.84	4.231	
16,200.00	6,921.99	16,464.16	6,918.04	154.63	156.21	-89.83	-1,513.63	-9,587.99	1,298.10	988.09	310.00	4.187	
16,300.00	6,921.79	16,564.16	6,917.72	156.21	157.78	-89.82	-1,513.18	-9,687.99	1,298.10	984.93	313.17	4.145	
16,400.00	6,921.60	16,664.16	6,917.39	157.79	159.35	-89.81	-1,512.72	-9,787.99	1,298.10	981.77	316.33	4.104	
16,500.00	6,921.41	16,764.16	6,917.07	159.38	160.93	-89.81	-1,512.27	-9,887.98	1,298.10	978.60	319.50	4.063	
16,600.00	6,921.22	16,864.16	6,916.75	160.96	162.50	-89.80	-1,511.81	-9,987.98	1,298.10	975.44	322.67	4.023	
16,700.00	6,921.03	16,964.16	6,916.42	162.55	164.07	-89.80	-1,511.36	-10,087.98	1,298.10	972.27	325.83	3.984	
16,800.00	6,920.84	17,064.16	6,916.10	164.13	165.65	-89.79	-1,510.90	-10,187.98	1,298.10	969.10	329.00	3.946	
16,900.00	6,920.65	17,164.16	6,915.78	165.72	167.22	-89.79	-1,510.45	-10,287.98	1,298.10	965.93	332.17	3.908	
17,000.00	6,920.45	17,264.16	6,915.45	167.30	168.80	-89.78	-1,509.99	-10,387.98	1,298.11	962.76	335.34	3.871	
17,100.00	6,920.26	17,364.16	6,915.13	168.89	170.38	-89.77	-1,509.54	-10,487.97	1,298.11	959.59	338.51	3.835	
17,200.00	6,920.07	17,464.16	6,914.81	170.48	171.95	-89.77	-1,509.08	-10,587.97	1,298.11	956.42	341.68	3.799	
17,300.00	6,919.88	17,564.16	6,914.48	172.06	173.53	-89.76	-1,508.63	-10,687.97	1,298.11	953.25	344.86	3.764	
17,400.00	6,919.69	17,664.16	6,914.16	173.65	175.11	-89.76	-1,508.17	-10,787.97	1,298.11	950.08	348.03	3.730	
17,500.00	6,919.50	17,764.16	6,913.84	175.24	176.69	-89.75	-1,507.72	-10,887.97	1,298.11	946.91	351.20	3.696	
17,600.00	6,919.31	17,864.16	6,913.52	176.83	178.27	-89.74	-1,507.26	-10,987.97	1,298.11	943.74	354.37	3.663	
17,700.00	6,919.11	17,964.16	6,913.19	178.41	179.85	-89.74	-1,506.81	-11,087.96	1,298.11	940.56	357.55	3.631	
17,759.55	6,919.00	18,023.72	6,913.00	179.36	180.79	-89.74	-1,506.53	-11,147.52	1,298.11	938.67	359.44	3.611 SF	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Prelim #4 — **Offset Site Error:** 0.00 usft

Survey Program: 0-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	144.87	-41.14	28.94	50.30				
100.00	100.00	100.00	100.00	0.25	0.25	144.87	-41.14	28.94	50.30	49.80	0.50	100.228	
200.00	200.00	200.00	200.00	0.61	0.61	144.87	-41.14	28.94	50.30	49.08	1.22	41.270	
300.00	300.00	300.00	300.00	0.97	0.97	144.87	-41.14	28.94	50.30	48.36	1.94	25.985	
400.00	400.00	400.00	400.00	1.33	1.33	144.87	-41.14	28.94	50.30	47.65	2.65	18.962	
500.00	500.00	500.00	500.00	1.68	1.68	144.87	-41.14	28.94	50.30	46.93	3.37	14.928	
600.00	600.00	600.95	600.93	2.04	2.05	143.16	-39.48	29.57	49.33	45.24	4.09	12.064	
700.00	700.00	701.66	701.49	2.40	2.41	137.65	-34.51	31.45	46.71	41.91	4.81	9.717	
800.00	800.00	801.86	801.30	2.76	2.77	127.24	-26.28	34.57	43.44	37.92	5.53	7.861	
900.00	900.00	901.33	900.09	3.12	3.14	111.71	-15.40	38.69	41.64	35.39	6.25	6.664	
905.91	905.91	907.19	905.91	3.14	3.16	110.74	-14.74	38.94	41.63	35.34	6.29	6.618	CC, ES
1,000.00	1,000.00	1,000.60	998.64	3.48	3.50	95.64	-4.24	42.91	43.14	36.17	6.97	6.189	SF
1,100.00	1,099.98	1,099.65	1,096.97	3.82	3.87	-113.24	6.90	47.13	48.39	40.72	7.67	6.310	
1,129.54	1,129.49	1,128.81	1,125.91	3.92	3.98	-117.80	10.18	48.37	50.86	42.99	7.87	6.463	
1,200.00	1,199.88	1,198.31	1,194.91	4.15	4.24	-127.34	17.99	51.33	58.11	49.77	8.35	6.961	
1,300.00	1,299.78	1,296.94	1,292.83	4.48	4.61	-137.15	29.08	55.53	70.43	61.40	9.03	7.799	
1,400.00	1,399.68	1,395.58	1,390.75	4.82	4.98	-143.93	40.17	59.73	84.18	74.47	9.72	8.662	
1,500.00	1,499.58	1,494.21	1,488.67	5.16	5.36	-148.78	51.26	63.93	98.77	88.36	10.41	9.486	
1,600.00	1,599.48	1,592.85	1,586.59	5.50	5.73	-152.36	62.35	68.13	113.87	102.76	11.11	10.251	
1,700.00	1,699.37	1,691.48	1,684.51	5.85	6.11	-155.10	73.44	72.33	129.31	117.50	11.81	10.952	
1,800.00	1,799.27	1,790.11	1,782.42	6.20	6.49	-157.25	84.53	76.53	144.97	132.46	12.51	11.590	
1,900.00	1,899.17	1,888.75	1,880.34	6.55	6.86	-158.99	95.63	80.72	160.80	147.58	13.21	12.170	
2,000.00	1,999.07	1,987.38	1,978.26	6.90	7.24	-160.41	106.72	84.92	176.74	162.82	13.92	12.699	
2,100.00	2,098.96	2,086.02	2,076.18	7.25	7.62	-161.59	117.81	89.12	192.77	178.14	14.62	13.181	
2,200.00	2,198.86	2,184.65	2,174.10	7.61	8.00	-162.60	128.90	93.32	208.87	193.54	15.33	13.623	
2,300.00	2,298.76	2,283.29	2,272.02	7.96	8.38	-163.46	139.99	97.52	225.02	208.98	16.04	14.028	
2,400.00	2,398.66	2,381.92	2,369.94	8.32	8.75	-164.20	151.08	101.72	241.22	224.47	16.75	14.400	
2,500.00	2,498.56	2,480.56	2,467.86	8.68	9.13	-164.86	162.17	105.92	257.45	239.99	17.46	14.744	
2,600.00	2,598.45	2,579.19	2,565.78	9.03	9.51	-165.43	173.26	110.12	273.71	255.53	18.17	15.061	
2,700.00	2,698.35	2,677.82	2,663.70	9.39	9.89	-165.94	184.35	114.32	289.99	271.10	18.88	15.356	
2,800.00	2,798.25	2,776.46	2,761.61	9.75	10.27	-166.39	195.44	118.52	306.29	286.69	19.60	15.629	
2,900.00	2,898.15	2,875.09	2,859.53	10.11	10.65	-166.80	206.53	122.72	322.61	302.30	20.31	15.884	
3,000.00	2,998.04	2,973.73	2,957.45	10.47	11.03	-167.17	217.62	126.91	338.94	317.92	21.02	16.122	
3,100.00	3,097.94	3,072.36	3,055.37	10.83	11.41	-167.51	228.71	131.11	355.29	333.55	21.74	16.344	
3,200.00	3,197.84	3,171.00	3,153.29	11.19	11.79	-167.82	239.80	135.31	371.65	349.20	22.45	16.553	
3,300.00	3,297.74	3,269.63	3,251.21	11.55	12.17	-168.10	250.89	139.51	388.02	364.85	23.17	16.749	
3,400.00	3,397.64	3,368.27	3,349.13	11.91	12.55	-168.35	261.98	143.71	404.39	380.51	23.88	16.933	
3,500.00	3,497.53	3,466.90	3,447.05	12.27	12.93	-168.59	273.07	147.91	420.77	396.18	24.60	17.107	
3,600.00	3,597.43	3,565.53	3,544.97	12.63	13.31	-168.81	284.17	152.11	437.16	411.85	25.31	17.271	
3,700.00	3,697.33	3,664.17	3,642.89	12.99	13.69	-169.02	295.26	156.31	453.56	427.53	26.03	17.426	
3,800.00	3,797.23	3,762.80	3,740.80	13.35	14.07	-169.21	306.35	160.51	469.96	443.21	26.74	17.573	
3,900.00	3,897.12	3,861.44	3,838.72	13.72	14.45	-169.38	317.44	164.71	486.36	458.90	27.46	17.712	
4,000.00	3,997.02	3,960.07	3,936.64	14.08	14.83	-169.55	328.53	168.91	502.77	474.59	28.18	17.844	
4,100.00	4,096.92	4,058.71	4,034.56	14.44	15.21	-169.70	339.62	173.11	519.18	490.29	28.89	17.969	
4,200.00	4,196.82	4,157.34	4,132.48	14.80	15.59	-169.85	350.71	177.30	535.60	505.99	29.61	18.089	
4,300.00	4,296.72	4,255.98	4,230.40	15.16	15.97	-169.99	361.80	181.50	552.02	521.69	30.33	18.203	
4,400.00	4,396.61	4,354.61	4,328.32	15.53	16.35	-170.11	372.89	185.70	568.44	537.40	31.04	18.311	
4,500.00	4,496.51	4,453.25	4,426.24	15.89	16.73	-170.24	383.98	189.90	584.87	553.11	31.76	18.415	
4,600.00	4,596.41	4,551.88	4,524.16	16.25	17.11	-170.35	395.07	194.10	601.29	568.82	32.48	18.514	
4,700.00	4,696.31	4,650.51	4,622.08	16.61	17.49	-170.46	406.16	198.30	617.72	584.53	33.19	18.609	
4,800.00	4,796.20	4,749.15	4,719.99	16.98	17.87	-170.56	417.25	202.50	634.16	600.24	33.91	18.700	
4,900.00	4,896.10	4,847.78	4,817.91	17.34	18.25	-170.66	428.34	206.70	650.59	615.96	34.63	18.787	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Prelim #4

