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 / NESE /	**County or Parish/State:**
Well Number: 704H	**Type of Well:** CONVENTIONAL GAS WELL	**Allottee or Tribe Name:**
Lease Number: NMSF0078767	**Unit or CA Name:**	**Unit or CA Number:** NMNM078407E
US Well Number: 3003931442	**Well Status:** Approved Application for Permit to Drill	**Operator:** LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2779241

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 03/12/2024

Time Sundry Submitted: 09:39

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 plan.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_005_Rosa_Unit_704H_Change_in_Plan_4__20240312_20240312093840.pdf

CONFIDENTIAL

Well Name: ROSA UNIT	**Well Location:** T31N / R5W / SEC 7 / NESE /	**County or Parish/State:**
Well Number: 704H	**Type of Well:** CONVENTIONAL GAS WELL	**Allottee or Tribe Name:**
Lease Number: NMSF0078767	**Unit or CA Name:**	**Unit or CA Number:** NMNM078407E
US Well Number: 3003931442	**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 12, 2024 09:37 AM

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 704H

2. Name of Operator: LOGOS OPERATING, LLC

9. API Well No.: 30-039-31442

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 I SEC 7 T31N 5W 2592' FSL 1308' 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 2571' FSL & 1293' FEL to **new surface-hole location 2592' FSL & 1308' FEL**
Original bottom-hole location from 2406' FNL & 1299' FEL to **new bottom-hole location 2202' FNL & 2537' FWL**
Original TD @ 17,001' (MD) 6,937' (TVD) to **new TD @ 20,856' (MD) 6,943' (TVD)**.

Geology tops have been updated per changes.
Original KOP @ 6,335' MD 6,315' TVD to **new KOP @ 6,376' (MD) 6,335' (TVD)**
Original Landing point @ 7,309' MD 6,925' TVD to **new Landing point @ 7,349' (MD) 6,941' (TVD)**

Original 13.375" Surface casing @ 320' MD to **new 20" Surface casing @ 320' (MD)**
Original 9,625" casing Intermediate @ 6,222' MD to **new 9.625" INT casing @ 6,281' (MD), additional 13.375" Intermediate casing @ 3,396' (MD)**
Original 5.5" casing Production casing @ 17,001' MD to **new 5.5" Production casing @ 20,856' (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: 3/12/2024

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)

Page 1 of 2

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
30-039-31442	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	704H

[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
I	7	31N	5W		2592	SOUTH	1308	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
F	10	31N	5W		2202	NORTH	2537	WEST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
1191.86	N/2 - Sections 7, 8, 9 & 10			R-13457

[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 — 3/12/2024 — Date

Etta Trujillo — Printed Name

etrujillo@logosresourcesllc.com — E-mail Address

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

[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.

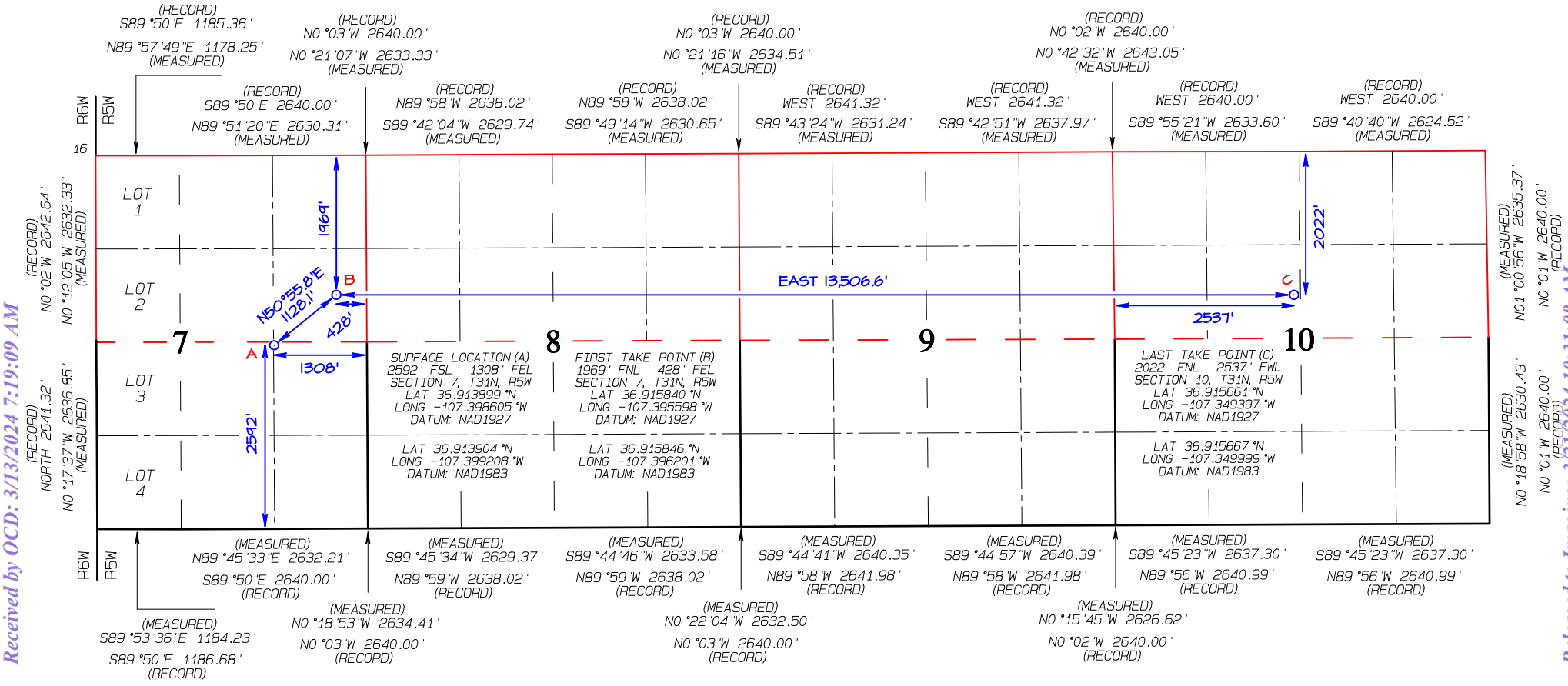
Date Revised: MARCH 11, 2024
Survey Date: NOVEMBER 15, 2021

Signature and Seal of Professional Surveyor

JASON C. EDWARDS — NEW MEXICO — 15269 — REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS

Certificate Number 15269



Received by OCD: 3/13/2024 7:19:09 AM

Released to Imaging: 3/21/2024 10:31:08 AM

LOGOS Operating, LLC
Operations Plan

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

Date:	February 29, 2024	Pool:	Basin Mancos
Well Name:	**Rosa Unit 704H**	GL Elevation:	6,295’
Surface Location:	Sec 7, T31N, R5W 2592’ FSL, 1308’ FEL (36.913904º N, 107.399208º W – NAD83)	KB:	30’
Bottom Hole Location:	Sec 10, T31N, R5W 2202’ FNL, 2537’ FWL (36.915667º N, 107.349999º W – NAD83)	Measured Depth:	20,856’ (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	2419'	2407'	*POINT LOOKOUT	5658'	5622'
KIRTLAND	2533'	2520'	*MANCOS	6206'	6166'
*FRUITLAND	2905'	2889'	KICKOFF POINT	6,376'	6,335'
*PICTURED CLIFFS	3346'	3327'	LANDING POINT	7,349'	6,941'
LEWIS	3473'	3453'	TD	20,856'	6,943'
CHACRA	4617'	4589'			
*CLIFF HOUSE	5105'	5074'			
MENEFEE	5390'	5356'			

* 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:** 6,943' TVD x 0.43 = 2985 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"	3,396'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE 2	12.25"	6,281'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,856'	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	2,796	600	0.6947	1.3	575	102	1.15	500	15.8
Stage 1 Lead - OH	350	2,446	0.6947	1.3	2,209	393	1.90	1163	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,141	**559**		**1851**	
Set Depth	3396								

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	5,781	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,692	1,089	0.3132	1.3	443	79	1.90	233	12.4
					663	**118**		**433**	
Stage 2 Tail	4,092	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,296	796	0.3132	1.3	324	58	1.90	171	12.4
Stage 2 Lead - Cased	3,196	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					**605**	**108**		**344**	
Int 2 Totals					**1,268**	**226**		**778**	
Contingency									
Stage 3 Tail	3,396	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,896	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,896	0.3490	1	1,011	180	1.90	532	12.4
Contingency Stage 3 Totals					**1,216**	**217**		**662**	

Set Depth 6281

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	6,181	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Tail	6,281	14,575	0.2291	1.15	3,845	685	1.59	2,418	13.2
					3,871	689		2,434	

Set Depth 20856

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 * 6,943' TVD = 1527 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

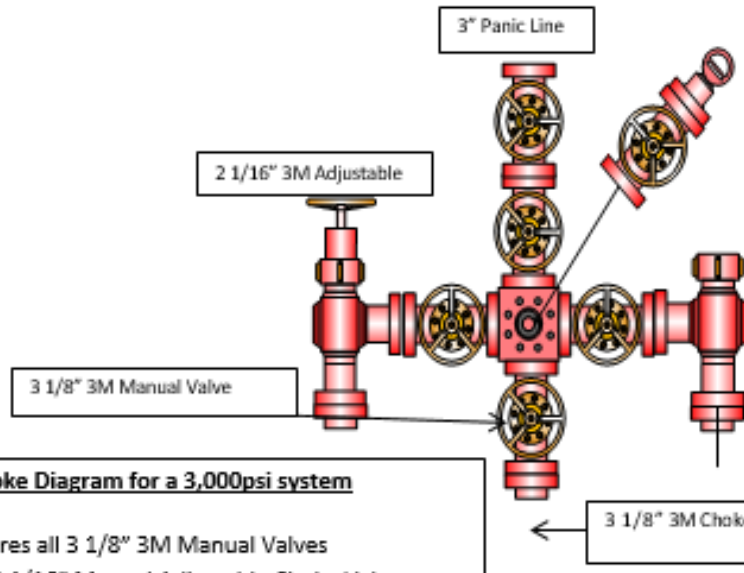
Stimulate with sand and water. Isolate stages with flow through or dissolvable frac plugs. Drill out frac plugs and flowback lateral.

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.

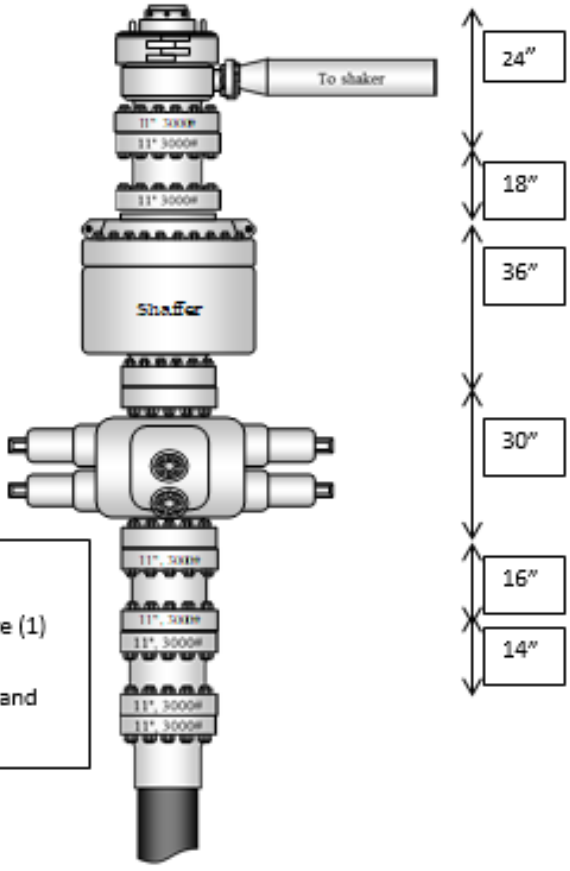
*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable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

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 704H

OH

Plan: Prelim #4

Standard Planning Report

01 March, 2024

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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 704H

Well Position	**+N/-S**	0.00 usft	**Northing:**	2,152,277.01 usft	**Latitude:**	36.913904
	+E/-W	0.00 usft	**Easting:**	2,850,002.92 usft	**Longitude:**	-107.399208
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	1/30/2024	8.45	63.46	49,468.08452589

Design Prelim #4

Audit Notes:

Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	90.26

Plan Survey Tool Program **Date** 3/1/2024

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,855.77	Prelim #4 (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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
845.27	6.91	20.74	844.44	19.43	7.36	2.00	2.00	0.00	20.74	
6,376.00	6.91	20.74	6,335.04	641.32	242.82	0.00	0.00	0.00	0.00	
7,349.12	89.99	90.26	6,941.00	707.16	879.09	9.00	8.54	7.14	69.66	RU 704H POE
20,855.77	89.99	90.26	6,943.00	645.69	14,385.59	0.00	0.00	0.00	0.00	RU 704H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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
Start Build 2.00									
600.00	2.00	20.74	599.98	1.63	0.62	0.61	2.00	2.00	0.00
700.00	4.00	20.74	699.84	6.53	2.47	2.44	2.00	2.00	0.00
800.00	6.00	20.74	799.45	14.68	5.56	5.49	2.00	2.00	0.00
845.27	6.91	20.74	844.44	19.43	7.36	7.27	2.00	2.00	0.00
Start 5530.73 hold at 845.27 MD									
900.00	6.91	20.74	898.77	25.59	9.69	9.57	0.00	0.00	0.00
1,000.00	6.91	20.74	998.04	36.83	13.95	13.78	0.00	0.00	0.00
1,100.00	6.91	20.74	1,097.32	48.08	18.20	17.98	0.00	0.00	0.00
1,200.00	6.91	20.74	1,196.59	59.32	22.46	22.19	0.00	0.00	0.00
1,300.00	6.91	20.74	1,295.87	70.57	26.72	26.40	0.00	0.00	0.00
1,400.00	6.91	20.74	1,395.14	81.81	30.97	30.60	0.00	0.00	0.00
1,500.00	6.91	20.74	1,494.42	93.05	35.23	34.81	0.00	0.00	0.00
1,600.00	6.91	20.74	1,593.69	104.30	39.49	39.02	0.00	0.00	0.00
1,700.00	6.91	20.74	1,692.96	115.54	43.75	43.22	0.00	0.00	0.00
1,800.00	6.91	20.74	1,792.24	126.79	48.00	47.43	0.00	0.00	0.00
1,900.00	6.91	20.74	1,891.51	138.03	52.26	51.63	0.00	0.00	0.00
2,000.00	6.91	20.74	1,990.79	149.27	56.52	55.84	0.00	0.00	0.00
2,100.00	6.91	20.74	2,090.06	160.52	60.78	60.05	0.00	0.00	0.00
2,200.00	6.91	20.74	2,189.34	171.76	65.03	64.25	0.00	0.00	0.00
2,300.00	6.91	20.74	2,288.61	183.01	69.29	68.46	0.00	0.00	0.00
2,400.00	6.91	20.74	2,387.89	194.25	73.55	72.67	0.00	0.00	0.00
2,419.25	6.91	20.74	2,407.00	196.42	74.37	73.48	0.00	0.00	0.00
Ojo Alamo									
2,500.00	6.91	20.74	2,487.16	205.49	77.81	76.87	0.00	0.00	0.00
2,533.08	6.91	20.74	2,520.00	209.21	79.21	78.26	0.00	0.00	0.00
Kirtland									
2,600.00	6.91	20.74	2,586.44	216.74	82.06	81.08	0.00	0.00	0.00
2,700.00	6.91	20.74	2,685.71	227.98	86.32	85.28	0.00	0.00	0.00
2,800.00	6.91	20.74	2,784.99	239.23	90.58	89.49	0.00	0.00	0.00
2,900.00	6.91	20.74	2,884.26	250.47	94.83	93.70	0.00	0.00	0.00
2,904.78	6.91	20.74	2,889.00	251.01	95.04	93.90	0.00	0.00	0.00
Fruitland									
3,000.00	6.91	20.74	2,983.53	261.72	99.09	97.90	0.00	0.00	0.00
3,001.48	6.91	20.74	2,985.00	261.88	99.15	97.97	0.00	0.00	0.00
Top of Coals									
3,100.00	6.91	20.74	3,082.81	272.96	103.35	102.11	0.00	0.00	0.00
3,175.74	6.91	20.74	3,158.00	281.48	106.57	105.30	0.00	0.00	0.00
Base of Coals									
3,200.00	6.91	20.74	3,182.08	284.20	107.61	106.32	0.00	0.00	0.00
3,300.00	6.91	20.74	3,281.36	295.45	111.86	110.52	0.00	0.00	0.00
3,345.98	6.91	20.74	3,327.00	300.62	113.82	112.46	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	6.91	20.74	3,380.63	306.69	116.12	114.73	0.00	0.00	0.00
3,472.90	6.91	20.74	3,453.00	314.89	119.22	117.79	0.00	0.00	0.00
Lewis									
3,500.00	6.91	20.74	3,479.91	317.94	120.38	118.93	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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	6.91	20.74	3,579.18	329.18	124.64	123.14	0.00	0.00	0.00
3,700.00	6.91	20.74	3,678.46	340.42	128.89	127.35	0.00	0.00	0.00
3,800.00	6.91	20.74	3,777.73	351.67	133.15	131.55	0.00	0.00	0.00
3,900.00	6.91	20.74	3,877.01	362.91	137.41	135.76	0.00	0.00	0.00
4,000.00	6.91	20.74	3,976.28	374.16	141.66	139.97	0.00	0.00	0.00
4,100.00	6.91	20.74	4,075.55	385.40	145.92	144.17	0.00	0.00	0.00
4,200.00	6.91	20.74	4,174.83	396.65	150.18	148.38	0.00	0.00	0.00
4,300.00	6.91	20.74	4,274.10	407.89	154.44	152.58	0.00	0.00	0.00
4,400.00	6.91	20.74	4,373.38	419.13	158.69	156.79	0.00	0.00	0.00
4,500.00	6.91	20.74	4,472.65	430.38	162.95	161.00	0.00	0.00	0.00
4,600.00	6.91	20.74	4,571.93	441.62	167.21	165.20	0.00	0.00	0.00
4,617.20	6.91	20.74	4,589.00	443.56	167.94	165.93	0.00	0.00	0.00
Chacra									
4,700.00	6.91	20.74	4,671.20	452.87	171.47	169.41	0.00	0.00	0.00
4,800.00	6.91	20.74	4,770.48	464.11	175.72	173.62	0.00	0.00	0.00
4,900.00	6.91	20.74	4,869.75	475.35	179.98	177.82	0.00	0.00	0.00
5,000.00	6.91	20.74	4,969.03	486.60	184.24	182.03	0.00	0.00	0.00
5,100.00	6.91	20.74	5,068.30	497.84	188.49	186.23	0.00	0.00	0.00
5,105.74	6.91	20.74	5,074.00	498.49	188.74	186.48	0.00	0.00	0.00
Upper Cliff House									
5,200.00	6.91	20.74	5,167.58	509.09	192.75	190.44	0.00	0.00	0.00
5,300.00	6.91	20.74	5,266.85	520.33	197.01	194.65	0.00	0.00	0.00
5,389.80	6.91	20.74	5,356.00	530.43	200.83	198.42	0.00	0.00	0.00
Cliff House									
5,400.00	6.91	20.74	5,366.12	531.58	201.27	198.85	0.00	0.00	0.00
5,440.17	6.91	20.74	5,406.00	536.09	202.98	200.54	0.00	0.00	0.00
Menefee									
5,500.00	6.91	20.74	5,465.40	542.82	205.52	203.06	0.00	0.00	0.00
5,600.00	6.91	20.74	5,564.67	554.06	209.78	207.27	0.00	0.00	0.00
5,657.75	6.91	20.74	5,622.00	560.56	212.24	209.69	0.00	0.00	0.00
Point Lookout									
5,700.00	6.91	20.74	5,663.95	565.31	214.04	211.47	0.00	0.00	0.00
5,800.00	6.91	20.74	5,763.22	576.55	218.30	215.68	0.00	0.00	0.00
5,900.00	6.91	20.74	5,862.50	587.80	222.55	219.88	0.00	0.00	0.00
6,000.00	6.91	20.74	5,961.77	599.04	226.81	224.09	0.00	0.00	0.00
6,100.00	6.91	20.74	6,061.05	610.28	231.07	228.30	0.00	0.00	0.00
6,200.00	6.91	20.74	6,160.32	621.53	235.33	232.50	0.00	0.00	0.00
6,205.72	6.91	20.74	6,166.00	622.17	235.57	232.74	0.00	0.00	0.00
Mancos									
6,300.00	6.91	20.74	6,259.60	632.77	239.58	236.71	0.00	0.00	0.00
6,376.00	6.91	20.74	6,335.04	641.32	242.82	239.91	0.00	0.00	0.00
Start DLS 9.00 TFO 69.66									
6,400.00	7.92	35.60	6,358.85	644.01	244.29	241.37	9.00	4.22	61.93
6,450.00	11.13	55.03	6,408.16	649.58	250.25	247.30	9.00	6.42	38.86
6,500.00	15.01	65.23	6,456.87	655.06	260.09	257.12	9.00	7.76	20.39
6,550.00	19.16	71.20	6,504.65	660.42	273.74	270.74	9.00	8.30	11.95
6,600.00	23.43	75.09	6,551.23	665.63	291.13	288.10	9.00	8.55	7.77
6,650.00	27.78	77.82	6,596.31	670.64	312.13	309.09	9.00	8.69	5.47
6,700.00	32.16	79.87	6,639.62	675.45	336.63	333.57	9.00	8.77	4.09
6,750.00	36.57	81.46	6,680.88	680.00	364.48	361.39	9.00	8.82	3.20
6,800.00	41.00	82.76	6,719.85	684.28	395.49	392.38	9.00	8.85	2.59
6,850.00	45.43	83.85	6,756.28	688.26	429.49	426.36	9.00	8.88	2.17
6,858.21	46.16	84.01	6,762.00	688.88	435.34	432.21	9.00	8.89	1.97

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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									
6,900.00	49.88	84.78	6,789.95	691.91	466.25	463.11	9.00	8.90	1.84
6,950.00	54.33	85.59	6,820.65	695.21	505.56	502.40	9.00	8.91	1.63
7,000.00	58.79	86.32	6,848.19	698.15	547.17	544.00	9.00	8.92	1.46
7,050.00	63.26	86.98	6,872.41	700.70	590.83	587.64	9.00	8.92	1.33
7,100.00	67.72	87.60	6,893.15	702.84	636.26	633.06	9.00	8.93	1.23
7,150.00	72.19	88.17	6,910.28	704.57	683.19	679.98	9.00	8.93	1.15
7,200.00	76.66	88.72	6,923.70	705.88	731.32	728.11	9.00	8.94	1.09
7,250.00	81.13	89.25	6,933.33	706.74	780.36	777.15	9.00	8.94	1.05
7,300.00	85.60	89.76	6,939.11	707.17	830.01	826.80	9.00	8.94	1.03
7,349.12	89.99	90.26	6,941.00	707.16	879.09	875.87	9.00	8.94	1.02
Start 13506.65 hold at 7349.12 MD									
7,400.00	89.99	90.26	6,941.01	706.93	929.97	926.75	0.00	0.00	0.00
7,500.00	89.99	90.26	6,941.02	706.48	1,029.96	1,026.75	0.00	0.00	0.00
7,600.00	89.99	90.26	6,941.04	706.02	1,129.96	1,126.75	0.00	0.00	0.00
7,700.00	89.99	90.26	6,941.05	705.57	1,229.96	1,226.75	0.00	0.00	0.00
7,800.00	89.99	90.26	6,941.07	705.11	1,329.96	1,326.75	0.00	0.00	0.00
7,900.00	89.99	90.26	6,941.08	704.66	1,429.96	1,426.75	0.00	0.00	0.00
8,000.00	89.99	90.26	6,941.10	704.20	1,529.96	1,526.75	0.00	0.00	0.00
8,100.00	89.99	90.26	6,941.11	703.75	1,629.96	1,626.75	0.00	0.00	0.00
8,200.00	89.99	90.26	6,941.13	703.29	1,729.96	1,726.75	0.00	0.00	0.00
8,300.00	89.99	90.26	6,941.14	702.83	1,829.96	1,826.75	0.00	0.00	0.00
8,400.00	89.99	90.26	6,941.16	702.38	1,929.96	1,926.75	0.00	0.00	0.00
8,500.00	89.99	90.26	6,941.17	701.92	2,029.95	2,026.75	0.00	0.00	0.00
8,600.00	89.99	90.26	6,941.19	701.47	2,129.95	2,126.75	0.00	0.00	0.00
8,700.00	89.99	90.26	6,941.20	701.01	2,229.95	2,226.75	0.00	0.00	0.00
8,800.00	89.99	90.26	6,941.22	700.56	2,329.95	2,326.75	0.00	0.00	0.00
8,900.00	89.99	90.26	6,941.23	700.10	2,429.95	2,426.75	0.00	0.00	0.00
9,000.00	89.99	90.26	6,941.24	699.65	2,529.95	2,526.75	0.00	0.00	0.00
9,100.00	89.99	90.26	6,941.26	699.19	2,629.95	2,626.75	0.00	0.00	0.00
9,200.00	89.99	90.26	6,941.27	698.74	2,729.95	2,726.75	0.00	0.00	0.00
9,300.00	89.99	90.26	6,941.29	698.28	2,829.95	2,826.75	0.00	0.00	0.00
9,400.00	89.99	90.26	6,941.30	697.83	2,929.95	2,926.75	0.00	0.00	0.00
9,500.00	89.99	90.26	6,941.32	697.37	3,029.94	3,026.75	0.00	0.00	0.00
9,600.00	89.99	90.26	6,941.33	696.92	3,129.94	3,126.75	0.00	0.00	0.00
9,700.00	89.99	90.26	6,941.35	696.46	3,229.94	3,226.75	0.00	0.00	0.00
9,800.00	89.99	90.26	6,941.36	696.01	3,329.94	3,326.75	0.00	0.00	0.00
9,900.00	89.99	90.26	6,941.38	695.55	3,429.94	3,426.75	0.00	0.00	0.00
10,000.00	89.99	90.26	6,941.39	695.10	3,529.94	3,526.75	0.00	0.00	0.00
10,100.00	89.99	90.26	6,941.41	694.64	3,629.94	3,626.75	0.00	0.00	0.00
10,200.00	89.99	90.26	6,941.42	694.19	3,729.94	3,726.75	0.00	0.00	0.00
10,300.00	89.99	90.26	6,941.44	693.73	3,829.94	3,826.75	0.00	0.00	0.00
10,400.00	89.99	90.26	6,941.45	693.28	3,929.93	3,926.75	0.00	0.00	0.00
10,500.00	89.99	90.26	6,941.47	692.82	4,029.93	4,026.75	0.00	0.00	0.00
10,600.00	89.99	90.26	6,941.48	692.37	4,129.93	4,126.75	0.00	0.00	0.00
10,700.00	89.99	90.26	6,941.50	691.91	4,229.93	4,226.75	0.00	0.00	0.00
10,800.00	89.99	90.26	6,941.51	691.46	4,329.93	4,326.75	0.00	0.00	0.00
10,900.00	89.99	90.26	6,941.53	691.00	4,429.93	4,426.75	0.00	0.00	0.00
11,000.00	89.99	90.26	6,941.54	690.55	4,529.93	4,526.75	0.00	0.00	0.00
11,100.00	89.99	90.26	6,941.56	690.09	4,629.93	4,626.75	0.00	0.00	0.00
11,200.00	89.99	90.26	6,941.57	689.64	4,729.93	4,726.75	0.00	0.00	0.00
11,300.00	89.99	90.26	6,941.59	689.18	4,829.93	4,826.75	0.00	0.00	0.00
11,400.00	89.99	90.26	6,941.60	688.73	4,929.92	4,926.75	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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)
11,500.00	89.99	90.26	6,941.61	688.27	5,029.92	5,026.75	0.00	0.00	0.00
11,600.00	89.99	90.26	6,941.63	687.82	5,129.92	5,126.75	0.00	0.00	0.00
11,700.00	89.99	90.26	6,941.64	687.36	5,229.92	5,226.75	0.00	0.00	0.00
11,800.00	89.99	90.26	6,941.66	686.91	5,329.92	5,326.75	0.00	0.00	0.00
11,900.00	89.99	90.26	6,941.67	686.45	5,429.92	5,426.75	0.00	0.00	0.00
12,000.00	89.99	90.26	6,941.69	686.00	5,529.92	5,526.75	0.00	0.00	0.00
12,100.00	89.99	90.26	6,941.70	685.54	5,629.92	5,626.75	0.00	0.00	0.00
12,200.00	89.99	90.26	6,941.72	685.09	5,729.92	5,726.75	0.00	0.00	0.00
12,300.00	89.99	90.26	6,941.73	684.63	5,829.92	5,826.75	0.00	0.00	0.00
12,400.00	89.99	90.26	6,941.75	684.17	5,929.91	5,926.75	0.00	0.00	0.00
12,500.00	89.99	90.26	6,941.76	683.72	6,029.91	6,026.75	0.00	0.00	0.00
12,600.00	89.99	90.26	6,941.78	683.26	6,129.91	6,126.75	0.00	0.00	0.00
12,700.00	89.99	90.26	6,941.79	682.81	6,229.91	6,226.75	0.00	0.00	0.00
12,800.00	89.99	90.26	6,941.81	682.35	6,329.91	6,326.75	0.00	0.00	0.00
12,900.00	89.99	90.26	6,941.82	681.90	6,429.91	6,426.75	0.00	0.00	0.00
13,000.00	89.99	90.26	6,941.84	681.44	6,529.91	6,526.75	0.00	0.00	0.00
13,100.00	89.99	90.26	6,941.85	680.99	6,629.91	6,626.75	0.00	0.00	0.00
13,200.00	89.99	90.26	6,941.87	680.53	6,729.91	6,726.75	0.00	0.00	0.00
13,300.00	89.99	90.26	6,941.88	680.08	6,829.90	6,826.75	0.00	0.00	0.00
13,400.00	89.99	90.26	6,941.90	679.62	6,929.90	6,926.75	0.00	0.00	0.00
13,500.00	89.99	90.26	6,941.91	679.17	7,029.90	7,026.75	0.00	0.00	0.00
13,600.00	89.99	90.26	6,941.93	678.71	7,129.90	7,126.75	0.00	0.00	0.00
13,700.00	89.99	90.26	6,941.94	678.26	7,229.90	7,226.75	0.00	0.00	0.00
13,800.00	89.99	90.26	6,941.96	677.80	7,329.90	7,326.75	0.00	0.00	0.00
13,900.00	89.99	90.26	6,941.97	677.35	7,429.90	7,426.75	0.00	0.00	0.00
14,000.00	89.99	90.26	6,941.99	676.89	7,529.90	7,526.75	0.00	0.00	0.00
14,100.00	89.99	90.26	6,942.00	676.44	7,629.90	7,626.75	0.00	0.00	0.00
14,200.00	89.99	90.26	6,942.01	675.98	7,729.90	7,726.75	0.00	0.00	0.00
14,300.00	89.99	90.26	6,942.03	675.53	7,829.89	7,826.75	0.00	0.00	0.00
14,400.00	89.99	90.26	6,942.04	675.07	7,929.89	7,926.75	0.00	0.00	0.00
14,500.00	89.99	90.26	6,942.06	674.62	8,029.89	8,026.75	0.00	0.00	0.00
14,600.00	89.99	90.26	6,942.07	674.16	8,129.89	8,126.75	0.00	0.00	0.00
14,700.00	89.99	90.26	6,942.09	673.71	8,229.89	8,226.75	0.00	0.00	0.00
14,800.00	89.99	90.26	6,942.10	673.25	8,329.89	8,326.75	0.00	0.00	0.00
14,900.00	89.99	90.26	6,942.12	672.80	8,429.89	8,426.75	0.00	0.00	0.00
15,000.00	89.99	90.26	6,942.13	672.34	8,529.89	8,526.75	0.00	0.00	0.00
15,100.00	89.99	90.26	6,942.15	671.89	8,629.89	8,626.75	0.00	0.00	0.00
15,200.00	89.99	90.26	6,942.16	671.43	8,729.89	8,726.75	0.00	0.00	0.00
15,300.00	89.99	90.26	6,942.18	670.98	8,829.88	8,826.75	0.00	0.00	0.00
15,400.00	89.99	90.26	6,942.19	670.52	8,929.88	8,926.75	0.00	0.00	0.00
15,500.00	89.99	90.26	6,942.21	670.07	9,029.88	9,026.75	0.00	0.00	0.00
15,600.00	89.99	90.26	6,942.22	669.61	9,129.88	9,126.75	0.00	0.00	0.00
15,700.00	89.99	90.26	6,942.24	669.16	9,229.88	9,226.75	0.00	0.00	0.00
15,800.00	89.99	90.26	6,942.25	668.70	9,329.88	9,326.75	0.00	0.00	0.00
15,900.00	89.99	90.26	6,942.27	668.25	9,429.88	9,426.75	0.00	0.00	0.00
16,000.00	89.99	90.26	6,942.28	667.79	9,529.88	9,526.75	0.00	0.00	0.00
16,100.00	89.99	90.26	6,942.30	667.34	9,629.88	9,626.75	0.00	0.00	0.00
16,200.00	89.99	90.26	6,942.31	666.88	9,729.87	9,726.75	0.00	0.00	0.00
16,300.00	89.99	90.26	6,942.33	666.43	9,829.87	9,826.75	0.00	0.00	0.00
16,400.00	89.99	90.26	6,942.34	665.97	9,929.87	9,926.75	0.00	0.00	0.00
16,500.00	89.99	90.26	6,942.36	665.51	10,029.87	10,026.75	0.00	0.00	0.00
16,600.00	89.99	90.26	6,942.37	665.06	10,129.87	10,126.75	0.00	0.00	0.00
16,700.00	89.99	90.26	6,942.38	664.60	10,229.87	10,226.75	0.00	0.00	0.00
16,800.00	89.99	90.26	6,942.40	664.15	10,329.87	10,326.75	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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)
16,900.00	89.99	90.26	6,942.41	663.69	10,429.87	10,426.75	0.00	0.00	0.00
17,000.00	89.99	90.26	6,942.43	663.24	10,529.87	10,526.75	0.00	0.00	0.00
17,100.00	89.99	90.26	6,942.44	662.78	10,629.87	10,626.75	0.00	0.00	0.00
17,200.00	89.99	90.26	6,942.46	662.33	10,729.86	10,726.75	0.00	0.00	0.00
17,300.00	89.99	90.26	6,942.47	661.87	10,829.86	10,826.75	0.00	0.00	0.00
17,400.00	89.99	90.26	6,942.49	661.42	10,929.86	10,926.75	0.00	0.00	0.00
17,500.00	89.99	90.26	6,942.50	660.96	11,029.86	11,026.75	0.00	0.00	0.00
17,600.00	89.99	90.26	6,942.52	660.51	11,129.86	11,126.75	0.00	0.00	0.00
17,700.00	89.99	90.26	6,942.53	660.05	11,229.86	11,226.75	0.00	0.00	0.00
17,800.00	89.99	90.26	6,942.55	659.60	11,329.86	11,326.75	0.00	0.00	0.00
17,900.00	89.99	90.26	6,942.56	659.14	11,429.86	11,426.75	0.00	0.00	0.00
18,000.00	89.99	90.26	6,942.58	658.69	11,529.86	11,526.75	0.00	0.00	0.00
18,100.00	89.99	90.26	6,942.59	658.23	11,629.86	11,626.75	0.00	0.00	0.00
18,200.00	89.99	90.26	6,942.61	657.78	11,729.85	11,726.75	0.00	0.00	0.00
18,300.00	89.99	90.26	6,942.62	657.32	11,829.85	11,826.75	0.00	0.00	0.00
18,400.00	89.99	90.26	6,942.64	656.87	11,929.85	11,926.75	0.00	0.00	0.00
18,500.00	89.99	90.26	6,942.65	656.41	12,029.85	12,026.75	0.00	0.00	0.00
18,600.00	89.99	90.26	6,942.67	655.96	12,129.85	12,126.75	0.00	0.00	0.00
18,700.00	89.99	90.26	6,942.68	655.50	12,229.85	12,226.75	0.00	0.00	0.00
18,800.00	89.99	90.26	6,942.70	655.05	12,329.85	12,326.75	0.00	0.00	0.00
18,900.00	89.99	90.26	6,942.71	654.59	12,429.85	12,426.75	0.00	0.00	0.00
19,000.00	89.99	90.26	6,942.73	654.14	12,529.85	12,526.75	0.00	0.00	0.00
19,100.00	89.99	90.26	6,942.74	653.68	12,629.84	12,626.75	0.00	0.00	0.00
19,200.00	89.99	90.26	6,942.76	653.23	12,729.84	12,726.75	0.00	0.00	0.00
19,300.00	89.99	90.26	6,942.77	652.77	12,829.84	12,826.75	0.00	0.00	0.00
19,400.00	89.99	90.26	6,942.78	652.32	12,929.84	12,926.75	0.00	0.00	0.00
19,500.00	89.99	90.26	6,942.80	651.86	13,029.84	13,026.75	0.00	0.00	0.00
19,600.00	89.99	90.26	6,942.81	651.41	13,129.84	13,126.75	0.00	0.00	0.00
19,700.00	89.99	90.26	6,942.83	650.95	13,229.84	13,226.75	0.00	0.00	0.00
19,800.00	89.99	90.26	6,942.84	650.50	13,329.84	13,326.75	0.00	0.00	0.00
19,900.00	89.99	90.26	6,942.86	650.04	13,429.84	13,426.75	0.00	0.00	0.00
20,000.00	89.99	90.26	6,942.87	649.59	13,529.84	13,526.75	0.00	0.00	0.00
20,100.00	89.99	90.26	6,942.89	649.13	13,629.83	13,626.75	0.00	0.00	0.00
20,200.00	89.99	90.26	6,942.90	648.68	13,729.83	13,726.75	0.00	0.00	0.00
20,300.00	89.99	90.26	6,942.92	648.22	13,829.83	13,826.75	0.00	0.00	0.00
20,400.00	89.99	90.26	6,942.93	647.77	13,929.83	13,926.75	0.00	0.00	0.00
20,500.00	89.99	90.26	6,942.95	647.31	14,029.83	14,026.75	0.00	0.00	0.00
20,600.00	89.99	90.26	6,942.96	646.86	14,129.83	14,126.75	0.00	0.00	0.00
20,700.00	89.99	90.26	6,942.98	646.40	14,229.83	14,226.75	0.00	0.00	0.00
20,800.00	89.99	90.26	6,942.99	645.94	14,329.83	14,326.75	0.00	0.00	0.00
20,855.77	89.99	90.26	6,943.00	645.69	14,385.59	14,382.52	0.00	0.00	0.00
TD at 20855.77									

SDT
Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
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 704H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #4		

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 704H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,152,277.01	2,850,002.92	36.913904	-107.399208
RU 704H POE - plan hits target center - Point	0.00	0.00	6,941.00	707.16	879.09	2,152,988.16	2,850,878.78	36.915846	-107.396201
RU 704H PBHL - plan hits target center - Point	0.00	0.00	6,943.00	645.69	14,385.59	2,152,988.16	2,864,385.43	36.915667	-107.349999

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,419.25	2,407.00	Ojo Alamo		0.00	
2,533.08	2,520.00	Kirtland		0.00	
2,904.78	2,889.00	Fruitland		0.00	
3,001.48	2,985.00	Top of Coals		0.00	
3,175.74	3,158.00	Base of Coals		0.00	
3,345.98	3,327.00	Pictured Cliffs		0.00	
3,472.90	3,453.00	Lewis		0.00	
4,617.20	4,589.00	Chacra		0.00	
5,105.74	5,074.00	Upper Cliff House		0.00	
5,389.80	5,356.00	Cliff House		0.00	
5,440.17	5,406.00	Menefee		0.00	
5,657.75	5,622.00	Point Lookout		0.00	
6,205.72	6,166.00	Mancos		0.00	
6,858.21	6,762.00	Black Top		0.00	

Plan Annotations

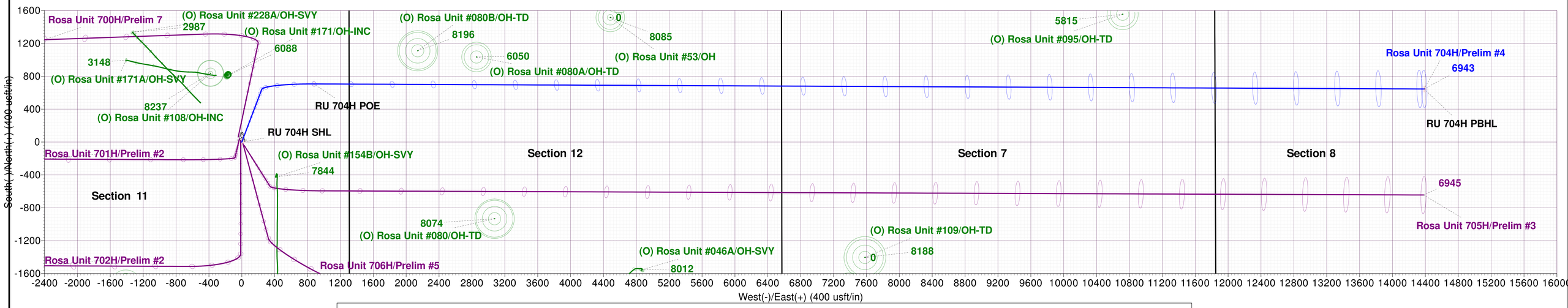
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.00	500.00	0.00	0.00	Start Build 2.00
845.27	844.44	19.43	7.36	Start 5530.73 hold at 845.27 MD
6,376.00	6,335.04	641.32	242.82	Start DLS 9.00 TFO 69.66
7,349.12	6,941.00	707.16	879.09	Start 13506.65 hold at 7349.12 MD
20,855.77	6,943.00	645.69	14,385.59	TD at 20855.77

Received by OCD: 3/13/2024 7:19:09 AM

LOGOS ENERGY

County: Rio Arriba, NM (NAD83)
Site: Rosa Unit 24
Well: Rosa Unit 704H
Depth Reference: 6295+30 @ 6325.00usft (H&P 530)
Rig: H&P 530
Plan: Prelim #4
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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
3	845.27	6.91	20.74	844.44	19.43	7.36	2.00	20.74	7.27	Start 5530.73 hold at 845.27 MD
4	6376.00	6.91	20.74	6335.04	641.32	242.82	0.00	0.00	239.91	Start DLS 9.00 TFO 69.66
5	7349.12	89.99	90.26	6941.00	707.16	879.09	9.00	69.66	875.87	Start 13506.65 hold at 7349.12 MD
6	20855.77	89.99	90.26	6943.00	645.69	14385.59	0.00	0.00	14382.52	TD at 20855.77

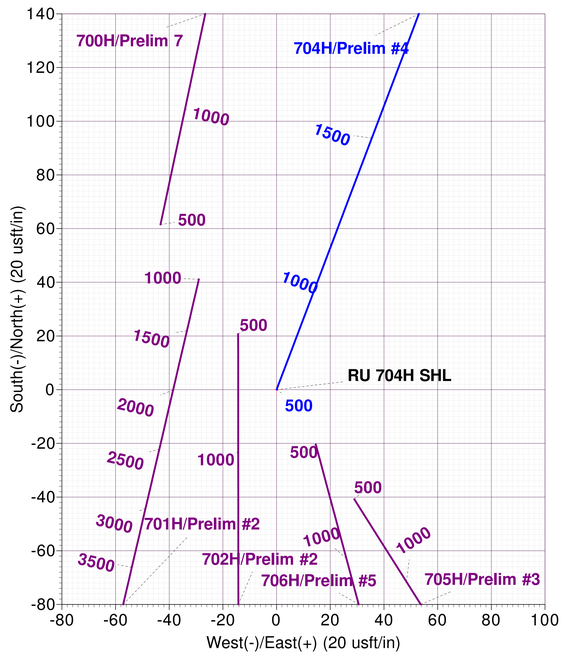
DESIGN TARGET DETAILS

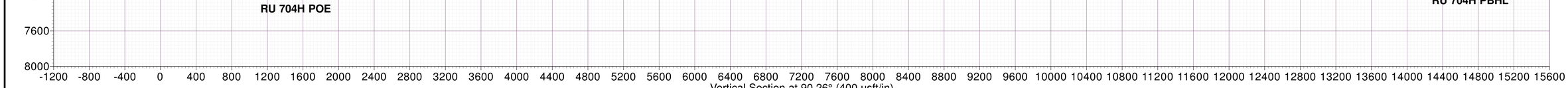
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
RU 704H SHL	0.00	0.00	0.00	2152277.01	2850002.92	36.913904	-107.399208
RU 704H POE	6941.00	707.16	879.09	2152988.16	2850878.78	36.915846	-107.396201
RU 704H PBHL	6943.00	645.69	14385.59	2152988.16	2864385.42	36.915667	-107.349999

TOTAL CORRECTION: 8.45°

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2407.00	2419.25	Ojo Alamo
2520.00	2533.08	Kirtland
2889.00	2904.78	Fruitland
2985.00	3001.48	Top of Coals
3158.00	3175.74	Base of Coals
3327.00	3345.98	Pictured Cliffs
3453.00	3472.90	Lewis
4589.00	4617.20	Chacra
5074.00	5105.74	Upper Cliff House
5356.00	5389.80	Cliff House
5406.00	5440.17	Menefee
5622.00	5657.75	Point Lookout
6166.00	6205.72	Mancos
6762.00	6858.21	Black Top





Received by OCD: 3/13/2024 10:37:08 AM

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 24
Rosa Unit 704H

OH
Prelim #4

Anticollision Report

06 March, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Reference	Prelim #4		
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** 3/6/2024

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,855.77	Prelim #4 (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	0.00	17.14	8,014.92			
(O) Rosa Unit #001E - OH - OH-SVY	500.00	479.34	8,016.30	8,013.02	2,448.356	ES
(O) Rosa Unit #001E - OH - OH-SVY	6,750.00	6,335.32	8,626.57	8,579.62	183.706	SF
(O) Rosa Unit #009A - OH - OH-TD	500.00	422.00	10,139.11	10,124.78	707.551	CC
(O) Rosa Unit #009A - OH - OH-TD	6,100.00	6,002.73	10,294.88	10,092.01	50.746	ES
(O) Rosa Unit #009A - OH - OH-TD	7,000.00	6,775.46	10,602.60	10,373.46	46.271	SF
(O) Rosa Unit #009C - OH - OH-TD	500.00	561.10	12,101.68	12,083.18	654.217	CC
(O) Rosa Unit #009C - OH - OH-TD	700.00	759.48	12,104.89	12,079.73	481.160	ES
(O) Rosa Unit #009C - OH - OH-TD	7,000.00	6,885.83	12,778.22	12,546.30	55.096	SF
(O) Rosa Unit #009D - OH - OH-SVY	0.00	0.00	10,178.40			
(O) Rosa Unit #009D - OH - OH-SVY	6,950.00	7,207.48	11,376.25	11,322.62	212.137	SF
(O) Rosa Unit #030 - OH - OH-SVY	0.00	161.37	3,811.48			
(O) Rosa Unit #030 - OH - OH-SVY	500.00	650.00	3,812.80	3,808.92	985.034	ES
(O) Rosa Unit #030 - OH - OH-SVY	6,800.00	6,652.15	4,617.49	4,569.63	96.488	SF
(O) Rosa Unit #030B - OH - OH-TD	500.00	661.10	5,293.16	5,271.67	246.258	CC
(O) Rosa Unit #030B - OH - OH-TD	600.00	759.39	5,293.44	5,268.64	213.468	ES
(O) Rosa Unit #030B - OH - OH-TD	6,750.00	6,828.05	5,954.01	5,724.73	25.968	SF
(O) Rosa Unit #030C - OH - OH-TD	571.81	749.89	3,914.06	3,889.64	160.333	CC
(O) Rosa Unit #030C - OH - OH-TD	600.00	773.90	3,914.81	3,889.57	155.149	ES
(O) Rosa Unit #030C - OH - OH-TD	6,200.00	6,317.00	4,504.27	4,292.36	21.255	SF
(O) Rosa Unit #036 - OH - OH-TD	500.00	600.10	7,834.15	7,814.48	398.348	CC
(O) Rosa Unit #036 - OH - OH-TD	3,400.00	3,492.66	7,920.33	7,803.05	67.531	ES
(O) Rosa Unit #036 - OH - OH-TD	6,900.00	6,896.02	8,250.44	8,017.99	35.494	SF
(O) Rosa Unit #036C - OH - OH-SVY	0.00	79.40	9,008.59			
(O) Rosa Unit #036C - OH - OH-SVY	200.00	244.83	9,009.34	9,008.29	8,592.331	ES
(O) Rosa Unit #036C - OH - OH-SVY	6,950.00	6,598.41	9,963.72	9,912.93	196.148	SF
(O) Rosa Unit #040 - OH - OH-TD	20,855.77	7,439.05	3,717.80	3,459.30	14.382	CC, ES, SF
(O) Rosa Unit #041C - OH - OH-TD	11,050.34	6,987.34	1,134.55	849.45	3.979	CC, ES
(O) Rosa Unit #041C - OH - OH-TD	11,100.00	6,987.36	1,135.64	849.55	3.970	SF
(O) Rosa Unit #045 - OH - OH-TD	13,872.83	6,117.00	2,670.86	2,391.97	9.577	CC
(O) Rosa Unit #045 - OH - OH-TD	13,900.00	6,117.00	2,671.00	2,391.79	9.566	ES
(O) Rosa Unit #045 - OH - OH-TD	14,100.00	6,117.00	2,680.50	2,399.21	9.529	SF
(O) Rosa Unit #046A - OH - OH-SVY	11,353.78	6,987.39	2,239.00	2,138.33	22.240	CC, ES
(O) Rosa Unit #046A - OH - OH-SVY	11,600.00	6,989.62	2,252.50	2,150.42	22.067	SF
(O) Rosa Unit #070 - OH - OH	19,598.91	6,518.00	1,575.63	1,197.37	4.166	CC
(O) Rosa Unit #070 - OH - OH	19,600.00	6,518.00	1,575.63	1,197.35	4.165	ES
(O) Rosa Unit #070 - OH - OH	19,700.00	6,518.00	1,578.87	1,199.01	4.156	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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 #080 - OH - OH-TD	9,553.01	6,867.76	1,628.09	1,368.52	6.272	CC, ES
(O) Rosa Unit #080 - OH - OH-TD	9,600.00	6,867.77	1,628.77	1,368.74	6.264	SF
(O) Rosa Unit #080A - OH - OH-TD	9,324.02	6,011.00	953.29	857.31	9.932	CC, ES
(O) Rosa Unit #080A - OH - OH-TD	10,000.00	6,011.00	1,168.64	1,017.79	7.747	SF
(O) Rosa Unit #080B - OH - OH-TD	8,608.72	6,923.05	410.15	161.65	1.650	CC, ES, SF
(O) Rosa Unit #095 - OH - OH-TD	17,183.46	6,300.00	1,437.87	1,192.46	5.859	CC
(O) Rosa Unit #095 - OH - OH-TD	17,200.00	6,300.00	1,437.97	1,192.31	5.853	ES
(O) Rosa Unit #095 - OH - OH-TD	17,300.00	6,300.00	1,442.59	1,195.24	5.832	SF
(O) Rosa Unit #108 - OH - OH-INC	6,060.00	5,971.79	651.93	513.42	4.707	CC
(O) Rosa Unit #108 - OH - OH-INC	6,376.00	6,285.49	653.04	507.14	4.476	ES
(O) Rosa Unit #108 - OH - OH-INC	6,450.00	6,358.61	657.74	510.11	4.455	SF
(O) Rosa Unit #109 - OH - OH-TD	14,060.65	7,241.06	2,080.03	1,740.69	6.130	CC
(O) Rosa Unit #109 - OH - OH-TD	14,100.00	7,241.06	2,080.40	1,740.60	6.122	ES
(O) Rosa Unit #109 - OH - OH-TD	14,200.00	7,241.08	2,084.69	1,743.91	6.117	SF
(O) Rosa Unit #149 - OH - OH-INC	541.85	510.93	3,538.24	3,524.24	252.897	CC
(O) Rosa Unit #149 - OH - OH-INC	6,000.00	5,927.48	3,609.37	3,403.81	17.559	ES
(O) Rosa Unit #149 - OH - OH-INC	6,100.00	5,949.00	3,612.63	3,405.73	17.461	SF
(O) Rosa Unit #149A - OH - OH-INC	400.00	359.00	4,868.61	4,860.92	633.377	CC
(O) Rosa Unit #149A - OH - OH-INC	800.00	760.07	4,871.71	4,855.31	297.109	ES
(O) Rosa Unit #149A - OH - OH-INC	6,300.00	6,000.00	5,049.51	4,906.48	35.304	SF
(O) Rosa Unit #149B - OH - OH-INC	500.00	596.03	6,779.28	6,764.91	471.760	CC
(O) Rosa Unit #149B - OH - OH-INC	6,376.00	6,432.61	6,928.38	6,747.40	38.281	ES
(O) Rosa Unit #149B - OH - OH-INC	6,900.00	6,887.52	7,146.43	6,950.18	36.415	SF
(O) Rosa Unit #149C - OH - OH-SVY	3,532.97	3,727.61	4,296.76	4,265.52	137.525	CC
(O) Rosa Unit #149C - OH - OH-SVY	3,600.00	3,769.00	4,297.00	4,265.49	136.358	ES
(O) Rosa Unit #149C - OH - OH-SVY	6,650.00	6,716.11	4,423.78	4,377.71	96.030	SF
(O) Rosa Unit #154 - OH - OH-TD	596.83	752.58	2,244.69	2,220.11	91.312	CC, ES
(O) Rosa Unit #154 - OH - OH-TD	6,200.00	6,319.77	2,883.63	2,671.74	13.609	SF
(O) Rosa Unit #154A - OH - OH-SVY	125.90	153.90	1,695.35	1,694.93	3,976.543	CC
(O) Rosa Unit #154A - OH - OH-SVY	500.00	524.43	1,696.00	1,693.98	840.031	ES
(O) Rosa Unit #154A - OH - OH-SVY	8,000.00	6,125.00	2,770.02	2,736.45	82.502	SF
(O) Rosa Unit #154B - OH - OH-SVY	3,414.00	3,756.77	776.25	758.56	43.892	CC, ES
(O) Rosa Unit #154B - OH - OH-SVY	7,050.00	7,175.08	1,140.42	1,108.78	36.046	SF
(O) Rosa Unit #171 - OH - OH-INC	6,130.82	6,028.00	455.08	390.44	7.040	CC, ES, SF
(O) Rosa Unit #171A - OH - OH-SVY	100.00	38.16	854.78	854.45	2,588.556	CC, ES
(O) Rosa Unit #171A - OH - OH-SVY	3,700.00	3,337.00	1,752.94	1,728.12	70.639	SF
(O) Rosa Unit #181 - OH - OH-SVY	587.10	643.00	10,858.74	10,855.94	3,869.218	CC
(O) Rosa Unit #181 - OH - OH-SVY	600.00	643.00	10,858.76	10,855.91	3,806.644	ES
(O) Rosa Unit #181 - OH - OH-SVY	6,750.00	1,391.00	12,583.87	12,557.97	485.853	SF
(O) Rosa Unit #228A - OH - OH-SVY	457.14	395.15	693.94	691.93	345.137	CC, ES
(O) Rosa Unit #228A - OH - OH-SVY	3,500.00	3,253.00	1,841.00	1,817.42	78.080	SF
(O) Rosa Unit #53 - OH - OH	10,949.14	6,997.67	825.54	603.20	3.713	CC, ES
(O) Rosa Unit #53 - OH - OH	11,000.00	6,997.68	827.11	603.70	3.702	SF
Rosa Unit 700H - OH - Prelim 7	500.00	500.00	75.22	71.85	22.322	CC
Rosa Unit 700H - OH - Prelim 7	700.00	696.49	75.97	71.18	15.871	ES
Rosa Unit 700H - OH - Prelim 7	1,600.00	1,586.44	129.03	117.63	11.320	SF
Rosa Unit 701H - OH - Prelim #2	907.19	905.91	41.63	35.34	6.618	CC, ES
Rosa Unit 701H - OH - Prelim #2	1,000.00	998.04	43.10	36.14	6.190	SF
Rosa Unit 702H - OH - Prelim #2	727.90	728.16	17.82	12.86	3.596	CC, ES, SF
Rosa Unit 705H - OH - Prelim #3	500.00	500.00	50.00	46.63	14.839	CC, ES
Rosa Unit 705H - OH - Prelim #3	20,855.77	20,741.48	1,289.63	830.49	2.809	SF
Rosa Unit 706H - OH - Prelim #5	500.00	500.00	25.09	21.72	7.445	CC, ES
Rosa Unit 706H - OH - Prelim #5	20,855.77	21,031.86	2,588.03	2,128.61	5.633	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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