Offset Site Error: 0.00 usft

Survey Program: 0-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
5,000.00	4,996.00	4,946.42	4,915.83	17.70	18.63	-170.75	439.43	210.90	667.03	631.68	35.35	18.870	
5,100.00	5,095.90	5,045.05	5,013.75	18.07	19.01	-170.84	450.52	215.10	683.46	647.40	36.07	18.951	
5,200.00	5,195.80	5,143.69	5,111.67	18.43	19.39	-170.93	461.62	219.30	699.90	663.12	36.78	19.028	
5,300.00	5,295.69	5,242.32	5,209.59	18.79	19.77	-171.01	472.71	223.50	716.34	678.84	37.50	19.102	
5,400.00	5,395.59	5,340.96	5,307.51	19.16	20.16	-171.09	483.80	227.69	732.78	694.56	38.22	19.173	
5,500.00	5,495.49	5,439.59	5,405.43	19.52	20.54	-171.16	494.89	231.89	749.22	710.29	38.94	19.242	
5,600.00	5,595.39	5,538.22	5,503.35	19.88	20.92	-171.23	505.98	236.09	765.67	726.01	39.66	19.308	
5,700.00	5,695.28	5,636.86	5,601.26	20.25	21.30	-171.30	517.07	240.29	782.11	741.74	40.37	19.371	
5,800.00	5,795.18	5,735.49	5,699.18	20.61	21.68	-171.36	528.16	244.49	798.56	757.47	41.09	19.433	
5,900.00	5,895.08	5,834.13	5,797.10	20.97	22.06	-171.42	539.25	248.69	815.01	773.19	41.81	19.492	
6,000.00	5,994.98	5,932.76	5,895.02	21.34	22.44	-171.48	550.34	252.89	831.45	788.92	42.53	19.550	
6,100.00	6,094.88	6,031.40	5,992.94	21.70	22.82	-171.54	561.43	257.09	847.90	804.65	43.25	19.605	
6,200.00	6,194.77	6,130.03	6,090.86	22.06	23.20	-171.60	572.52	261.29	864.35	820.38	43.97	19.659	
6,300.00	6,294.67	6,228.67	6,188.78	22.43	23.58	-171.65	583.61	265.49	880.80	836.11	44.69	19.711	
6,314.74	6,309.40	6,243.20	6,203.21	22.48	23.64	-171.66	585.25	266.11	883.23	838.43	44.79	19.718	
6,350.00	6,344.59	6,277.91	6,237.67	22.61	23.77	144.70	589.15	267.58	889.37	844.33	45.05	19.744	
6,400.00	6,394.26	6,326.75	6,286.15	22.79	23.96	127.20	594.64	269.66	899.25	853.85	45.40	19.808	
6,450.00	6,443.36	6,374.87	6,333.92	22.97	24.15	120.92	600.05	271.71	910.50	864.75	45.75	19.903	
6,500.00	6,491.60	6,400.00	6,358.85	23.15	24.24	117.32	602.87	273.23	923.55	877.63	45.92	20.112	
6,550.00	6,538.67	6,433.81	6,392.24	23.32	24.38	115.04	606.64	276.84	938.81	892.66	46.15	20.342	
6,600.00	6,584.29	6,450.00	6,408.16	23.49	24.44	112.79	608.44	279.19	956.48	910.26	46.22	20.693	
6,650.00	6,628.18	6,482.53	6,439.93	23.66	24.57	111.30	612.02	285.16	976.31	929.87	46.44	21.023	
6,700.00	6,670.06	6,500.00	6,456.87	23.83	24.64	109.31	613.92	289.03	998.52	952.01	46.51	21.469	
6,750.00	6,709.68	6,519.68	6,475.80	24.00	24.72	107.35	616.05	293.95	1,022.98	976.38	46.61	21.949	
6,800.00	6,746.79	6,533.90	6,489.38	24.17	24.78	104.99	617.57	297.88	1,049.60	1,002.95	46.65	22.497	
6,850.00	6,781.17	6,550.00	6,504.65	24.35	24.85	102.54	619.28	302.68	1,078.25	1,031.51	46.74	23.070	
6,900.00	6,812.60	6,550.00	6,504.65	24.54	24.85	98.91	619.28	302.68	1,108.68	1,062.03	46.65	23.767	
6,950.00	6,840.88	6,550.00	6,504.65	24.74	24.85	94.98	619.28	302.68	1,140.79	1,094.21	46.58	24.492	
7,000.00	6,865.85	6,564.96	6,518.73	24.96	24.91	91.77	620.86	307.50	1,174.04	1,127.32	46.72	25.129	
7,050.00	6,887.35	6,567.22	6,520.84	25.19	24.92	87.55	621.09	308.25	1,208.47	1,161.74	46.73	25.858	
7,100.00	6,905.25	6,567.65	6,521.24	25.43	24.92	83.06	621.14	308.40	1,243.71	1,196.95	46.76	26.600	
7,150.00	6,919.43	6,566.43	6,520.10	25.69	24.92	78.41	621.01	307.99	1,279.48	1,232.69	46.79	27.345	
7,200.00	6,929.81	6,550.00	6,504.65	25.96	24.85	72.88	619.28	302.68	1,315.69	1,269.02	46.67	28.193	
7,250.00	6,936.33	6,550.00	6,504.65	26.25	24.85	68.53	619.28	302.68	1,351.65	1,304.87	46.78	28.894	
7,300.00	6,938.95	6,550.00	6,504.65	26.55	24.85	64.39	619.28	302.68	1,387.40	1,340.48	46.92	29.570	
7,309.56	6,939.00	6,550.00	6,504.65	26.60	24.85	63.63	619.28	302.68	1,394.19	1,347.24	46.95	29.697	
7,400.00	6,938.83	6,550.00	6,504.65	27.19	24.85	63.63	619.28	302.68	1,459.78	1,412.55	47.23	30.906	
7,500.00	6,938.64	6,532.69	6,488.23	27.91	24.78	62.73	617.44	297.53	1,534.96	1,487.61	47.35	32.418	
7,600.00	6,938.44	6,523.39	6,479.36	28.70	24.74	62.24	616.45	294.95	1,612.70	1,565.15	47.55	33.919	
7,700.00	6,938.25	6,500.00	6,456.87	29.55	24.64	61.03	613.92	289.03	1,692.85	1,645.26	47.59	35.570	
7,800.00	6,938.06	6,500.00	6,456.87	30.47	24.64	61.03	613.92	289.03	1,774.55	1,726.69	47.86	37.079	
7,900.00	6,937.87	6,500.00	6,456.87	31.44	24.64	61.03	613.92	289.03	1,858.03	1,809.93	48.10	38.626	
8,000.00	6,937.68	6,500.00	6,456.87	32.46	24.64	61.03	613.92	289.03	1,943.08	1,894.75	48.33	40.206	
8,100.00	6,937.49	6,500.00	6,456.87	33.53	24.64	61.03	613.92	289.03	2,029.49	1,980.95	48.53	41.815	
8,200.00	6,937.30	6,500.00	6,456.87	34.64	24.64	61.03	613.92	289.03	2,117.09	2,068.37	48.73	43.449	
8,300.00	6,937.10	6,477.43	6,434.97	35.78	24.55	59.88	611.46	284.11	2,205.28	2,156.54	48.73	45.252	
8,400.00	6,936.91	6,472.73	6,430.40	36.96	24.53	59.64	610.94	283.19	2,294.65	2,245.78	48.87	46.955	
8,500.00	6,936.72	6,450.00	6,408.16	38.17	24.44	58.49	608.44	279.19	2,385.15	2,336.28	48.87	48.810	
8,600.00	6,936.53	6,450.00	6,408.16	39.41	24.44	58.49	608.44	279.19	2,475.93	2,426.91	49.02	50.509	
8,700.00	6,936.34	6,450.00	6,408.16	40.68	24.44	58.49	608.44	279.19	2,567.39	2,518.23	49.16	52.222	
8,800.00	6,936.15	6,450.00	6,408.16	41.97	24.44	58.49	608.44	279.19	2,659.47	2,610.18	49.30	53.949	
8,900.00	6,935.96	6,450.00	6,408.16	43.27	24.44	58.49	608.44	279.19	2,752.10	2,702.68	49.42	55.686	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Prelim #4

Offset Site Error: 0.00 usft

Survey Program: 0-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
9,000.00	6,935.76	6,450.00	6,408.16	44.60	24.44	58.49	608.44	279.19	2,845.24	2,795.70	49.54	57.433	
9,100.00	6,935.57	6,450.00	6,408.16	45.95	24.44	58.49	608.44	279.19	2,938.82	2,889.17	49.65	59.188	
9,200.00	6,935.38	6,450.00	6,408.16	47.31	24.44	58.49	608.44	279.19	3,032.81	2,983.05	49.76	60.951	
9,300.00	6,935.19	6,450.00	6,408.16	48.69	24.44	58.49	608.44	279.19	3,127.18	3,077.32	49.86	62.720	
9,400.00	6,935.00	6,450.00	6,408.16	50.08	24.44	58.49	608.44	279.19	3,221.88	3,171.92	49.96	64.495	
9,500.00	6,934.81	6,450.00	6,408.16	51.48	24.44	58.49	608.44	279.19	3,316.90	3,266.85	50.05	66.274	
9,600.00	6,934.62	6,450.00	6,408.16	52.89	24.44	58.49	608.44	279.19	3,412.20	3,362.06	50.14	68.058	
9,700.00	6,934.43	6,450.00	6,408.16	54.32	24.44	58.49	608.44	279.19	3,507.76	3,457.54	50.22	69.845	
9,800.00	6,934.23	6,450.00	6,408.16	55.75	24.44	58.49	608.44	279.19	3,603.56	3,553.26	50.30	71.635	
9,900.00	6,934.04	6,428.63	6,387.14	57.19	24.36	57.42	606.07	276.17	3,699.18	3,648.90	50.27	73.579	
10,000.00	6,933.85	6,426.77	6,385.31	58.65	24.35	57.33	605.86	275.94	3,795.34	3,744.99	50.34	75.387	
10,100.00	6,933.66	6,424.99	6,383.55	60.10	24.34	57.24	605.66	275.73	3,891.68	3,841.27	50.41	77.195	
10,200.00	6,933.47	6,423.29	6,381.88	61.57	24.33	57.16	605.47	275.52	3,988.20	3,937.72	50.48	79.004	
10,300.00	6,933.28	6,421.66	6,380.27	63.04	24.33	57.08	605.29	275.34	4,084.88	4,034.34	50.55	80.814	
10,400.00	6,933.09	6,400.00	6,358.85	64.52	24.24	56.01	602.87	273.23	4,182.08	4,131.56	50.51	82.790	
10,500.00	6,932.89	6,400.00	6,358.85	66.01	24.24	56.01	602.87	273.23	4,279.00	4,228.41	50.59	84.588	
10,600.00	6,932.70	6,400.00	6,358.85	67.50	24.24	56.01	602.87	273.23	4,376.06	4,325.40	50.66	86.384	
10,700.00	6,932.51	6,400.00	6,358.85	68.99	24.24	56.01	602.87	273.23	4,473.25	4,422.53	50.73	88.181	
10,800.00	6,932.32	6,400.00	6,358.85	70.50	24.24	56.01	602.87	273.23	4,570.57	4,519.77	50.80	89.976	
10,900.00	6,932.13	6,400.00	6,358.85	72.00	24.24	56.01	602.87	273.23	4,667.99	4,617.13	50.87	91.771	
11,000.00	6,931.94	6,400.00	6,358.85	73.51	24.24	56.01	602.87	273.23	4,765.53	4,714.59	50.93	93.564	
11,100.00	6,931.75	6,400.00	6,358.85	75.02	24.24	56.01	602.87	273.23	4,863.16	4,812.16	51.00	95.355	
11,200.00	6,931.55	6,400.00	6,358.85	76.54	24.24	56.01	602.87	273.23	4,960.89	4,909.82	51.07	97.145	
11,300.00	6,931.36	6,400.00	6,358.85	78.06	24.24	56.01	602.87	273.23	5,058.70	5,007.57	51.13	98.933	
11,400.00	6,931.17	6,400.00	6,358.85	79.58	24.24	56.01	602.87	273.23	5,156.60	5,105.41	51.20	100.718	
11,500.00	6,930.98	6,400.00	6,358.85	81.11	24.24	56.01	602.87	273.23	5,254.58	5,203.32	51.26	102.501	
11,600.00	6,930.79	6,400.00	6,358.85	82.64	24.24	56.01	602.87	273.23	5,352.64	5,301.31	51.33	104.282	
11,700.00	6,930.60	6,400.00	6,358.85	84.17	24.24	56.01	602.87	273.23	5,450.76	5,399.37	51.39	106.060	
11,800.00	6,930.41	6,400.00	6,358.85	85.70	24.24	56.01	602.87	273.23	5,548.95	5,497.50	51.46	107.834	
11,900.00	6,930.21	6,400.00	6,358.85	87.24	24.24	56.01	602.87	273.23	5,647.21	5,595.69	51.52	109.606	
12,000.00	6,930.02	6,400.00	6,358.85	88.78	24.24	56.01	602.87	273.23	5,745.52	5,693.94	51.59	111.375	
12,100.00	6,929.83	6,400.00	6,358.85	90.32	24.24	56.01	602.87	273.23	5,843.90	5,792.24	51.65	113.140	
12,200.00	6,929.64	6,400.00	6,358.85	91.87	24.24	56.01	602.87	273.23	5,942.32	5,890.61	51.72	114.902	
12,300.00	6,929.45	6,400.00	6,358.85	93.41	24.24	56.01	602.87	273.23	6,040.80	5,989.02	51.78	116.660	
12,400.00	6,929.26	6,400.00	6,358.85	94.96	24.24	56.01	602.87	273.23	6,139.33	6,087.48	51.85	118.415	
12,500.00	6,929.07	6,400.00	6,358.85	96.51	24.24	56.01	602.87	273.23	6,237.90	6,185.99	51.91	120.166	
12,600.00	6,928.88	6,400.00	6,358.85	98.06	24.24	56.01	602.87	273.23	6,336.52	6,284.55	51.98	121.912	
12,700.00	6,928.68	6,400.00	6,358.85	99.62	24.24	56.01	602.87	273.23	6,435.19	6,383.14	52.04	123.655	
12,800.00	6,928.49	6,400.00	6,358.85	101.17	24.24	56.01	602.87	273.23	6,533.89	6,481.78	52.11	125.394	
12,900.00	6,928.30	6,400.00	6,358.85	102.73	24.24	56.01	602.87	273.23	6,632.63	6,580.46	52.17	127.128	
13,000.00	6,928.11	6,400.00	6,358.85	104.28	24.24	56.01	602.87	273.23	6,731.41	6,679.17	52.24	128.859	
13,100.00	6,927.92	6,400.00	6,358.85	105.84	24.24	56.01	602.87	273.23	6,830.22	6,777.92	52.31	130.584	
13,200.00	6,927.73	6,400.00	6,358.85	107.40	24.24	56.01	602.87	273.23	6,929.07	6,876.70	52.37	132.306	
13,300.00	6,927.54	6,400.00	6,358.85	108.97	24.24	56.01	602.87	273.23	7,027.95	6,975.51	52.44	134.023	
13,400.00	6,927.34	6,400.00	6,358.85	110.53	24.24	56.01	602.87	273.23	7,126.86	7,074.36	52.51	135.735	
13,500.00	6,927.15	6,400.00	6,358.85	112.09	24.24	56.01	602.87	273.23	7,225.80	7,173.23	52.57	137.442	
13,600.00	6,926.96	6,400.00	6,358.85	113.66	24.24	56.01	602.87	273.23	7,324.78	7,272.13	52.64	139.145	
13,700.00	6,926.77	6,400.00	6,358.85	115.22	24.24	56.01	602.87	273.23	7,423.77	7,371.06	52.71	140.843	
13,800.00	6,926.58	6,400.00	6,358.85	116.79	24.24	56.01	602.87	273.23	7,522.80	7,470.02	52.78	142.535	
13,900.00	6,926.39	6,400.00	6,358.85	118.36	24.24	56.01	602.87	273.23	7,621.85	7,569.00	52.85	144.223	
14,000.00	6,926.20	6,388.90	6,347.84	119.93	24.20	55.48	601.63	272.44	7,720.82	7,667.95	52.87	146.025	
14,100.00	6,926.00	6,388.41	6,347.36	121.50	24.20	55.45	601.57	272.41	7,819.91	7,766.97	52.94	147.709	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 704H - OH - Prelim #4

Offset Site Error: 0.00 usft

Survey Program: 0-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
14,200.00	6,925.81	6,387.93	6,346.89	123.07	24.20	55.43	601.52	272.38	7,919.02	7,866.01	53.01	149.388	
14,300.00	6,925.62	6,387.47	6,346.43	124.64	24.19	55.41	601.47	272.35	8,018.15	7,965.07	53.08	151.061	
14,400.00	6,925.43	6,376.00	6,335.04	126.21	24.15	54.86	600.18	271.76	8,117.41	8,064.30	53.11	152.855	
14,500.00	6,925.24	6,376.00	6,335.04	127.79	24.15	54.86	600.18	271.76	8,216.58	8,163.40	53.18	154.514	
14,600.00	6,925.05	6,376.00	6,335.04	129.36	24.15	54.86	600.18	271.76	8,315.76	8,262.51	53.25	156.167	
14,700.00	6,924.86	6,376.00	6,335.04	130.93	24.15	54.86	600.18	271.76	8,414.97	8,361.65	53.32	157.815	
14,800.00	6,924.66	6,376.00	6,335.04	132.51	24.15	54.86	600.18	271.76	8,514.19	8,460.80	53.39	159.457	
14,900.00	6,924.47	6,376.00	6,335.04	134.09	24.15	54.86	600.18	271.76	8,613.43	8,559.96	53.47	161.094	
15,000.00	6,924.28	6,376.00	6,335.04	135.66	24.15	54.86	600.18	271.76	8,712.69	8,659.15	53.54	162.725	
15,100.00	6,924.09	6,376.00	6,335.04	137.24	24.15	54.86	600.18	271.76	8,811.97	8,758.35	53.62	164.351	
15,200.00	6,923.90	6,376.00	6,335.04	138.82	24.15	54.86	600.18	271.76	8,911.26	8,857.57	53.69	165.971	
15,300.00	6,923.71	6,376.00	6,335.04	140.40	24.15	54.86	600.18	271.76	9,010.57	8,956.80	53.77	167.586	
15,400.00	6,923.52	6,376.00	6,335.04	141.97	24.15	54.86	600.18	271.76	9,109.89	9,056.05	53.84	169.195	
15,500.00	6,923.33	6,376.00	6,335.04	143.55	24.15	54.86	600.18	271.76	9,209.23	9,155.31	53.92	170.798	
15,600.00	6,923.13	6,376.00	6,335.04	145.13	24.15	54.86	600.18	271.76	9,308.58	9,254.59	54.00	172.395	
15,700.00	6,922.94	6,376.00	6,335.04	146.72	24.15	54.86	600.18	271.76	9,407.95	9,353.87	54.07	173.987	
15,800.00	6,922.75	6,376.00	6,335.04	148.30	24.15	54.86	600.18	271.76	9,507.33	9,453.18	54.15	175.573	
15,900.00	6,922.56	6,376.00	6,335.04	149.88	24.15	54.86	600.18	271.76	9,606.72	9,552.49	54.23	177.153	
16,000.00	6,922.37	6,376.00	6,335.04	151.46	24.15	54.86	600.18	271.76	9,706.12	9,651.81	54.31	178.728	
16,100.00	6,922.18	6,376.00	6,335.04	153.04	24.15	54.86	600.18	271.76	9,805.54	9,751.15	54.39	180.296	
16,200.00	6,921.99	6,376.00	6,335.04	154.63	24.15	54.86	600.18	271.76	9,904.97	9,850.50	54.47	181.859	
16,300.00	6,921.79	6,376.00	6,335.04	156.21	24.15	54.86	600.18	271.76	10,004.41	9,949.86	54.55	183.416	
16,400.00	6,921.60	6,376.00	6,335.04	157.79	24.15	54.86	600.18	271.76	10,103.86	10,049.23	54.63	184.966	
16,500.00	6,921.41	6,376.00	6,335.04	159.38	24.15	54.86	600.18	271.76	10,203.32	10,148.61	54.71	186.511	
16,600.00	6,921.22	6,376.00	6,335.04	160.96	24.15	54.86	600.18	271.76	10,302.79	10,248.00	54.79	188.050	
16,700.00	6,921.03	6,376.00	6,335.04	162.55	24.15	54.86	600.18	271.76	10,402.27	10,347.40	54.87	189.583	
16,800.00	6,920.84	6,376.00	6,335.04	164.13	24.15	54.86	600.18	271.76	10,501.76	10,446.81	54.95	191.110	
16,900.00	6,920.65	6,376.00	6,335.04	165.72	24.15	54.86	600.18	271.76	10,601.26	10,546.23	55.03	192.631	
17,000.00	6,920.45	6,376.00	6,335.04	167.30	24.15	54.86	600.18	271.76	10,700.78	10,645.66	55.12	194.146	
17,100.00	6,920.26	6,376.00	6,335.04	168.89	24.15	54.86	600.18	271.76	10,800.29	10,745.09	55.20	195.655	
17,200.00	6,920.07	6,376.00	6,335.04	170.48	24.15	54.86	600.18	271.76	10,899.82	10,844.54	55.28	197.158	
17,300.00	6,919.88	6,376.00	6,335.04	172.06	24.15	54.86	600.18	271.76	10,999.36	10,943.99	55.37	198.655	
17,400.00	6,919.69	6,376.00	6,335.04	173.65	24.15	54.86	600.18	271.76	11,098.91	11,043.45	55.45	200.146	
17,500.00	6,919.50	6,376.00	6,335.04	175.24	24.15	54.86	600.18	271.76	11,198.46	11,142.92	55.54	201.631	
17,600.00	6,919.31	6,376.00	6,335.04	176.83	24.15	54.86	600.18	271.76	11,298.02	11,242.40	55.63	203.110	
17,700.00	6,919.11	6,376.00	6,335.04	178.41	24.15	54.86	600.18	271.76	11,397.59	11,341.88	55.71	204.583	
17,759.55	6,919.00	6,376.00	6,335.04	179.36	24.15	54.86	600.18	271.76	11,456.89	11,401.13	55.76	205.457	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Prelim #3 — **Offset Site Error:** 0.00 usft

Survey Program: 0-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	144.75	-81.92	57.88	100.30				
100.00	100.00	100.00	100.00	0.25	0.25	144.75	-81.92	57.88	100.30	99.80	0.50	199.863	
200.00	200.00	200.00	200.00	0.61	0.61	144.75	-81.92	57.88	100.30	99.08	1.22	82.296	
300.00	300.00	300.00	300.00	0.97	0.97	144.75	-81.92	57.88	100.30	98.37	1.94	51.816	
400.00	400.00	400.00	400.00	1.33	1.33	144.75	-81.92	57.88	100.30	97.65	2.65	37.812	
500.00	500.00	500.00	500.00	1.68	1.68	144.75	-81.92	57.88	100.30	96.93	3.37	29.767	CC, ES
600.00	600.00	596.59	596.57	2.04	2.02	144.80	-83.29	58.75	101.99	97.93	4.06	25.124	
700.00	700.00	692.95	692.81	2.40	2.34	144.94	-87.41	61.35	107.03	102.29	4.74	22.590	
800.00	800.00	788.88	788.39	2.76	2.67	145.13	-94.22	65.65	115.42	110.01	5.42	21.313	
900.00	900.00	888.10	887.08	3.12	3.02	145.34	-102.84	71.10	125.69	119.58	6.11	20.557	
1,000.00	1,000.00	987.57	986.03	3.48	3.38	145.52	-111.49	76.56	135.97	129.15	6.82	19.943	
1,100.00	1,099.98	1,087.14	1,085.07	3.82	3.75	-47.81	-120.15	82.03	145.08	137.57	7.51	19.326	
1,129.54	1,129.49	1,116.58	1,114.36	3.92	3.85	-48.06	-122.71	83.64	147.32	139.62	7.70	19.121	
1,200.00	1,199.88	1,186.83	1,184.23	4.15	4.11	-48.82	-128.82	87.50	152.46	144.27	8.19	18.626	
1,300.00	1,299.78	1,286.53	1,283.40	4.48	4.48	-49.82	-137.49	92.98	159.79	150.91	8.87	18.007	
1,400.00	1,399.68	1,386.22	1,382.57	4.82	4.86	-50.72	-146.16	98.45	167.16	157.59	9.57	17.471	
1,500.00	1,499.58	1,485.92	1,481.73	5.16	5.23	-51.55	-154.83	103.92	174.57	164.30	10.27	17.004	
1,600.00	1,599.48	1,585.61	1,580.90	5.50	5.61	-52.31	-163.50	109.40	182.01	171.04	10.97	16.593	
1,700.00	1,699.37	1,685.31	1,680.06	5.85	5.98	-53.02	-172.17	114.87	189.48	177.81	11.68	16.230	
1,800.00	1,799.27	1,785.00	1,779.23	6.20	6.36	-53.67	-180.84	120.35	196.98	184.60	12.38	15.907	
1,900.00	1,899.17	1,884.70	1,878.40	6.55	6.74	-54.27	-189.52	125.82	204.51	191.41	13.09	15.617	
2,000.00	1,999.07	1,984.39	1,977.56	6.90	7.12	-54.83	-198.19	131.30	212.05	198.24	13.81	15.357	
2,100.00	2,098.96	2,084.08	2,076.73	7.25	7.50	-55.35	-206.86	136.77	219.61	205.09	14.52	15.122	
2,200.00	2,198.86	2,183.78	2,175.89	7.61	7.88	-55.83	-215.53	142.24	227.19	211.95	15.24	14.909	
2,300.00	2,298.76	2,283.47	2,275.06	7.96	8.26	-56.28	-224.20	147.72	234.78	218.83	15.96	14.714	
2,400.00	2,398.66	2,383.17	2,374.22	8.32	8.64	-56.71	-232.87	153.19	242.39	225.72	16.67	14.537	
2,500.00	2,498.56	2,482.86	2,473.39	8.68	9.02	-57.11	-241.54	158.67	250.01	232.62	17.39	14.373	
2,600.00	2,598.45	2,582.56	2,572.56	9.03	9.40	-57.49	-250.21	164.14	257.64	239.53	18.11	14.223	
2,700.00	2,698.35	2,682.25	2,671.72	9.39	9.78	-57.84	-258.88	169.62	265.28	246.45	18.84	14.084	
2,800.00	2,798.25	2,781.95	2,770.89	9.75	10.16	-58.17	-267.55	175.09	272.94	253.38	19.56	13.955	
2,900.00	2,898.15	2,881.64	2,870.05	10.11	10.54	-58.49	-276.22	180.56	280.60	260.31	20.28	13.835	
3,000.00	2,998.04	2,981.34	2,969.22	10.47	10.93	-58.79	-284.89	186.04	288.26	267.26	21.00	13.724	
3,100.00	3,097.94	3,081.03	3,068.39	10.83	11.31	-59.07	-293.56	191.51	295.94	274.21	21.73	13.620	
3,200.00	3,197.84	3,180.72	3,167.55	11.19	11.69	-59.34	-302.23	196.99	303.62	281.17	22.45	13.523	
3,300.00	3,297.74	3,280.42	3,266.72	11.55	12.07	-59.60	-310.90	202.46	311.31	288.13	23.18	13.432	
3,400.00	3,397.64	3,380.11	3,365.88	11.91	12.45	-59.84	-319.57	207.94	319.01	295.10	23.90	13.346	
3,500.00	3,497.53	3,479.81	3,465.05	12.27	12.84	-60.08	-328.24	213.41	326.71	302.08	24.63	13.265	
3,600.00	3,597.43	3,579.50	3,564.21	12.63	13.22	-60.30	-336.91	218.88	334.41	309.06	25.35	13.189	
3,700.00	3,697.33	3,679.20	3,663.38	12.99	13.60	-60.51	-345.58	224.36	342.12	316.04	26.08	13.118	
3,800.00	3,797.23	3,778.89	3,762.55	13.35	13.98	-60.71	-354.25	229.83	349.83	323.03	26.81	13.050	
3,900.00	3,897.12	3,878.59	3,861.71	13.72	14.37	-60.91	-362.92	235.31	357.55	330.02	27.53	12.986	
4,000.00	3,997.02	3,978.28	3,960.88	14.08	14.75	-61.09	-371.59	240.78	365.28	337.01	28.26	12.925	
4,100.00	4,096.92	4,077.98	4,060.04	14.44	15.13	-61.27	-380.26	246.26	373.00	344.01	28.99	12.867	
4,200.00	4,196.82	4,177.67	4,159.21	14.80	15.51	-61.44	-388.93	251.73	380.73	351.02	29.72	12.812	
4,300.00	4,296.72	4,277.36	4,258.38	15.16	15.90	-61.60	-397.60	257.20	388.46	358.02	30.44	12.760	
4,400.00	4,396.61	4,377.06	4,357.54	15.53	16.28	-61.76	-406.27	262.68	396.20	365.03	31.17	12.710	
4,500.00	4,496.51	4,476.75	4,456.71	15.89	16.66	-61.91	-414.94	268.15	403.94	372.04	31.90	12.662	
4,600.00	4,596.41	4,576.45	4,555.87	16.25	17.05	-62.06	-423.61	273.63	411.68	379.05	32.63	12.617	
4,700.00	4,696.31	4,676.14	4,655.04	16.61	17.43	-62.20	-432.28	279.10	419.42	386.07	33.36	12.574	
4,800.00	4,796.20	4,775.84	4,754.20	16.98	17.81	-62.33	-440.95	284.58	427.17	393.08	34.09	12.532	
4,900.00	4,896.10	4,875.53	4,853.37	17.34	18.19	-62.46	-449.62	290.05	434.92	400.10	34.82	12.492	
5,000.00	4,996.00	4,975.23	4,952.54	17.70	18.58	-62.59	-458.29	295.52	442.67	407.13	35.54	12.454	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Prelim #3