Offset Design: Rosa Unit 24 - (O) Rosa Unit #001E - 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
0.00	0.00	17.14	17.14	0.00	0.03	-102.44	-1,726.41	-7,826.78	8,014.92				
100.00	100.00	105.99	105.99	0.25	0.28	-102.44	-1,726.50	-7,826.89	8,015.06	8,014.53	0.53	N/A	
200.00	200.00	206.65	206.65	0.61	0.64	-102.44	-1,726.79	-7,826.97	8,015.21	8,013.96	1.24	6,438.966	
300.00	300.00	297.26	297.26	0.97	0.95	-102.44	-1,727.18	-7,827.07	8,015.41	8,013.49	1.92	4,174.944	
400.00	400.00	377.04	377.04	1.33	1.23	-102.45	-1,727.58	-7,827.31	8,015.80	8,013.25	2.56	3,134.289	
500.00	500.00	479.34	479.33	1.68	1.59	-102.45	-1,727.93	-7,827.75	8,016.30	8,013.02	3.27	2,448.356 ES	
600.00	599.98	631.66	631.66	2.04	2.12	-123.18	-1,728.17	-7,827.99	8,017.44	8,013.28	4.16	1,925.559	
700.00	699.84	742.13	742.13	2.40	2.51	-123.18	-1,728.54	-7,827.62	8,020.05	8,015.15	4.91	1,634.838	
800.00	799.45	842.30	842.29	2.77	2.86	-123.15	-1,728.59	-7,827.37	8,024.60	8,018.98	5.61	1,429.301	
845.27	844.44	888.67	888.66	2.93	3.02	-123.14	-1,728.50	-7,827.23	8,027.25	8,021.31	5.94	1,351.247	
900.00	898.77	947.63	947.63	3.13	3.22	-123.18	-1,728.33	-7,827.08	8,030.69	8,024.34	6.35	1,265.630	
1,000.00	998.04	1,071.32	1,071.31	3.50	3.65	-123.27	-1,727.94	-7,826.40	8,036.69	8,029.54	7.14	1,125.209	
1,100.00	1,097.32	1,168.51	1,168.50	3.87	3.99	-123.34	-1,727.69	-7,825.74	8,042.60	8,034.75	7.85	1,024.477	
1,200.00	1,196.59	1,268.17	1,268.16	4.24	4.34	-123.41	-1,727.48	-7,825.10	8,048.57	8,040.00	8.57	939.238	
1,300.00	1,295.87	1,371.92	1,371.91	4.62	4.70	-123.48	-1,726.95	-7,824.45	8,054.50	8,045.20	9.30	865.702	
1,400.00	1,395.14	1,463.67	1,463.65	5.00	5.02	-123.54	-1,726.32	-7,824.02	8,060.56	8,050.57	10.00	806.226	
1,500.00	1,494.42	1,550.00	1,549.97	5.38	5.33	-123.60	-1,725.58	-7,823.67	8,066.66	8,055.99	10.67	755.757	
1,600.00	1,593.69	1,674.09	1,674.06	5.76	5.76	-123.68	-1,724.74	-7,823.16	8,072.81	8,061.33	11.48	703.055	
1,700.00	1,692.96	1,804.53	1,804.49	6.14	6.22	-123.77	-1,723.52	-7,822.13	8,078.53	8,066.21	12.31	656.019	
1,800.00	1,792.24	1,885.77	1,885.72	6.52	6.50	-123.82	-1,722.30	-7,821.51	8,084.17	8,071.19	12.97	623.089	
1,900.00	1,891.51	1,958.19	1,958.12	6.91	6.75	-123.86	-1,720.94	-7,821.29	8,090.16	8,076.56	13.60	594.721	
2,000.00	1,990.79	2,029.37	2,029.29	7.29	7.00	-123.90	-1,719.44	-7,821.37	8,096.52	8,082.29	14.23	569.063	
2,100.00	2,090.06	2,136.94	2,136.84	7.67	7.38	-123.96	-1,717.46	-7,821.61	8,103.06	8,088.08	14.98	540.906	
2,200.00	2,189.34	2,250.00	2,249.88	8.06	7.77	-124.03	-1,715.33	-7,821.58	8,109.34	8,093.59	15.75	514.783	
2,300.00	2,288.61	2,325.00	2,324.86	8.44	8.03	-124.07	-1,713.70	-7,821.71	8,115.76	8,099.37	16.39	495.126	
2,400.00	2,387.89	2,402.26	2,402.11	8.82	8.30	-124.12	-1,712.31	-7,822.02	8,122.50	8,105.46	17.04	476.746	
2,500.00	2,487.16	2,536.96	2,536.80	9.21	8.78	-124.20	-1,710.46	-7,822.32	8,129.19	8,111.30	17.89	454.487	
2,600.00	2,586.44	2,625.00	2,624.82	9.59	9.08	-124.25	-1,708.94	-7,822.39	8,135.65	8,117.08	18.57	438.082	
2,700.00	2,685.71	2,683.34	2,683.15	9.98	9.29	-124.28	-1,707.89	-7,822.65	8,142.48	8,123.33	19.15	425.191	
2,800.00	2,784.99	2,736.52	2,736.32	10.36	9.47	-124.31	-1,707.17	-7,823.12	8,149.83	8,130.12	19.71	413.484	
2,900.00	2,884.26	2,823.06	2,822.85	10.75	9.78	-124.37	-1,706.28	-7,824.33	8,157.73	8,137.34	20.39	400.120	
3,000.00	2,983.53	2,900.00	2,899.78	11.13	10.04	-124.41	-1,705.28	-7,825.46	8,165.68	8,144.65	21.03	388.249	
3,100.00	3,082.81	2,950.00	2,949.77	11.52	10.22	-124.44	-1,704.75	-7,826.39	8,174.08	8,152.50	21.58	378.798	
3,200.00	3,182.08	3,091.97	3,091.72	11.90	10.71	-124.53	-1,704.33	-7,828.63	8,182.31	8,159.86	22.46	364.381	
3,300.00	3,281.36	3,150.00	3,149.74	12.29	10.92	-124.57	-1,704.16	-7,829.63	8,190.78	8,167.75	23.03	355.644	
3,400.00	3,380.63	3,285.07	3,284.80	12.67	11.39	-124.66	-1,704.21	-7,831.65	8,199.03	8,175.15	23.88	343.300	
3,500.00	3,479.91	3,405.98	3,405.69	13.06	11.81	-124.74	-1,704.29	-7,833.47	8,207.44	8,182.75	24.68	332.493	
3,600.00	3,579.18	3,466.69	3,466.40	13.44	12.02	-124.78	-1,704.24	-7,834.37	8,215.73	8,190.46	25.27	325.121	
3,700.00	3,678.46	3,563.93	3,563.62	13.83	12.36	-124.85	-1,704.29	-7,835.74	8,224.02	8,198.03	25.99	316.474	
3,800.00	3,777.73	3,664.99	3,664.67	14.21	12.71	-124.91	-1,704.24	-7,837.27	8,232.38	8,205.66	26.72	308.134	
3,900.00	3,877.01	3,784.22	3,783.89	14.60	13.13	-124.99	-1,704.18	-7,839.04	8,240.72	8,213.20	27.51	299.520	
4,000.00	3,976.28	3,850.00	3,849.66	14.98	13.36	-125.04	-1,704.42	-7,840.05	8,249.23	8,221.11	28.12	293.398	
4,100.00	4,075.55	3,940.47	3,940.11	15.37	13.68	-125.10	-1,705.22	-7,841.57	8,258.02	8,229.21	28.81	286.654	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
4,200.00	4,174.83	4,033.98	4,033.60	15.75	14.00	-125.17	-1,706.70	-7,843.07	8,266.93	8,237.42	29.51	280.126	
4,300.00	4,274.10	4,100.00	4,099.59	16.14	14.23	-125.23	-1,708.20	-7,844.14	8,276.05	8,245.93	30.11	274.821	
4,400.00	4,373.38	4,186.30	4,185.84	16.53	14.53	-125.30	-1,710.78	-7,845.68	8,285.51	8,254.72	30.79	269.091	
4,500.00	4,472.65	4,260.34	4,259.83	16.91	14.79	-125.36	-1,713.30	-7,847.01	8,295.12	8,263.70	31.42	263.990	
4,600.00	4,571.93	4,339.32	4,338.73	17.30	15.07	-125.44	-1,716.27	-7,848.65	8,305.09	8,273.02	32.07	258.958	
4,700.00	4,671.20	4,416.46	4,415.79	17.68	15.34	-125.50	-1,719.25	-7,850.45	8,315.35	8,282.63	32.71	254.189	
4,800.00	4,770.48	4,493.13	4,492.37	18.07	15.60	-125.57	-1,722.45	-7,852.34	8,325.84	8,292.49	33.35	249.627	
4,900.00	4,869.75	4,609.55	4,608.65	18.45	16.01	-125.68	-1,727.33	-7,855.16	8,336.33	8,302.19	34.14	244.177	
5,000.00	4,969.03	4,686.98	4,685.99	18.84	16.28	-125.75	-1,730.73	-7,857.13	8,346.97	8,312.19	34.78	239.972	
5,100.00	5,068.30	4,786.45	4,785.33	19.23	16.63	-125.84	-1,735.06	-7,859.75	8,357.74	8,322.23	35.51	235.380	
5,200.00	5,167.58	4,875.00	4,873.77	19.61	16.94	-125.92	-1,738.87	-7,861.96	8,368.41	8,332.22	36.19	231.228	
5,300.00	5,266.85	4,985.91	4,984.54	20.00	17.33	-126.02	-1,743.65	-7,864.80	8,379.13	8,342.17	36.96	226.718	
5,400.00	5,366.12	5,059.66	5,058.19	20.38	17.58	-126.09	-1,746.95	-7,866.73	8,389.98	8,352.39	37.59	223.218	
5,500.00	5,465.40	5,185.87	5,184.23	20.77	18.03	-126.21	-1,752.55	-7,870.08	8,400.88	8,362.47	38.41	218.710	
5,600.00	5,564.67	5,312.14	5,310.33	21.15	18.47	-126.32	-1,758.54	-7,872.86	8,411.45	8,372.21	39.24	214.383	
5,700.00	5,663.95	5,459.30	5,457.29	21.54	18.98	-126.46	-1,765.63	-7,875.38	8,421.60	8,381.46	40.14	209.818	
5,800.00	5,763.22	5,582.81	5,580.63	21.93	19.41	-126.58	-1,771.92	-7,876.86	8,431.37	8,390.42	40.95	205.888	
5,900.00	5,862.50	5,715.40	5,713.03	22.31	19.88	-126.71	-1,779.14	-7,877.84	8,440.82	8,399.02	41.80	201.943	
6,000.00	5,961.77	5,825.00	5,822.46	22.70	20.26	-126.82	-1,785.11	-7,878.15	8,449.85	8,407.29	42.56	198.541	
6,100.00	6,061.05	5,896.06	5,893.42	23.08	20.51	-126.89	-1,788.89	-7,878.62	8,459.21	8,416.03	43.18	195.910	
6,200.00	6,160.32	5,977.55	5,974.78	23.47	20.79	-126.97	-1,793.21	-7,879.37	8,468.85	8,425.02	43.84	193.191	
6,300.00	6,259.60	6,050.00	6,047.13	23.86	21.05	-127.05	-1,797.10	-7,880.27	8,478.81	8,434.35	44.46	190.704	
6,376.00	6,335.04	6,100.00	6,097.05	24.15	21.22	-127.09	-1,799.79	-7,880.98	8,486.56	8,441.64	44.92	188.946	
6,400.00	6,358.85	6,122.84	6,119.85	24.24	21.30	-141.93	-1,800.98	-7,881.35	8,489.47	8,444.39	45.09	188.298	
6,450.00	6,408.16	6,154.24	6,151.21	24.44	21.41	-161.37	-1,802.67	-7,881.90	8,498.36	8,452.98	45.38	187.283	
6,500.00	6,456.87	6,188.11	6,185.03	24.64	21.53	-171.68	-1,804.45	-7,882.50	8,510.95	8,465.27	45.67	186.339	
6,550.00	6,504.65	6,218.71	6,215.58	24.85	21.64	-177.88	-1,806.13	-7,883.16	8,527.27	8,481.32	45.95	185.563	
6,600.00	6,551.23	6,250.00	6,246.81	25.06	21.75	177.87	-1,807.83	-7,883.84	8,547.12	8,500.90	46.23	184.892	
6,650.00	6,596.31	6,286.30	6,283.05	25.26	21.87	174.63	-1,809.80	-7,884.68	8,570.38	8,523.87	46.51	184.262	
6,700.00	6,639.62	6,317.94	6,314.62	25.48	21.98	171.90	-1,811.57	-7,885.48	8,596.94	8,550.17	46.77	183.820	
6,750.00	6,680.88	6,335.32	6,331.97	25.69	22.04	169.40	-1,812.54	-7,885.91	8,626.57	8,579.62	46.96	183.706 SF	
6,800.00	6,719.85	6,350.00	6,346.62	25.91	22.10	166.94	-1,813.45	-7,886.34	8,659.22	8,612.09	47.13	183.746	
6,850.00	6,756.28	6,350.00	6,346.62	26.13	22.10	164.32	-1,813.45	-7,886.34	8,694.61	8,647.39	47.22	184.118	
6,900.00	6,789.95	6,350.00	6,346.62	26.37	22.10	161.40	-1,813.45	-7,886.34	8,732.55	8,685.24	47.31	184.600	
6,950.00	6,820.65	6,364.93	6,361.50	26.61	22.15	158.02	-1,814.47	-7,886.85	8,772.72	8,725.29	47.43	184.956	
7,000.00	6,848.19	6,484.34	6,480.66	26.87	22.57	154.39	-1,820.96	-7,890.99	8,814.69	8,766.74	47.95	183.821	
7,050.00	6,872.41	6,514.20	6,510.47	27.13	22.67	149.58	-1,822.42	-7,891.93	8,858.28	8,810.17	48.11	184.124	
7,100.00	6,893.15	6,535.87	6,532.10	27.41	22.75	143.41	-1,823.47	-7,892.57	8,903.28	8,855.06	48.22	184.628	
7,150.00	6,910.28	6,541.49	6,537.71	27.71	22.77	135.24	-1,823.74	-7,892.75	8,949.48	8,901.22	48.26	185.444	
7,200.00	6,923.70	6,585.87	6,582.02	28.02	22.92	125.23	-1,825.85	-7,894.06	8,996.53	8,948.09	48.44	185.739	
7,250.00	6,933.33	6,588.79	6,584.94	28.34	22.93	112.04	-1,825.98	-7,894.14	9,044.19	8,995.75	48.44	186.709	
7,300.00	6,939.11	6,590.33	6,586.48	28.67	22.94	96.82	-1,826.06	-7,894.18	9,092.18	9,043.75	48.43	187.743	
7,349.12	6,941.00	6,590.50	6,586.65	29.00	22.94	81.75	-1,826.06	-7,894.19	9,139.35	9,090.95	48.41	188.810	
7,400.00	6,941.01	6,589.98	6,586.13	29.36	22.94	81.74	-1,826.04	-7,894.17	9,188.14	9,139.76	48.38	189.932	
7,500.00	6,941.02	6,588.98	6,585.13	30.11	22.93	81.72	-1,825.99	-7,894.14	9,284.09	9,235.77	48.33	192.114	
7,600.00	6,941.04	6,587.99	6,584.14	30.93	22.93	81.70	-1,825.95	-7,894.12	9,380.13	9,331.85	48.28	194.269	
7,700.00	6,941.05	6,587.01	6,583.17	31.80	22.92	81.67	-1,825.90	-7,894.09	9,476.26	9,428.01	48.25	196.398	
7,800.00	6,941.07	6,586.04	6,582.20	32.73	22.92	81.65	-1,825.85	-7,894.06	9,572.46	9,524.23	48.22	198.501	
7,900.00	6,941.08	6,585.08	6,581.24	33.71	22.92	81.63	-1,825.81	-7,894.03	9,668.73	9,620.53	48.20	200.578	
8,000.00	6,941.10	6,584.14	6,580.29	34.73	22.91	81.61	-1,825.77	-7,894.01	9,765.09	9,716.89	48.19	202.630	
8,100.00	6,941.11	6,562.64	6,558.83	35.79	22.84	81.14	-1,824.76	-7,893.39	9,861.51	9,813.41	48.10	205.005	
8,200.00	6,941.13	6,540.87	6,537.10	36.90	22.76	80.66	-1,823.71	-7,892.73	9,957.99	9,909.97	48.02	207.369	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
8,300.00	6,941.14	6,539.84	6,536.07	38.03	22.76	80.64	-1,823.66	-7,892.70	10,054.54	10,006.52	48.03	209.357	
8,400.00	6,941.16	6,538.82	6,535.05	39.20	22.76	80.62	-1,823.61	-7,892.66	10,151.16	10,103.12	48.04	211.320	
8,500.00	6,941.17	6,537.81	6,534.04	40.40	22.75	80.60	-1,823.56	-7,892.63	10,247.84	10,199.79	48.05	213.261	
8,600.00	6,941.19	6,536.81	6,533.04	41.63	22.75	80.58	-1,823.51	-7,892.60	10,344.59	10,296.51	48.07	215.178	
8,700.00	6,941.20	6,535.82	6,532.06	42.88	22.75	80.55	-1,823.46	-7,892.57	10,441.39	10,393.29	48.10	217.073	
8,800.00	6,941.22	6,534.85	6,531.08	44.16	22.74	80.53	-1,823.42	-7,892.54	10,538.26	10,490.13	48.13	218.947	
8,900.00	6,941.23	6,533.88	6,530.12	45.45	22.74	80.51	-1,823.37	-7,892.51	10,635.18	10,587.01	48.17	220.799	
9,000.00	6,941.24	6,523.85	6,520.10	46.76	22.70	80.29	-1,822.89	-7,892.22	10,732.17	10,684.00	48.17	222.798	
9,100.00	6,941.26	6,520.83	6,517.09	48.10	22.69	80.23	-1,822.74	-7,892.13	10,829.20	10,780.99	48.20	224.649	
9,200.00	6,941.27	6,517.82	6,514.08	49.44	22.68	80.16	-1,822.60	-7,892.04	10,926.28	10,878.04	48.24	226.480	
9,300.00	6,941.29	6,514.81	6,511.08	50.80	22.67	80.10	-1,822.45	-7,891.95	11,023.42	10,975.13	48.29	228.293	
9,400.00	6,941.30	6,511.80	6,508.07	52.18	22.66	80.03	-1,822.31	-7,891.85	11,120.60	11,072.27	48.33	230.088	
9,500.00	6,941.32	6,491.56	6,487.87	53.57	22.59	79.59	-1,821.31	-7,891.22	11,217.83	11,169.52	48.31	232.197	
9,600.00	6,941.33	6,490.09	6,486.40	54.97	22.59	79.56	-1,821.24	-7,891.17	11,315.11	11,266.74	48.37	233.929	
9,700.00	6,941.35	6,488.63	6,484.94	56.38	22.58	79.53	-1,821.17	-7,891.13	11,412.43	11,364.00	48.43	235.643	
9,800.00	6,941.36	6,487.18	6,483.49	57.80	22.58	79.49	-1,821.10	-7,891.08	11,509.80	11,461.31	48.49	237.340	
9,900.00	6,941.38	6,485.74	6,482.06	59.23	22.57	79.46	-1,821.03	-7,891.04	11,607.22	11,558.65	48.56	239.021	
10,000.00	6,941.39	6,484.31	6,480.63	60.67	22.57	79.43	-1,820.96	-7,890.99	11,704.67	11,656.04	48.63	240.685	
10,100.00	6,941.41	6,459.48	6,455.85	62.11	22.48	78.89	-1,819.73	-7,890.19	11,802.17	11,753.56	48.61	242.803	
10,200.00	6,941.42	6,456.23	6,452.59	63.57	22.47	78.82	-1,819.57	-7,890.09	11,899.70	11,851.02	48.67	244.476	
10,300.00	6,941.44	6,375.00	6,371.54	65.03	22.18	77.07	-1,815.19	-7,887.23	11,997.27	11,948.84	48.43	247.734	
10,400.00	6,941.45	6,364.42	6,361.00	66.50	22.15	76.84	-1,814.43	-7,886.83	12,094.84	12,046.37	48.47	249.539	
10,500.00	6,941.47	6,363.71	6,360.29	67.97	22.14	76.83	-1,814.38	-7,886.81	12,192.46	12,143.91	48.55	251.124	
10,600.00	6,941.48	6,363.01	6,359.59	69.45	22.14	76.81	-1,814.33	-7,886.78	12,290.13	12,241.49	48.64	252.696	
10,700.00	6,941.50	6,362.32	6,358.90	70.94	22.14	76.80	-1,814.28	-7,886.76	12,387.83	12,339.11	48.72	254.253	
10,800.00	6,941.51	6,361.63	6,358.21	72.43	22.14	76.78	-1,814.24	-7,886.73	12,485.57	12,436.75	48.81	255.797	
10,900.00	6,941.53	6,360.95	6,357.53	73.92	22.13	76.77	-1,814.19	-7,886.71	12,583.34	12,534.44	48.90	257.327	
11,000.00	6,941.54	6,360.28	6,356.86	75.42	22.13	76.75	-1,814.14	-7,886.69	12,681.14	12,632.15	48.99	258.845	
11,100.00	6,941.56	6,350.00	6,346.62	76.92	22.10	76.53	-1,813.45	-7,886.34	12,779.00	12,729.96	49.04	260.557	
11,200.00	6,941.57	6,350.00	6,346.62	78.43	22.10	76.53	-1,813.45	-7,886.34	12,876.87	12,827.73	49.14	262.037	
11,300.00	6,941.59	6,350.00	6,346.62	79.94	22.10	76.53	-1,813.45	-7,886.34	12,974.78	12,925.54	49.24	263.504	
11,400.00	6,941.60	6,350.00	6,346.62	81.46	22.10	76.53	-1,813.45	-7,886.34	13,072.71	13,023.37	49.34	264.960	
11,500.00	6,941.61	6,350.00	6,346.62	82.98	22.10	76.53	-1,813.45	-7,886.34	13,170.68	13,121.24	49.44	266.405	
11,600.00	6,941.63	6,350.00	6,346.62	84.50	22.10	76.53	-1,813.45	-7,886.34	13,268.68	13,219.14	49.54	267.838	
11,700.00	6,941.64	6,350.00	6,346.62	86.02	22.10	76.53	-1,813.45	-7,886.34	13,366.70	13,317.06	49.64	269.261	
11,800.00	6,941.66	6,350.00	6,346.62	87.55	22.10	76.53	-1,813.45	-7,886.34	13,464.76	13,415.01	49.75	270.673	
11,900.00	6,941.67	6,350.00	6,346.62	89.08	22.10	76.53	-1,813.45	-7,886.34	13,562.84	13,512.99	49.85	272.075	
12,000.00	6,941.69	6,350.00	6,346.62	90.61	22.10	76.53	-1,813.45	-7,886.34	13,660.95	13,611.00	49.95	273.467	
12,100.00	6,941.70	6,350.00	6,346.62	92.14	22.10	76.53	-1,813.45	-7,886.34	13,759.09	13,709.03	50.06	274.849	
12,200.00	6,941.72	6,350.00	6,346.62	93.68	22.10	76.53	-1,813.45	-7,886.34	13,857.26	13,807.09	50.17	276.221	
12,300.00	6,941.73	6,350.00	6,346.62	95.22	22.10	76.53	-1,813.45	-7,886.34	13,955.45	13,905.17	50.27	277.584	
12,400.00	6,941.75	6,350.00	6,346.62	96.76	22.10	76.53	-1,813.45	-7,886.34	14,053.67	14,003.28	50.38	278.938	
12,500.00	6,941.76	6,350.00	6,346.62	98.30	22.10	76.53	-1,813.45	-7,886.34	14,151.91	14,101.42	50.49	280.283	
12,600.00	6,941.78	6,350.00	6,346.62	99.85	22.10	76.53	-1,813.45	-7,886.34	14,250.17	14,199.57	50.60	281.619	
12,700.00	6,941.79	6,350.00	6,346.62	101.40	22.10	76.53	-1,813.45	-7,886.34	14,348.46	14,297.75	50.71	282.946	
12,800.00	6,941.81	6,350.00	6,346.62	102.95	22.10	76.53	-1,813.45	-7,886.34	14,446.78	14,395.96	50.82	284.265	
12,900.00	6,941.82	6,350.00	6,346.62	104.50	22.10	76.53	-1,813.45	-7,886.34	14,545.11	14,494.18	50.93	285.576	
13,000.00	6,941.84	6,350.00	6,346.62	106.05	22.10	76.53	-1,813.45	-7,886.34	14,643.47	14,592.43	51.04	286.878	
13,100.00	6,941.85	6,350.00	6,346.62	107.60	22.10	76.53	-1,813.45	-7,886.34	14,741.85	14,690.70	51.16	288.173	
13,200.00	6,941.87	6,350.00	6,346.62	109.16	22.10	76.53	-1,813.45	-7,886.34	14,840.26	14,788.99	51.27	289.459	
13,300.00	6,941.88	6,350.00	6,346.62	110.71	22.10	76.53	-1,813.45	-7,886.34	14,938.68	14,887.30	51.38	290.738	
13,400.00	6,941.90	6,350.00	6,346.62	112.27	22.10	76.53	-1,813.45	-7,886.34	15,037.13	14,985.63	51.50	292.009	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
13,500.00	6,941.91	6,350.00	6,346.62	113.83	22.10	76.53	-1,813.45	-7,886.34	15,135.59	15,083.98	51.61	293.273	
13,600.00	6,941.93	6,350.00	6,346.62	115.39	22.10	76.53	-1,813.45	-7,886.34	15,234.08	15,182.35	51.72	294.530	
13,700.00	6,941.94	6,350.00	6,346.62	116.95	22.10	76.53	-1,813.45	-7,886.34	15,332.58	15,280.74	51.84	295.779	
13,800.00	6,941.96	6,350.00	6,346.62	118.51	22.10	76.53	-1,813.45	-7,886.34	15,431.11	15,379.15	51.95	297.022	
13,900.00	6,941.97	6,350.00	6,346.62	120.08	22.10	76.53	-1,813.45	-7,886.34	15,529.65	15,477.58	52.07	298.257	
14,000.00	6,941.99	6,350.00	6,346.62	121.64	22.10	76.53	-1,813.45	-7,886.34	15,628.21	15,576.03	52.18	299.486	
14,100.00	6,942.00	6,350.00	6,346.62	123.21	22.10	76.53	-1,813.45	-7,886.34	15,726.79	15,674.49	52.30	300.707	
14,200.00	6,942.01	6,350.00	6,346.62	124.77	22.10	76.53	-1,813.45	-7,886.34	15,825.39	15,772.97	52.42	301.922	
14,300.00	6,942.03	6,350.00	6,346.62	126.34	22.10	76.53	-1,813.45	-7,886.34	15,924.00	15,871.47	52.53	303.131	
14,400.00	6,942.04	6,350.00	6,346.62	127.91	22.10	76.53	-1,813.45	-7,886.34	16,022.64	15,969.99	52.65	304.333	
14,500.00	6,942.06	6,350.00	6,346.62	129.48	22.10	76.53	-1,813.45	-7,886.34	16,121.28	16,068.52	52.77	305.529	
14,600.00	6,942.07	6,350.00	6,346.62	131.05	22.10	76.53	-1,813.45	-7,886.34	16,219.95	16,167.07	52.88	306.718	
14,700.00	6,942.09	6,350.00	6,346.62	132.62	22.10	76.53	-1,813.45	-7,886.34	16,318.63	16,265.63	53.00	307.902	
14,800.00	6,942.10	6,350.00	6,346.62	134.19	22.10	76.53	-1,813.45	-7,886.34	16,417.33	16,364.21	53.12	309.079	
14,900.00	6,942.12	6,350.00	6,346.62	135.76	22.10	76.53	-1,813.45	-7,886.34	16,516.04	16,462.81	53.23	310.250	
15,000.00	6,942.13	6,350.00	6,346.62	137.34	22.10	76.53	-1,813.45	-7,886.34	16,614.77	16,561.42	53.35	311.415	
15,100.00	6,942.15	6,350.00	6,346.62	138.91	22.10	76.53	-1,813.45	-7,886.34	16,713.52	16,660.05	53.47	312.575	
15,200.00	6,942.16	6,350.00	6,346.62	140.48	22.10	76.53	-1,813.45	-7,886.34	16,812.28	16,758.69	53.59	313.728	
15,300.00	6,942.18	6,350.00	6,346.62	142.06	22.10	76.53	-1,813.45	-7,886.34	16,911.05	16,857.34	53.71	314.876	
15,400.00	6,942.19	6,350.00	6,346.62	143.64	22.10	76.53	-1,813.45	-7,886.34	17,009.84	16,956.01	53.83	316.018	
15,500.00	6,942.21	6,338.85	6,335.49	145.21	22.06	76.30	-1,812.75	-7,886.01	17,108.61	17,054.71	53.90	317.415	
15,600.00	6,942.22	6,338.51	6,335.15	146.79	22.05	76.29	-1,812.73	-7,886.00	17,207.42	17,153.41	54.02	318.554	
15,700.00	6,942.24	6,338.16	6,334.81	148.37	22.05	76.28	-1,812.71	-7,885.99	17,306.25	17,252.12	54.13	319.688	
15,800.00	6,942.25	6,337.82	6,334.47	149.94	22.05	76.27	-1,812.69	-7,885.98	17,405.09	17,350.84	54.25	320.816	
15,900.00	6,942.27	6,337.49	6,334.13	151.52	22.05	76.27	-1,812.67	-7,885.97	17,503.95	17,449.58	54.37	321.939	
16,000.00	6,942.28	6,337.16	6,333.80	153.10	22.05	76.26	-1,812.65	-7,885.96	17,602.81	17,548.32	54.49	323.056	
16,100.00	6,942.30	6,336.82	6,333.47	154.68	22.05	76.25	-1,812.63	-7,885.95	17,701.69	17,647.09	54.61	324.168	
16,200.00	6,942.31	6,336.50	6,333.15	156.26	22.05	76.25	-1,812.61	-7,885.94	17,800.58	17,745.86	54.72	325.275	
16,300.00	6,942.33	6,336.17	6,332.82	157.84	22.05	76.24	-1,812.59	-7,885.93	17,899.49	17,844.64	54.84	326.376	
16,400.00	6,942.34	6,325.00	6,321.67	159.42	22.01	76.00	-1,811.96	-7,885.65	17,998.43	17,943.51	54.92	327.728	
16,500.00	6,942.36	6,325.00	6,321.67	161.00	22.01	76.00	-1,811.96	-7,885.65	18,097.36	18,042.32	55.04	328.812	
16,600.00	6,942.37	6,325.00	6,321.67	162.59	22.01	76.00	-1,811.96	-7,885.65	18,196.30	18,141.14	55.16	329.890	
16,700.00	6,942.38	6,325.00	6,321.67	164.17	22.01	76.00	-1,811.96	-7,885.65	18,295.25	18,239.97	55.28	330.964	
16,800.00	6,942.40	6,325.00	6,321.67	165.75	22.01	76.00	-1,811.96	-7,885.65	18,394.21	18,338.81	55.40	332.033	
16,900.00	6,942.41	6,325.00	6,321.67	167.33	22.01	76.00	-1,811.96	-7,885.65	18,493.18	18,437.66	55.52	333.096	
17,000.00	6,942.43	6,325.00	6,321.67	168.92	22.01	76.00	-1,811.96	-7,885.65	18,592.16	18,536.52	55.64	334.155	
17,100.00	6,942.44	6,325.00	6,321.67	170.50	22.01	76.00	-1,811.96	-7,885.65	18,691.16	18,635.40	55.76	335.209	
17,200.00	6,942.46	6,325.00	6,321.67	172.09	22.01	76.00	-1,811.96	-7,885.65	18,790.16	18,734.28	55.88	336.258	
17,300.00	6,942.47	6,325.00	6,321.67	173.67	22.01	76.00	-1,811.96	-7,885.65	18,889.18	18,833.18	56.00	337.303	
17,400.00	6,942.49	6,325.00	6,321.67	175.26	22.01	76.00	-1,811.96	-7,885.65	18,988.20	18,932.08	56.12	338.343	
17,500.00	6,942.50	6,325.00	6,321.67	176.84	22.01	76.00	-1,811.96	-7,885.65	19,087.24	19,031.00	56.24	339.378	
17,600.00	6,942.52	6,325.00	6,321.67	178.43	22.01	76.00	-1,811.96	-7,885.65	19,186.28	19,129.92	56.36	340.408	
17,700.00	6,942.53	6,325.00	6,321.67	180.01	22.01	76.00	-1,811.96	-7,885.65	19,285.34	19,228.86	56.48	341.434	
17,800.00	6,942.55	6,325.00	6,321.67	181.60	22.01	76.00	-1,811.96	-7,885.65	19,384.41	19,327.80	56.60	342.455	
17,900.00	6,942.56	6,325.00	6,321.67	183.19	22.01	76.00	-1,811.96	-7,885.65	19,483.48	19,426.76	56.73	343.471	
18,000.00	6,942.58	6,325.00	6,321.67	184.77	22.01	76.00	-1,811.96	-7,885.65	19,582.56	19,525.72	56.85	344.483	
18,100.00	6,942.59	6,325.00	6,321.67	186.36	22.01	76.00	-1,811.96	-7,885.65	19,681.66	19,624.69	56.97	345.490	
18,200.00	6,942.61	6,325.00	6,321.67	187.95	22.01	76.00	-1,811.96	-7,885.65	19,780.76	19,723.67	57.09	346.493	
18,300.00	6,942.62	6,325.00	6,321.67	189.54	22.01	76.00	-1,811.96	-7,885.65	19,879.87	19,822.66	57.21	347.492	
18,400.00	6,942.64	6,325.00	6,321.67	191.12	22.01	76.00	-1,811.96	-7,885.65	19,978.99	19,921.66	57.33	348.486	
18,500.00	6,942.65	6,325.00	6,321.67	192.71	22.01	76.00	-1,811.96	-7,885.65	20,078.12	20,020.67	57.45	349.476	
18,600.00	6,942.67	6,325.00	6,321.67	194.30	22.01	76.00	-1,811.96	-7,885.65	20,177.26	20,119.69	57.57	350.461	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,700.00	6,942.68	6,323.72	6,320.39	195.89	22.00	75.97	-1,811.89	-7,885.62	20,276.41	20,218.72	57.69	351.472	
18,800.00	6,942.70	6,321.26	6,317.93	197.48	21.99	75.92	-1,811.75	-7,885.56	20,375.56	20,317.76	57.80	352.507	
18,900.00	6,942.71	6,318.79	6,315.47	199.07	21.99	75.87	-1,811.61	-7,885.50	20,474.72	20,416.81	57.91	353.538	
19,000.00	6,942.73	6,316.33	6,313.01	200.66	21.98	75.81	-1,811.48	-7,885.44	20,573.89	20,515.87	58.03	354.565	
19,100.00	6,942.74	6,313.86	6,310.55	202.25	21.97	75.76	-1,811.34	-7,885.37	20,673.07	20,614.93	58.14	355.587	
19,200.00	6,942.76	6,311.40	6,308.09	203.84	21.96	75.71	-1,811.20	-7,885.31	20,772.26	20,714.01	58.25	356.606	
19,300.00	6,942.77	6,308.93	6,305.64	205.43	21.95	75.66	-1,811.07	-7,885.25	20,871.45	20,813.09	58.36	357.620	
19,400.00	6,942.78	6,306.47	6,303.18	207.02	21.94	75.61	-1,810.93	-7,885.19	20,970.65	20,912.18	58.47	358.629	