Offset Site Error: 0.00 usft

Survey Program: 0-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
5,100.00	5,095.90	5,074.92	5,051.70	18.07	18.96	-62.71	-466.96	301.00	450.42	414.15	36.27	12.417	
5,200.00	5,195.80	5,174.62	5,150.87	18.43	19.34	-62.83	-475.63	306.47	458.18	421.17	37.00	12.382	
5,300.00	5,295.69	5,274.31	5,250.03	18.79	19.73	-62.94	-484.30	311.95	465.93	428.20	37.73	12.349	
5,400.00	5,395.59	5,374.00	5,349.20	19.16	20.11	-63.05	-492.97	317.42	473.69	435.23	38.46	12.316	
5,500.00	5,495.49	5,473.70	5,448.37	19.52	20.49	-63.16	-501.64	322.90	481.45	442.26	39.19	12.285	
5,600.00	5,595.39	5,573.39	5,547.53	19.88	20.88	-63.26	-510.31	328.37	489.21	449.29	39.92	12.255	
5,700.00	5,695.28	5,673.09	5,646.70	20.25	21.26	-63.36	-518.98	333.84	496.98	456.33	40.65	12.226	
5,800.00	5,795.18	5,772.78	5,745.86	20.61	21.64	-63.46	-527.65	339.32	504.74	463.36	41.38	12.198	
5,900.00	5,895.08	5,872.48	5,845.03	20.97	22.03	-63.55	-536.32	344.79	512.51	470.40	42.11	12.171	
6,000.00	5,994.98	5,972.17	5,944.19	21.34	22.41	-63.64	-544.99	350.27	520.28	477.43	42.84	12.145	
6,100.00	6,094.88	6,071.87	6,043.36	21.70	22.79	-63.73	-553.66	355.74	528.04	484.47	43.57	12.119	
6,200.00	6,194.77	6,171.56	6,142.53	22.06	23.18	-63.81	-562.33	361.22	535.81	491.51	44.30	12.095	
6,300.00	6,294.67	6,271.26	6,241.69	22.43	23.56	-63.90	-571.00	366.69	543.58	498.55	45.03	12.071	
6,314.74	6,309.40	6,285.95	6,256.31	22.48	23.62	-63.91	-572.28	367.50	544.73	499.59	45.14	12.068 SF	
6,350.00	6,344.59	6,321.02	6,291.19	22.61	23.75	-106.96	-575.33	369.42	548.23	502.83	45.40	12.076	
6,400.00	6,394.26	6,370.32	6,340.24	22.79	23.94	-123.78	-579.62	372.13	555.77	510.01	45.77	12.144	
6,450.00	6,443.36	6,400.00	6,369.72	22.97	24.05	-129.29	-582.20	374.21	567.03	521.04	45.99	12.330	
6,500.00	6,491.60	6,428.19	6,397.62	23.15	24.17	-131.77	-584.64	377.44	582.93	536.76	46.17	12.626	
6,550.00	6,538.67	6,450.00	6,419.09	23.32	24.25	-132.76	-586.53	380.79	603.35	557.10	46.25	13.045	
6,600.00	6,584.29	6,476.06	6,444.57	23.49	24.36	-133.13	-588.77	385.76	628.02	581.64	46.38	13.541	
6,650.00	6,628.18	6,500.00	6,467.78	23.66	24.46	-132.88	-590.81	391.24	656.71	610.23	46.48	14.128	
6,700.00	6,670.06	6,514.05	6,481.31	23.83	24.52	-131.59	-592.01	394.86	689.02	642.57	46.45	14.835	
6,750.00	6,709.68	6,529.14	6,495.73	24.00	24.58	-129.72	-593.28	399.09	724.61	678.16	46.45	15.601	
6,800.00	6,746.79	6,550.00	6,515.51	24.17	24.67	-127.61	-595.03	405.49	763.14	716.56	46.58	16.382	
6,850.00	6,781.17	6,550.00	6,515.51	24.35	24.67	-122.92	-595.03	405.49	803.91	757.51	46.40	17.327	
6,900.00	6,812.60	6,550.00	6,515.51	24.54	24.67	-116.79	-595.03	405.49	846.87	800.61	46.25	18.309	
6,950.00	6,840.88	6,565.10	6,529.69	24.74	24.73	-110.96	-596.29	410.53	891.16	844.73	46.43	19.195	
7,000.00	6,865.85	6,568.71	6,533.06	24.96	24.75	-102.19	-596.59	411.78	936.74	890.29	46.45	20.169	
7,050.00	6,887.35	6,570.49	6,534.72	25.19	24.75	-91.59	-596.73	412.41	983.10	936.62	46.48	21.152	
7,100.00	6,905.25	6,570.59	6,534.81	25.43	24.76	-79.74	-596.74	412.44	1,029.90	983.38	46.53	22.135	
7,150.00	6,919.43	6,569.18	6,533.49	25.69	24.75	-67.74	-596.62	411.95	1,076.82	1,030.22	46.59	23.110	
7,200.00	6,929.81	6,566.38	6,530.89	25.96	24.74	-56.74	-596.39	410.97	1,123.55	1,076.87	46.68	24.070	
7,250.00	6,936.33	6,550.00	6,515.51	26.25	24.67	-46.23	-595.03	405.49	1,169.99	1,123.40	46.59	25.111	
7,300.00	6,938.95	6,550.00	6,515.51	26.55	24.67	-39.29	-595.03	405.49	1,215.43	1,168.64	46.79	25.977	
7,309.56	6,939.00	6,550.00	6,515.51	26.60	24.67	-38.12	-595.03	405.49	1,224.02	1,177.19	46.83	26.140	
7,400.00	6,938.83	6,550.00	6,515.51	27.19	24.67	-38.12	-595.03	405.49	1,305.76	1,258.57	47.18	27.674	
7,500.00	6,938.64	6,550.00	6,515.51	27.91	24.67	-38.12	-595.03	405.49	1,397.39	1,349.87	47.52	29.408	
7,600.00	6,938.44	6,526.38	6,493.10	28.70	24.57	-36.55	-593.05	398.29	1,489.48	1,441.94	47.54	31.330	
7,700.00	6,938.25	6,517.91	6,485.01	29.55	24.53	-36.00	-592.33	395.91	1,582.57	1,534.86	47.72	33.167	
7,800.00	6,938.06	6,500.00	6,467.78	30.47	24.46	-34.87	-590.81	391.24	1,676.44	1,628.66	47.77	35.092	
7,900.00	6,937.87	6,500.00	6,467.78	31.44	24.46	-34.87	-590.81	391.24	1,770.66	1,722.68	47.99	36.899	
8,000.00	6,937.68	6,500.00	6,467.78	32.46	24.46	-34.87	-590.81	391.24	1,865.49	1,817.32	48.17	38.724	
8,100.00	6,937.49	6,500.00	6,467.78	33.53	24.46	-34.87	-590.81	391.24	1,960.83	1,912.49	48.34	40.564	
8,200.00	6,937.30	6,500.00	6,467.78	34.64	24.46	-34.87	-590.81	391.24	2,056.62	2,008.13	48.49	42.415	
8,300.00	6,937.10	6,479.56	6,447.98	35.78	24.37	-33.64	-589.07	386.51	2,152.37	2,103.90	48.47	44.408	
8,400.00	6,936.91	6,474.70	6,443.24	36.96	24.35	-33.36	-588.65	385.47	2,248.65	2,200.09	48.56	46.306	
8,500.00	6,936.72	6,470.15	6,438.81	38.17	24.34	-33.09	-588.26	384.54	2,345.20	2,296.56	48.65	48.209	
8,600.00	6,936.53	6,450.00	6,419.09	39.41	24.25	-31.96	-586.53	380.79	2,442.25	2,393.62	48.62	50.231	
8,700.00	6,936.34	6,450.00	6,419.09	40.68	24.25	-31.96	-586.53	380.79	2,539.15	2,490.42	48.73	52.110	
8,800.00	6,936.15	6,450.00	6,419.09	41.97	24.25	-31.96	-586.53	380.79	2,636.28	2,587.45	48.82	53.994	
8,900.00	6,935.96	6,450.00	6,419.09	43.27	24.25	-31.96	-586.53	380.79	2,733.62	2,684.70	48.92	55.883	
9,000.00	6,935.76	6,450.00	6,419.09	44.60	24.25	-31.96	-586.53	380.79	2,831.14	2,782.14	49.00	57.775	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Prelim #3