19,500.00	6,942.80	6,304.01	6,300.72	208.61	21.93	75.55	-1,810.79	-7,885.13	21,069.86	21,011.27	58.59	359.635	
19,600.00	6,942.81	6,301.54	6,298.26	210.20	21.93	75.50	-1,810.65	-7,885.07	21,169.07	21,110.37	58.70	360.637	
19,700.00	6,942.83	6,300.00	6,296.72	211.79	21.92	75.47	-1,810.57	-7,885.03	21,268.29	21,209.48	58.82	361.612	
19,800.00	6,942.84	6,300.00	6,296.72	213.38	21.92	75.47	-1,810.57	-7,885.03	21,367.52	21,308.59	58.94	362.547	
19,900.00	6,942.86	6,300.00	6,296.72	214.97	21.92	75.47	-1,810.57	-7,885.03	21,466.76	21,407.70	59.06	363.478	
20,000.00	6,942.87	6,300.00	6,296.72	216.56	21.92	75.47	-1,810.57	-7,885.03	21,566.00	21,506.82	59.18	364.404	
20,100.00	6,942.89	6,300.00	6,296.72	218.15	21.92	75.47	-1,810.57	-7,885.03	21,665.25	21,605.95	59.30	365.327	
20,200.00	6,942.90	6,300.00	6,296.72	219.75	21.92	75.47	-1,810.57	-7,885.03	21,764.51	21,705.08	59.43	366.246	
20,300.00	6,942.92	6,300.00	6,296.72	221.34	21.92	75.47	-1,810.57	-7,885.03	21,863.77	21,804.22	59.55	367.160	
20,400.00	6,942.93	6,300.00	6,296.72	222.93	21.92	75.47	-1,810.57	-7,885.03	21,963.04	21,903.37	59.67	368.071	
20,500.00	6,942.95	6,289.48	6,286.22	224.52	21.88	75.24	-1,809.97	-7,884.76	22,062.31	22,002.55	59.75	369.228	
20,600.00	6,942.96	6,289.08	6,285.81	226.12	21.88	75.24	-1,809.95	-7,884.75	22,161.59	22,101.71	59.87	370.141	
20,700.00	6,942.98	6,288.67	6,285.41	227.71	21.88	75.23	-1,809.93	-7,884.74	22,260.88	22,200.88	59.99	371.049	
20,800.00	6,942.99	6,288.27	6,285.01	229.30	21.88	75.22	-1,809.90	-7,884.73	22,360.17	22,300.06	60.12	371.954	
20,855.77	6,943.00	6,288.05	6,284.79	230.19	21.88	75.21	-1,809.89	-7,884.72	22,415.55	22,355.37	60.18	372.456	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	0.00	0.00	0.00	0.00	-81.29	1,535.93	-10,022.10	10,139.41				
100.00	100.00	22.00	22.00	0.25	0.66	-81.29	1,535.93	-10,022.10	10,139.11	10,138.20	0.91	N/A	
200.00	200.00	122.00	122.00	0.61	3.66	-81.29	1,535.93	-10,022.10	10,139.11	10,134.85	4.27	2,377.158	
300.00	300.00	222.00	222.00	0.97	6.65	-81.29	1,535.93	-10,022.10	10,139.11	10,131.49	7.62	1,330.573	
400.00	400.00	322.00	322.00	1.33	9.65	-81.29	1,535.93	-10,022.10	10,139.11	10,128.14	10.97	923.838	
500.00	500.00	422.00	422.00	1.68	12.65	-81.29	1,535.93	-10,022.10	10,139.11	10,124.78	14.33	707.551 CC	
600.00	599.98	522.08	521.98	2.04	15.64	-102.03	1,535.93	-10,022.10	10,139.48	10,121.79	17.69	573.301	
700.00	699.84	621.94	621.84	2.40	18.64	-102.03	1,535.93	-10,022.10	10,140.57	10,119.53	21.04	482.068	
800.00	799.45	721.55	721.45	2.77	21.62	-102.05	1,535.93	-10,022.10	10,142.39	10,118.01	24.38	416.006	
845.27	844.44	768.52	768.38	2.93	23.03	-102.04	1,538.10	-10,022.10	10,143.79	10,117.83	25.95	390.862	
900.00	898.77	829.29	829.13	3.13	24.85	-102.08	1,537.89	-10,022.10	10,145.14	10,117.17	27.97	362.671	
1,000.00	998.04	940.19	940.01	3.50	28.17	-102.16	1,536.85	-10,022.10	10,147.55	10,115.88	31.67	320.456	
1,100.00	1,097.32	1,019.72	1,019.32	3.87	30.56	-102.22	1,535.93	-10,022.10	10,149.95	10,115.53	34.42	294.872	
1,200.00	1,196.59	1,119.00	1,118.59	4.24	33.53	-102.29	1,535.93	-10,022.10	10,152.52	10,114.75	37.77	268.791	
1,300.00	1,295.87	1,218.27	1,217.87	4.62	36.50	-102.35	1,535.93	-10,022.10	10,155.10	10,113.98	41.12	246.950	
1,400.00	1,395.14	1,325.24	1,324.78	5.00	39.71	-102.41	1,537.91	-10,022.10	10,157.98	10,113.28	44.71	227.222	
1,500.00	1,494.42	1,435.66	1,435.18	5.38	43.02	-102.49	1,536.91	-10,022.10	10,160.46	10,112.07	48.39	209.959	
1,600.00	1,593.69	1,516.40	1,515.69	5.76	45.44	-102.55	1,535.93	-10,022.10	10,162.93	10,111.74	51.19	198.528	
1,700.00	1,692.96	1,615.68	1,614.96	6.14	48.41	-102.62	1,535.93	-10,022.10	10,165.57	10,111.02	54.55	186.366	
1,800.00	1,792.24	1,714.95	1,714.24	6.52	51.39	-102.68	1,535.93	-10,022.10	10,168.22	10,110.32	57.90	175.612	
1,900.00	1,891.51	1,821.23	1,820.47	6.91	54.57	-102.74	1,537.93	-10,022.10	10,171.16	10,109.70	61.47	165.472	
2,000.00	1,990.79	1,931.17	1,930.39	7.29	57.87	-102.82	1,536.96	-10,022.10	10,173.72	10,108.58	65.14	156.173	
2,100.00	2,090.06	2,013.08	2,012.06	7.67	60.32	-102.88	1,535.93	-10,022.10	10,176.26	10,108.28	67.98	149.695	
2,200.00	2,189.34	2,112.35	2,111.34	8.06	63.30	-102.94	1,535.93	-10,022.10	10,178.96	10,107.62	71.34	142.689	
2,300.00	2,288.61	2,211.63	2,210.61	8.44	66.27	-103.01	1,535.93	-10,022.10	10,181.68	10,106.99	74.69	136.312	
2,400.00	2,387.89	2,317.25	2,316.18	8.82	69.44	-103.07	1,537.95	-10,022.10	10,184.68	10,106.44	78.24	130.170	
2,500.00	2,487.16	2,426.72	2,425.63	9.21	72.72	-103.15	1,537.02	-10,022.10	10,187.31	10,105.41	81.90	124.380	
2,600.00	2,586.44	2,509.76	2,508.44	9.59	75.20	-103.21	1,535.93	-10,022.10	10,189.92	10,105.14	84.78	120.199	
2,700.00	2,685.71	2,609.03	2,607.71	9.98	78.18	-103.27	1,535.93	-10,022.10	10,192.69	10,104.56	88.13	115.651	
2,800.00	2,784.99	2,708.30	2,706.99	10.36	81.15	-103.34	1,535.93	-10,022.10	10,195.48	10,103.98	91.49	111.437	
2,900.00	2,884.26	2,813.31	2,811.94	10.75	84.30	-103.39	1,537.97	-10,022.10	10,198.53	10,103.51	95.02	107.330	
3,000.00	2,983.53	2,922.31	2,920.91	11.13	87.57	-103.47	1,537.07	-10,022.10	10,201.24	10,102.57	98.67	103.387	
3,100.00	3,082.81	3,006.43	3,004.81	11.52	90.09	-103.53	1,535.93	-10,022.10	10,203.91	10,102.34	101.57	100.458	
3,200.00	3,182.08	3,105.71	3,104.08	11.90	93.06	-103.60	1,535.93	-10,022.10	10,206.75	10,101.82	104.93	97.270	
3,300.00	3,281.36	3,204.98	3,203.36	12.29	96.04	-103.66	1,535.93	-10,022.10	10,209.61	10,101.31	108.29	94.280	
3,400.00	3,380.63	3,309.40	3,307.72	12.67	99.16	-103.72	1,537.99	-10,022.10	10,212.72	10,100.92	111.80	91.346	
3,500.00	3,479.91	3,417.93	3,416.24	13.06	102.42	-103.80	1,537.12	-10,022.10	10,215.50	10,100.06	115.44	88.493	
3,600.00	3,579.18	3,503.11	3,501.18	13.44	104.97	-103.86	1,535.93	-10,022.10	10,218.24	10,099.87	118.37	86.321	
3,700.00	3,678.46	3,602.39	3,600.46	13.83	107.94	-103.92	1,535.93	-10,022.10	10,221.15	10,099.42	121.73	83.963	
3,800.00	3,777.73	3,701.66	3,699.73	14.21	110.92	-103.99	1,535.93	-10,022.10	10,224.07	10,098.98	125.09	81.733	
3,900.00	3,877.01	3,805.52	3,803.54	14.60	114.03	-104.04	1,538.00	-10,022.10	10,227.24	10,098.65	128.59	79.535	
4,000.00	3,976.28	3,913.60	3,911.59	14.98	117.27	-104.12	1,537.17	-10,022.10	10,230.10	10,097.89	132.21	77.378	
4,100.00	4,075.55	4,021.51	4,019.47	15.37	120.50	-104.20	1,535.54	-10,022.10	10,232.89	10,097.06	135.83	75.337	
4,200.00	4,174.83	4,099.06	4,096.83	15.75	122.83	-104.25	1,535.93	-10,022.10	10,235.88	10,097.35	138.53	73.887	
4,300.00	4,274.10	4,198.34	4,196.10	16.14	125.80	-104.31	1,535.93	-10,022.10	10,238.87	10,096.97	141.89	72.159	
4,400.00	4,373.38	4,301.68	4,299.40	16.53	128.90	-104.37	1,538.02	-10,022.10	10,242.09	10,096.72	145.37	70.454	
4,500.00	4,472.65	4,409.29	4,406.99	16.91	132.12	-104.44	1,537.22	-10,022.10	10,245.03	10,096.04	148.98	68.767	
4,600.00	4,571.93	4,516.76	4,514.41	17.30	135.34	-104.52	1,535.62	-10,022.10	10,247.89	10,095.31	152.59	67.161	
4,700.00	4,671.20	4,595.74	4,593.20	17.68	137.71	-104.57	1,535.93	-10,022.10	10,250.94	10,095.61	155.34	65.992	
4,800.00	4,770.48	4,695.02	4,692.48	18.07	140.68	-104.64	1,535.93	-10,022.10	10,254.00	10,095.30	158.69	64.615	
4,900.00	4,869.75	4,797.87	4,795.28	18.45	143.77	-104.69	1,538.03	-10,022.10	10,257.28	10,095.12	162.16	63.254	
5,000.00	4,969.03	4,905.03	4,902.42	18.84	146.98	-104.76	1,537.27	-10,022.10	10,260.28	10,094.53	165.76	61.900	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,012.04	5,009.40	19.23	150.18	-104.84	1,535.71	-10,022.10	10,263.23	10,093.88	169.35	60.605	
5,200.00	5,167.58	5,092.42	5,089.58	19.61	152.59	-104.89	1,535.93	-10,022.10	10,266.34	10,094.20	172.14	59.640	
5,300.00	5,266.85	5,191.69	5,188.85	20.00	155.57	-104.96	1,535.93	-10,022.10	10,269.45	10,093.96	175.50	58.517	
5,400.00	5,366.12	5,294.09	5,291.20	20.38	158.63	-105.01	1,538.04	-10,022.10	10,272.79	10,093.84	178.95	57.406	
5,500.00	5,465.40	5,400.80	5,397.89	20.77	161.83	-105.09	1,537.32	-10,022.10	10,275.87	10,093.34	182.53	56.297	
5,600.00	5,564.67	5,507.36	5,504.42	21.15	165.03	-105.16	1,535.80	-10,022.10	10,278.89	10,092.78	186.11	55.231	
5,700.00	5,663.95	5,589.10	5,585.95	21.54	167.47	-105.22	1,535.93	-10,022.10	10,282.06	10,093.12	188.94	54.420	
5,800.00	5,763.22	5,688.37	5,685.22	21.93	170.45	-105.28	1,535.93	-10,022.10	10,285.24	10,092.94	192.30	53.486	
5,900.00	5,862.50	5,790.34	5,787.15	22.31	173.50	-105.33	1,538.05	-10,022.10	10,288.63	10,092.89	195.74	52.563	
6,000.00	5,961.77	5,896.61	5,893.39	22.70	176.69	-105.41	1,537.36	-10,022.10	10,291.78	10,092.47	199.31	51.638	
6,100.00	6,061.05	6,002.73	5,999.48	23.08	179.87	-105.48	1,535.88	-10,022.10	10,294.88	10,092.01	202.87	50.746 ES	
6,200.00	6,160.32	6,085.77	6,082.32	23.47	182.36	-105.54	1,535.93	-10,022.10	10,298.10	10,092.36	205.74	50.054	
6,300.00	6,259.60	6,185.05	6,181.60	23.86	185.33	-105.60	1,535.93	-10,022.10	10,301.35	10,092.25	209.10	49.265	
6,376.00	6,335.04	6,261.21	6,257.72	24.15	187.61	-105.64	1,538.11	-10,022.10	10,304.02	10,092.34	211.67	48.679	
6,400.00	6,358.85	6,286.60	6,283.11	24.24	188.38	-120.39	1,538.06	-10,022.10	10,305.25	10,092.72	212.53	48.489	
6,450.00	6,408.16	6,339.19	6,335.68	24.44	189.95	-139.56	1,537.83	-10,022.10	10,310.69	10,096.39	214.30	48.114	
6,500.00	6,456.87	6,391.09	6,387.57	24.64	191.51	-149.47	1,537.41	-10,022.10	10,319.99	10,103.94	216.04	47.768	
6,550.00	6,504.65	6,441.98	6,438.44	24.85	193.03	-155.12	1,536.82	-10,022.10	10,333.08	10,115.32	217.76	47.452	
6,600.00	6,551.23	6,491.54	6,487.99	25.06	194.52	-158.66	1,536.07	-10,022.10	10,349.91	10,130.47	219.43	47.166	
6,650.00	6,596.31	6,522.07	6,518.31	25.26	195.43	-160.98	1,535.93	-10,022.10	10,370.40	10,149.87	220.53	47.025	
6,700.00	6,639.62	6,565.37	6,561.62	25.48	196.73	-162.57	1,535.93	-10,022.10	10,394.41	10,172.41	222.00	46.821	
6,750.00	6,680.88	6,606.64	6,602.88	25.69	197.96	-163.66	1,535.93	-10,022.10	10,421.79	10,198.38	223.41	46.649	
6,800.00	6,719.85	6,645.60	6,641.85	25.91	199.13	-164.38	1,535.93	-10,022.10	10,452.35	10,227.62	224.73	46.510	
6,850.00	6,756.28	6,682.03	6,678.28	26.13	200.22	-164.80	1,535.93	-10,022.10	10,485.91	10,259.94	225.97	46.404	
6,900.00	6,789.95	6,715.70	6,711.95	26.37	201.23	-164.96	1,535.93	-10,022.10	10,522.26	10,295.14	227.12	46.330	
6,950.00	6,820.65	6,746.41	6,742.65	26.61	202.15	-164.84	1,535.93	-10,022.10	10,561.18	10,333.02	228.16	46.288	
7,000.00	6,848.19	6,775.46	6,771.66	26.87	203.02	-164.42	1,538.09	-10,022.10	10,602.60	10,373.46	229.14	46.271 SF	
7,050.00	6,872.41	6,801.18	6,797.38	27.13	203.79	-163.65	1,538.02	-10,022.10	10,645.91	10,415.90	230.01	46.284	
7,100.00	6,893.15	6,823.21	6,819.40	27.41	204.45	-162.36	1,537.92	-10,022.10	10,691.03	10,460.27	230.76	46.331	
7,150.00	6,910.28	6,841.40	6,837.59	27.71	205.00	-160.25	1,537.82	-10,022.10	10,737.67	10,506.30	231.37	46.409	
7,200.00	6,923.70	6,855.65	6,851.83	28.02	205.43	-156.65	1,537.72	-10,022.10	10,785.55	10,553.69	231.86	46.518	
7,250.00	6,933.33	6,865.87	6,862.05	28.34	205.73	-149.79	1,537.64	-10,022.10	10,834.38	10,602.17	232.21	46.658	
7,300.00	6,939.11	6,872.00	6,868.19	28.67	205.92	-133.80	1,537.59	-10,022.10	10,883.84	10,651.41	232.43	46.826	
7,349.12	6,941.00	6,874.01	6,870.19	29.00	205.98	-90.65	1,537.57	-10,022.10	10,932.77	10,700.26	232.52	47.019	
7,400.00	6,941.01	6,874.02	6,870.20	29.36	205.98	-90.65	1,537.57	-10,022.10	10,983.52	10,750.98	232.54	47.233	
7,500.00	6,941.02	6,874.04	6,870.22	30.11	205.98	-90.65	1,537.57	-10,022.10	11,083.27	10,850.69	232.58	47.653	
7,600.00	6,941.04	6,874.06	6,870.24	30.93	205.98	-90.65	1,537.57	-10,022.10	11,183.03	10,950.40	232.63	48.073	
7,700.00	6,941.05	6,874.08	6,870.26	31.80	205.98	-90.65	1,537.57	-10,022.10	11,282.78	11,050.11	232.67	48.492	
7,800.00	6,941.07	6,874.10	6,870.28	32.73	205.98	-90.65	1,537.57	-10,022.10	11,382.55	11,149.83	232.72	48.911	
7,900.00	6,941.08	6,874.12	6,870.30	33.71	205.98	-90.65	1,537.57	-10,022.10	11,482.31	11,249.55	232.76	49.330	
8,000.00	6,941.10	6,874.14	6,870.32	34.73	205.98	-90.66	1,537.57	-10,022.10	11,582.08	11,349.27	232.81	49.749	
8,100.00	6,941.11	6,874.16	6,870.34	35.79	205.98	-90.66	1,537.57	-10,022.10	11,681.86	11,449.00	232.86	50.167	
8,200.00	6,941.13	6,874.18	6,870.36	36.90	205.98	-90.66	1,537.57	-10,022.10	11,781.64	11,548.73	232.91	50.585	
8,300.00	6,941.14	6,874.20	6,870.38	38.03	205.98	-90.66	1,537.57	-10,022.10	11,881.42	11,648.46	232.95	51.003	
8,400.00	6,941.16	6,874.22	6,870.40	39.20	205.98	-90.66	1,537.57	-10,022.10	11,981.20	11,748.20	233.00	51.421	
8,500.00	6,941.17	6,874.24	6,870.42	40.40	205.98	-90.66	1,537.57	-10,022.10	12,080.99	11,847.94	233.05	51.838	
8,600.00	6,941.19	6,874.26	6,870.44	41.63	205.98	-90.66	1,537.57	-10,022.10	12,180.79	11,947.68	233.10	52.255	
8,700.00	6,941.20	6,874.28	6,870.46	42.88	205.98	-90.67	1,537.57	-10,022.10	12,280.58	12,047.43	233.15	52.671	
8,800.00	6,941.22	6,874.30	6,870.48	44.16	205.98	-90.67	1,537.57	-10,022.10	12,380.38	12,147.18	233.21	53.088	
8,900.00	6,941.23	6,874.31	6,870.50	45.45	205.99	-90.67	1,537.57	-10,022.10	12,480.18	12,246.93	233.26	53.504	
9,000.00	6,941.24	6,874.33	6,870.52	46.76	205.99	-90.67	1,537.57	-10,022.10	12,579.99	12,346.68	233.31	53.919	
9,100.00	6,941.26	6,874.35	6,870.54	48.10	205.99	-90.67	1,537.57	-10,022.10	12,679.80	12,446.43	233.36	54.335	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,874.37	6,870.56	49.44	205.99	-90.67	1,537.57	-10,022.10	12,779.61	12,546.19	233.42	54.750	
9,300.00	6,941.29	6,874.39	6,870.57	50.80	205.99	-90.67	1,537.57	-10,022.10	12,879.42	12,645.95	233.47	55.165	
9,400.00	6,941.30	6,874.41	6,870.59	52.18	205.99	-90.68	1,537.57	-10,022.10	12,979.24	12,745.72	233.53	55.579	
9,500.00	6,941.32	6,874.43	6,870.61	53.57	205.99	-90.68	1,537.57	-10,022.10	13,079.06	12,845.48	233.58	55.994	
9,600.00	6,941.33	6,874.45	6,870.63	54.97	205.99	-90.68	1,537.57	-10,022.10	13,178.89	12,945.25	233.64	56.407	
9,700.00	6,941.35	6,874.47	6,870.65	56.38	205.99	-90.68	1,537.57	-10,022.10	13,278.71	13,045.02	233.69	56.821	
9,800.00	6,941.36	6,874.49	6,870.67	57.80	205.99	-90.68	1,537.57	-10,022.10	13,378.54	13,144.79	233.75	57.234	
9,900.00	6,941.38	6,874.51	6,870.69	59.23	205.99	-90.68	1,537.57	-10,022.10	13,478.37	13,244.56	233.81	57.647	
10,000.00	6,941.39	6,874.53	6,870.71	60.67	205.99	-90.68	1,537.57	-10,022.10	13,578.20	13,344.34	233.87	58.060	
10,100.00	6,941.41	6,874.55	6,870.73	62.11	205.99	-90.69	1,537.57	-10,022.10	13,678.04	13,444.11	233.92	58.472	
10,200.00	6,941.42	6,874.57	6,870.75	63.57	205.99	-90.69	1,537.57	-10,022.10	13,777.88	13,543.89	233.98	58.884	
10,300.00	6,941.44	6,874.59	6,870.77	65.03	205.99	-90.69	1,537.57	-10,022.10	13,877.72	13,643.68	234.04	59.296	
10,400.00	6,941.45	6,874.61	6,870.79	66.50	205.99	-90.69	1,537.57	-10,022.10	13,977.56	13,743.46	234.10	59.707	
10,500.00	6,941.47	6,874.63	6,870.81	67.97	205.99	-90.69	1,537.57	-10,022.10	14,077.40	13,843.24	234.16	60.118	
10,600.00	6,941.48	6,874.65	6,870.83	69.45	206.00	-90.69	1,537.57	-10,022.10	14,177.25	13,943.03	234.22	60.529	
10,700.00	6,941.50	6,874.67	6,870.85	70.94	206.00	-90.69	1,537.57	-10,022.10	14,277.10	14,042.82	234.28	60.939	
10,800.00	6,941.51	6,874.69	6,870.87	72.43	206.00	-90.70	1,537.57	-10,022.10	14,376.95	14,142.61	234.35	61.349	
10,900.00	6,941.53	6,874.71	6,870.89	73.92	206.00	-90.70	1,537.57	-10,022.10	14,476.81	14,242.40	234.41	61.759	
11,000.00	6,941.54	6,874.73	6,870.91	75.42	206.00	-90.70	1,537.57	-10,022.10	14,576.66	14,342.19	234.47	62.168	
11,100.00	6,941.56	6,874.75	6,870.93	76.92	206.00	-90.70	1,537.57	-10,022.10	14,676.52	14,441.98	234.54	62.577	
11,200.00	6,941.57	6,874.77	6,870.95	78.43	206.00	-90.70	1,537.57	-10,022.10	14,776.38	14,541.78	234.60	62.986	
11,300.00	6,941.59	6,874.79	6,870.97	79.94	206.00	-90.70	1,537.57	-10,022.10	14,876.24	14,641.58	234.66	63.394	
11,400.00	6,941.60	6,874.81	6,870.99	81.46	206.00	-90.70	1,537.57	-10,022.10	14,976.10	14,741.37	234.73	63.802	
11,500.00	6,941.61	6,874.82	6,871.01	82.98	206.00	-90.71	1,537.57	-10,022.10	15,075.97	14,841.17	234.79	64.209	
11,600.00	6,941.63	6,874.84	6,871.03	84.50	206.00	-90.71	1,537.57	-10,022.10	15,175.83	14,940.97	234.86	64.617	
11,700.00	6,941.64	6,874.86	6,871.05	86.02	206.00	-90.71	1,537.57	-10,022.10	15,275.70	15,040.78	234.93	65.023	
11,800.00	6,941.66	6,874.88	6,871.07	87.55	206.00	-90.71	1,537.56	-10,022.10	15,375.57	15,140.58	234.99	65.430	
11,900.00	6,941.67	6,874.90	6,871.09	89.08	206.00	-90.71	1,537.56	-10,022.10	15,475.44	15,240.38	235.06	65.836	
12,000.00	6,941.69	6,874.92	6,871.10	90.61	206.00	-90.71	1,537.56	-10,022.10	15,575.32	15,340.19	235.13	66.242	
12,100.00	6,941.70	6,874.94	6,871.12	92.14	206.00	-90.71	1,537.56	-10,022.10	15,675.19	15,440.00	235.20	66.647	
12,200.00	6,941.72	6,874.96	6,871.14	93.68	206.00	-90.72	1,537.56	-10,022.10	15,775.07	15,539.80	235.27	67.052	
12,300.00	6,941.73	6,874.98	6,871.16	95.22	206.01	-90.72	1,537.56	-10,022.10	15,874.95	15,639.61	235.33	67.457	
12,400.00	6,941.75	6,875.00	6,871.18	96.76	206.01	-90.72	1,537.56	-10,022.10	15,974.83	15,739.42	235.40	67.861	
12,500.00	6,941.76	6,875.02	6,871.20	98.30	206.01	-90.72	1,537.56	-10,022.10	16,074.71	15,839.23	235.47	68.265	
12,600.00	6,941.78	6,875.04	6,871.22	99.85	206.01	-90.72	1,537.56	-10,022.10	16,174.59	15,939.05	235.55	68.669	
12,700.00	6,941.79	6,875.06	6,871.24	101.40	206.01	-90.72	1,537.56	-10,022.10	16,274.48	16,038.86	235.62	69.072	
12,800.00	6,941.81	6,875.08	6,871.26	102.95	206.01	-90.72	1,537.56	-10,022.10	16,374.36	16,138.67	235.69	69.475	
12,900.00	6,941.82	6,875.10	6,871.28	104.50	206.01	-90.73	1,537.56	-10,022.10	16,474.25	16,238.49	235.76	69.877	
13,000.00	6,941.84	6,875.12	6,871.30	106.05	206.01	-90.73	1,537.56	-10,022.10	16,574.14	16,338.30	235.83	70.279	
13,100.00	6,941.85	6,875.14	6,871.32	107.60	206.01	-90.73	1,537.56	-10,022.10	16,674.03	16,438.12	235.91	70.681	
13,200.00	6,941.87	6,875.16	6,871.34	109.16	206.01	-90.73	1,537.56	-10,022.10	16,773.92	16,537.94	235.98	71.082	
13,300.00	6,941.88	6,875.18	6,871.36	110.71	206.01	-90.73	1,537.56	-10,022.10	16,873.81	16,637.76	236.05	71.483	
13,400.00	6,941.90	6,875.20	6,871.38	112.27	206.01	-90.73	1,537.56	-10,022.10	16,973.70	16,737.58	236.13	71.884	
13,500.00	6,941.91	6,875.22	6,871.40	113.83	206.01	-90.73	1,537.56	-10,022.10	17,073.60	16,837.39	236.20	72.284	
13,600.00	6,941.93	6,875.24	6,871.42	115.39	206.01	-90.74	1,537.56	-10,022.10	17,173.49	16,937.22	236.28	72.683	
13,700.00	6,941.94	6,875.26	6,871.44	116.95	206.01	-90.74	1,537.56	-10,022.10	17,273.39	17,037.04	236.35	73.083	
13,800.00	6,941.96	6,875.28	6,871.46	118.51	206.01	-90.74	1,537.56	-10,022.10	17,373.29	17,136.86	236.43	73.482	
13,900.00	6,941.97	6,875.30	6,871.48	120.08	206.01	-90.74	1,537.56	-10,022.10	17,473.19	17,236.68	236.51	73.880	
14,000.00	6,941.99	6,875.32	6,871.50	121.64	206.02	-90.74	1,537.56	-10,022.10	17,573.09	17,336.51	236.58	74.279	
14,100.00	6,942.00	6,875.34	6,871.52	123.21	206.02	-90.74	1,537.56	-10,022.10	17,672.99	17,436.33	236.66	74.676	
14,200.00	6,942.01	6,875.36	6,871.54	124.77	206.02	-90.74	1,537.56	-10,022.10	17,772.89	17,536.15	236.74	75.074	
14,300.00	6,942.03	6,875.38	6,871.56	126.34	206.02	-90.75	1,537.56	-10,022.10	17,872.80	17,635.98	236.82	75.471	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	6,875.40	6,871.58	127.91	206.02	-90.75	1,537.56	-10,022.10	17,972.70	17,735.81	236.90	75.867	
14,500.00	6,942.06	6,875.41	6,871.60	129.48	206.02	-90.75	1,537.56	-10,022.10	18,072.61	17,835.63	236.98	76.264	
14,600.00	6,942.07	6,875.43	6,871.62	131.05	206.02	-90.75	1,537.56	-10,022.10	18,172.52	17,935.46	237.06	76.659	
14,700.00	6,942.09	6,875.45	6,871.64	132.62	206.02	-90.75	1,537.56	-10,022.10	18,272.42	18,035.29	237.14	77.055	
14,800.00	6,942.10	6,875.47	6,871.66	134.19	206.02	-90.75	1,537.56	-10,022.10	18,372.33	18,135.12	237.22	77.450	
14,900.00	6,942.12	6,875.49	6,871.67	135.76	206.02	-90.76	1,537.56	-10,022.10	18,472.24	18,234.95	237.30	77.844	
15,000.00	6,942.13	6,875.51	6,871.69	137.34	206.02	-90.76	1,537.56	-10,022.10	18,572.15	18,334.78	237.38	78.239	
15,100.00	6,942.15	6,875.53	6,871.71	138.91	206.02	-90.76	1,537.56	-10,022.10	18,672.07	18,434.61	237.46	78.632	
15,200.00	6,942.16	6,875.55	6,871.73	140.48	206.02	-90.76	1,537.56	-10,022.10	18,771.98	18,534.44	237.54	79.026	
15,300.00	6,942.18	6,875.57	6,871.75	142.06	206.02	-90.76	1,537.56	-10,022.10	18,871.89	18,634.27	237.63	79.419	
15,400.00	6,942.19	6,875.59	6,871.77	143.64	206.02	-90.76	1,537.56	-10,022.10	18,971.81	18,734.10	237.71	79.811	
15,500.00	6,942.21	6,875.61	6,871.79	145.21	206.02	-90.76	1,537.56	-10,022.10	19,071.72	18,833.93	237.79	80.203	
15,600.00	6,942.22	6,875.63	6,871.81	146.79	206.03	-90.77	1,537.56	-10,022.10	19,171.64	18,933.76	237.88	80.595	
15,700.00	6,942.24	6,875.65	6,871.83	148.37	206.03	-90.77	1,537.56	-10,022.10	19,271.56	19,033.60	237.96	80.986	
15,800.00	6,942.25	6,875.67	6,871.85	149.94	206.03	-90.77	1,537.56	-10,022.10	19,371.48	19,133.43	238.05	81.377	
15,900.00	6,942.27	6,875.69	6,871.87	151.52	206.03	-90.77	1,537.56	-10,022.10	19,471.40	19,233.27	238.13	81.768	
16,000.00	6,942.28	6,875.71	6,871.89	153.10	206.03	-90.77	1,537.56	-10,022.10	19,571.32	19,333.10	238.22	82.158	
16,100.00	6,942.30	6,875.73	6,871.91	154.68	206.03	-90.77	1,537.56	-10,022.10	19,671.24	19,432.93	238.30	82.547	
16,200.00	6,942.31	6,875.75	6,871.93	156.26	206.03	-90.77	1,537.56	-10,022.10	19,771.16	19,532.77	238.39	82.937	
16,300.00	6,942.33	6,875.77	6,871.95	157.84	206.03	-90.78	1,537.56	-10,022.10	19,871.08	19,632.60	238.48	83.325	
16,400.00	6,942.34	6,875.79	6,871.97	159.42	206.03	-90.78	1,537.56	-10,022.10	19,971.00	19,732.44	238.56	83.714	
16,500.00	6,942.36	6,875.81	6,871.99	161.00	206.03	-90.78	1,537.56	-10,022.10	20,070.93	19,832.28	238.65	84.102	
16,600.00	6,942.37	6,875.83	6,872.01	162.59	206.03	-90.78	1,537.56	-10,022.10	20,170.85	19,932.11	238.74	84.489	
16,700.00	6,942.38	6,875.85	6,872.03	164.17	206.03	-90.78	1,537.56	-10,022.10	20,270.78	20,031.95	238.83	84.877	
16,800.00	6,942.40	6,875.87	6,872.05	165.75	206.03	-90.78	1,537.56	-10,022.10	20,370.70	20,131.79	238.92	85.263	
16,900.00	6,942.41	6,875.89	6,872.07	167.33	206.03	-90.78	1,537.56	-10,022.10	20,470.63	20,231.63	239.00	85.649	
17,000.00	6,942.43	6,875.91	6,872.09	168.92	206.03	-90.79	1,537.56	-10,022.10	20,570.56	20,331.46	239.09	86.035	
17,100.00	6,942.44	6,875.93	6,872.11	170.50	206.03	-90.79	1,537.56	-10,022.10	20,670.49	20,431.30	239.18	86.421	
17,200.00	6,942.46	6,875.95	6,872.13	172.09	206.03	-90.79	1,537.56	-10,022.10	20,770.42	20,531.14	239.27	86.806	
17,300.00	6,942.47	6,875.97	6,872.15	173.67	206.04	-90.79	1,537.56	-10,022.10	20,870.35	20,630.98	239.37	87.190	
17,400.00	6,942.49	6,875.99	6,872.17	175.26	206.04	-90.79	1,537.56	-10,022.10	20,970.28	20,730.82	239.46	87.575	
17,500.00	6,942.50	6,876.01	6,872.19	176.84	206.04	-90.79	1,537.56	-10,022.10	21,070.21	20,830.66	239.55	87.958	
17,600.00	6,942.52	6,876.03	6,872.21	178.43	206.04	-90.79	1,537.55	-10,022.10	21,170.14	20,930.50	239.64	88.342	
17,700.00	6,942.53	6,876.05	6,872.23	180.01	206.04	-90.80	1,537.55	-10,022.10	21,270.07	21,030.34	239.73	88.724	