Offset Site Error: 0.00 usft

Survey Program: 0-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
9,100.00	6,935.57	6,450.00	6,419.09	45.95	24.25	-31.96	-586.53	380.79	2,928.83	2,879.75	49.08	59.669	
9,200.00	6,935.38	6,450.00	6,419.09	47.31	24.25	-31.96	-586.53	380.79	3,026.67	2,977.51	49.16	61.566	
9,300.00	6,935.19	6,450.00	6,419.09	48.69	24.25	-31.96	-586.53	380.79	3,124.65	3,075.42	49.24	63.463	
9,400.00	6,935.00	6,450.00	6,419.09	50.08	24.25	-31.96	-586.53	380.79	3,222.75	3,173.45	49.31	65.362	
9,500.00	6,934.81	6,450.00	6,419.09	51.48	24.25	-31.96	-586.53	380.79	3,320.97	3,271.60	49.37	67.261	
9,600.00	6,934.62	6,450.00	6,419.09	52.89	24.25	-31.96	-586.53	380.79	3,419.29	3,369.85	49.44	69.161	
9,700.00	6,934.43	6,450.00	6,419.09	54.32	24.25	-31.96	-586.53	380.79	3,517.70	3,468.20	49.50	71.060	
9,800.00	6,934.23	6,450.00	6,419.09	55.75	24.25	-31.96	-586.53	380.79	3,616.21	3,566.64	49.57	72.958	
9,900.00	6,934.04	6,428.20	6,397.62	57.19	24.17	-30.78	-584.64	377.44	3,714.35	3,664.83	49.52	75.007	
10,000.00	6,933.85	6,426.20	6,395.65	58.65	24.16	-30.68	-584.47	377.17	3,812.92	3,763.35	49.57	76.918	
10,100.00	6,933.66	6,424.29	6,393.77	60.10	24.15	-30.58	-584.31	376.92	3,911.56	3,861.94	49.62	78.826	
10,200.00	6,933.47	6,422.47	6,391.97	61.57	24.14	-30.48	-584.15	376.69	4,010.26	3,960.59	49.67	80.733	
10,300.00	6,933.28	6,400.00	6,369.72	63.04	24.05	-29.35	-582.20	374.21	4,109.41	4,059.78	49.63	82.805	
10,400.00	6,933.09	6,400.00	6,369.72	64.52	24.05	-29.35	-582.20	374.21	4,208.16	4,158.47	49.69	84.694	
10,500.00	6,932.89	6,400.00	6,369.72	66.01	24.05	-29.35	-582.20	374.21	4,306.97	4,257.22	49.75	86.580	
10,600.00	6,932.70	6,400.00	6,369.72	67.50	24.05	-29.35	-582.20	374.21	4,405.83	4,356.03	49.80	88.464	
10,700.00	6,932.51	6,400.00	6,369.72	68.99	24.05	-29.35	-582.20	374.21	4,504.74	4,454.88	49.86	90.346	
10,800.00	6,932.32	6,400.00	6,369.72	70.50	24.05	-29.35	-582.20	374.21	4,603.70	4,553.78	49.92	92.225	
10,900.00	6,932.13	6,400.00	6,369.72	72.00	24.05	-29.35	-582.20	374.21	4,702.70	4,652.73	49.98	94.100	
11,000.00	6,931.94	6,400.00	6,369.72	73.51	24.05	-29.35	-582.20	374.21	4,801.75	4,751.71	50.03	95.973	
11,100.00	6,931.75	6,400.00	6,369.72	75.02	24.05	-29.35	-582.20	374.21	4,900.83	4,850.74	50.09	97.843	
11,200.00	6,931.55	6,400.00	6,369.72	76.54	24.05	-29.35	-582.20	374.21	4,999.95	4,949.80	50.15	99.709	
11,300.00	6,931.36	6,400.00	6,369.72	78.06	24.05	-29.35	-582.20	374.21	5,099.10	5,048.90	50.20	101.571	
11,400.00	6,931.17	6,400.00	6,369.72	79.58	24.05	-29.35	-582.20	374.21	5,198.29	5,148.03	50.26	103.430	
11,500.00	6,930.98	6,400.00	6,369.72	81.11	24.05	-29.35	-582.20	374.21	5,297.51	5,247.19	50.32	105.285	
11,600.00	6,930.79	6,400.00	6,369.72	82.64	24.05	-29.35	-582.20	374.21	5,396.75	5,346.38	50.37	107.135	
11,700.00	6,930.60	6,400.00	6,369.72	84.17	24.05	-29.35	-582.20	374.21	5,496.02	5,445.59	50.43	108.982	
11,800.00	6,930.41	6,400.00	6,369.72	85.70	24.05	-29.35	-582.20	374.21	5,595.32	5,544.84	50.49	110.825	
11,900.00	6,930.21	6,400.00	6,369.72	87.24	24.05	-29.35	-582.20	374.21	5,694.65	5,644.10	50.55	112.663	
12,000.00	6,930.02	6,400.00	6,369.72	88.78	24.05	-29.35	-582.20	374.21	5,793.99	5,743.39	50.60	114.497	
12,100.00	6,929.83	6,400.00	6,369.72	90.32	24.05	-29.35	-582.20	374.21	5,893.36	5,842.70	50.66	116.327	
12,200.00	6,929.64	6,400.00	6,369.72	91.87	24.05	-29.35	-582.20	374.21	5,992.75	5,942.03	50.72	118.151	
12,300.00	6,929.45	6,400.00	6,369.72	93.41	24.05	-29.35	-582.20	374.21	6,092.16	6,041.38	50.78	119.971	
12,400.00	6,929.26	6,400.00	6,369.72	94.96	24.05	-29.35	-582.20	374.21	6,191.59	6,140.75	50.84	121.787	
12,500.00	6,929.07	6,400.00	6,369.72	96.51	24.05	-29.35	-582.20	374.21	6,291.04	6,240.14	50.90	123.597	
12,600.00	6,928.88	6,400.00	6,369.72	98.06	24.05	-29.35	-582.20	374.21	6,390.50	6,339.54	50.96	125.403	
12,700.00	6,928.68	6,400.00	6,369.72	99.62	24.05	-29.35	-582.20	374.21	6,489.98	6,438.96	51.02	127.203	
12,800.00	6,928.49	6,400.00	6,369.72	101.17	24.05	-29.35	-582.20	374.21	6,589.48	6,538.40	51.08	128.998	
12,900.00	6,928.30	6,400.00	6,369.72	102.73	24.05	-29.35	-582.20	374.21	6,688.99	6,637.85	51.14	130.789	
13,000.00	6,928.11	6,400.00	6,369.72	104.28	24.05	-29.35	-582.20	374.21	6,788.52	6,737.31	51.21	132.573	
13,100.00	6,927.92	6,400.00	6,369.72	105.84	24.05	-29.35	-582.20	374.21	6,888.06	6,836.79	51.27	134.353	
13,200.00	6,927.73	6,400.00	6,369.72	107.40	24.05	-29.35	-582.20	374.21	6,987.61	6,936.28	51.33	136.127	
13,300.00	6,927.54	6,400.00	6,369.72	108.97	24.05	-29.35	-582.20	374.21	7,087.17	7,035.78	51.40	137.896	
13,400.00	6,927.34	6,388.57	6,358.37	110.53	24.01	-28.80	-581.20	373.26	7,186.64	7,135.22	51.42	139.773	
13,500.00	6,927.15	6,387.95	6,357.76	112.09	24.01	-28.77	-581.15	373.21	7,286.22	7,234.74	51.48	141.537	
13,600.00	6,926.96	6,387.34	6,357.16	113.66	24.01	-28.74	-581.10	373.17	7,385.80	7,334.26	51.54	143.296	
13,700.00	6,926.77	6,375.94	6,345.82	115.22	23.96	-28.20	-580.11	372.44	7,485.50	7,433.94	51.57	145.163	
13,800.00	6,926.58	6,375.94	6,345.82	116.79	23.96	-28.20	-580.11	372.44	7,585.10	7,533.47	51.63	146.905	
13,900.00	6,926.39	6,375.94	6,345.82	118.36	23.96	-28.20	-580.11	372.44	7,684.71	7,633.01	51.70	148.642	
14,000.00	6,926.20	6,375.94	6,345.82	119.93	23.96	-28.20	-580.11	372.44	7,784.33	7,732.56	51.77	150.372	
14,100.00	6,926.00	6,375.94	6,345.82	121.50	23.96	-28.20	-580.11	372.44	7,883.95	7,832.12	51.84	152.097	
14,200.00	6,925.81	6,375.94	6,345.82	123.07	23.96	-28.20	-580.11	372.44	7,983.59	7,931.69	51.90	153.816	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 705H - OH - Prelim #3

Offset Site Error: 0.00 usft

Survey Program: 0-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
14,300.00	6,925.62	6,375.94	6,345.82	124.64	23.96	-28.20	-580.11	372.44	8,083.24	8,031.26	51.97	155.528	
14,400.00	6,925.43	6,375.94	6,345.82	126.21	23.96	-28.20	-580.11	372.44	8,182.89	8,130.85	52.04	157.235	
14,500.00	6,925.24	6,375.94	6,345.82	127.79	23.96	-28.20	-580.11	372.44	8,282.55	8,230.44	52.11	158.936	
14,600.00	6,925.05	6,375.94	6,345.82	129.36	23.96	-28.20	-580.11	372.44	8,382.22	8,330.04	52.18	160.631	
14,700.00	6,924.86	6,375.94	6,345.82	130.93	23.96	-28.20	-580.11	372.44	8,481.90	8,429.65	52.25	162.319	
14,800.00	6,924.66	6,375.94	6,345.82	132.51	23.96	-28.20	-580.11	372.44	8,581.59	8,529.26	52.33	164.002	
14,900.00	6,924.47	6,375.94	6,345.82	134.09	23.96	-28.20	-580.11	372.44	8,681.28	8,628.88	52.40	165.678	
15,000.00	6,924.28	6,375.94	6,345.82	135.66	23.96	-28.20	-580.11	372.44	8,780.98	8,728.51	52.47	167.348	
15,100.00	6,924.09	6,375.94	6,345.82	137.24	23.96	-28.20	-580.11	372.44	8,880.69	8,828.15	52.54	169.012	
15,200.00	6,923.90	6,375.94	6,345.82	138.82	23.96	-28.20	-580.11	372.44	8,980.40	8,927.78	52.62	170.669	
15,300.00	6,923.71	6,375.94	6,345.82	140.40	23.96	-28.20	-580.11	372.44	9,080.12	9,027.43	52.69	172.321	
15,400.00	6,923.52	6,375.94	6,345.82	141.97	23.96	-28.20	-580.11	372.44	9,179.85	9,127.08	52.77	173.966	
15,500.00	6,923.33	6,375.94	6,345.82	143.55	23.96	-28.20	-580.11	372.44	9,279.58	9,226.74	52.84	175.604	
15,600.00	6,923.13	6,375.94	6,345.82	145.13	23.96	-28.20	-580.11	372.44	9,379.32	9,326.40	52.92	177.236	
15,700.00	6,922.94	6,375.94	6,345.82	146.72	23.96	-28.20	-580.11	372.44	9,479.06	9,426.07	53.00	178.862	
15,800.00	6,922.75	6,375.94	6,345.82	148.30	23.96	-28.20	-580.11	372.44	9,578.81	9,525.74	53.07	180.482	
15,900.00	6,922.56	6,375.94	6,345.82	149.88	23.96	-28.20	-580.11	372.44	9,678.56	9,625.41	53.15	182.095	
16,000.00	6,922.37	6,375.94	6,345.82	151.46	23.96	-28.20	-580.11	372.44	9,778.32	9,725.09	53.23	183.702	
16,100.00	6,922.18	6,375.94	6,345.82	153.04	23.96	-28.20	-580.11	372.44	9,878.09	9,824.78	53.31	185.302	
16,200.00	6,921.99	6,370.74	6,340.64	154.63	23.94	-27.97	-579.65	372.15	9,977.85	9,924.48	53.37	186.959	
16,300.00	6,921.79	6,365.01	6,334.95	156.21	23.92	-27.71	-579.16	371.84	10,077.62	10,024.19	53.43	188.617	
16,400.00	6,921.60	6,359.29	6,329.26	157.79	23.90	-27.45	-578.66	371.52	10,177.39	10,123.90	53.49	190.269	
16,500.00	6,921.41	6,353.57	6,323.57	159.38	23.88	-27.20	-578.16	371.21	10,277.16	10,223.61	53.55	191.915	
16,600.00	6,921.22	6,347.85	6,317.88	160.96	23.85	-26.95	-577.66	370.90	10,376.93	10,323.32	53.61	193.555	
16,700.00	6,921.03	6,342.13	6,312.19	162.55	23.83	-26.70	-577.17	370.58	10,476.71	10,423.03	53.67	195.189	
16,800.00	6,920.84	6,336.41	6,306.50	164.13	23.81	-26.46	-576.67	370.27	10,576.48	10,522.74	53.74	196.817	
16,900.00	6,920.65	6,330.69	6,300.81	165.72	23.79	-26.22	-576.17	369.95	10,676.26	10,622.46	53.80	198.439	
17,000.00	6,920.45	6,324.97	6,295.12	167.30	23.77	-25.98	-575.67	369.64	10,776.04	10,722.17	53.87	200.056	
17,100.00	6,920.26	6,319.25	6,289.43	168.89	23.74	-25.75	-575.18	369.32	10,875.81	10,821.88	53.93	201.666	
17,200.00	6,920.07	6,313.53	6,283.74	170.48	23.72	-25.52	-574.68	369.01	10,975.59	10,921.60	54.00	203.270	
17,300.00	6,919.88	6,307.81	6,278.05	172.06	23.70	-25.29	-574.18	368.70	11,075.37	11,021.31	54.06	204.869	
17,400.00	6,919.69	6,302.08	6,272.36	173.65	23.68	-25.07	-573.68	368.38	11,175.15	11,121.03	54.13	206.461	
17,500.00	6,919.50	6,296.36	6,266.67	175.24	23.66	-24.85	-573.19	368.07	11,274.94	11,220.74	54.19	208.047	
17,600.00	6,919.31	6,290.64	6,260.98	176.83	23.63	-24.63	-572.69	367.75	11,374.72	11,320.46	54.26	209.627	
17,700.00	6,919.11	6,284.92	6,255.29	178.41	23.61	-24.42	-572.19	367.44	11,474.50	11,420.17	54.33	211.202	
17,759.55	6,919.00	6,281.51	6,251.90	179.36	23.60	-24.29	-571.89	367.25	11,533.93	11,479.56	54.37	212.136	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - Prelim #5

Offset Site Error: 0.00 usft

Survey Program: 0-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	144.70	-61.53	43.56	75.39				
100.00	100.00	100.00	100.00	0.25	0.25	144.70	-61.53	43.56	75.39	74.88	0.50	150.213	
200.00	200.00	200.00	200.00	0.61	0.61	144.70	-61.53	43.56	75.39	74.17	1.22	61.853	
300.00	300.00	300.00	300.00	0.97	0.97	144.70	-61.53	43.56	75.39	73.45	1.94	38.944	
400.00	400.00	400.00	400.00	1.33	1.33	144.70	-61.53	43.56	75.39	72.73	2.65	28.419	
500.00	500.00	500.00	500.00	1.68	1.68	144.70	-61.53	43.56	75.39	72.02	3.37	22.372	CC, ES
600.00	600.00	597.55	597.53	2.04	2.02	145.13	-63.13	43.99	76.99	72.92	4.06	18.955	
700.00	700.00	694.88	694.73	2.40	2.35	146.32	-67.93	45.27	81.80	77.06	4.74	17.252	
800.00	800.00	791.76	791.26	2.76	2.68	148.00	-75.87	47.40	89.88	84.46	5.42	16.576	SF
900.00	900.00	887.98	886.79	3.12	3.02	149.90	-86.87	50.35	101.27	95.17	6.10	16.600	
1,000.00	1,000.00	983.32	981.03	3.48	3.37	151.79	-100.82	54.09	115.97	109.20	6.77	17.125	
1,100.00	1,099.98	1,077.87	1,073.96	3.82	3.73	-39.84	-117.63	58.59	132.66	125.24	7.42	17.884	
1,129.54	1,129.49	1,105.95	1,101.44	3.92	3.84	-39.58	-123.19	60.08	137.69	130.09	7.60	18.110	
1,200.00	1,199.88	1,175.39	1,169.36	4.15	4.12	-39.23	-137.14	63.82	149.64	141.56	8.08	18.513	
1,300.00	1,299.78	1,273.93	1,265.75	4.48	4.53	-38.82	-156.93	69.12	166.61	157.84	8.77	19.001	
1,400.00	1,399.68	1,372.47	1,362.14	4.82	4.94	-38.48	-176.72	74.42	183.58	174.11	9.47	19.392	
1,500.00	1,499.58	1,471.02	1,458.53	5.16	5.36	-38.20	-196.51	79.73	200.56	190.39	10.17	19.720	
1,600.00	1,599.48	1,569.56	1,554.92	5.50	5.78	-37.96	-216.30	85.03	217.54	206.67	10.88	19.998	
1,700.00	1,699.37	1,668.11	1,651.31	5.85	6.21	-37.76	-236.09	90.33	234.53	222.94	11.59	20.234	
1,800.00	1,799.27	1,766.65	1,747.70	6.20	6.64	-37.59	-255.88	95.64	251.52	239.21	12.31	20.438	
1,900.00	1,899.17	1,865.19	1,844.09	6.55	7.07	-37.44	-275.67	100.94	268.51	255.48	13.02	20.616	
2,000.00	1,999.07	1,963.74	1,940.49	6.90	7.50	-37.30	-295.46	106.24	285.50	271.76	13.75	20.771	
2,100.00	2,098.96	2,062.28	2,036.88	7.25	7.93	-37.18	-315.25	111.54	302.49	288.03	14.47	20.908	
2,200.00	2,198.86	2,160.82	2,133.27	7.61	8.37	-37.08	-335.04	116.85	319.49	304.30	15.19	21.030	
2,300.00	2,298.76	2,259.37	2,229.66	7.96	8.80	-36.98	-354.83	122.15	336.48	320.57	15.92	21.139	
2,400.00	2,398.66	2,357.91	2,326.05	8.32	9.24	-36.89	-374.62	127.45	353.48	336.84	16.65	21.236	
2,500.00	2,498.56	2,456.46	2,422.44	8.68	9.68	-36.81	-394.41	132.76	370.48	353.10	17.37	21.324	
2,600.00	2,598.45	2,555.00	2,518.83	9.03	10.12	-36.74	-414.20	138.06	387.48	369.37	18.10	21.404	
2,700.00	2,698.35	2,653.54	2,615.22	9.39	10.56	-36.68	-433.99	143.36	404.47	385.64	18.83	21.477	
2,800.00	2,798.25	2,752.09	2,711.61	9.75	11.00	-36.62	-453.78	148.66	421.47	401.91	19.56	21.543	
2,900.00	2,898.15	2,850.63	2,808.00	10.11	11.44	-36.56	-473.57	153.97	438.47	418.18	20.30	21.604	
3,000.00	2,998.04	2,949.17	2,904.39	10.47	11.88	-36.51	-493.36	159.27	455.47	434.44	21.03	21.660	
3,100.00	3,097.94	3,047.72	3,000.78	10.83	12.32	-36.46	-513.15	164.57	472.47	450.71	21.76	21.712	
3,200.00	3,197.84	3,146.26	3,097.17	11.19	12.76	-36.42	-532.94	169.87	489.47	466.98	22.49	21.760	
3,300.00	3,297.74	3,244.80	3,193.56	11.55	13.21	-36.38	-552.73	175.18	506.47	483.24	23.23	21.805	
3,400.00	3,397.64	3,343.35	3,289.95	11.91	13.65	-36.34	-572.52	180.48	523.47	499.51	23.96	21.846	
3,500.00	3,497.53	3,441.89	3,386.34	12.27	14.09	-36.30	-592.31	185.78	540.47	515.78	24.70	21.884	
3,600.00	3,597.43	3,540.44	3,482.73	12.63	14.53	-36.27	-612.10	191.09	557.47	532.04	25.43	21.920	
3,700.00	3,697.33	3,638.98	3,579.12	12.99	14.98	-36.23	-631.89	196.39	574.48	548.31	26.17	21.954	
3,800.00	3,797.23	3,737.52	3,675.51	13.35	15.42	-36.20	-651.68	201.69	591.48	564.57	26.90	21.986	
3,900.00	3,897.12	3,836.07	3,771.90	13.72	15.86	-36.18	-671.47	206.99	608.48	580.84	27.64	22.015	
4,000.00	3,997.02	3,934.61	3,868.29	14.08	16.31	-36.15	-691.26	212.30	625.48	597.10	28.38	22.043	
4,100.00	4,096.92	4,033.15	3,964.68	14.44	16.75	-36.12	-711.05	217.60	642.48	613.37	29.11	22.070	
4,200.00	4,196.82	4,131.70	4,061.07	14.80	17.20	-36.10	-730.84	222.90	659.48	629.64	29.85	22.095	
4,300.00	4,296.72	4,230.24	4,157.46	15.16	17.64	-36.08	-750.63	228.21	676.49	645.90	30.59	22.118	
4,400.00	4,396.61	4,328.79	4,253.85	15.53	18.08	-36.05	-770.43	233.51	693.49	662.17	31.32	22.140	
4,500.00	4,496.51	4,427.33	4,350.24	15.89	18.53	-36.03	-790.22	238.81	710.49	678.43	32.06	22.162	
4,600.00	4,596.41	4,525.87	4,446.63	16.25	18.97	-36.01	-810.01	244.11	727.49	694.70	32.80	22.182	
4,700.00	4,696.31	4,624.42	4,543.02	16.61	19.42	-35.99	-829.80	249.42	744.49	710.96	33.53	22.201	
4,800.00	4,796.20	4,722.96	4,639.41	16.98	19.86	-35.98	-849.59	254.72	761.50	727.22	34.27	22.219	
4,900.00	4,896.10	4,821.50	4,735.80	17.34	20.31	-35.96	-869.38	260.02	778.50	743.49	35.01	22.236	
5,000.00	4,996.00	4,920.05	4,832.19	17.70	20.75	-35.94	-889.17	265.33	795.50	759.75	35.75	22.253	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - Prelim #5

Offset Site Error: 0.00 usft

Survey Program: 0-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
5,100.00	5,095.90	5,018.59	4,928.58	18.07	21.20	-35.93	-908.96	270.63	812.51	776.02	36.49	22.268	
5,200.00	5,195.80	5,117.14	5,024.97	18.43	21.64	-35.91	-928.75	275.93	829.51	792.28	37.23	22.283	
5,300.00	5,295.69	5,215.68	5,121.36	18.79	22.09	-35.90	-948.54	281.23	846.51	808.55	37.96	22.298	
5,400.00	5,395.59	5,314.22	5,217.75	19.16	22.53	-35.88	-968.33	286.54	863.51	824.81	38.70	22.311	
5,500.00	5,495.49	5,412.77	5,314.15	19.52	22.98	-35.87	-988.12	291.84	880.52	841.07	39.44	22.325	
5,600.00	5,595.39	5,511.31	5,410.54	19.88	23.42	-35.85	-1,007.91	297.14	897.52	857.34	40.18	22.337	
5,700.00	5,695.28	5,609.85	5,506.93	20.25	23.87	-35.84	-1,027.70	302.45	914.52	873.60	40.92	22.349	
5,800.00	5,795.18	5,708.40	5,603.32	20.61	24.31	-35.83	-1,047.49	307.75	931.53	889.87	41.66	22.361	
5,900.00	5,895.08	5,806.94	5,699.71	20.97	24.76	-35.82	-1,067.28	313.05	948.53	906.13	42.40	22.372	
6,000.00	5,994.98	5,905.48	5,796.10	21.34	25.20	-35.81	-1,087.07	318.35	965.53	922.39	43.14	22.383	
6,100.00	6,094.88	6,004.03	5,892.49	21.70	25.65	-35.80	-1,106.86	323.66	982.53	938.66	43.88	22.393	
6,200.00	6,194.77	6,102.57	5,988.88	22.06	26.10	-35.79	-1,126.65	328.96	999.54	954.92	44.62	22.403	
6,300.00	6,294.67	6,201.12	6,085.27	22.43	26.54	-35.78	-1,146.44	334.26	1,016.54	971.19	45.36	22.413	
6,314.74	6,309.40	6,215.64	6,099.48	22.48	26.61	-35.77	-1,149.36	335.04	1,019.05	973.58	45.46	22.414	
6,350.00	6,344.59	6,250.31	6,133.38	22.61	26.76	-78.44	-1,156.32	336.91	1,025.41	979.69	45.73	22.425	
6,400.00	6,394.26	6,299.04	6,181.05	22.79	26.98	-94.71	-1,166.11	339.53	1,035.70	989.60	46.10	22.466	
6,450.00	6,443.36	6,347.01	6,227.97	22.97	27.20	-99.92	-1,175.74	342.11	1,047.45	1,000.97	46.48	22.538	
6,500.00	6,491.60	6,393.91	6,273.85	23.15	27.41	-102.22	-1,185.16	344.64	1,060.66	1,013.81	46.85	22.639	
6,550.00	6,538.67	6,439.46	6,318.40	23.32	27.62	-103.37	-1,194.31	347.09	1,075.36	1,028.13	47.23	22.770	
6,600.00	6,584.29	6,483.37	6,361.36	23.49	27.82	-103.92	-1,203.12	349.45	1,091.58	1,043.98	47.60	22.930	
6,650.00	6,628.18	6,525.38	6,402.45	23.66	28.01	-104.09	-1,211.56	351.71	1,109.38	1,061.40	47.98	23.122	
6,700.00	6,670.06	6,550.00	6,426.48	23.83	28.12	-103.52	-1,216.64	353.30	1,129.14	1,080.90	48.24	23.406	
6,750.00	6,709.68	6,550.00	6,426.48	24.00	28.12	-101.81	-1,216.64	353.30	1,151.31	1,103.01	48.30	23.834	
6,800.00	6,746.79	6,572.16	6,447.99	24.17	28.23	-100.52	-1,221.56	355.42	1,175.58	1,127.01	48.57	24.205	
6,850.00	6,781.17	6,583.37	6,458.80	24.35	28.28	-98.51	-1,224.18	356.75	1,202.02	1,153.27	48.75	24.658	
6,900.00	6,812.60	6,600.00	6,474.77	24.54	28.36	-96.43	-1,228.22	359.05	1,230.41	1,181.41	49.00	25.109	
6,950.00	6,840.88	6,600.00	6,474.77	24.74	28.36	-93.26	-1,228.22	359.05	1,260.37	1,211.26	49.11	25.665	
7,000.00	6,865.85	6,600.00	6,474.77	24.96	28.36	-89.75	-1,228.22	359.05	1,291.90	1,242.67	49.23	26.240	
7,050.00	6,887.35	6,600.00	6,474.77	25.19	28.36	-85.94	-1,228.22	359.05	1,324.70	1,275.32	49.38	26.825	
7,100.00	6,905.25	6,600.00	6,474.77	25.43	28.36	-81.90	-1,228.22	359.05	1,358.49	1,308.93	49.56	27.414	
7,150.00	6,919.43	6,600.00	6,474.77	25.69	28.36	-77.71	-1,228.22	359.05	1,392.98	1,343.23	49.75	27.998	
7,200.00	6,929.81	6,617.06	6,491.03	25.96	28.45	-74.42	-1,232.56	361.80	1,427.61	1,377.45	50.16	28.460	
7,250.00	6,936.33	6,600.00	6,474.77	26.25	28.36	-69.21	-1,228.22	359.05	1,463.09	1,412.87	50.21	29.137	
7,300.00	6,938.95	6,600.00	6,474.77	26.55	28.36	-65.05	-1,228.22	359.05	1,498.24	1,447.77	50.47	29.683	
7,309.56	6,939.00	6,600.00	6,474.77	26.60	28.36	-64.27	-1,228.22	359.05	1,504.94	1,454.42	50.52	29.786	
7,400.00	6,938.83	6,600.00	6,474.77	27.19	28.36	-64.27	-1,228.22	359.05	1,569.63	1,518.62	51.01	30.772	
7,500.00	6,938.64	6,600.00	6,474.77	27.91	28.36	-64.27	-1,228.22	359.05	1,643.99	1,592.48	51.51	31.915	
7,600.00	6,938.44	6,600.00	6,474.77	28.70	28.36	-64.27	-1,228.22	359.05	1,720.94	1,668.96	51.98	33.107	
7,700.00	6,938.25	6,600.00	6,474.77	29.55	28.36	-64.27	-1,228.22	359.05	1,800.17	1,747.75	52.42	34.343	
7,800.00	6,938.06	6,600.00	6,474.77	30.47	28.36	-64.27	-1,228.22	359.05	1,881.37	1,828.55	52.82	35.620	
7,900.00	6,937.87	6,600.00	6,474.77	31.44	28.36	-64.27	-1,228.22	359.05	1,964.31	1,911.12	53.19	36.932	
8,000.00	6,937.68	6,600.00	6,474.77	32.46	28.36	-64.27	-1,228.22	359.05	2,048.77	1,995.25	53.53	38.275	
8,100.00	6,937.49	6,600.00	6,474.77	33.53	28.36	-64.27	-1,228.22	359.05	2,134.58	2,080.74	53.84	39.646	
8,200.00	6,937.30	6,579.93	6,455.49	34.64	28.26	-63.23	-1,223.37	356.33	2,221.17	2,167.20	53.97	41.156	
8,300.00	6,937.10	6,577.24	6,452.89	35.78	28.25	-63.09	-1,222.73	356.00	2,309.10	2,254.88	54.22	42.589	
8,400.00	6,936.91	6,574.69	6,450.43	36.96	28.24	-62.96	-1,222.14	355.71	2,397.97	2,343.52	54.45	44.042	
8,500.00	6,936.72	6,572.30	6,448.11	38.17	28.23	-62.84	-1,221.59	355.44	2,487.67	2,433.01	54.66	45.511	
8,600.00	6,936.53	6,550.00	6,426.48	39.41	28.12	-61.71	-1,216.64	353.30	2,578.51	2,523.80	54.71	47.131	
8,700.00	6,936.34	6,550.00	6,426.48	40.68	28.12	-61.71	-1,216.64	353.30	2,669.55	2,614.63	54.91	48.614	
8,800.00	6,936.15	6,550.00	6,426.48	41.97	28.12	-61.71	-1,216.64	353.30	2,761.21	2,706.10	55.10	50.111	
8,900.00	6,935.96	6,550.00	6,426.48	43.27	28.12	-61.71	-1,216.64	353.30	2,853.42	2,798.15	55.28	51.618	
9,000.00	6,935.76	6,550.00	6,426.48	44.60	28.12	-61.71	-1,216.64	353.30	2,946.15	2,890.71	55.45	53.136	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - Prelim #5