17,800.00	6,942.55	6,876.06	6,872.25	181.60	206.04	-90.80	1,537.55	-10,022.10	21,370.00	21,130.18	239.82	89.107	
17,900.00	6,942.56	6,876.08	6,872.27	183.19	206.04	-90.80	1,537.55	-10,022.10	21,469.94	21,230.02	239.92	89.489	
18,000.00	6,942.58	6,876.10	6,872.29	184.77	206.04	-90.80	1,537.55	-10,022.10	21,569.87	21,329.86	240.01	89.870	
18,100.00	6,942.59	6,876.12	6,872.31	186.36	206.04	-90.80	1,537.55	-10,022.10	21,669.81	21,429.70	240.10	90.252	
18,200.00	6,942.61	6,876.14	6,872.32	187.95	206.04	-90.80	1,537.55	-10,022.10	21,769.74	21,529.54	240.20	90.632	
18,300.00	6,942.62	6,876.16	6,872.34	189.54	206.04	-90.80	1,537.55	-10,022.10	21,869.68	21,629.38	240.29	91.013	
18,400.00	6,942.64	6,876.18	6,872.36	191.12	206.04	-90.81	1,537.55	-10,022.10	21,969.61	21,729.23	240.39	91.393	
18,500.00	6,942.65	6,876.20	6,872.38	192.71	206.04	-90.81	1,537.55	-10,022.10	22,069.55	21,829.07	240.48	91.772	
18,600.00	6,942.67	6,876.22	6,872.40	194.30	206.04	-90.81	1,537.55	-10,022.10	22,169.49	21,928.91	240.58	92.151	
18,700.00	6,942.68	6,876.24	6,872.42	195.89	206.04	-90.81	1,537.55	-10,022.10	22,269.43	22,028.75	240.67	92.530	
18,800.00	6,942.70	6,876.26	6,872.44	197.48	206.04	-90.81	1,537.55	-10,022.10	22,369.37	22,128.60	240.77	92.908	
18,900.00	6,942.71	6,876.28	6,872.46	199.07	206.04	-90.81	1,537.55	-10,022.10	22,469.30	22,228.44	240.87	93.285	
19,000.00	6,942.73	6,876.30	6,872.48	200.66	206.05	-90.81	1,537.55	-10,022.10	22,569.24	22,328.28	240.96	93.663	
19,100.00	6,942.74	6,876.32	6,872.50	202.25	206.05	-90.82	1,537.55	-10,022.10	22,669.18	22,428.12	241.06	94.039	
19,200.00	6,942.76	6,876.34	6,872.52	203.84	206.05	-90.82	1,537.55	-10,022.10	22,769.13	22,527.97	241.16	94.416	
19,300.00	6,942.77	6,876.36	6,872.54	205.43	206.05	-90.82	1,537.55	-10,022.10	22,869.07	22,627.81	241.26	94.792	
19,400.00	6,942.78	6,876.38	6,872.56	207.02	206.05	-90.82	1,537.55	-10,022.10	22,969.01	22,727.66	241.35	95.167	
19,500.00	6,942.80	6,876.40	6,872.58	208.61	206.05	-90.82	1,537.55	-10,022.10	23,068.95	22,827.50	241.45	95.542	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,600.00	6,942.81	6,876.42	6,872.60	210.20	206.05	-90.82	1,537.55	-10,022.10	23,168.89	22,927.34	241.55	95.917	
19,700.00	6,942.83	6,876.44	6,872.62	211.79	206.05	-90.82	1,537.55	-10,022.10	23,268.84	23,027.19	241.65	96.291	
19,800.00	6,942.84	6,876.46	6,872.64	213.38	206.05	-90.83	1,537.55	-10,022.10	23,368.78	23,127.03	241.75	96.665	
19,900.00	6,942.86	6,876.48	6,872.66	214.97	206.05	-90.83	1,537.55	-10,022.10	23,468.73	23,226.88	241.85	97.038	
20,000.00	6,942.87	6,876.50	6,872.68	216.56	206.05	-90.83	1,537.55	-10,022.10	23,568.67	23,326.72	241.95	97.411	
20,100.00	6,942.89	6,876.52	6,872.70	218.15	206.05	-90.83	1,537.55	-10,022.10	23,668.62	23,426.57	242.05	97.784	
20,200.00	6,942.90	6,876.54	6,872.72	219.75	206.05	-90.83	1,537.55	-10,022.10	23,768.56	23,526.41	242.15	98.156	
20,300.00	6,942.92	6,876.56	6,872.74	221.34	206.05	-90.83	1,537.55	-10,022.10	23,868.51	23,626.26	242.25	98.528	
20,400.00	6,942.93	6,876.58	6,872.76	222.93	206.05	-90.83	1,537.55	-10,022.10	23,968.46	23,726.10	242.35	98.899	
20,500.00	6,942.95	6,876.60	6,872.78	224.52	206.05	-90.84	1,537.55	-10,022.10	24,068.40	23,825.95	242.46	99.269	
20,600.00	6,942.96	6,876.62	6,872.80	226.12	206.05	-90.84	1,537.55	-10,022.10	24,168.35	23,925.79	242.56	99.640	
20,700.00	6,942.98	6,876.64	6,872.82	227.71	206.06	-90.84	1,537.55	-10,022.10	24,268.30	24,025.64	242.66	100.010	
20,800.00	6,942.99	6,876.66	6,872.84	229.30	206.06	-90.84	1,537.55	-10,022.10	24,368.25	24,125.48	242.76	100.379	
20,855.77	6,943.00	6,876.67	6,872.85	230.19	206.06	-90.84	1,537.55	-10,022.10	24,423.99	24,181.17	242.82	100.585	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 — **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	61.00	61.00	0.00	1.83	-100.31	-2,165.67	-11,906.32	12,101.68				
100.00	100.00	161.00	161.00	0.25	4.82	-100.31	-2,165.67	-11,906.32	12,101.68	12,096.61	5.08	2,384.401	
200.00	200.00	261.00	261.00	0.61	7.82	-100.31	-2,165.67	-11,906.32	12,101.68	12,093.25	8.43	1,435.509	
300.00	300.00	361.00	361.00	0.97	10.82	-100.31	-2,165.67	-11,906.32	12,101.68	12,089.90	11.79	1,026.861	
400.00	400.00	461.00	461.00	1.33	13.81	-100.31	-2,165.67	-11,906.32	12,101.68	12,086.54	15.14	799.318	
500.00	500.00	561.10	561.00	1.68	16.81	-100.31	-2,165.67	-11,906.32	12,101.68	12,083.18	18.50	654.217	CC
600.00	599.98	661.08	660.98	2.04	19.81	-121.04	-2,165.67	-11,906.32	12,102.58	12,080.73	21.85	553.859	
700.00	699.84	759.48	759.34	2.40	22.76	-121.00	-2,163.49	-11,906.32	12,104.89	12,079.73	25.16	481.160	ES
800.00	799.45	845.96	845.81	2.77	25.35	-120.96	-2,163.81	-11,906.32	12,109.46	12,081.35	28.11	430.798	
845.27	844.44	884.99	884.82	2.93	26.52	-120.93	-2,164.12	-11,906.32	12,112.15	12,082.71	29.44	411.368	
900.00	898.77	932.09	931.92	3.13	27.93	-120.95	-2,164.65	-11,906.32	12,115.66	12,084.61	31.05	390.145	
1,000.00	998.04	1,059.45	1,059.04	3.50	31.75	-121.02	-2,165.67	-11,906.32	12,122.04	12,086.80	35.24	344.019	
1,100.00	1,097.32	1,158.72	1,158.32	3.87	34.72	-121.07	-2,165.67	-11,906.32	12,128.27	12,089.69	38.58	314.365	
1,200.00	1,196.59	1,256.90	1,256.46	4.24	37.66	-121.11	-2,163.49	-11,906.32	12,134.12	12,092.22	41.89	289.644	
1,300.00	1,295.87	1,342.80	1,342.34	4.62	40.24	-121.15	-2,163.79	-11,906.32	12,140.43	12,095.59	44.84	270.753	
1,400.00	1,395.14	1,428.60	1,428.12	5.00	42.81	-121.20	-2,164.60	-11,906.32	12,146.86	12,099.08	47.78	254.203	
1,500.00	1,494.42	1,556.13	1,555.42	5.38	46.63	-121.26	-2,165.67	-11,906.32	12,153.30	12,101.32	51.98	233.806	
1,600.00	1,593.69	1,655.40	1,654.69	5.76	49.60	-121.31	-2,165.67	-11,906.32	12,159.57	12,104.24	55.33	219.763	
1,700.00	1,692.96	1,754.01	1,753.26	6.14	52.56	-121.35	-2,163.49	-11,906.32	12,165.45	12,106.79	58.66	207.385	
1,800.00	1,792.24	1,839.62	1,838.85	6.52	55.12	-121.39	-2,163.77	-11,906.32	12,171.80	12,110.20	61.60	197.586	
1,900.00	1,891.51	1,925.13	1,924.35	6.91	57.69	-121.44	-2,164.56	-11,906.32	12,178.28	12,113.74	64.54	188.690	
2,000.00	1,990.79	2,052.80	2,051.79	7.29	61.51	-121.50	-2,165.67	-11,906.32	12,184.77	12,116.02	68.74	177.247	
2,100.00	2,090.06	2,152.08	2,151.06	7.67	64.49	-121.55	-2,165.67	-11,906.32	12,191.09	12,118.99	72.10	169.093	
2,200.00	2,189.34	2,251.14	2,250.09	8.06	67.45	-121.59	-2,163.49	-11,906.32	12,197.00	12,121.56	75.44	161.672	
2,300.00	2,288.61	2,336.46	2,335.39	8.44	70.01	-121.63	-2,163.75	-11,906.32	12,203.39	12,125.02	78.38	155.701	
2,400.00	2,387.89	2,421.69	2,420.60	8.82	72.56	-121.68	-2,164.52	-11,906.32	12,209.91	12,128.60	81.31	150.168	
2,500.00	2,487.16	2,549.48	2,548.16	9.21	76.39	-121.74	-2,165.67	-11,906.32	12,216.46	12,130.94	85.52	142.854	
2,600.00	2,586.44	2,648.76	2,647.44	9.59	79.37	-121.79	-2,165.67	-11,906.32	12,222.82	12,133.95	88.87	137.536	
2,700.00	2,685.71	2,748.03	2,746.71	9.98	82.34	-121.84	-2,165.67	-11,906.32	12,229.19	12,136.97	92.22	132.605	
2,800.00	2,784.99	2,833.32	2,831.95	10.36	84.90	-121.87	-2,163.73	-11,906.32	12,235.20	12,140.04	95.16	128.579	
2,900.00	2,884.26	2,918.26	2,916.87	10.75	87.44	-121.91	-2,164.48	-11,906.32	12,241.76	12,143.68	98.08	124.814	
3,000.00	2,983.53	3,046.16	3,044.53	11.13	91.28	-121.98	-2,165.67	-11,906.32	12,248.36	12,146.06	102.29	119.739	
3,100.00	3,082.81	3,145.43	3,143.81	11.52	94.25	-122.03	-2,165.67	-11,906.32	12,254.76	12,149.12	105.65	115.999	
3,200.00	3,182.08	3,244.71	3,243.08	11.90	97.23	-122.08	-2,165.67	-11,906.32	12,261.18	12,152.18	109.00	112.489	
3,300.00	3,281.36	3,330.21	3,328.53	12.29	99.79	-122.11	-2,163.71	-11,906.32	12,267.21	12,155.27	111.94	109.588	
3,400.00	3,380.63	3,414.86	3,413.17	12.67	102.32	-122.15	-2,164.44	-11,906.32	12,273.81	12,158.96	114.85	106.864	
3,500.00	3,479.91	3,542.84	3,540.91	13.06	106.16	-122.22	-2,165.67	-11,906.32	12,280.47	12,161.40	119.07	103.137	
3,600.00	3,579.18	3,642.11	3,640.18	13.44	109.13	-122.26	-2,165.67	-11,906.32	12,286.91	12,164.49	122.42	100.365	
3,700.00	3,678.46	3,741.39	3,739.46	13.83	112.11	-122.31	-2,165.67	-11,906.32	12,293.37	12,167.59	125.78	97.740	
3,800.00	3,777.73	3,827.11	3,825.13	14.21	114.68	-122.34	-2,163.70	-11,906.32	12,299.44	12,170.71	128.72	95.549	
3,900.00	3,877.01	3,911.49	3,909.49	14.60	117.21	-122.39	-2,164.40	-11,906.32	12,306.08	12,174.45	131.63	93.490	
4,000.00	3,976.28	4,039.51	4,037.28	14.98	121.04	-122.45	-2,165.67	-11,906.32	12,312.79	12,176.94	135.85	90.637	
4,100.00	4,075.55	4,138.79	4,136.55	15.37	124.02	-122.50	-2,165.67	-11,906.32	12,319.28	12,180.08	139.20	88.500	
4,200.00	4,174.83	4,238.06	4,235.83	15.75	126.99	-122.55	-2,165.67	-11,906.32	12,325.78	12,183.22	142.55	86.464	
4,300.00	4,274.10	4,324.04	4,321.75	16.14	129.57	-122.58	-2,163.68	-11,906.32	12,331.87	12,186.36	145.51	84.750	
4,400.00	4,373.38	4,408.13	4,405.83	16.53	132.09	-122.62	-2,164.36	-11,906.32	12,338.55	12,190.15	148.41	83.140	
4,500.00	4,472.65	4,536.19	4,533.65	16.91	135.92	-122.69	-2,165.67	-11,906.32	12,345.32	12,192.69	152.62	80.887	
4,600.00	4,571.93	4,635.47	4,632.93	17.30	138.90	-122.73	-2,165.67	-11,906.32	12,351.85	12,195.87	155.98	79.190	
4,700.00	4,671.20	4,734.74	4,732.20	17.68	141.87	-122.78	-2,165.67	-11,906.32	12,358.39	12,199.06	159.33	77.564	
4,800.00	4,770.48	4,820.98	4,818.39	18.07	144.46	-122.81	-2,163.66	-11,906.32	12,364.51	12,202.22	162.29	76.186	
4,900.00	4,869.75	4,904.80	4,902.19	18.45	146.97	-122.85	-2,164.32	-11,906.32	12,371.24	12,206.05	165.18	74.894	
5,000.00	4,969.03	5,032.87	5,030.03	18.84	150.81	-122.92	-2,165.67	-11,906.32	12,378.05	12,208.65	169.40	73.069	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,132.14	5,129.30	19.23	153.78	-122.97	-2,165.67	-11,906.32	12,384.63	12,211.87	172.76	71.689	
5,200.00	5,167.58	5,231.42	5,228.58	19.61	156.76	-123.01	-2,165.67	-11,906.32	12,391.21	12,215.10	176.11	70.361	
5,300.00	5,266.85	5,317.95	5,315.05	20.00	159.35	-123.04	-2,163.65	-11,906.32	12,397.36	12,218.28	179.08	69.228	
5,400.00	5,366.12	5,401.49	5,398.58	20.38	161.85	-123.09	-2,164.29	-11,906.32	12,404.12	12,222.16	181.96	68.169	
5,500.00	5,465.40	5,529.55	5,526.40	20.77	165.69	-123.15	-2,165.67	-11,906.32	12,410.99	12,224.81	186.18	66.661	
5,600.00	5,564.67	5,628.82	5,625.67	21.15	168.66	-123.20	-2,165.67	-11,906.32	12,417.61	12,228.07	189.53	65.517	
5,700.00	5,663.95	5,728.10	5,724.95	21.54	171.64	-123.24	-2,165.67	-11,906.32	12,424.23	12,231.34	192.89	64.412	
5,800.00	5,763.22	5,814.93	5,811.74	21.93	174.24	-123.28	-2,163.63	-11,906.32	12,430.41	12,234.55	195.87	63.464	
5,900.00	5,862.50	5,898.20	5,894.99	22.31	176.74	-123.32	-2,164.26	-11,906.32	12,437.21	12,238.47	198.74	62.581	
6,000.00	5,961.77	6,026.22	6,022.77	22.70	180.57	-123.38	-2,165.67	-11,906.32	12,444.14	12,241.18	202.96	61.314	
6,100.00	6,061.05	6,125.50	6,122.05	23.08	183.55	-123.43	-2,165.67	-11,906.32	12,450.79	12,244.48	206.31	60.350	
6,200.00	6,160.32	6,224.77	6,221.32	23.47	186.52	-123.47	-2,165.67	-11,906.32	12,457.45	12,247.79	209.66	59.416	
6,300.00	6,259.60	6,311.94	6,308.44	23.86	189.13	-123.51	-2,163.62	-11,906.32	12,463.67	12,251.01	212.65	58.610	
6,376.00	6,335.04	6,375.02	6,371.51	24.15	191.02	-123.54	-2,164.03	-11,906.32	12,468.85	12,254.02	214.83	58.040	
6,400.00	6,358.85	6,394.92	6,391.40	24.24	191.62	-138.33	-2,164.22	-11,906.32	12,470.94	12,255.43	215.52	57.865	
6,450.00	6,408.16	6,436.11	6,432.58	24.44	192.86	-157.68	-2,164.70	-11,906.32	12,478.14	12,261.20	216.94	57.519	
6,500.00	6,456.87	6,521.62	6,517.87	24.64	195.42	-167.88	-2,165.67	-11,906.32	12,489.12	12,269.43	219.69	56.849	
6,550.00	6,504.65	6,569.41	6,565.65	24.85	196.85	-173.93	-2,165.67	-11,906.32	12,503.63	12,282.33	221.30	56.500	
6,600.00	6,551.23	6,615.99	6,612.23	25.06	198.24	-177.99	-2,165.67	-11,906.32	12,521.74	12,298.87	222.87	56.184	
6,650.00	6,596.31	6,661.07	6,657.31	25.26	199.60	178.99	-2,165.67	-11,906.32	12,543.34	12,318.96	224.39	55.901	
6,700.00	6,639.62	6,704.37	6,700.62	25.48	200.89	176.54	-2,165.67	-11,906.32	12,568.29	12,342.45	225.84	55.652	
6,750.00	6,680.88	6,745.64	6,741.88	25.69	202.13	174.38	-2,165.67	-11,906.32	12,596.44	12,369.23	227.22	55.438	
6,800.00	6,719.85	6,778.84	6,775.04	25.91	203.12	172.34	-2,163.52	-11,906.32	12,627.14	12,398.80	228.34	55.299	
6,850.00	6,756.28	6,809.22	6,805.42	26.13	204.04	170.26	-2,163.61	-11,906.32	12,661.18	12,431.81	229.37	55.200	
6,900.00	6,789.95	6,837.29	6,833.48	26.37	204.88	168.02	-2,163.75	-11,906.32	12,697.87	12,467.55	230.31	55.133	
6,950.00	6,820.65	6,862.88	6,859.06	26.61	205.64	165.48	-2,163.93	-11,906.32	12,736.96	12,505.79	231.17	55.099	
7,000.00	6,848.19	6,885.83	6,882.01	26.87	206.33	162.47	-2,164.13	-11,906.32	12,778.22	12,546.30	231.93	55.096	SF
7,050.00	6,872.41	6,906.00	6,902.17	27.13	206.93	158.71	-2,164.34	-11,906.32	12,821.40	12,588.81	232.59	55.125	
7,100.00	6,893.15	6,923.27	6,919.44	27.41	207.45	153.85	-2,164.54	-11,906.32	12,866.22	12,633.07	233.15	55.185	
7,150.00	6,910.28	6,937.54	6,933.70	27.71	207.88	147.30	-2,164.72	-11,906.32	12,912.40	12,678.80	233.60	55.275	
7,200.00	6,923.70	6,948.71	6,944.87	28.02	208.21	138.18	-2,164.87	-11,906.32	12,959.66	12,725.71	233.95	55.395	
7,250.00	6,933.33	6,956.73	6,952.89	28.34	208.46	125.39	-2,164.98	-11,906.32	13,007.71	12,773.52	234.19	55.543	
7,300.00	6,939.11	7,004.17	7,000.11	28.67	209.88	109.13	-2,165.67	-11,906.32	13,056.32	12,820.71	235.61	55.415	
7,349.12	6,941.00	7,006.06	7,002.00	29.00	209.93	90.04	-2,165.67	-11,906.32	13,104.19	12,868.55	235.65	55.610	
7,400.00	6,941.01	7,006.07	7,002.01	29.36	209.93	90.04	-2,165.67	-11,906.32	13,153.79	12,918.17	235.62	55.826	
7,500.00	6,941.02	7,006.08	7,002.02	30.11	209.93	90.04	-2,165.67	-11,906.32	13,251.29	13,015.72	235.58	56.250	
7,600.00	6,941.04	7,006.10	7,002.04	30.93	209.93	90.04	-2,165.67	-11,906.32	13,348.84	13,113.30	235.54	56.674	
7,700.00	6,941.05	7,006.11	7,002.05	31.80	209.93	90.04	-2,165.67	-11,906.32	13,446.41	13,210.91	235.51	57.096	
7,800.00	6,941.07	7,006.13	7,002.07	32.73	209.94	90.04	-2,165.67	-11,906.32	13,544.03	13,308.55	235.48	57.517	
7,900.00	6,941.08	7,006.14	7,002.08	33.71	209.94	90.04	-2,165.67	-11,906.32	13,641.67	13,406.22	235.46	57.937	
8,000.00	6,941.10	7,006.16	7,002.10	34.73	209.94	90.04	-2,165.67	-11,906.32	13,739.36	13,503.92	235.44	58.356	
8,100.00	6,941.11	7,006.17	7,002.11	35.79	209.94	90.04	-2,165.67	-11,906.32	13,837.07	13,601.64	235.43	58.775	
8,200.00	6,941.13	7,006.19	7,002.13	36.90	209.94	90.04	-2,165.67	-11,906.32	13,934.82	13,699.40	235.42	59.192	
8,300.00	6,941.14	7,006.20	7,002.14	38.03	209.94	90.04	-2,165.67	-11,906.32	14,032.60	13,797.18	235.42	59.608	
8,400.00	6,941.16	7,006.22	7,002.16	39.20	209.94	90.04	-2,165.67	-11,906.32	14,130.41	13,894.99	235.42	60.023	
8,500.00	6,941.17	7,006.23	7,002.17	40.40	209.94	90.04	-2,165.67	-11,906.32	14,228.25	13,992.82	235.42	60.436	
8,600.00	6,941.19	7,006.25	7,002.19	41.63	209.94	90.04	-2,165.67	-11,906.32	14,326.12	14,090.68	235.44	60.849	
8,700.00	6,941.20	7,006.26	7,002.20	42.88	209.94	90.04	-2,165.67	-11,906.32	14,424.01	14,188.56	235.45	61.261	
8,800.00	6,941.22	7,006.28	7,002.22	44.16	209.94	90.04	-2,165.67	-11,906.32	14,521.94	14,286.47	235.47	61.672	
8,900.00	6,941.23	7,006.29	7,002.23	45.45	209.94	90.04	-2,165.67	-11,906.32	14,619.90	14,384.41	235.49	62.083	
9,000.00	6,941.24	7,006.31	7,002.24	46.76	209.94	90.04	-2,165.67	-11,906.32	14,717.88	14,482.36	235.52	62.492	
9,100.00	6,941.26	7,006.32	7,002.26	48.10	209.94	90.04	-2,165.67	-11,906.32	14,815.89	14,580.34	235.55	62.900	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	7,006.34	7,002.27	49.44	209.94	90.04	-2,165.67	-11,906.32	14,913.93	14,678.35	235.58	63.307	
9,300.00	6,941.29	7,006.35	7,002.29	50.80	209.94	90.04	-2,165.67	-11,906.32	15,011.99	14,776.37	235.62	63.713	
9,400.00	6,941.30	7,006.37	7,002.30	52.18	209.94	90.04	-2,165.67	-11,906.32	15,110.08	14,874.42	235.66	64.119	
9,500.00	6,941.32	7,006.38	7,002.32	53.57	209.94	90.04	-2,165.67	-11,906.32	15,208.19	14,972.49	235.70	64.523	
9,600.00	6,941.33	7,006.39	7,002.33	54.97	209.94	90.04	-2,165.67	-11,906.32	15,306.33	15,070.58	235.75	64.927	
9,700.00	6,941.35	7,006.41	7,002.35	56.38	209.94	90.04	-2,165.67	-11,906.32	15,404.49	15,168.70	235.80	65.330	
9,800.00	6,941.36	7,006.42	7,002.36	57.80	209.94	90.04	-2,165.67	-11,906.32	15,502.68	15,266.83	235.85	65.732	
9,900.00	6,941.38	7,006.44	7,002.38	59.23	209.94	90.04	-2,165.67	-11,906.32	15,600.88	15,364.98	235.90	66.133	
10,000.00	6,941.39	7,006.45	7,002.39	60.67	209.95	90.04	-2,165.67	-11,906.32	15,699.12	15,463.15	235.96	66.533	
10,100.00	6,941.41	7,006.47	7,002.41	62.11	209.95	90.04	-2,165.67	-11,906.32	15,797.37	15,561.35	236.02	66.932	
10,200.00	6,941.42	7,006.48	7,002.42	63.57	209.95	90.05	-2,165.67	-11,906.32	15,895.64	15,659.56	236.08	67.331	
10,300.00	6,941.44	7,006.50	7,002.44	65.03	209.95	90.05	-2,165.67	-11,906.32	15,993.94	15,757.79	236.15	67.729	
10,400.00	6,941.45	7,006.51	7,002.45	66.50	209.95	90.05	-2,165.67	-11,906.32	16,092.26	15,856.04	236.21	68.126	
10,500.00	6,941.47	7,006.53	7,002.47	67.97	209.95	90.05	-2,165.67	-11,906.32	16,190.59	15,954.31	236.28	68.522	
10,600.00	6,941.48	7,006.54	7,002.48	69.45	209.95	90.05	-2,165.67	-11,906.32	16,288.95	16,052.60	236.36	68.917	
10,700.00	6,941.50	7,006.56	7,002.50	70.94	209.95	90.05	-2,165.67	-11,906.32	16,387.33	16,150.90	236.43	69.312	
10,800.00	6,941.51	7,006.57	7,002.51	72.43	209.95	90.05	-2,165.67	-11,906.32	16,485.73	16,249.22	236.50	69.706	
10,900.00	6,941.53	7,006.59	7,002.53	73.92	209.95	90.05	-2,165.67	-11,906.32	16,584.14	16,347.56	236.58	70.099	
11,000.00	6,941.54	7,006.60	7,002.54	75.42	209.95	90.05	-2,165.67	-11,906.32	16,682.58	16,445.92	236.66	70.491	
11,100.00	6,941.56	7,006.62	7,002.56	76.92	209.95	90.05	-2,165.67	-11,906.32	16,781.03	16,544.29	236.74	70.883	
11,200.00	6,941.57	7,006.63	7,002.57	78.43	209.95	90.05	-2,165.67	-11,906.32	16,879.50	16,642.68	236.83	71.274	
11,300.00	6,941.59	7,006.65	7,002.59	79.94	209.95	90.05	-2,165.67	-11,906.32	16,977.99	16,741.08	236.91	71.664	
11,400.00	6,941.60	7,006.66	7,002.60	81.46	209.95	90.05	-2,165.67	-11,906.32	17,076.50	16,839.50	237.00	72.054	
11,500.00	6,941.61	7,006.68	7,002.61	82.98	209.95	90.05	-2,165.67	-11,906.32	17,175.02	16,937.94	237.08	72.443	
11,600.00	6,941.63	7,006.69	7,002.63	84.50	209.95	90.05	-2,165.67	-11,906.32	17,273.57	17,036.39	237.17	72.831	
11,700.00	6,941.64	7,006.71	7,002.64	86.02	209.95	90.05	-2,165.67	-11,906.32	17,372.12	17,134.86	237.26	73.219	
11,800.00	6,941.66	7,006.72	7,002.66	87.55	209.95	90.05	-2,165.67	-11,906.32	17,470.70	17,233.34	237.36	73.606	
11,900.00	6,941.67	7,006.74	7,002.67	89.08	209.95	90.05	-2,165.67	-11,906.32	17,569.29	17,331.84	237.45	73.992	
12,000.00	6,941.69	7,006.75	7,002.69	90.61	209.95	90.05	-2,165.67	-11,906.32	17,667.90	17,430.35	237.54	74.378	
12,100.00	6,941.70	7,006.76	7,002.70	92.14	209.95	90.05	-2,165.67	-11,906.32	17,766.52	17,528.88	237.64	74.763	
12,200.00	6,941.72	7,006.78	7,002.72	93.68	209.95	90.05	-2,165.67	-11,906.32	17,865.16	17,627.42	237.74	75.147	
12,300.00	6,941.73	7,006.79	7,002.73	95.22	209.96	90.05	-2,165.67	-11,906.32	17,963.81	17,725.97	237.83	75.531	
12,400.00	6,941.75	7,006.81	7,002.75	96.76	209.96	90.05	-2,165.67	-11,906.32	18,062.48	17,824.54	237.93	75.914	
12,500.00	6,941.76	7,006.82	7,002.76	98.30	209.96	90.05	-2,165.67	-11,906.32	18,161.16	17,923.12	238.03	76.296	
12,600.00	6,941.78	7,006.84	7,002.78	99.85	209.96	90.05	-2,165.67	-11,906.32	18,259.85	18,021.72	238.14	76.678	
12,700.00	6,941.79	7,006.85	7,002.79	101.40	209.96	90.05	-2,165.67	-11,906.32	18,358.56	18,120.33	238.24	77.060	
12,800.00	6,941.81	7,006.87	7,002.81	102.95	209.96	90.05	-2,165.67	-11,906.32	18,457.29	18,218.95	238.34	77.441	
12,900.00	6,941.82	7,006.88	7,002.82	104.50	209.96	90.05	-2,165.67	-11,906.32	18,556.03	18,317.58	238.45	77.821	
13,000.00	6,941.84	7,006.90	7,002.84	106.05	209.96	90.05	-2,165.67	-11,906.32	18,654.78	18,416.23	238.55	78.200	
13,100.00	6,941.85	7,006.91	7,002.85	107.60	209.96	90.05	-2,165.67	-11,906.32	18,753.54	18,514.88	238.66	78.579	
13,200.00	6,941.87	7,006.93	7,002.87	109.16	209.96	90.05	-2,165.67	-11,906.32	18,852.32	18,613.56	238.76	78.958	
13,300.00	6,941.88	7,006.94	7,002.88	110.71	209.96	90.05	-2,165.67	-11,906.32	18,951.11	18,712.24	238.87	79.336	
13,400.00	6,941.90	7,006.96	7,002.90	112.27	209.96	90.05	-2,165.67	-11,906.32	19,049.91	18,810.93	238.98	79.713	
13,500.00	6,941.91	7,006.97	7,002.91	113.83	209.96	90.05	-2,165.67	-11,906.32	19,148.73	18,909.64	239.09	80.090	
13,600.00	6,941.93	7,006.99	7,002.93	115.39	209.96	90.06	-2,165.67	-11,906.32	19,247.56	19,008.36	239.20	80.467	
13,700.00	6,941.94	7,007.00	7,002.94	116.95	209.96	90.06	-2,165.67	-11,906.32	19,346.40	19,107.09	239.31	80.842	
13,800.00	6,941.96	7,007.02	7,002.96	118.51	209.96	90.06	-2,165.67	-11,906.32	19,445.25	19,205.83	239.42	81.218	
13,900.00	6,941.97	7,007.03	7,002.97	120.08	209.96	90.06	-2,165.67	-11,906.32	19,544.11	19,304.58	239.53	81.592	
14,000.00	6,941.99	7,007.05	7,002.99	121.64	209.96	90.06	-2,165.67	-11,906.32	19,642.99	19,403.34	239.65	81.967	
14,100.00	6,942.00	7,007.06	7,003.00	123.21	209.96	90.06	-2,165.67	-11,906.32	19,741.87	19,502.11	239.76	82.340	
14,200.00	6,942.01	7,007.08	7,003.01	124.77	209.96	90.06	-2,165.67	-11,906.32	19,840.77	19,600.90	239.87	82.714	
14,300.00	6,942.03	7,007.09	7,003.03	126.34	209.96	90.06	-2,165.67	-11,906.32	19,939.68	19,699.69	239.99	83.086	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	7,007.11	7,003.04	127.91	209.96	90.06	-2,165.67	-11,906.32	20,038.60	19,798.49	240.10	83.459	
14,500.00	6,942.06	7,007.12	7,003.06	129.48	209.97	90.06	-2,165.67	-11,906.32	20,137.53	19,897.31	240.22	83.830	
14,600.00	6,942.07	7,007.14	7,003.07	131.05	209.97	90.06	-2,165.67	-11,906.32	20,236.47	19,996.13	240.33	84.201	
14,700.00	6,942.09	7,007.15	7,003.09	132.62	209.97	90.06	-2,165.67	-11,906.32	20,335.42	20,094.97	240.45	84.572	
14,800.00	6,942.10	7,007.16	7,003.10	134.19	209.97	90.06	-2,165.67	-11,906.32	20,434.38	20,193.81	240.57	84.943	
14,900.00	6,942.12	7,007.18	7,003.12	135.76	209.97	90.06	-2,165.67	-11,906.32	20,533.35	20,292.67	240.68	85.312	
15,000.00	6,942.13	7,007.19	7,003.13	137.34	209.97	90.06	-2,165.67	-11,906.32	20,632.33	20,391.53	240.80	85.682	
15,100.00	6,942.15	7,007.21	7,003.15	138.91	209.97	90.06	-2,165.67	-11,906.32	20,731.32	20,490.40	240.92	86.050	
15,200.00	6,942.16	7,007.22	7,003.16	140.48	209.97	90.06	-2,165.67	-11,906.32	20,830.32	20,589.28	241.04	86.419	
15,300.00	6,942.18	7,007.24	7,003.18	142.06	209.97	90.06	-2,165.67	-11,906.32	20,929.33	20,688.17	241.16	86.787	
15,400.00	6,942.19	7,007.25	7,003.19	143.64	209.97	90.06	-2,165.67	-11,906.32	21,028.35	20,787.07	241.28	87.154	
15,500.00	6,942.21	7,007.27	7,003.21	145.21	209.97	90.06	-2,165.67	-11,906.32	21,127.38	20,885.98	241.40	87.521	
15,600.00	6,942.22	7,007.28	7,003.22	146.79	209.97	90.06	-2,165.67	-11,906.32	21,226.42	20,984.90	241.52	87.888	
15,700.00	6,942.24	7,007.30	7,003.24	148.37	209.97	90.06	-2,165.67	-11,906.32	21,325.46	21,083.83	241.64	88.254	
15,800.00	6,942.25	7,007.31	7,003.25	149.94	209.97	90.06	-2,165.67	-11,906.32	21,424.52	21,182.76	241.76	88.620	
15,900.00	6,942.27	7,007.33	7,003.27	151.52	209.97	90.06	-2,165.67	-11,906.32	21,523.58	21,281.70	241.88	88.985	
16,000.00	6,942.28	7,007.34	7,003.28	153.10	209.97	90.06	-2,165.67	-11,906.32	21,622.66	21,380.65	242.00	89.350	
16,100.00	6,942.30	7,007.36	7,003.30	154.68	209.97	90.06	-2,165.67	-11,906.32	21,721.74	21,479.61	242.12	89.714	
16,200.00	6,942.31	7,007.37	7,003.31	156.26	209.97	90.06	-2,165.67	-11,906.32	21,820.83	21,578.58	242.24	90.078	
16,300.00	6,942.33	7,007.39	7,003.33	157.84	209.97	90.06	-2,165.67	-11,906.32	21,919.92	21,677.56	242.37	90.441	
16,400.00	6,942.34	7,007.40	7,003.34	159.42	209.97	90.06	-2,165.67	-11,906.32	22,019.03	21,776.54	242.49	90.804	
16,500.00	6,942.36	7,007.42	7,003.36	161.00	209.97	90.06	-2,165.67	-11,906.32	22,118.14	21,875.53	242.61	91.167	
16,600.00	6,942.37	7,007.43	7,003.37	162.59	209.97	90.06	-2,165.67	-11,906.32	22,217.27	21,974.53	242.74	91.529	
16,700.00	6,942.38	7,007.45	7,003.38	164.17	209.97	90.06	-2,165.67	-11,906.32	22,316.40	22,073.54	242.86	91.891	
16,800.00	6,942.40	7,007.46	7,003.40	165.75	209.98	90.06	-2,165.67	-11,906.32	22,415.53	22,172.55	242.98	92.252	
16,900.00	6,942.41	7,007.48	7,003.41	167.33	209.98	90.06	-2,165.67	-11,906.32	22,514.68	22,271.57	243.11	92.613	
17,000.00	6,942.43	7,007.49	7,003.43	168.92	209.98	90.06	-2,165.67	-11,906.32	22,613.83	22,370.60	243.23	92.973	
17,100.00	6,942.44	7,007.51	7,003.44	170.50	209.98	90.07	-2,165.67	-11,906.32	22,712.99	22,469.64	243.35	93.333	
17,200.00	6,942.46	7,007.52	7,003.46	172.09	209.98	90.07	-2,165.67	-11,906.32	22,812.16	22,568.68	243.48	93.693	
17,300.00	6,942.47	7,007.53	7,003.47	173.67	209.98	90.07	-2,165.67	-11,906.32	22,911.33	22,667.73	243.60	94.052	
17,400.00	6,942.49	7,007.55	7,003.49	175.26	209.98	90.07	-2,165.67	-11,906.32	23,010.52	22,766.79	243.73	94.411	
17,500.00	6,942.50	7,007.56	7,003.50	176.84	209.98	90.07	-2,165.67	-11,906.32	23,109.71	22,865.85	243.85	94.769	
17,600.00	6,942.52	7,007.58	7,003.52	178.43	209.98	90.07	-2,165.67	-11,906.32	23,208.90	22,964.92	243.98	95.127	
17,700.00	6,942.53	7,007.59	7,003.53	180.01	209.98	90.07	-2,165.67	-11,906.32	23,308.10	23,064.00	244.10	95.485	
17,800.00	6,942.55	7,007.61	7,003.55	181.60	209.98	90.07	-2,165.67	-11,906.32	23,407.31	23,163.09	244.23	95.842	
17,900.00	6,942.56	7,007.62	7,003.56	183.19	209.98	90.07	-2,165.67	-11,906.32	23,506.53	23,262.18	244.35	96.199	
18,000.00	6,942.58	7,007.64	7,003.58	184.77	209.98	90.07	-2,165.67	-11,906.32	23,605.75	23,361.27	244.48	96.555	
18,100.00	6,942.59	7,007.65	7,003.59	186.36	209.98	90.07	-2,165.67	-11,906.32	23,704.98	23,460.38	244.61	96.911	
18,200.00	6,942.61	7,007.67	7,003.61	187.95	209.98	90.07	-2,165.67	-11,906.32	23,804.22	23,559.49	244.73	97.266	
18,300.00	6,942.62	7,007.68	7,003.62	189.54	209.98	90.07	-2,165.67	-11,906.32	23,903.46	23,658.60	244.86	97.622	
18,400.00	6,942.64	7,007.70	7,003.64	191.12	209.98	90.07	-2,165.67	-11,906.32	24,002.71	23,757.72	244.98	97.976	
18,500.00	6,942.65	7,007.71	7,003.65	192.71	209.98	90.07	-2,165.67	-11,906.32	24,101.96	23,856.85	245.11	98.331	
18,600.00	6,942.67	7,007.73	7,003.67	194.30	209.98	90.07	-2,165.67	-11,906.32	24,201.22	23,955.99	245.24	98.685	
18,700.00	6,942.68	7,007.74	7,003.68	195.89	209.98	90.07	-2,165.67	-11,906.32	24,300.49	24,055.13	245.36	99.038	
18,800.00	6,942.70	7,007.76	7,003.70	197.48	209.98	90.07	-2,165.67	-11,906.32	24,399.76	24,154.27	245.49	99.391	
18,900.00	6,942.71	7,007.77	7,003.71	199.07	209.98	90.07	-2,165.67	-11,906.32	24,499.04	24,253.42	245.62	99.744	
19,000.00	6,942.73	7,007.79	7,003.73	200.66	209.98	90.07	-2,165.67	-11,906.32	24,598.33	24,352.58	245.75	100.097	
19,100.00	6,942.74	7,007.80	7,003.74	202.25	209.99	90.07	-2,165.67	-11,906.32	24,697.62	24,451.75	245.87	100.449	
19,200.00	6,942.76	7,007.82	7,003.76	203.84	209.99	90.07	-2,165.67	-11,906.32	24,796.91	24,550.91	246.00	100.800	
19,300.00	6,942.77	7,007.83	7,003.77	205.43	209.99	90.07	-2,165.67	-11,906.32	24,896.22	24,650.09	246.13	101.151	
19,400.00	6,942.78	7,007.85	7,003.78	207.02	209.99	90.07	-2,165.67	-11,906.32	24,995.52	24,749.27	246.26	101.502	
19,500.00	6,942.80	7,007.86	7,003.80	208.61	209.99	90.07	-2,165.67	-11,906.32	25,094.84	24,848.45	246.38	101.853	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,600.00	6,942.81	7,007.88	7,003.81	210.20	209.99	90.07	-2,165.67	-11,906.32	25,194.15	24,947.64	246.51	102.203	
19,700.00	6,942.83	7,007.89	7,003.83	211.79	209.99	90.07	-2,165.67	-11,906.32	25,293.48	25,046.84	246.64	102.552	
19,800.00	6,942.84	7,007.91	7,003.84	213.38	209.99	90.07	-2,165.67	-11,906.32	25,392.81	25,146.04	246.77	102.902	
19,900.00	6,942.86	7,007.92	7,003.86	214.97	209.99	90.07	-2,165.67	-11,906.32	25,492.14	25,245.25	246.90	103.251	
20,000.00	6,942.87	7,007.93	7,003.87	216.56	209.99	90.07	-2,165.67	-11,906.32	25,591.48	25,344.46	247.02	103.599	
20,100.00	6,942.89	7,007.95	7,003.89	218.15	209.99	90.07	-2,165.67	-11,906.32	25,690.83	25,443.67	247.15	103.947	
20,200.00	6,942.90	7,007.96	7,003.90	219.75	209.99	90.07	-2,165.67	-11,906.32	25,790.18	25,542.89	247.28	104.295	
20,300.00	6,942.92	7,007.98	7,003.92	221.34	209.99	90.07	-2,165.67	-11,906.32	25,889.53	25,642.12	247.41	104.642	
20,400.00	6,942.93	7,007.99	7,003.93	222.93	209.99	90.07	-2,165.67	-11,906.32	25,988.89	25,741.35	247.54	104.989	
20,500.00	6,942.95	7,008.01	7,003.95	224.52	209.99	90.08	-2,165.67	-11,906.32	26,088.25	25,840.59	247.67	105.336	
20,600.00	6,942.96	7,008.02	7,003.96	226.12	209.99	90.08	-2,165.67	-11,906.32	26,187.62	25,939.83	247.80	105.682	
20,700.00	6,942.98	7,008.04	7,003.98	227.71	209.99	90.08	-2,165.67	-11,906.32	26,287.00	26,039.07	247.92	106.028	
20,800.00	6,942.99	7,008.05	7,003.99	229.30	209.99	90.08	-2,165.67	-11,906.32	26,386.38	26,138.32	248.05	106.374	
20,855.77	6,943.00	7,008.06	7,004.00	230.19	209.99	90.08	-2,165.67	-11,906.32	26,441.80	26,193.67	248.13	106.566	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-81.81	1,449.36	-10,074.17	10,178.40				
100.00	100.00	0.00	0.00	0.25	0.00	-81.81	1,449.36	-10,074.17	10,179.90	10,179.64	0.26	N/A	
200.00	200.00	0.00	0.00	0.61	0.00	-81.81	1,449.36	-10,074.17	10,182.37	10,181.76	0.61	N/A	
300.00	300.00	0.00	0.00	0.97	0.00	-81.81	1,449.36	-10,074.17	10,185.83	10,184.86	0.97	N/A	
400.00	400.00	0.00	0.00	1.33	0.00	-81.81	1,449.36	-10,074.17	10,190.26	10,188.93	1.33	7,662.196	
500.00	500.00	0.00	0.00	1.68	0.00	-81.81	1,449.36	-10,074.17	10,195.68	10,193.99	1.69	6,040.597	
600.00	599.98	0.00	0.00	2.04	0.00	-102.42	1,449.36	-10,074.17	10,202.45	10,200.41	2.04	4,989.423	
700.00	699.84	0.00	0.00	2.40	0.00	-102.25	1,449.36	-10,074.17	10,210.94	10,208.54	2.40	4,252.072	
800.00	799.45	0.00	0.00	2.77	0.00	-102.05	1,449.36	-10,074.17	10,221.14	10,218.38	2.76	3,703.794	
845.27	844.44	0.00	0.00	2.93	0.00	-101.95	1,449.36	-10,074.17	10,226.32	10,223.40	2.92	3,498.131	
900.00	898.77	0.00	0.00	3.13	0.00	-101.95	1,449.36	-10,074.17	10,232.93	10,229.81	3.12	3,278.163	
1,000.00	998.04	538.84	522.50	3.50	2.12	-102.41	1,435.22	-10,117.67	10,243.95	10,238.32	5.63	1,818.997	
1,100.00	1,097.32	550.00	533.60	3.87	2.16	-102.42	1,434.38	-10,118.45	10,252.64	10,246.60	6.04	1,697.229	
1,200.00	1,196.59	575.00	558.44	4.24	2.24	-102.45	1,432.38	-10,120.40	10,262.10	10,255.61	6.50	1,579.672	
1,300.00	1,295.87	600.00	583.25	4.62	2.32	-102.48	1,430.17	-10,122.60	10,272.33	10,265.38	6.95	1,477.109	
1,400.00	1,395.14	637.25	620.13	5.00	2.45	-102.53	1,426.36	-10,126.19	10,283.24	10,275.78	7.46	1,379.094	
1,500.00	1,494.42	685.15	667.41	5.38	2.62	-102.60	1,420.54	-10,131.16	10,294.70	10,286.70	8.00	1,286.761	
1,600.00	1,593.69	700.00	682.04	5.76	2.67	-102.62	1,418.56	-10,132.77	10,306.77	10,298.34	8.43	1,222.730	
1,700.00	1,692.96	725.00	706.61	6.14	2.77	-102.66	1,415.02	-10,135.70	10,319.61	10,310.71	8.90	1,160.026	
1,800.00	1,792.24	736.51	717.90	6.52	2.81	-102.67	1,413.31	-10,137.18	10,333.29	10,323.98	9.31	1,109.515	
1,900.00	1,891.51	750.00	731.10	6.91	2.87	-102.70	1,411.24	-10,139.02	10,347.80	10,338.06	9.74	1,062.719	
2,000.00	1,990.79	775.00	755.52	7.29	2.97	-102.74	1,407.31	-10,142.63	10,363.09	10,352.89	10.21	1,015.461	
2,100.00	2,090.06	800.00	779.91	7.67	3.08	-102.78	1,403.32	-10,146.44	10,379.11	10,368.43	10.67	972.381	
2,200.00	2,189.34	825.00	804.25	8.06	3.19	-102.82	1,399.29	-10,150.46	10,395.89	10,384.75	11.14	932.964	
2,300.00	2,288.61	825.00	804.25	8.44	3.19	-102.82	1,399.29	-10,150.46	10,413.41	10,401.90	11.51	904.722	
2,400.00	2,387.89	850.00	828.51	8.82	3.30	-102.86	1,395.15	-10,154.84	10,431.79	10,419.81	11.98	870.908	
2,500.00	2,487.16	850.00	828.51	9.21	3.30	-102.86	1,395.15	-10,154.84	10,450.94	10,438.60	12.34	846.789	
2,600.00	2,586.44	875.00	852.70	9.59	3.41	-102.90	1,390.89	-10,159.53	10,470.86	10,458.05	12.81	817.493	
2,700.00	2,685.71	900.00	876.81	9.98	3.53	-102.95	1,386.51	-10,164.48	10,491.55	10,478.27	13.28	790.299	
2,800.00	2,784.99	900.00	876.81	10.36	3.53	-102.95	1,386.51	-10,164.48	10,513.00	10,499.37	13.63	771.111	
2,900.00	2,884.26	925.00	900.76	10.75	3.66	-102.99	1,381.78	-10,169.85	10,535.32	10,521.22	14.10	747.184	
3,000.00	2,983.53	925.00	900.76	11.13	3.66	-102.99	1,381.78	-10,169.85	10,558.36	10,543.90	14.45	730.478	
3,100.00	3,082.81	962.61	936.55	11.52	3.85	-103.06	1,374.01	-10,178.42	10,582.14	10,567.16	14.98	706.490	
3,200.00	3,182.08	1,000.00	971.91	11.90	4.05	-103.14	1,365.61	-10,187.17	10,606.51	10,591.00	15.51	684.044	
3,300.00	3,281.36	1,025.00	995.44	12.29	4.19	-103.19	1,359.69	-10,193.19	10,631.51	10,615.53	15.98	665.483	
3,400.00	3,380.63	1,039.72	1,009.25	12.67	4.28	-103.22	1,356.12	-10,196.82	10,657.19	10,640.80	16.39	650.035	
3,500.00	3,479.91	1,063.71	1,031.68	13.06	4.42	-103.27	1,350.16	-10,202.91	10,683.60	10,666.74	16.86	633.685	
3,600.00	3,579.18	1,100.00	1,065.53	13.44	4.63	-103.35	1,341.03	-10,212.28	10,710.62	10,693.23	17.39	615.994	
3,700.00	3,678.46	1,136.74	1,099.71	13.83	4.85	-103.43	1,331.67	-10,221.97	10,738.22	10,720.30	17.92	599.237	
3,800.00	3,777.73	1,175.00	1,135.30	14.21	5.08	-103.52	1,322.03	-10,232.17	10,766.31	10,747.85	18.46	583.219	
3,900.00	3,877.01	1,213.47	1,171.13	14.60	5.31	-103.60	1,312.62	-10,242.58	10,794.92	10,775.92	19.00	568.132	
4,000.00	3,976.28	1,238.90	1,194.81	14.98	5.47	-103.65	1,306.60	-10,249.62	10,824.17	10,804.70	19.47	555.951	
4,100.00	4,075.55	1,310.41	1,261.51	15.37	5.91	-103.80	1,290.48	-10,269.73	10,853.95	10,833.77	20.18	537.748	
4,200.00	4,174.83	1,644.54	1,573.87	15.75	7.99	-104.47	1,214.24	-10,360.56	10,883.47	10,861.13	22.35	486.961	
4,300.00	4,274.10	1,715.52	1,640.29	16.14	8.43	-104.61	1,197.35	-10,379.02	10,911.54	10,888.46	23.08	472.801	
4,400.00	4,373.38	1,866.42	1,781.40	16.53	9.38	-104.92	1,160.70	-10,417.98	10,939.54	10,915.27	24.26	450.857	
4,500.00	4,472.65	1,911.93	1,823.95	16.91	9.67	-105.01	1,149.58	-10,429.64	10,967.53	10,942.68	24.85	441.321	
4,600.00	4,571.93	1,937.54	1,847.89	17.30	9.83	-105.06	1,143.41	-10,436.36	10,996.12	10,970.79	25.32	434.220	
4,700.00	4,671.20	1,975.00	1,882.88	17.68	10.07	-105.14	1,134.55	-10,446.39	11,025.31	10,999.45	25.86	426.319	
4,800.00	4,770.48	5,045.29	4,864.98	18.07	23.72	-109.07	758.86	-10,864.37	11,044.03	11,004.86	39.17	281.983	
4,900.00	4,869.75	5,475.00	5,284.23	18.45	24.99	-109.52	721.22	-10,860.44	11,047.58	11,006.72	40.86	270.353	
5,000.00	4,969.03	5,900.00	5,692.98	18.84	26.14	-109.91	691.14	-10,844.88	11,048.53	11,006.11	42.42	260.457	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,068.30	5,900.00	5,692.98	19.23	26.14	-109.91	691.14	-10,844.88	11,047.44	11,004.60	42.83	257.920	
5,170.90	5,138.69	5,900.00	5,692.98	19.50	26.14	-109.91	691.14	-10,844.88	11,047.21	11,004.08	43.12	256.174	
5,200.00	5,167.58	5,900.00	5,692.98	19.61	26.14	-109.91	691.14	-10,844.88	11,047.25	11,004.00	43.24	255.469	
5,300.00	5,266.85	5,900.00	5,692.98	20.00	26.14	-109.91	691.14	-10,844.88	11,047.96	11,004.31	43.65	253.103	
5,400.00	5,366.12	5,900.00	5,692.98	20.38	26.14	-109.91	691.14	-10,844.88	11,049.58	11,005.53	44.05	250.817	
5,500.00	5,465.40	5,900.00	5,692.98	20.77	26.14	-109.91	691.14	-10,844.88	11,052.11	11,007.65	44.46	248.611	
5,600.00	5,564.67	5,939.32	5,732.30	21.15	26.25	-109.93	690.70	-10,844.64	11,055.46	11,010.50	44.96	245.881	
5,700.00	5,663.95	5,990.78	5,783.76	21.54	26.38	-109.97	690.39	-10,844.41	11,059.17	11,013.67	45.50	243.063	
5,800.00	5,763.22	6,063.15	5,856.12	21.93	26.58	-110.01	690.19	-10,844.41	11,063.30	11,017.20	46.10	240.003	
5,900.00	5,862.50	6,125.00	5,917.97	22.31	26.76	-110.05	689.78	-10,844.57	11,067.69	11,021.02	46.67	237.139	
6,000.00	5,961.77	6,200.00	5,992.97	22.70	26.98	-110.09	689.18	-10,844.99	11,072.40	11,025.11	47.29	234.149	
6,100.00	6,061.05	6,225.00	6,017.97	23.08	27.05	-110.11	688.94	-10,845.17	11,077.47	11,029.72	47.75	231.968	
6,200.00	6,160.32	6,225.00	6,017.97	23.47	27.05	-110.11	688.94	-10,845.17	11,083.40	11,035.25	48.14	230.221	
6,300.00	6,259.60	6,225.00	6,017.97	23.86	27.05	-110.11	688.94	-10,845.17	11,090.22	11,041.70	48.53	228.538	
6,376.00	6,335.04	6,225.00	6,017.97	24.15	27.05	-110.11	688.94	-10,845.17	11,096.01	11,047.19	48.82	227.300	
6,400.00	6,358.85	6,225.00	6,017.97	24.24	27.05	-124.85	688.94	-10,845.17	11,098.39	11,049.49	48.91	226.923	
6,450.00	6,408.16	6,225.00	6,017.97	24.44	27.05	-144.03	688.94	-10,845.17	11,106.41	11,057.31	49.10	226.209	
6,500.00	6,456.87	6,225.00	6,017.97	24.64	27.05	-153.96	688.94	-10,845.17	11,118.48	11,069.19	49.29	225.591	
6,550.00	6,504.65	6,225.00	6,017.97	24.85	27.05	-159.67	688.94	-10,845.17	11,134.53	11,085.06	49.47	225.079	
6,600.00	6,551.23	6,225.00	6,017.97	25.06	27.05	-163.28	688.94	-10,845.17	11,154.43	11,104.78	49.65	224.677	
6,650.00	6,596.31	6,225.00	6,017.97	25.26	27.05	-165.74	688.94	-10,845.17	11,178.04	11,128.23	49.82	224.387	
6,700.00	6,639.62	6,225.00	6,017.97	25.48	27.05	-167.50	688.94	-10,845.17	11,205.21	11,155.23	49.98	224.212	
6,750.00	6,680.88	7,060.21	6,809.67	25.69	29.58	-169.56	660.30	-10,870.85	11,235.38	11,182.71	52.67	213.326	
6,800.00	6,719.85	7,090.29	6,839.75	25.91	29.66	-170.62	660.25	-10,870.80	11,266.34	11,213.43	52.91	212.947	
6,850.00	6,756.28	7,133.10	6,882.55	26.13	29.78	-171.48	660.21	-10,870.71	11,300.26	11,247.09	53.17	212.535	
6,900.00	6,789.95	7,151.83	6,901.28	26.37	29.83	-172.18	660.19	-10,870.68	11,336.98	11,283.63	53.35	212.500	
6,950.00	6,820.65	7,207.48	6,956.94	26.61	29.99	-172.80	660.10	-10,870.58	11,376.25	11,322.62	53.63	212.137 SF	
7,000.00	6,848.19	7,226.64	6,976.09	26.87	30.04	-173.31	660.08	-10,870.53	11,417.80	11,364.01	53.78	212.299	
7,050.00	6,872.41	7,250.00	6,999.45	27.13	30.10	-173.80	660.04	-10,870.47	11,461.40	11,407.47	53.93	212.506	
7,100.00	6,893.15	7,267.52	7,016.98	27.41	30.15	-174.27	660.01	-10,870.43	11,506.79	11,452.74	54.06	212.865	
7,150.00	6,910.28	7,292.64	7,042.09	27.71	30.22	-174.80	659.96	-10,870.38	11,553.69	11,499.51	54.19	213.219	
7,200.00	6,923.70	7,308.65	7,058.10	28.02	30.27	-175.50	659.93	-10,870.34	11,601.79	11,547.52	54.28	213.752	
7,250.00	6,933.33	7,316.22	7,065.67	28.34	30.29	-176.67	659.91	-10,870.32	11,650.81	11,596.49	54.33	214.449	
7,300.00	6,939.11	7,320.79	7,070.25	28.67	30.30	-179.91	659.91	-10,870.30	11,700.45	11,646.09	54.36	215.237	
7,349.12	6,941.00	7,325.00	7,074.45	29.00	30.31	108.24	659.90	-10,870.29	11,749.52	11,695.14	54.38	216.058	
7,400.00	6,941.01	7,325.00	7,074.45	29.36	30.31	108.24	659.90	-10,870.29	11,800.40	11,746.01	54.38	216.980	
7,500.00	6,941.02	7,325.00	7,074.45	30.11	30.31	108.24	659.90	-10,870.29	11,900.39	11,846.00	54.39	218.790	
7,600.00	6,941.04	7,325.00	7,074.45	30.93	30.31	108.24	659.90	-10,870.29	12,000.39	11,945.99	54.40	220.595	
7,700.00	6,941.05	7,325.00	7,074.45	31.80	30.31	108.24	659.90	-10,870.29	12,100.38	12,045.97	54.41	222.397	
7,800.00	6,941.07	7,325.00	7,074.45	32.73	30.31	108.24	659.90	-10,870.29	12,200.38	12,145.96	54.42	224.193	
7,900.00	6,941.08	7,325.00	7,074.45	33.71	30.31	108.24	659.90	-10,870.29	12,300.38	12,245.95	54.43	225.986	
8,000.00	6,941.10	7,325.00	7,074.45	34.73	30.31	108.24	659.90	-10,870.29	12,400.37	12,345.93	54.44	227.773	
8,100.00	6,941.11	7,325.00	7,074.45	35.79	30.31	108.24	659.90	-10,870.29	12,500.37	12,445.91	54.45	229.556	
8,200.00	6,941.13	7,337.05	7,086.51	36.90	30.35	114.18	659.87	-10,870.25	12,600.36	12,545.85	54.50	231.180	
8,300.00	6,941.14	7,337.42	7,086.87	38.03	30.35	114.35	659.87	-10,870.25	12,700.36	12,645.84	54.52	232.947	
8,400.00	6,941.16	7,337.78	7,087.23	39.20	30.35	114.52	659.87	-10,870.25	12,800.35	12,745.81	54.54	234.709	
8,500.00	6,941.17	7,338.14	7,087.59	40.40	30.35	114.69	659.87	-10,870.25	12,900.35	12,845.79	54.55	236.466	
8,600.00	6,941.19	7,338.50	7,087.95	41.63	30.35	114.86	659.87	-10,870.25	13,000.34	12,945.77	54.57	238.217	
8,700.00	6,941.20	7,338.86	7,088.31	42.88	30.35	115.03	659.87	-10,870.25	13,100.34	13,045.75	54.59	239.963	
8,800.00	6,941.22	7,339.22	7,088.67	44.16	30.35	115.20	659.87	-10,870.24	13,200.34	13,145.72	54.61	241.704	
8,900.00	6,941.23	7,339.58	7,089.03	45.45	30.35	115.36	659.87	-10,870.24	13,300.33	13,245.70	54.64	243.440	
9,000.00	6,941.24	7,339.94	7,089.39	46.76	30.36	115.53	659.87	-10,870.24	13,400.33	13,345.67	54.66	245.170	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	7,340.30	7,089.76	48.10	30.36	115.70	659.86	-10,870.24	13,500.33	13,445.65	54.68	246.894	
9,200.00	6,941.27	7,340.66	7,090.12	49.44	30.36	115.86	659.86	-10,870.24	13,600.32	13,545.62	54.70	248.613	
9,300.00	6,941.29	7,341.02	7,090.48	50.80	30.36	116.03	659.86	-10,870.24	13,700.32	13,645.59	54.73	250.326	
9,400.00	6,941.30	7,341.39	7,090.84	52.18	30.36	116.20	659.86	-10,870.24	13,800.32	13,745.56	54.76	252.033	
9,500.00	6,941.32	7,341.75	7,091.20	53.57	30.36	116.36	659.86	-10,870.24	13,900.31	13,845.53	54.78	253.735	
9,600.00	6,941.33	7,342.11	7,091.56	54.97	30.36	116.52	659.86	-10,870.24	14,000.31	13,945.50	54.81	255.430	
9,700.00	6,941.35	7,342.47	7,091.92	56.38	30.36	116.69	659.86	-10,870.23	14,100.31	14,045.47	54.84	257.120	
9,800.00	6,941.36	7,342.83	7,092.28	57.80	30.36	116.85	659.86	-10,870.23	14,200.30	14,145.43	54.87	258.804	
9,900.00	6,941.38	7,343.19	7,092.64	59.23	30.36	117.01	659.86	-10,870.23	14,300.30	14,245.40	54.90	260.481	
10,000.00	6,941.39	7,343.55	7,093.00	60.67	30.37	117.18	659.86	-10,870.23	14,400.30	14,345.37	54.93	262.153	
10,100.00	6,941.41	7,343.91	7,093.36	62.11	30.37	117.34	659.86	-10,870.23	14,500.29	14,445.33	54.96	263.818	
10,200.00	6,941.42	7,344.27	7,093.72	63.57	30.37	117.50	659.86	-10,870.23	14,600.29	14,545.30	55.00	265.477	
10,300.00	6,941.44	7,344.63	7,094.09	65.03	30.37	117.66	659.86	-10,870.23	14,700.29	14,645.26	55.03	267.130	
10,400.00	6,941.45	7,344.99	7,094.45	66.50	30.37	117.82	659.85	-10,870.23	14,800.29	14,745.22	55.07	268.777	
10,500.00	6,941.47	7,355.97	7,105.42	67.97	30.40	122.48	659.82	-10,870.18	14,900.28	14,845.15	55.13	270.254	
10,600.00	6,941.48	7,356.20	7,105.66	69.45	30.40	122.57	659.82	-10,870.18	15,000.28	14,945.11	55.17	271.889	
10,700.00	6,941.50	7,356.44	7,105.89	70.94	30.40	122.66	659.82	-10,870.18	15,100.27	15,045.07	55.21	273.517	
10,800.00	6,941.51	7,356.66	7,106.12	72.43	30.40	122.75	659.82	-10,870.18	15,200.27	15,145.03	55.25	275.139	
10,900.00	6,941.53	7,356.89	7,106.34	73.92	30.40	122.85	659.82	-10,870.18	15,300.27	15,244.98	55.28	276.755	
11,000.00	6,941.54	7,357.12	7,106.57	75.42	30.40	122.94	659.82	-10,870.18	15,400.27	15,344.94	55.32	278.364	
11,100.00	6,941.56	7,357.34	7,106.80	76.92	30.40	123.03	659.82	-10,870.18	15,500.26	15,444.90	55.36	279.966	
11,200.00	6,941.57	7,357.57	7,107.02	78.43	30.41	123.12	659.82	-10,870.18	15,600.26	15,544.85	55.41	281.562	
11,300.00	6,941.59	7,357.79	7,107.24	79.94	30.41	123.20	659.82	-10,870.17	15,700.26	15,644.81	55.45	283.151	
11,400.00	6,941.60	7,358.01	7,107.46	81.46	30.41	123.29	659.82	-10,870.17	15,800.25	15,744.76	55.49	284.734	
11,500.00	6,941.61	7,358.23	7,107.68	82.98	30.41	123.38	659.81	-10,870.17	15,900.25	15,844.72	55.54	286.310	
11,600.00	6,941.63	7,358.45	7,107.90	84.50	30.41	123.46	659.81	-10,870.17	16,000.25	15,944.67	55.58	287.879	
11,700.00	6,941.64	7,358.67	7,108.12	86.02	30.41	123.55	659.81	-10,870.17	16,100.24	16,044.62	55.63	289.442	
11,800.00	6,941.66	7,358.88	7,108.34	87.55	30.41	123.63	659.81	-10,870.17	16,200.24	16,144.57	55.67	290.997	
11,900.00	6,941.67	7,359.10	7,108.55	89.08	30.41	123.72	659.81	-10,870.17	16,300.24	16,244.52	55.72	292.546	
12,000.00	6,941.69	7,359.31	7,108.76	90.61	30.41	123.80	659.81	-10,870.17	16,400.24	16,344.47	55.77	294.088	
12,100.00	6,941.70	7,359.52	7,108.98	92.14	30.41	123.89	659.81	-10,870.17	16,500.23	16,444.42	55.82	295.623	
12,200.00	6,941.72	7,359.73	7,109.19	93.68	30.41	123.97	659.81	-10,870.17	16,600.23	16,544.37	55.86	297.152	
12,300.00	6,941.73	7,359.94	7,109.40	95.22	30.41	124.05	659.81	-10,870.17	16,700.23	16,644.31	55.91	298.673	
12,400.00	6,941.75	7,360.15	7,109.61	96.76	30.41	124.13	659.81	-10,870.16	16,800.23	16,744.26	55.97	300.188	
12,500.00	6,941.76	7,360.36	7,109.81	98.30	30.41	124.21	659.81	-10,870.16	16,900.22	16,844.21	56.02	301.695	
12,600.00	6,941.78	7,360.57	7,110.02	99.85	30.41	124.29	659.81	-10,870.16	17,000.22	16,944.15	56.07	303.196	
12,700.00	6,941.79	7,360.77	7,110.22	101.40	30.41	124.37	659.80	-10,870.16	17,100.22	17,044.09	56.12	304.689	
12,800.00	6,941.81	7,360.98	7,110.43	102.95	30.41	124.45	659.80	-10,870.16	17,200.22	17,144.04	56.18	306.176	
12,900.00	6,941.82	7,361.18	7,110.63	104.50	30.42	124.53	659.80	-10,870.16	17,300.21	17,243.98	56.23	307.656	
13,000.00	6,941.84	7,361.38	7,110.83	106.05	30.42	124.60	659.80	-10,870.16	17,400.21	17,343.92	56.29	309.128	
13,100.00	6,941.85	7,361.58	7,111.03	107.60	30.42	124.68	659.80	-10,870.16	17,500.21	17,443.86	56.34	310.594	
13,200.00	6,941.87	7,361.78	7,111.23	109.16	30.42	124.76	659.80	-10,870.16	17,600.21	17,543.80	56.40	312.053	
13,300.00	6,941.88	7,361.98	7,111.43	110.71	30.42	124.83	659.80	-10,870.16	17,700.20	17,643.74	56.46	313.504	
13,400.00	6,941.90	7,362.17	7,111.63	112.27	30.42	124.91	659.80	-10,870.16	17,800.20	17,743.68	56.52	314.948	
13,500.00	6,941.91	7,362.37	7,111.82	113.83	30.42	124.98	659.80	-10,870.16	17,900.20	17,843.62	56.58	316.386	
13,600.00	6,941.93	7,362.56	7,112.02	115.39	30.42	125.06	659.80	-10,870.16	18,000.20	17,943.56	56.64	317.816	
13,700.00	6,941.94	7,362.76	7,112.21	116.95	30.42	125.13	659.80	-10,870.15	18,100.19	18,043.50	56.70	319.239	
13,800.00	6,941.96	7,362.95	7,112.40	118.51	30.42	125.20	659.80	-10,870.15	18,200.19	18,143.43	56.76	320.655	
13,900.00	6,941.97	7,363.14	7,112.59	120.08	30.42	125.28	659.79	-10,870.15	18,300.19	18,243.37	56.82	322.064	
14,000.00	6,941.99	7,363.33	7,112.78	121.64	30.42	125.35	659.79	-10,870.15	18,400.19	18,343.30	56.88	323.466	
14,100.00	6,942.00	7,363.52	7,112.97	123.21	30.42	125.42	659.79	-10,870.15	18,500.18	18,443.24	56.95	324.861	
14,200.00	6,942.01	7,363.71	7,113.16	124.77	30.42	125.49	659.79	-10,870.15	18,600.18	18,543.17	57.01	326.249	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 25-B001Mb_MWD+HRGM