Offset Site Error: 0.00 usft

Survey Program: 0-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
9,100.00	6,935.57	6,550.00	6,426.48	45.95	28.12	-61.71	-1,216.64	353.30	3,039.34	2,983.74	55.60	54.662	
9,200.00	6,935.38	6,550.00	6,426.48	47.31	28.12	-61.71	-1,216.64	353.30	3,132.95	3,077.20	55.75	56.197	
9,300.00	6,935.19	6,550.00	6,426.48	48.69	28.12	-61.71	-1,216.64	353.30	3,226.94	3,171.05	55.89	57.738	
9,400.00	6,935.00	6,550.00	6,426.48	50.08	28.12	-61.71	-1,216.64	353.30	3,321.28	3,265.26	56.02	59.286	
9,500.00	6,934.81	6,550.00	6,426.48	51.48	28.12	-61.71	-1,216.64	353.30	3,415.95	3,359.80	56.15	60.839	
9,600.00	6,934.62	6,550.00	6,426.48	52.89	28.12	-61.71	-1,216.64	353.30	3,510.91	3,454.64	56.27	62.398	
9,700.00	6,934.43	6,550.00	6,426.48	54.32	28.12	-61.71	-1,216.64	353.30	3,606.14	3,549.76	56.38	63.960	
9,800.00	6,934.23	6,550.00	6,426.48	55.75	28.12	-61.71	-1,216.64	353.30	3,701.62	3,645.13	56.49	65.526	
9,900.00	6,934.04	6,550.00	6,426.48	57.19	28.12	-61.71	-1,216.64	353.30	3,797.34	3,740.74	56.60	67.095	
10,000.00	6,933.85	6,550.00	6,426.48	58.65	28.12	-61.71	-1,216.64	353.30	3,893.27	3,836.57	56.70	68.668	
10,100.00	6,933.66	6,550.00	6,426.48	60.10	28.12	-61.71	-1,216.64	353.30	3,989.40	3,932.61	56.80	70.242	
10,200.00	6,933.47	6,550.00	6,426.48	61.57	28.12	-61.71	-1,216.64	353.30	4,085.72	4,028.83	56.89	71.818	
10,300.00	6,933.28	6,550.00	6,426.48	63.04	28.12	-61.71	-1,216.64	353.30	4,182.21	4,125.23	56.98	73.396	
10,400.00	6,933.09	6,550.00	6,426.48	64.52	28.12	-61.71	-1,216.64	353.30	4,278.86	4,221.79	57.07	74.975	
10,500.00	6,932.89	6,550.00	6,426.48	66.01	28.12	-61.71	-1,216.64	353.30	4,375.67	4,318.51	57.16	76.555	
10,600.00	6,932.70	6,541.55	6,418.24	67.50	28.08	-61.28	-1,214.85	352.66	4,472.55	4,415.36	57.19	78.206	
10,700.00	6,932.51	6,540.64	6,417.36	68.99	28.08	-61.23	-1,214.66	352.60	4,569.61	4,512.34	57.27	79.795	
10,800.00	6,932.32	6,539.77	6,416.51	70.50	28.07	-61.19	-1,214.48	352.54	4,666.79	4,609.45	57.34	81.385	
10,900.00	6,932.13	6,530.62	6,407.57	72.00	28.03	-60.73	-1,212.61	351.99	4,764.15	4,706.78	57.37	83.048	
11,000.00	6,931.94	6,530.62	6,407.57	73.51	28.03	-60.73	-1,212.61	351.99	4,861.54	4,804.10	57.44	84.631	
11,100.00	6,931.75	6,530.62	6,407.57	75.02	28.03	-60.73	-1,212.61	351.99	4,959.04	4,901.52	57.52	86.213	
11,200.00	6,931.55	6,530.62	6,407.57	76.54	28.03	-60.73	-1,212.61	351.99	5,056.64	4,999.05	57.60	87.795	
11,300.00	6,931.36	6,530.62	6,407.57	78.06	28.03	-60.73	-1,212.61	351.99	5,154.33	5,096.66	57.67	89.376	
11,400.00	6,931.17	6,530.62	6,407.57	79.58	28.03	-60.73	-1,212.61	351.99	5,252.11	5,194.36	57.74	90.955	
11,500.00	6,930.98	6,530.62	6,407.57	81.11	28.03	-60.73	-1,212.61	351.99	5,349.97	5,292.15	57.82	92.534	
11,600.00	6,930.79	6,530.62	6,407.57	82.64	28.03	-60.73	-1,212.61	351.99	5,447.90	5,390.02	57.89	94.111	
11,700.00	6,930.60	6,530.62	6,407.57	84.17	28.03	-60.73	-1,212.61	351.99	5,545.91	5,487.95	57.96	95.687	
11,800.00	6,930.41	6,530.62	6,407.57	85.70	28.03	-60.73	-1,212.61	351.99	5,643.99	5,585.96	58.03	97.261	
11,900.00	6,930.21	6,530.62	6,407.57	87.24	28.03	-60.73	-1,212.61	351.99	5,742.14	5,684.04	58.10	98.834	
12,000.00	6,930.02	6,530.62	6,407.57	88.78	28.03	-60.73	-1,212.61	351.99	5,840.35	5,782.18	58.17	100.404	
12,100.00	6,929.83	6,530.62	6,407.57	90.32	28.03	-60.73	-1,212.61	351.99	5,938.62	5,880.38	58.24	101.973	
12,200.00	6,929.64	6,525.38	6,402.44	91.87	28.01	-60.47	-1,211.56	351.71	6,036.94	5,978.66	58.28	103.593	
12,300.00	6,929.45	6,519.72	6,396.91	93.41	27.98	-60.19	-1,210.42	351.41	6,135.31	6,077.00	58.31	105.216	
12,400.00	6,929.26	6,514.06	6,391.37	94.96	27.96	-59.91	-1,209.29	351.10	6,233.73	6,175.38	58.35	106.838	
12,500.00	6,929.07	6,508.40	6,385.83	96.51	27.93	-59.63	-1,208.15	350.80	6,332.20	6,273.81	58.38	108.459	
12,600.00	6,928.88	6,502.74	6,380.30	98.06	27.90	-59.35	-1,207.01	350.49	6,430.70	6,372.28	58.42	110.079	
12,700.00	6,928.68	6,497.08	6,374.76	99.62	27.88	-59.07	-1,205.88	350.19	6,529.25	6,470.79	58.45	111.698	
12,800.00	6,928.49	6,491.42	6,369.22	101.17	27.85	-58.80	-1,204.74	349.88	6,627.83	6,569.34	58.49	113.315	
12,900.00	6,928.30	6,485.76	6,363.69	102.73	27.83	-58.52	-1,203.60	349.58	6,726.45	6,667.93	58.53	114.931	
13,000.00	6,928.11	6,480.10	6,358.15	104.28	27.80	-58.24	-1,202.47	349.27	6,825.11	6,766.55	58.56	116.545	
13,100.00	6,927.92	6,474.44	6,352.62	105.84	27.78	-57.97	-1,201.33	348.97	6,923.80	6,865.21	58.60	118.157	
13,200.00	6,927.73	6,468.78	6,347.08	107.40	27.75	-57.70	-1,200.19	348.67	7,022.53	6,963.89	58.63	119.768	
13,300.00	6,927.54	6,463.12	6,341.54	108.97	27.73	-57.43	-1,199.06	348.36	7,121.28	7,062.61	58.67	121.376	
13,400.00	6,927.34	6,457.46	6,336.01	110.53	27.70	-57.15	-1,197.92	348.06	7,220.07	7,161.36	58.71	122.983	
13,500.00	6,927.15	6,451.80	6,330.47	112.09	27.67	-56.88	-1,196.78	347.75	7,318.88	7,260.14	58.74	124.588	
13,600.00	6,926.96	6,446.14	6,324.94	113.66	27.65	-56.62	-1,195.65	347.45	7,417.72	7,358.94	58.78	126.191	
13,700.00	6,926.77	6,440.48	6,319.40	115.22	27.62	-56.35	-1,194.51	347.14	7,516.59	7,457.77	58.82	127.792	
13,800.00	6,926.58	6,434.82	6,313.86	116.79	27.60	-56.08	-1,193.37	346.84	7,615.48	7,556.63	58.86	129.390	
13,900.00	6,926.39	6,429.16	6,308.33	118.36	27.57	-55.81	-1,192.24	346.53	7,714.40	7,655.50	58.89	130.986	
14,000.00	6,926.20	6,423.50	6,302.79	119.93	27.55	-55.55	-1,191.10	346.23	7,813.34	7,754.41	58.93	132.580	
14,100.00	6,926.00	6,417.84	6,297.26	121.50	27.52	-55.29	-1,189.96	345.92	7,912.30	7,853.33	58.97	134.172	
14,200.00	6,925.81	6,412.18	6,291.72	123.07	27.50	-55.02	-1,188.83	345.62	8,011.29	7,952.28	59.01	135.761	

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 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 706H - OH - Prelim #5

Offset Site Error: 0.00 usft

Survey Program: 0-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
14,300.00	6,925.62	6,406.52	6,286.18	124.64	27.47	-54.76	-1,187.69	345.32	8,110.29	8,051.24	59.05	137.347	
14,400.00	6,925.43	6,400.86	6,280.65	126.21	27.44	-54.50	-1,186.55	345.01	8,209.32	8,150.23	59.09	138.931	
14,500.00	6,925.24	6,395.20	6,275.11	127.79	27.42	-54.24	-1,185.42	344.71	8,308.37	8,249.24	59.13	140.512	
14,600.00	6,925.05	6,389.54	6,269.58	129.36	27.39	-53.98	-1,184.28	344.40	8,407.43	8,348.26	59.17	142.090	
14,700.00	6,924.86	6,383.88	6,264.04	130.93	27.37	-53.72	-1,183.14	344.10	8,506.51	8,447.30	59.21	143.666	
14,800.00	6,924.66	6,378.22	6,258.50	132.51	27.34	-53.47	-1,182.01	343.79	8,605.61	8,546.36	59.25	145.239	
14,900.00	6,924.47	6,372.56	6,252.97	134.09	27.32	-53.21	-1,180.87	343.49	8,704.73	8,645.44	59.29	146.809	
15,000.00	6,924.28	6,366.90	6,247.43	135.66	27.29	-52.96	-1,179.73	343.18	8,803.86	8,744.53	59.33	148.376	
15,100.00	6,924.09	6,361.24	6,241.89	137.24	27.27	-52.70	-1,178.60	342.88	8,903.01	8,843.63	59.38	149.940	
15,200.00	6,923.90	6,355.58	6,236.36	138.82	27.24	-52.45	-1,177.46	342.57	9,002.18	8,942.76	59.42	151.501	
15,300.00	6,923.71	6,349.92	6,230.82	140.40	27.21	-52.20	-1,176.32	342.27	9,101.36	9,041.89	59.46	153.058	
15,400.00	6,923.52	6,344.26	6,225.29	141.97	27.19	-51.95	-1,175.19	341.97	9,200.55	9,141.04	59.51	154.613	
15,500.00	6,923.33	6,338.60	6,219.75	143.55	27.16	-51.70	-1,174.05	341.66	9,299.76	9,240.20	59.55	156.165	
15,600.00	6,923.13	6,332.94	6,214.21	145.13	27.14	-51.45	-1,172.91	341.36	9,398.98	9,339.38	59.60	157.713	
15,700.00	6,922.94	6,327.28	6,208.68	146.72	27.11	-51.21	-1,171.78	341.05	9,498.21	9,438.57	59.64	159.258	
15,800.00	6,922.75	6,321.62	6,203.14	148.30	27.09	-50.96	-1,170.64	340.75	9,597.46	9,537.77	59.69	160.800	
15,900.00	6,922.56	6,315.96	6,197.61	149.88	27.06	-50.72	-1,169.50	340.44	9,696.71	9,636.98	59.73	162.338	
16,000.00	6,922.37	6,310.30	6,192.07	151.46	27.03	-50.47	-1,168.37	340.14	9,795.98	9,736.21	59.78	163.873	
16,100.00	6,922.18	6,304.64	6,186.53	153.04	27.01	-50.23	-1,167.23	339.83	9,895.27	9,835.44	59.82	165.405	
16,200.00	6,921.99	6,298.98	6,181.00	154.63	26.98	-49.99	-1,166.09	339.53	9,994.56	9,934.69	59.87	166.933	
16,300.00	6,921.79	6,293.33	6,175.46	156.21	26.96	-49.75	-1,164.96	339.22	10,093.86	10,033.94	59.92	168.457	
16,400.00	6,921.60	6,287.67	6,169.93	157.79	26.93	-49.51	-1,163.82	338.92	10,193.18	10,133.21	59.97	169.978	
16,500.00	6,921.41	6,282.01	6,164.39	159.38	26.91	-49.27	-1,162.68	338.61	10,292.50	10,232.48	60.02	171.495	
16,600.00	6,921.22	6,276.35	6,158.85	160.96	26.88	-49.03	-1,161.55	338.31	10,391.83	10,331.77	60.07	173.009	
16,700.00	6,921.03	6,270.69	6,153.32	162.55	26.86	-48.80	-1,160.41	338.01	10,491.18	10,431.06	60.11	174.519	
16,800.00	6,920.84	6,265.03	6,147.78	164.13	26.83	-48.56	-1,159.27	337.70	10,590.53	10,530.37	60.16	176.026	
16,900.00	6,920.65	6,259.37	6,142.24	165.72	26.80	-48.33	-1,158.14	337.40	10,689.89	10,629.68	60.22	177.528	
17,000.00	6,920.45	6,253.71	6,136.71	167.30	26.78	-48.10	-1,157.00	337.09	10,789.26	10,729.00	60.27	179.027	
17,100.00	6,920.26	6,248.05	6,131.17	168.89	26.75	-47.87	-1,155.86	336.79	10,888.64	10,828.33	60.32	180.522	
17,200.00	6,920.07	6,242.39	6,125.64	170.48	26.73	-47.63	-1,154.73	336.48	10,988.03	10,927.66	60.37	182.014	
17,300.00	6,919.88	6,236.73	6,120.10	172.06	26.70	-47.41	-1,153.59	336.18	11,087.43	11,027.01	60.42	183.501	
17,400.00	6,919.69	6,231.07	6,114.56	173.65	26.68	-47.18	-1,152.46	335.87	11,186.83	11,126.36	60.47	184.985	
17,500.00	6,919.50	6,225.41	6,109.03	175.24	26.65	-46.95	-1,151.32	335.57	11,286.24	11,225.71	60.53	186.464	
17,600.00	6,919.31	6,219.75	6,103.49	176.83	26.63	-46.72	-1,150.18	335.26	11,385.66	11,325.08	60.58	187.940	
17,700.00	6,919.11	6,214.09	6,097.96	178.41	26.60	-46.50	-1,149.05	334.96	11,485.09	11,424.45	60.64	189.412	
17,759.55	6,919.00	6,210.72	6,094.66	179.36	26.58	-46.37	-1,148.37	334.78	11,544.30	11,483.64	60.67	190.286	

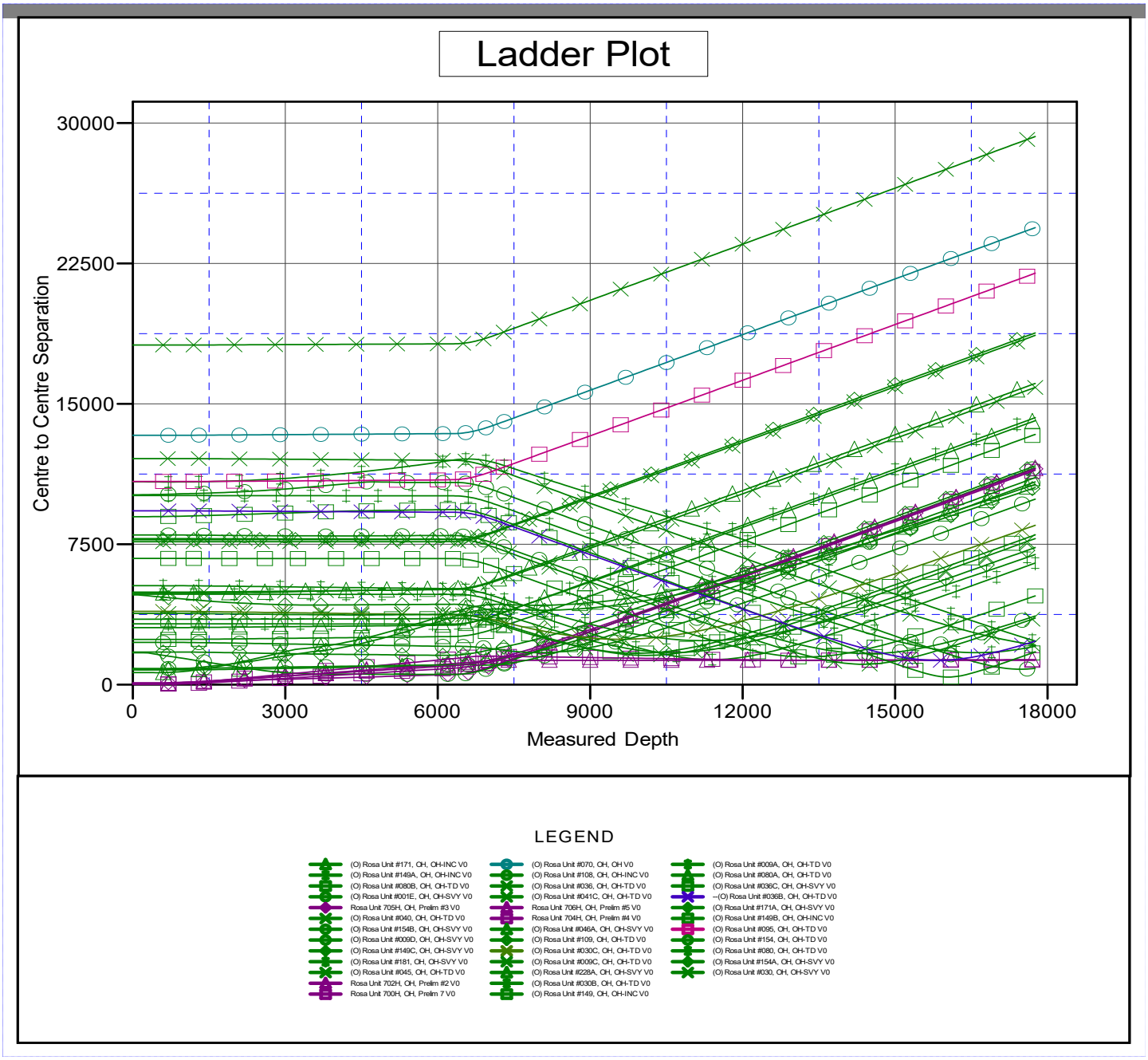
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**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 701H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.26°



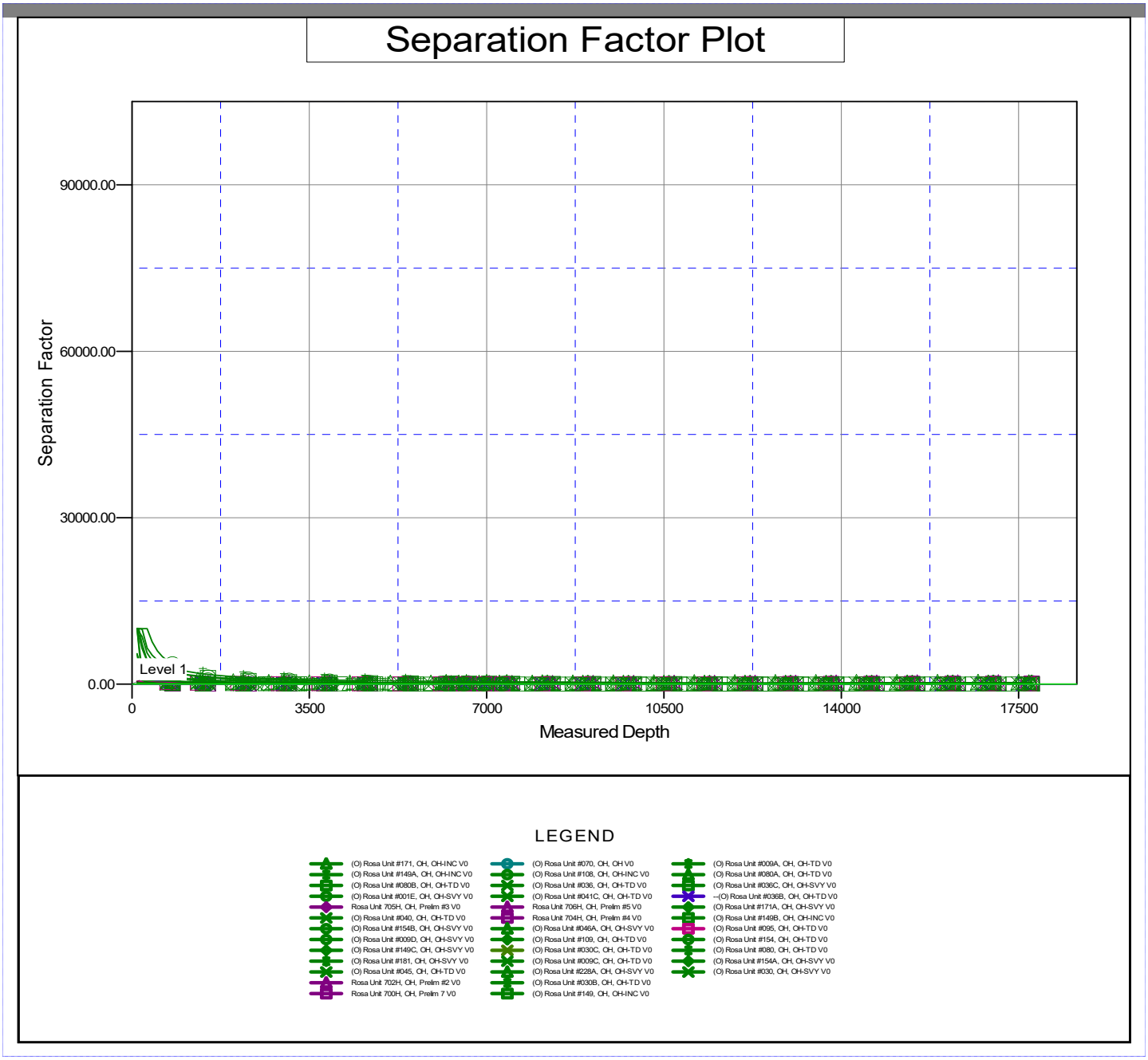
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 701H
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 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Prelim #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6295+30 @ 6325.00usft (H&P 530)	Coordinates are relative to: Rosa Unit 701H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Western Zone
Central Meridian is -107.833334	Grid Convergence at Surface is: 0.26°



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 322809

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 322809
	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.	3/21/2024