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,300.00	6,942.03	7,363.90	7,113.35	126.34	30.42	125.56	659.79	-10,870.15	18,700.18	18,643.10	57.08	327.629	
14,400.00	6,942.04	7,364.08	7,113.54	127.91	30.42	125.63	659.79	-10,870.15	18,800.18	18,743.04	57.14	329.003	
14,500.00	6,942.06	7,364.27	7,113.72	129.48	30.42	125.70	659.79	-10,870.15	18,900.18	18,842.97	57.21	330.369	
14,600.00	6,942.07	7,364.45	7,113.91	131.05	30.42	125.77	659.79	-10,870.15	19,000.17	18,942.90	57.28	331.729	
14,700.00	6,942.09	7,364.64	7,114.09	132.62	30.43	125.84	659.79	-10,870.15	19,100.17	19,042.83	57.34	333.081	
14,800.00	6,942.10	7,364.82	7,114.27	134.19	30.43	125.90	659.79	-10,870.15	19,200.17	19,142.76	57.41	334.426	
14,900.00	6,942.12	7,365.00	7,114.45	135.76	30.43	125.97	659.79	-10,870.15	19,300.17	19,242.69	57.48	335.764	
15,000.00	6,942.13	7,365.18	7,114.63	137.34	30.43	126.04	659.78	-10,870.15	19,400.17	19,342.61	57.55	337.095	
15,100.00	6,942.15	7,365.36	7,114.81	138.91	30.43	126.10	659.78	-10,870.15	19,500.16	19,442.54	57.62	338.419	
15,200.00	6,942.16	7,365.54	7,114.99	140.48	30.43	126.17	659.78	-10,870.14	19,600.16	19,542.47	57.69	339.736	
15,300.00	6,942.18	7,365.72	7,115.17	142.06	30.43	126.24	659.78	-10,870.14	19,700.16	19,642.40	57.76	341.046	
15,400.00	6,942.19	7,365.89	7,115.34	143.64	30.43	126.30	659.78	-10,870.14	19,800.16	19,742.32	57.84	342.349	
15,500.00	6,942.21	7,366.07	7,115.52	145.21	30.43	126.36	659.78	-10,870.14	19,900.16	19,842.25	57.91	343.645	
15,600.00	6,942.22	7,366.24	7,115.69	146.79	30.43	126.43	659.78	-10,870.14	20,000.15	19,942.17	57.98	344.934	
15,700.00	6,942.24	7,366.42	7,115.87	148.37	30.43	126.49	659.78	-10,870.14	20,100.15	20,042.09	58.06	346.216	
15,800.00	6,942.25	7,366.59	7,116.04	149.94	30.43	126.56	659.78	-10,870.14	20,200.15	20,142.02	58.13	347.491	
15,900.00	6,942.27	7,366.76	7,116.21	151.52	30.43	126.62	659.78	-10,870.14	20,300.15	20,241.94	58.21	348.759	
16,000.00	6,942.28	7,366.93	7,116.38	153.10	30.43	126.68	659.78	-10,870.14	20,400.15	20,341.86	58.28	350.020	
16,100.00	6,942.30	7,367.10	7,116.55	154.68	30.43	126.74	659.78	-10,870.14	20,500.14	20,441.78	58.36	351.274	
16,200.00	6,942.31	7,367.27	7,116.72	156.26	30.43	126.80	659.77	-10,870.14	20,600.14	20,541.71	58.44	352.521	
16,300.00	6,942.33	7,367.44	7,116.89	157.84	30.43	126.86	659.77	-10,870.14	20,700.14	20,641.63	58.51	353.762	
16,400.00	6,942.34	7,367.61	7,117.06	159.42	30.43	126.93	659.77	-10,870.14	20,800.14	20,741.55	58.59	354.995	
16,500.00	6,942.36	7,367.77	7,117.23	161.00	30.43	126.99	659.77	-10,870.14	20,900.14	20,841.46	58.67	356.222	
16,600.00	6,942.37	7,367.94	7,117.39	162.59	30.43	127.05	659.77	-10,870.14	21,000.13	20,941.38	58.75	357.441	
16,700.00	6,942.38	6,225.00	6,017.97	164.17	27.05	4.00	688.94	-10,845.17	21,100.04	21,044.71	55.32	381.405	
16,800.00	6,942.40	6,225.00	6,017.97	165.75	27.05	4.00	688.94	-10,845.17	21,199.92	21,144.51	55.40	382.646	
16,900.00	6,942.41	6,225.00	6,017.97	167.33	27.05	4.00	688.94	-10,845.17	21,299.80	21,244.32	55.49	383.880	
17,000.00	6,942.43	6,225.00	6,017.97	168.92	27.05	4.00	688.94	-10,845.17	21,399.69	21,344.12	55.57	385.106	
17,100.00	6,942.44	6,225.00	6,017.97	170.50	27.05	4.00	688.94	-10,845.17	21,499.57	21,443.92	55.65	386.325	
17,200.00	6,942.46	6,225.00	6,017.97	172.09	27.05	4.00	688.94	-10,845.17	21,599.46	21,543.72	55.74	387.536	
17,300.00	6,942.47	6,225.00	6,017.97	173.67	27.05	4.00	688.94	-10,845.17	21,699.35	21,643.53	55.82	388.740	
17,400.00	6,942.49	6,225.00	6,017.97	175.26	27.05	4.00	688.94	-10,845.17	21,799.23	21,743.33	55.90	389.936	
17,500.00	6,942.50	6,225.00	6,017.97	176.84	27.05	4.00	688.94	-10,845.17	21,899.12	21,843.13	55.99	391.125	
17,600.00	6,942.52	6,225.00	6,017.97	178.43	27.05	4.00	688.94	-10,845.17	21,999.02	21,942.94	56.08	392.307	
17,700.00	6,942.53	6,225.00	6,017.97	180.01	27.05	4.00	688.94	-10,845.17	22,098.91	22,042.74	56.16	393.481	
17,800.00	6,942.55	6,225.00	6,017.97	181.60	27.05	4.00	688.94	-10,845.17	22,198.80	22,142.55	56.25	394.649	
17,900.00	6,942.56	6,225.00	6,017.97	183.19	27.05	4.00	688.94	-10,845.17	22,298.69	22,242.36	56.34	395.809	
18,000.00	6,942.58	6,225.00	6,017.97	184.77	27.05	4.00	688.94	-10,845.17	22,398.59	22,342.16	56.43	396.962	
18,100.00	6,942.59	6,225.00	6,017.97	186.36	27.05	4.00	688.94	-10,845.17	22,498.48	22,441.97	56.51	398.107	
18,200.00	6,942.61	6,225.00	6,017.97	187.95	27.05	4.00	688.94	-10,845.17	22,598.38	22,541.78	56.60	399.246	
18,300.00	6,942.62	6,225.00	6,017.97	189.54	27.05	4.00	688.94	-10,845.17	22,698.28	22,641.59	56.69	400.377	
18,400.00	6,942.64	6,225.00	6,017.97	191.12	27.05	4.00	688.94	-10,845.17	22,798.18	22,741.39	56.78	401.502	
18,500.00	6,942.65	6,225.00	6,017.97	192.71	27.05	4.00	688.94	-10,845.17	22,898.07	22,841.20	56.87	402.619	
18,600.00	6,942.67	6,225.00	6,017.97	194.30	27.05	4.00	688.94	-10,845.17	22,997.97	22,941.01	56.96	403.730	
18,700.00	6,942.68	6,225.00	6,017.97	195.89	27.05	4.00	688.94	-10,845.17	23,097.88	23,040.82	57.06	404.833	
18,800.00	6,942.70	6,225.00	6,017.97	197.48	27.05	4.00	688.94	-10,845.17	23,197.78	23,140.63	57.15	405.930	
18,900.00	6,942.71	6,225.00	6,017.97	199.07	27.05	4.00	688.94	-10,845.17	23,297.68	23,240.44	57.24	407.020	
19,000.00	6,942.73	6,225.00	6,017.97	200.66	27.05	4.00	688.94	-10,845.17	23,397.58	23,340.25	57.33	408.103	
19,100.00	6,942.74	6,225.00	6,017.97	202.25	27.05	4.00	688.94	-10,845.17	23,497.49	23,440.06	57.43	409.179	
19,200.00	6,942.76	6,225.00	6,017.97	203.84	27.05	4.00	688.94	-10,845.17	23,597.39	23,539.87	57.52	410.248	
19,300.00	6,942.77	6,225.00	6,017.97	205.43	27.05	4.00	688.94	-10,845.17	23,697.30	23,639.68	57.61	411.311	
19,400.00	6,942.78	6,225.00	6,017.97	207.02	27.05	4.00	688.94	-10,845.17	23,797.21	23,739.50	57.71	412.366	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 **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
19,500.00	6,942.80	6,225.00	6,017.97	208.61	27.05	4.00	688.94	-10,845.17	23,897.11	23,839.31	57.80	413.416	
19,600.00	6,942.81	6,225.00	6,017.97	210.20	27.05	4.00	688.94	-10,845.17	23,997.02	23,939.12	57.90	414.458	
19,700.00	6,942.83	6,225.00	6,017.97	211.79	27.05	4.00	688.94	-10,845.17	24,096.93	24,038.93	58.00	415.494	
19,800.00	6,942.84	6,225.00	6,017.97	213.38	27.05	4.00	688.94	-10,845.17	24,196.84	24,138.75	58.09	416.524	
19,900.00	6,942.86	6,225.00	6,017.97	214.97	27.05	4.00	688.94	-10,845.17	24,296.75	24,238.56	58.19	417.547	
20,000.00	6,942.87	6,225.00	6,017.97	216.56	27.05	4.00	688.94	-10,845.17	24,396.66	24,338.37	58.29	418.563	
20,100.00	6,942.89	6,225.00	6,017.97	218.15	27.05	4.00	688.94	-10,845.17	24,496.57	24,438.19	58.38	419.573	
20,200.00	6,942.90	6,225.00	6,017.97	219.75	27.05	4.00	688.94	-10,845.17	24,596.49	24,538.00	58.48	420.577	
20,300.00	6,942.92	6,225.00	6,017.97	221.34	27.05	4.00	688.94	-10,845.17	24,696.40	24,637.82	58.58	421.574	
20,400.00	6,942.93	6,225.00	6,017.97	222.93	27.05	4.00	688.94	-10,845.17	24,796.31	24,737.63	58.68	422.565	
20,500.00	6,942.95	6,225.00	6,017.97	224.52	27.05	4.00	688.94	-10,845.17	24,896.23	24,837.45	58.78	423.550	
20,600.00	6,942.96	6,225.00	6,017.97	226.12	27.05	4.00	688.94	-10,845.17	24,996.14	24,937.26	58.88	424.529	
20,700.00	6,942.98	6,225.00	6,017.97	227.71	27.05	4.00	688.94	-10,845.17	25,096.06	25,037.08	58.98	425.501	
20,800.00	6,942.99	6,225.00	6,017.97	229.30	27.05	4.00	688.94	-10,845.17	25,195.98	25,136.90	59.08	426.467	
20,855.77	6,943.00	6,225.00	6,017.97	230.19	27.05	4.00	688.94	-10,845.17	25,251.70	25,192.56	59.14	427.003	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	161.37	161.37	0.00	0.48	-115.96	-1,668.19	-3,427.03	3,811.48				
100.00	100.00	257.14	257.14	0.25	0.81	-115.96	-1,668.16	-3,427.04	3,811.49	3,810.43	1.06	3,587.865	
200.00	200.00	362.72	362.72	0.61	1.18	-115.95	-1,668.26	-3,427.31	3,811.77	3,809.98	1.79	2,129.140	
300.00	300.00	440.35	440.35	0.97	1.45	-115.95	-1,668.25	-3,427.52	3,812.03	3,809.61	2.42	1,575.041	
400.00	400.00	550.00	550.00	1.33	1.84	-115.96	-1,668.62	-3,427.76	3,812.36	3,809.20	3.16	1,205.540	
500.00	500.00	650.00	649.99	1.68	2.19	-115.96	-1,669.19	-3,427.97	3,812.80	3,808.92	3.87	985.034 ES	
600.00	599.98	756.13	756.12	2.04	2.56	-136.71	-1,669.91	-3,428.18	3,814.55	3,809.95	4.60	829.270	
700.00	699.84	845.64	845.63	2.40	2.87	-136.70	-1,670.23	-3,428.47	3,818.80	3,813.53	5.27	724.296	
800.00	799.45	950.76	950.75	2.77	3.24	-136.70	-1,670.12	-3,428.83	3,825.41	3,819.41	6.00	637.503	
845.27	844.44	1,001.97	1,001.96	2.93	3.42	-136.70	-1,670.00	-3,429.07	3,829.27	3,822.92	6.34	603.528	
900.00	898.77	1,070.33	1,070.31	3.13	3.66	-136.78	-1,669.60	-3,429.21	3,834.02	3,827.24	6.78	565.432	
1,000.00	998.04	1,176.45	1,176.43	3.50	4.03	-136.89	-1,668.47	-3,429.64	3,842.72	3,835.21	7.51	511.449	
1,100.00	1,097.32	1,262.49	1,262.46	3.87	4.33	-136.98	-1,667.24	-3,430.03	3,851.31	3,843.13	8.18	470.893	
1,200.00	1,196.59	1,369.82	1,369.78	4.24	4.70	-137.09	-1,665.98	-3,430.59	3,860.09	3,851.17	8.92	432.744	
1,300.00	1,295.87	1,453.63	1,453.58	4.62	4.99	-137.17	-1,664.79	-3,431.21	3,868.95	3,859.36	9.58	403.835	
1,400.00	1,395.14	1,563.14	1,563.08	5.00	5.38	-137.28	-1,663.30	-3,431.87	3,877.73	3,867.39	10.33	375.316	
1,500.00	1,494.42	1,675.76	1,675.69	5.38	5.77	-137.39	-1,661.84	-3,432.51	3,886.53	3,875.44	11.10	350.293	
1,600.00	1,593.69	1,782.04	1,781.95	5.76	6.14	-137.50	-1,660.54	-3,432.79	3,895.11	3,883.27	11.84	329.078	
1,700.00	1,692.96	1,877.62	1,877.53	6.14	6.48	-137.60	-1,659.27	-3,432.85	3,903.46	3,890.92	12.54	311.267	
1,800.00	1,792.24	1,976.34	1,976.24	6.52	6.82	-137.70	-1,658.14	-3,432.89	3,911.90	3,898.64	13.26	295.102	
1,900.00	1,891.51	2,069.74	2,069.64	6.91	7.15	-137.80	-1,657.41	-3,432.90	3,920.48	3,906.52	13.95	280.976	
2,000.00	1,990.79	2,175.70	2,175.60	7.29	7.52	-137.92	-1,656.71	-3,432.91	3,929.13	3,914.44	14.69	267.380	
2,100.00	2,090.06	2,263.87	2,263.77	7.67	7.83	-138.01	-1,656.11	-3,432.94	3,937.80	3,922.42	15.37	256.138	
2,200.00	2,189.34	2,350.00	2,349.89	8.06	8.13	-138.11	-1,655.75	-3,433.10	3,946.74	3,930.70	16.05	245.976	
2,300.00	2,288.61	2,430.88	2,430.77	8.44	8.41	-138.20	-1,655.55	-3,433.43	3,955.99	3,939.29	16.70	236.917	
2,400.00	2,387.89	2,532.40	2,532.29	8.82	8.77	-138.31	-1,655.59	-3,434.14	3,965.62	3,948.20	17.43	227.582	
2,500.00	2,487.16	2,638.77	2,638.66	9.21	9.14	-138.43	-1,655.32	-3,434.81	3,975.08	3,956.91	18.17	218.773	
2,600.00	2,586.44	2,748.06	2,747.94	9.59	9.52	-138.54	-1,654.63	-3,435.42	3,984.31	3,965.38	18.93	210.528	
2,700.00	2,685.71	2,856.32	2,856.20	9.98	9.90	-138.66	-1,654.08	-3,435.72	3,993.37	3,973.69	19.68	202.947	
2,800.00	2,784.99	2,950.00	2,949.88	10.36	10.23	-138.76	-1,653.60	-3,435.89	4,002.35	3,981.97	20.38	196.429	
2,900.00	2,884.26	3,039.10	3,038.98	10.75	10.54	-138.85	-1,653.49	-3,435.99	4,011.47	3,990.41	21.06	190.501	
3,000.00	2,983.53	3,122.07	3,121.95	11.13	10.83	-138.95	-1,653.61	-3,436.27	4,020.94	3,999.22	21.72	185.151	
3,100.00	3,082.81	3,200.00	3,199.88	11.52	11.10	-139.04	-1,654.02	-3,436.72	4,030.84	4,008.48	22.36	180.290	
3,200.00	3,182.08	3,300.00	3,299.87	11.90	11.45	-139.16	-1,655.31	-3,437.37	4,041.14	4,018.06	23.08	175.098	
3,300.00	3,281.36	3,418.29	3,418.13	12.29	11.86	-139.32	-1,657.69	-3,437.56	4,051.42	4,027.55	23.87	169.736	
3,400.00	3,380.63	3,506.63	3,506.45	12.67	12.17	-139.44	-1,659.14	-3,437.64	4,061.44	4,036.89	24.55	165.453	
3,500.00	3,479.91	3,629.07	3,628.88	13.06	12.59	-139.60	-1,660.84	-3,437.55	4,071.20	4,045.85	25.35	160.585	
3,600.00	3,579.18	3,721.61	3,721.42	13.44	12.92	-139.71	-1,661.79	-3,437.69	4,081.01	4,054.97	26.05	156.681	
3,700.00	3,678.46	3,839.01	3,838.82	13.83	13.32	-139.85	-1,663.03	-3,437.51	4,090.61	4,063.77	26.83	152.448	
3,800.00	3,777.73	3,923.51	3,923.31	14.21	13.62	-139.95	-1,663.71	-3,437.42	4,100.13	4,072.64	27.50	149.112	
3,900.00	3,877.01	4,003.24	4,003.04	14.60	13.90	-140.05	-1,664.62	-3,437.55	4,110.08	4,081.93	28.14	146.044	
4,000.00	3,976.28	4,102.67	4,102.45	14.98	14.24	-140.18	-1,666.42	-3,437.64	4,120.30	4,091.44	28.86	142.757	
4,100.00	4,075.55	4,195.38	4,195.15	15.37	14.57	-140.30	-1,668.03	-3,437.73	4,130.52	4,100.96	29.56	139.751	
4,200.00	4,174.83	4,265.26	4,265.01	15.75	14.81	-140.39	-1,669.39	-3,438.12	4,141.26	4,111.09	30.16	137.296	
4,300.00	4,274.10	4,338.66	4,338.38	16.14	15.07	-140.48	-1,671.36	-3,438.81	4,152.69	4,121.91	30.78	134.908	
4,400.00	4,373.38	4,423.18	4,422.85	16.53	15.36	-140.60	-1,674.18	-3,439.72	4,164.60	4,133.16	31.44	132.452	
4,500.00	4,472.65	4,506.59	4,506.20	16.91	15.65	-140.71	-1,677.13	-3,440.88	4,176.90	4,144.80	32.10	130.129	
4,600.00	4,571.93	4,584.22	4,583.77	17.30	15.93	-140.82	-1,679.88	-3,442.33	4,189.63	4,156.90	32.73	128.004	
4,700.00	4,671.20	4,663.05	4,662.51	17.68	16.20	-140.93	-1,683.05	-3,444.19	4,203.00	4,169.64	33.37	125.965	
4,800.00	4,770.48	4,754.86	4,754.23	18.07	16.52	-141.05	-1,686.62	-3,446.44	4,216.46	4,182.41	34.05	123.817	
4,900.00	4,869.75	4,825.00	4,824.28	18.45	16.77	-141.14	-1,689.23	-3,448.60	4,230.40	4,195.75	34.65	122.079	
5,000.00	4,969.03	4,932.71	4,931.85	18.84	17.14	-141.27	-1,693.34	-3,452.07	4,244.49	4,209.08	35.41	119.882	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,030.21	5,029.24	19.23	17.49	-141.39	-1,696.82	-3,455.38	4,258.63	4,222.52	36.12	117.915	
5,200.00	5,167.58	5,125.00	5,123.91	19.61	17.82	-141.50	-1,700.14	-3,458.70	4,272.86	4,236.04	36.82	116.061	
5,300.00	5,266.85	5,216.80	5,215.59	20.00	18.14	-141.61	-1,703.47	-3,462.03	4,287.26	4,249.76	37.50	114.318	
5,400.00	5,366.12	5,308.86	5,307.52	20.38	18.46	-141.72	-1,706.94	-3,465.46	4,301.84	4,263.65	38.19	112.641	
5,500.00	5,465.40	5,416.44	5,414.96	20.77	18.84	-141.84	-1,710.73	-3,469.57	4,316.39	4,277.45	38.94	110.837	
5,600.00	5,564.67	5,513.80	5,512.19	21.15	19.18	-141.95	-1,714.19	-3,473.20	4,330.89	4,291.24	39.65	109.218	
5,700.00	5,663.95	5,616.68	5,614.93	21.54	19.54	-142.06	-1,717.62	-3,476.98	4,345.25	4,304.86	40.39	107.591	
5,800.00	5,763.22	5,714.61	5,712.74	21.93	19.88	-142.17	-1,720.88	-3,480.56	4,359.61	4,318.51	41.10	106.074	
5,900.00	5,862.50	5,811.10	5,809.12	22.31	20.22	-142.28	-1,724.23	-3,484.17	4,374.12	4,332.32	41.81	104.629	
6,000.00	5,961.77	5,915.65	5,913.52	22.70	20.58	-142.40	-1,728.00	-3,488.01	4,388.68	4,346.13	42.55	103.150	
6,100.00	6,061.05	6,000.08	5,997.84	23.08	20.88	-142.49	-1,731.09	-3,491.01	4,403.18	4,359.98	43.20	101.920	
6,200.00	6,160.32	6,108.92	6,106.54	23.47	21.26	-142.61	-1,735.21	-3,494.92	4,417.78	4,373.82	43.96	100.493	
6,300.00	6,259.60	6,184.74	6,182.25	23.86	21.53	-142.70	-1,738.15	-3,497.82	4,432.63	4,388.05	44.58	99.431	
6,376.00	6,335.04	6,250.00	6,247.40	24.15	21.76	-142.77	-1,740.62	-3,500.42	4,444.02	4,398.93	45.08	98.576	
6,400.00	6,358.85	6,287.18	6,284.53	24.24	21.89	-157.74	-1,742.02	-3,501.96	4,448.01	4,402.70	45.31	98.164	
6,450.00	6,408.16	6,325.00	6,322.29	24.44	22.02	-177.48	-1,743.46	-3,503.52	4,458.74	4,413.13	45.62	97.739	
6,500.00	6,456.87	6,375.00	6,372.21	24.64	22.19	171.87	-1,745.27	-3,505.60	4,472.62	4,426.65	45.97	97.286	
6,550.00	6,504.65	6,416.57	6,413.71	24.85	22.34	165.26	-1,746.77	-3,507.50	4,489.75	4,443.46	46.29	96.997	
6,600.00	6,551.23	6,450.00	6,447.08	25.06	22.46	160.54	-1,747.98	-3,509.00	4,509.87	4,463.31	46.56	96.864	
6,650.00	6,596.31	6,508.77	6,505.76	25.26	22.66	156.80	-1,750.04	-3,511.67	4,532.83	4,485.90	46.93	96.583	
6,700.00	6,639.62	6,540.72	6,537.65	25.48	22.78	153.47	-1,751.24	-3,513.11	4,558.58	4,511.40	47.18	96.620	
6,750.00	6,680.88	6,592.26	6,589.11	25.69	22.96	150.38	-1,753.08	-3,515.36	4,586.82	4,539.32	47.50	96.555	
6,800.00	6,719.85	6,652.15	6,648.91	25.91	23.17	147.35	-1,755.28	-3,517.83	4,617.49	4,569.63	47.86	96.488	SF
6,850.00	6,756.28	6,682.82	6,679.54	26.13	23.27	144.04	-1,756.40	-3,518.97	4,650.29	4,602.21	48.07	96.739	
6,900.00	6,789.95	6,744.41	6,741.05	26.37	23.49	140.71	-1,758.52	-3,521.24	4,685.13	4,636.73	48.41	96.785	
6,950.00	6,820.65	6,772.55	6,769.16	26.61	23.59	136.79	-1,759.44	-3,522.19	4,721.76	4,673.17	48.59	97.174	
7,000.00	6,848.19	6,839.83	6,836.38	26.87	23.82	132.86	-1,761.47	-3,524.11	4,759.87	4,710.94	48.93	97.276	
7,050.00	6,872.41	6,898.29	6,894.80	27.13	24.03	128.44	-1,763.10	-3,525.49	4,799.45	4,750.22	49.22	97.504	
7,100.00	6,893.15	6,913.91	6,910.41	27.41	24.08	122.86	-1,763.52	-3,525.78	4,840.18	4,790.86	49.32	98.131	
7,150.00	6,910.28	6,925.63	6,922.12	27.71	24.12	116.54	-1,763.85	-3,526.01	4,882.00	4,832.60	49.40	98.831	
7,200.00	6,923.70	6,939.63	6,936.12	28.02	24.17	109.62	-1,764.25	-3,526.28	4,924.63	4,875.16	49.47	99.542	
7,250.00	6,933.33	6,949.32	6,945.80	28.34	24.21	102.12	-1,764.51	-3,526.47	4,967.82	4,918.30	49.52	100.316	
7,300.00	6,939.11	6,972.60	6,969.07	28.67	24.29	94.67	-1,765.09	-3,526.92	5,011.30	4,961.68	49.62	100.989	
7,349.12	6,941.00	6,978.24	6,974.71	29.00	24.31	87.00	-1,765.21	-3,527.02	5,054.07	5,004.43	49.64	101.810	
7,400.00	6,941.01	6,973.22	6,969.68	29.36	24.29	86.88	-1,765.10	-3,526.93	5,098.38	5,048.76	49.62	102.755	
7,500.00	6,941.02	6,962.41	6,958.88	30.11	24.25	86.64	-1,764.85	-3,526.73	5,185.80	5,136.23	49.58	104.601	
7,600.00	6,941.04	6,950.18	6,946.66	30.93	24.21	86.36	-1,764.53	-3,526.49	5,273.67	5,224.12	49.55	106.439	
7,700.00	6,941.05	6,947.84	6,944.32	31.80	24.20	86.30	-1,764.47	-3,526.44	5,361.96	5,312.39	49.57	108.163	
7,800.00	6,941.07	6,945.67	6,942.15	32.73	24.19	86.25	-1,764.41	-3,526.40	5,450.66	5,401.04	49.61	109.862	
7,900.00	6,941.08	6,943.52	6,940.00	33.71	24.19	86.20	-1,764.36	-3,526.36	5,539.74	5,490.07	49.67	111.541	
8,000.00	6,941.10	6,941.40	6,937.88	34.73	24.18	86.15	-1,764.30	-3,526.31	5,629.18	5,579.45	49.73	113.198	
8,100.00	6,941.11	6,939.29	6,935.78	35.79	24.17	86.11	-1,764.24	-3,526.27	5,718.98	5,669.17	49.80	114.837	
8,200.00	6,941.13	6,937.21	6,933.69	36.90	24.16	86.06	-1,764.18	-3,526.23	5,809.10	5,759.22	49.88	116.457	
8,300.00	6,941.14	6,935.14	6,931.63	38.03	24.16	86.01	-1,764.12	-3,526.19	5,899.55	5,849.58	49.97	118.061	
8,400.00	6,941.16	6,933.10	6,929.59	39.20	24.15	85.96	-1,764.07	-3,526.15	5,990.29	5,940.23	50.07	119.649	
8,500.00	6,941.17	6,931.08	6,927.57	40.40	24.14	85.92	-1,764.01	-3,526.11	6,081.33	6,031.16	50.17	121.221	
8,600.00	6,941.19	6,929.07	6,925.57	41.63	24.14	85.87	-1,763.95	-3,526.07	6,172.65	6,122.37	50.27	122.780	
8,700.00	6,941.20	6,927.09	6,923.58	42.88	24.13	85.83	-1,763.89	-3,526.03	6,264.22	6,213.84	50.39	124.326	
8,800.00	6,941.22	6,925.13	6,921.62	44.16	24.12	85.78	-1,763.84	-3,526.00	6,356.06	6,305.55	50.50	125.859	
8,900.00	6,941.23	6,925.00	6,921.49	45.45	24.12	85.78	-1,763.83	-3,525.99	6,448.13	6,397.50	50.63	127.361	
9,000.00	6,941.24	6,925.00	6,921.49	46.76	24.12	85.78	-1,763.83	-3,525.99	6,540.44	6,489.68	50.76	128.851	
9,100.00	6,941.26	6,921.10	6,917.59	48.10	24.11	85.69	-1,763.72	-3,525.92	6,632.97	6,582.09	50.88	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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,919.77	6,916.27	49.44	24.10	85.66	-1,763.68	-3,525.89	6,725.71	6,674.70	51.01	131.859	
9,300.00	6,941.29	6,918.44	6,914.94	50.80	24.10	85.63	-1,763.64	-3,525.87	6,818.66	6,767.52	51.14	133.336	
9,400.00	6,941.30	6,917.12	6,913.62	52.18	24.09	85.60	-1,763.60	-3,525.84	6,911.80	6,860.53	51.27	134.804	
9,500.00	6,941.32	6,915.79	6,912.29	53.57	24.09	85.57	-1,763.57	-3,525.82	7,005.13	6,953.73	51.41	136.265	
9,600.00	6,941.33	6,914.47	6,910.97	54.97	24.09	85.54	-1,763.53	-3,525.79	7,098.65	7,047.10	51.54	137.719	
9,700.00	6,941.35	6,913.14	6,909.64	56.38	24.08	85.51	-1,763.49	-3,525.77	7,192.34	7,140.65	51.68	139.165	
9,800.00	6,941.36	6,911.82	6,908.32	57.80	24.08	85.48	-1,763.46	-3,525.74	7,286.19	7,234.37	51.82	140.606	
9,900.00	6,941.38	6,910.50	6,907.00	59.23	24.07	85.45	-1,763.42	-3,525.72	7,380.21	7,328.25	51.96	142.040	
10,000.00	6,941.39	6,909.17	6,905.68	60.67	24.07	85.42	-1,763.39	-3,525.69	7,474.38	7,422.28	52.10	143.469	
10,100.00	6,941.41	6,907.85	6,904.36	62.11	24.06	85.39	-1,763.35	-3,525.67	7,568.70	7,516.46	52.24	144.892	
10,200.00	6,941.42	6,891.10	6,887.62	63.57	24.00	85.00	-1,762.91	-3,525.33	7,663.16	7,610.86	52.31	146.498	
10,300.00	6,941.44	6,850.00	6,846.54	65.03	23.86	84.06	-1,761.78	-3,524.37	7,757.76	7,705.49	52.28	148.401	
10,400.00	6,941.45	6,845.83	6,842.38	66.50	23.84	83.97	-1,761.65	-3,524.26	7,852.48	7,800.08	52.40	149.849	
10,500.00	6,941.47	6,844.15	6,840.69	67.97	23.84	83.93	-1,761.60	-3,524.22	7,947.33	7,894.79	52.54	151.262	
10,600.00	6,941.48	6,842.48	6,839.02	69.45	23.83	83.89	-1,761.55	-3,524.18	8,042.30	7,989.63	52.68	152.670	
10,700.00	6,941.50	6,840.82	6,837.36	70.94	23.83	83.85	-1,761.50	-3,524.14	8,137.40	8,084.58	52.81	154.074	
10,800.00	6,941.51	6,839.17	6,835.72	72.43	23.82	83.82	-1,761.45	-3,524.09	8,232.61	8,179.65	52.95	155.474	
10,900.00	6,941.53	6,837.53	6,834.08	73.92	23.82	83.78	-1,761.40	-3,524.05	8,327.93	8,274.84	53.09	156.870	
11,000.00	6,941.54	6,758.01	6,754.64	75.42	23.54	81.97	-1,758.97	-3,521.70	8,423.34	8,370.45	52.89	159.270	
11,100.00	6,941.56	6,755.13	6,751.75	76.92	23.53	81.90	-1,758.87	-3,521.60	8,518.85	8,465.83	53.02	160.680	
11,200.00	6,941.57	6,752.26	6,748.89	78.43	23.52	81.84	-1,758.78	-3,521.50	8,614.45	8,561.31	53.15	162.086	
11,300.00	6,941.59	6,749.30	6,745.93	79.94	23.51	81.77	-1,758.68	-3,521.41	8,710.16	8,656.88	53.28	163.490	
11,400.00	6,941.60	6,745.91	6,742.54	81.46	23.49	81.70	-1,758.57	-3,521.29	8,805.96	8,752.55	53.40	164.897	
11,500.00	6,941.61	6,687.15	6,683.85	82.98	23.29	80.37	-1,756.57	-3,519.14	8,901.82	8,848.53	53.29	167.044	
11,600.00	6,941.63	6,685.56	6,682.27	84.50	23.28	80.33	-1,756.51	-3,519.08	8,997.78	8,944.35	53.42	168.423	
11,700.00	6,941.64	6,684.00	6,680.71	86.02	23.28	80.30	-1,756.45	-3,519.02	9,093.82	9,040.26	53.56	169.799	
11,800.00	6,941.66	6,682.45	6,679.17	87.55	23.27	80.26	-1,756.39	-3,518.96	9,189.95	9,136.26	53.69	171.171	
11,900.00	6,941.67	6,675.00	6,671.73	89.08	23.25	80.09	-1,756.11	-3,518.68	9,286.16	9,232.36	53.79	172.622	
12,000.00	6,941.69	6,675.00	6,671.73	90.61	23.25	80.09	-1,756.11	-3,518.68	9,382.44	9,328.51	53.93	173.967	
12,100.00	6,941.70	6,675.00	6,671.73	92.14	23.25	80.09	-1,756.11	-3,518.68	9,478.80	9,424.73	54.07	175.309	
12,200.00	6,941.72	6,674.61	6,671.34	93.68	23.24	80.09	-1,756.10	-3,518.67	9,575.24	9,521.04	54.20	176.654	
12,300.00	6,941.73	6,674.92	6,671.64	95.22	23.25	80.09	-1,756.11	-3,518.68	9,671.75	9,617.41	54.34	177.985	
12,400.00	6,941.75	6,669.49	6,666.22	96.76	23.23	79.97	-1,755.91	-3,518.48	9,768.32	9,713.87	54.45	179.394	
12,500.00	6,941.76	6,664.00	6,660.74	98.30	23.21	79.85	-1,755.71	-3,518.27	9,864.97	9,810.41	54.56	180.802	
12,600.00	6,941.78	6,600.00	6,596.84	99.85	22.98	78.41	-1,753.37	-3,515.69	9,961.67	9,907.24	54.43	183.034	
12,700.00	6,941.79	6,600.00	6,596.84	101.40	22.98	78.41	-1,753.37	-3,515.69	10,058.42	10,003.86	54.56	184.361	
12,800.00	6,941.81	6,600.00	6,596.84	102.95	22.98	78.41	-1,753.37	-3,515.69	10,155.23	10,100.54	54.69	185.685	
12,900.00	6,941.82	6,600.00	6,596.84	104.50	22.98	78.41	-1,753.37	-3,515.69	10,252.10	10,197.28	54.82	187.006	
13,000.00	6,941.84	6,591.73	6,588.58	106.05	22.95	78.23	-1,753.06	-3,515.33	10,349.02	10,294.10	54.92	188.443	
13,100.00	6,941.85	6,590.12	6,586.98	107.60	22.95	78.19	-1,753.00	-3,515.27	10,446.01	10,390.97	55.04	189.782	
13,200.00	6,941.87	6,588.54	6,585.39	109.16	22.94	78.16	-1,752.94	-3,515.20	10,543.05	10,487.88	55.17	191.117	
13,300.00	6,941.88	6,586.97	6,583.83	110.71	22.94	78.12	-1,752.88	-3,515.13	10,640.15	10,584.86	55.29	192.450	
13,400.00	6,941.90	6,585.42	6,582.28	112.27	22.93	78.09	-1,752.82	-3,515.07	10,737.29	10,681.88	55.41	193.779	
13,500.00	6,941.91	6,534.40	6,531.34	113.83	22.75	76.96	-1,751.01	-3,512.82	10,834.49	10,779.16	55.33	195.827	
13,600.00	6,941.93	6,531.33	6,528.27	115.39	22.74	76.89	-1,750.90	-3,512.68	10,931.72	10,876.27	55.44	197.175	
13,700.00	6,941.94	6,525.00	6,521.96	116.95	22.72	76.75	-1,750.65	-3,512.40	11,029.00	10,973.45	55.54	198.568	
13,800.00	6,941.96	6,525.00	6,521.96	118.51	22.72	76.75	-1,750.65	-3,512.40	11,126.32	11,070.65	55.67	199.865	
13,900.00	6,941.97	6,525.00	6,521.96	120.08	22.72	76.75	-1,750.65	-3,512.40	11,223.69	11,167.89	55.80	201.158	
14,000.00	6,941.99	6,525.00	6,521.96	121.64	22.72	76.75	-1,750.65	-3,512.40	11,321.11	11,265.19	55.92	202.449	
14,100.00	6,942.00	6,525.00	6,521.96	123.21	22.72	76.75	-1,750.65	-3,512.40	11,418.57	11,362.52	56.05	203.737	
14,200.00	6,942.01	6,517.09	6,514.06	124.77	22.69	76.58	-1,750.35	-3,512.04	11,516.07	11,459.93	56.14	205.140	
14,300.00	6,942.03	6,515.09	6,512.06	126.34	22.69	76.53	-1,750.27	-3,511.95	11,613.61	11,557.36	56.25	206.452	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,400.00	6,942.04	6,513.10	6,510.08	127.91	22.68	76.49	-1,750.20	-3,511.86	11,711.20	11,654.83	56.37	207.761	
14,500.00	6,942.06	6,511.12	6,508.10	129.48	22.67	76.45	-1,750.13	-3,511.78	11,808.82	11,752.34	56.48	209.066	
14,600.00	6,942.07	6,509.16	6,506.14	131.05	22.66	76.40	-1,750.06	-3,511.69	11,906.48	11,849.89	56.60	210.369	
14,700.00	6,942.09	6,507.20	6,504.19	132.62	22.66	76.36	-1,749.99	-3,511.60	12,004.19	11,947.47	56.71	211.668	
14,800.00	6,942.10	6,494.27	6,491.28	134.19	22.61	76.07	-1,749.54	-3,511.03	12,101.92	12,045.14	56.78	213.130	
14,900.00	6,942.12	6,489.80	6,486.82	135.76	22.60	75.98	-1,749.39	-3,510.83	12,199.69	12,142.81	56.89	214.462	
15,000.00	6,942.13	6,485.34	6,482.36	137.34	22.58	75.88	-1,749.24	-3,510.63	12,297.50	12,240.51	56.99	215.791	
15,100.00	6,942.15	6,454.91	6,451.98	138.91	22.47	75.21	-1,748.17	-3,509.23	12,395.33	12,338.34	56.99	217.512	
15,200.00	6,942.16	6,450.00	6,447.08	140.48	22.46	75.11	-1,747.98	-3,509.00	12,493.19	12,436.10	57.09	218.843	
15,300.00	6,942.18	6,450.00	6,447.08	142.06	22.46	75.11	-1,747.98	-3,509.00	12,591.08	12,533.87	57.21	220.095	
15,400.00	6,942.19	6,450.00	6,447.08	143.64	22.46	75.11	-1,747.98	-3,509.00	12,689.00	12,631.68	57.33	221.345	
15,500.00	6,942.21	6,450.00	6,447.08	145.21	22.46	75.11	-1,747.98	-3,509.00	12,786.96	12,729.52	57.45	222.591	
15,600.00	6,942.22	6,442.02	6,439.12	146.79	22.43	74.93	-1,747.68	-3,508.64	12,884.94	12,827.41	57.53	223.957	
15,700.00	6,942.24	6,440.22	6,437.32	148.37	22.42	74.89	-1,747.61	-3,508.56	12,982.96	12,925.32	57.64	225.225	
15,800.00	6,942.25	6,438.44	6,435.54	149.94	22.42	74.85	-1,747.54	-3,508.47	13,081.01	13,023.25	57.76	226.489	
15,900.00	6,942.27	6,436.67	6,433.77	151.52	22.41	74.82	-1,747.48	-3,508.39	13,179.08	13,121.22	57.87	227.750	
16,000.00	6,942.28	6,434.91	6,432.02	153.10	22.40	74.78	-1,747.41	-3,508.32	13,277.19	13,219.21	57.98	229.008	
16,100.00	6,942.30	6,433.16	6,430.27	154.68	22.40	74.74	-1,747.35	-3,508.24	13,375.32	13,317.23	58.09	230.262	
16,200.00	6,942.31	6,412.32	6,409.46	156.26	22.33	74.29	-1,746.63	-3,507.29	13,473.47	13,415.35	58.12	231.810	
16,300.00	6,942.33	6,407.71	6,404.87	157.84	22.31	74.19	-1,746.47	-3,507.07	13,571.65	13,513.43	58.22	233.103	
16,400.00	6,942.34	6,403.10	6,400.27	159.42	22.29	74.09	-1,746.31	-3,506.86	13,669.85	13,611.53	58.32	234.392	
16,500.00	6,942.36	6,400.00	6,397.17	161.00	22.28	74.02	-1,746.20	-3,506.71	13,768.08	13,709.65	58.42	235.655	
16,600.00	6,942.37	6,400.00	6,397.17	162.59	22.28	74.02	-1,746.20	-3,506.71	13,866.33	13,807.79	58.54	236.866	
16,700.00	6,942.38	6,400.00	6,397.17	164.17	22.28	74.02	-1,746.20	-3,506.71	13,964.60	13,905.95	58.66	238.074	
16,800.00	6,942.40	6,400.00	6,397.17	165.75	22.28	74.02	-1,746.20	-3,506.71	14,062.90	14,004.13	58.77	239.278	
16,900.00	6,942.41	6,389.30	6,386.49	167.33	22.24	73.79	-1,745.83	-3,506.21	14,161.21	14,102.36	58.85	240.648	
17,000.00	6,942.43	6,388.36	6,385.54	168.92	22.24	73.77	-1,745.79	-3,506.17	14,259.55	14,200.60	58.96	241.861	
17,100.00	6,942.44	6,387.43	6,384.61	170.50	22.24	73.75	-1,745.76	-3,506.13	14,357.92	14,298.85	59.07	243.070	
17,200.00	6,942.46	6,386.51	6,383.70	172.09	22.23	73.73	-1,745.72	-3,506.09	14,456.31	14,397.13	59.18	244.275	
17,300.00	6,942.47	6,385.60	6,382.79	173.67	22.23	73.71	-1,745.69	-3,506.05	14,554.72	14,495.43	59.29	245.477	
17,400.00	6,942.49	6,375.00	6,372.21	175.26	22.19	73.48	-1,745.27	-3,505.60	14,653.17	14,593.80	59.37	246.832	
17,500.00	6,942.50	6,375.00	6,372.21	176.84	22.19	73.48	-1,745.27	-3,505.60	14,751.62	14,692.14	59.48	248.012	
17,600.00	6,942.52	6,375.00	6,372.21	178.43	22.19	73.48	-1,745.27	-3,505.60	14,850.09	14,790.49	59.59	249.190	
17,700.00	6,942.53	6,375.00	6,372.21	180.01	22.19	73.48	-1,745.27	-3,505.60	14,948.58	14,888.87	59.71	250.363	
17,800.00	6,942.55	6,375.00	6,372.21	181.60	22.19	73.48	-1,745.27	-3,505.60	15,047.09	14,987.27	59.82	251.534	
17,900.00	6,942.56	6,375.00	6,372.21	183.19	22.19	73.48	-1,745.27	-3,505.60	15,145.62	15,085.68	59.94	252.700	
18,000.00	6,942.58	6,375.00	6,372.21	184.77	22.19	73.48	-1,745.27	-3,505.60	15,244.17	15,184.12	60.05	253.864	
18,100.00	6,942.59	6,375.00	6,372.21	186.36	22.19	73.48	-1,745.27	-3,505.60	15,342.74	15,282.57	60.16	255.023	
18,200.00	6,942.61	6,375.00	6,372.21	187.95	22.19	73.48	-1,745.27	-3,505.60	15,441.32	15,381.05	60.28	256.180	
18,300.00	6,942.62	6,375.00	6,372.21	189.54	22.19	73.48	-1,745.27	-3,505.60	15,539.93	15,479.54	60.39	257.332	
18,400.00	6,942.64	6,375.00	6,372.21	191.12	22.19	73.48	-1,745.27	-3,505.60	15,638.55	15,578.05	60.50	258.481	
18,500.00	6,942.65	6,375.00	6,372.21	192.71	22.19	73.48	-1,745.27	-3,505.60	15,737.19	15,676.57	60.61	259.627	
18,600.00	6,942.67	6,375.00	6,372.21	194.30	22.19	73.48	-1,745.27	-3,505.60	15,835.85	15,775.12	60.73	260.769	
18,700.00	6,942.68	6,375.00	6,372.21	195.89	22.19	73.48	-1,745.27	-3,505.60	15,934.52	15,873.68	60.84	261.907	
18,800.00	6,942.70	6,375.00	6,372.21	197.48	22.19	73.48	-1,745.27	-3,505.60	16,033.21	15,972.26	60.95	263.042	
18,900.00	6,942.71	6,375.00	6,372.21	199.07	22.19	73.48	-1,745.27	-3,505.60	16,131.92	16,070.85	61.07	264.173	
19,000.00	6,942.73	6,375.00	6,372.21	200.66	22.19	73.48	-1,745.27	-3,505.60	16,230.64	16,169.46	61.18	265.301	
19,100.00	6,942.74	6,366.26	6,363.48	202.25	22.16	73.30	-1,744.93	-3,505.24	16,329.37	16,268.11	61.26	266.569	
19,200.00	6,942.76	6,330.19	6,327.47	203.84	22.04	72.52	-1,743.64	-3,503.74	16,428.12	16,366.89	61.23	268.281	
19,300.00	6,942.77	6,325.95	6,323.23	205.43	22.02	72.43	-1,743.49	-3,503.56	16,526.88	16,465.55	61.33	269.468	
19,400.00	6,942.78	6,314.34	6,311.64	207.02	21.98	72.19	-1,743.05	-3,503.05	16,625.63	16,564.23	61.40	270.773	
19,500.00	6,942.80	6,313.58	6,310.89	208.61	21.98	72.17	-1,743.02	-3,503.02	16,724.41	16,662.90	61.51	271.897	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,600.00	6,942.81	6,312.83	6,310.14	210.20	21.98	72.15	-1,742.99	-3,502.99	16,823.21	16,761.59	61.62	273.016	
19,700.00	6,942.83	6,312.09	6,309.39	211.79	21.97	72.14	-1,742.96	-3,502.96	16,922.02	16,860.29	61.73	274.132	
19,800.00	6,942.84	6,311.35	6,308.66	213.38	21.97	72.12	-1,742.94	-3,502.92	17,020.84	16,959.00	61.84	275.244	
19,900.00	6,942.86	6,310.62	6,307.93	214.97	21.97	72.11	-1,742.91	-3,502.89	17,119.68	17,057.73	61.95	276.353	
20,000.00	6,942.87	6,300.00	6,297.33	216.56	21.93	71.88	-1,742.50	-3,502.47	17,218.55	17,156.53	62.02	277.622	
20,100.00	6,942.89	6,300.00	6,297.33	218.15	21.93	71.88	-1,742.50	-3,502.47	17,317.41	17,255.27	62.13	278.711	
20,200.00	6,942.90	6,300.00	6,297.33	219.75	21.93	71.88	-1,742.50	-3,502.47	17,416.28	17,354.04	62.25	279.797	
20,300.00	6,942.92	6,300.00	6,297.33	221.34	21.93	71.88	-1,742.50	-3,502.47	17,515.17	17,452.81	62.36	280.879	
20,400.00	6,942.93	6,300.00	6,297.33	222.93	21.93	71.88	-1,742.50	-3,502.47	17,614.07	17,551.60	62.47	281.957	
20,500.00	6,942.95	6,300.00	6,297.33	224.52	21.93	71.88	-1,742.50	-3,502.47	17,712.98	17,650.40	62.58	283.032	
20,600.00	6,942.96	6,300.00	6,297.33	226.12	21.93	71.88	-1,742.50	-3,502.47	17,811.91	17,749.21	62.70	284.103	
20,700.00	6,942.98	6,300.00	6,297.33	227.71	21.93	71.88	-1,742.50	-3,502.47	17,910.84	17,848.03	62.81	285.171	
20,800.00	6,942.99	6,300.00	6,297.33	229.30	21.93	71.88	-1,742.50	-3,502.47	18,009.79	17,946.87	62.92	286.235	
20,855.77	6,943.00	6,300.00	6,297.33	230.19	21.93	71.88	-1,742.50	-3,502.47	18,064.98	18,001.99	62.98	286.827	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	-118.81	-2,550.70	-4,638.05	5,293.16				
100.00	100.00	261.00	261.00	0.25	7.82	-118.81	-2,550.70	-4,638.05	5,293.16	5,285.09	8.07	655.762	
200.00	200.00	361.00	361.00	0.61	10.82	-118.81	-2,550.70	-4,638.05	5,293.16	5,281.73	11.43	463.229	
300.00	300.00	461.00	461.00	0.97	13.81	-118.81	-2,550.70	-4,638.05	5,293.16	5,278.38	14.78	358.093	
400.00	400.00	561.10	561.00	1.33	16.81	-118.81	-2,550.70	-4,638.05	5,293.16	5,275.02	18.14	291.803	
500.00	500.00	661.10	661.00	1.68	19.81	-118.81	-2,550.70	-4,638.05	5,293.16	5,271.67	21.49	246.258 CC	
502.39	502.39	663.49	663.39	1.69	19.88	-139.55	-2,550.70	-4,638.05	5,293.16	5,271.59	21.57	245.344	
600.00	599.98	759.39	759.25	2.04	22.75	-139.52	-2,548.52	-4,638.05	5,293.44	5,268.64	24.80	213.468 ES	
700.00	699.84	844.17	844.01	2.40	25.30	-139.50	-2,548.83	-4,638.05	5,297.60	5,269.90	27.70	191.270	
800.00	799.45	928.68	928.50	2.77	27.83	-139.47	-2,549.63	-4,638.05	5,304.69	5,274.10	30.59	173.412	
845.27	844.44	1,005.84	1,005.44	2.93	30.14	-139.49	-2,550.70	-4,638.05	5,308.99	5,275.92	33.07	160.550	
900.00	898.77	1,060.17	1,059.77	3.13	31.77	-139.53	-2,550.70	-4,638.05	5,314.01	5,279.12	34.89	152.293	
1,000.00	998.04	1,159.45	1,159.04	3.50	34.74	-139.62	-2,550.70	-4,638.05	5,323.19	5,284.96	38.23	139.240	
1,100.00	1,097.32	1,257.36	1,256.92	3.87	37.68	-139.68	-2,548.52	-4,638.05	5,331.32	5,289.79	41.53	128.376	
1,200.00	1,196.59	1,341.38	1,340.92	4.24	40.19	-139.75	-2,548.81	-4,638.05	5,340.69	5,296.28	44.41	120.252	
1,300.00	1,295.87	1,425.31	1,424.83	4.62	42.71	-139.83	-2,549.59	-4,638.05	5,350.35	5,303.06	47.29	113.130	
1,400.00	1,395.14	1,556.85	1,556.14	5.00	46.65	-139.95	-2,550.70	-4,638.05	5,360.03	5,308.42	51.60	103.866	
1,500.00	1,494.42	1,656.13	1,655.42	5.38	49.63	-140.03	-2,550.70	-4,638.05	5,369.26	5,314.31	54.95	97.714	
1,600.00	1,593.69	1,754.53	1,753.78	5.76	52.57	-140.09	-2,548.52	-4,638.05	5,377.43	5,319.17	58.27	92.289	
1,700.00	1,692.96	1,838.28	1,837.51	6.14	55.08	-140.16	-2,548.79	-4,638.05	5,386.85	5,325.70	61.15	88.099	
1,800.00	1,792.24	1,921.93	1,921.15	6.52	57.59	-140.24	-2,549.55	-4,638.05	5,396.56	5,332.54	64.02	84.293	
1,900.00	1,891.51	2,053.53	2,052.51	6.91	61.53	-140.36	-2,550.70	-4,638.05	5,406.32	5,337.98	68.34	79.111	
2,000.00	1,990.79	2,152.80	2,151.79	7.29	64.51	-140.44	-2,550.70	-4,638.05	5,415.61	5,343.92	71.68	75.549	
2,100.00	2,090.06	2,251.72	2,250.67	7.67	67.47	-140.50	-2,548.52	-4,638.05	5,423.82	5,348.80	75.02	72.299	
2,200.00	2,189.34	2,335.19	2,334.12	8.06	69.97	-140.57	-2,548.77	-4,638.05	5,433.28	5,355.39	77.89	69.756	
2,300.00	2,288.61	2,418.57	2,417.48	8.44	72.47	-140.64	-2,549.51	-4,638.05	5,443.04	5,362.29	80.76	67.400	
2,400.00	2,387.89	2,550.21	2,548.89	8.82	76.42	-140.76	-2,550.70	-4,638.05	5,452.88	5,367.80	85.08	64.093	
2,500.00	2,487.16	2,649.48	2,648.16	9.21	79.39	-140.84	-2,550.70	-4,638.05	5,462.22	5,373.80	88.42	61.773	
2,600.00	2,586.44	2,748.76	2,747.44	9.59	82.37	-140.92	-2,550.70	-4,638.05	5,471.58	5,379.81	91.77	59.622	
2,700.00	2,685.71	2,832.13	2,830.75	9.98	84.86	-140.97	-2,548.75	-4,638.05	5,479.98	5,385.34	94.64	57.904	
2,800.00	2,784.99	2,915.23	2,913.84	10.36	87.35	-141.04	-2,549.47	-4,638.05	5,489.79	5,392.29	97.50	56.306	
2,900.00	2,884.26	3,046.88	3,045.26	10.75	91.30	-141.15	-2,550.70	-4,638.05	5,499.70	5,397.88	101.82	54.014	
3,000.00	2,983.53	3,146.16	3,144.53	11.13	94.27	-141.23	-2,550.70	-4,638.05	5,509.10	5,403.93	105.17	52.384	
3,100.00	3,082.81	3,245.43	3,243.81	11.52	97.25	-141.31	-2,550.70	-4,638.05	5,518.50	5,409.99	108.51	50.855	
3,200.00	3,182.08	3,329.08	3,327.40	11.90	99.75	-141.36	-2,548.73	-4,638.05	5,526.94	5,415.55	111.39	49.618	
3,300.00	3,281.36	3,411.92	3,410.22	12.29	102.24	-141.43	-2,549.43	-4,638.05	5,536.79	5,422.55	114.24	48.466	
3,400.00	3,380.63	3,543.56	3,541.63	12.67	106.18	-141.54	-2,550.70	-4,638.05	5,546.78	5,428.22	118.56	46.783	
3,500.00	3,479.91	3,642.84	3,640.91	13.06	109.16	-141.62	-2,550.70	-4,638.05	5,556.23	5,434.32	121.91	45.576	
3,600.00	3,579.18	3,742.11	3,740.18	13.44	112.13	-141.70	-2,550.70	-4,638.05	5,565.69	5,440.43	125.26	44.434	
3,700.00	3,678.46	3,826.06	3,824.08	13.83	114.65	-141.74	-2,548.72	-4,638.05	5,574.15	5,446.01	128.14	43.500	
3,800.00	3,777.73	3,908.62	3,906.62	14.21	117.12	-141.81	-2,549.40	-4,638.05	5,584.04	5,453.06	130.98	42.631	
3,900.00	3,877.01	4,040.24	4,038.01	14.60	121.06	-141.92	-2,550.70	-4,638.05	5,594.11	5,458.81	135.31	41.344	
4,000.00	3,976.28	4,139.51	4,137.28	14.98	124.04	-142.00	-2,550.70	-4,638.05	5,603.61	5,464.95	138.65	40.414	
4,100.00	4,075.55	4,238.79	4,236.55	15.37	127.01	-142.07	-2,550.70	-4,638.05	5,613.11	5,471.11	142.00	39.529	
4,200.00	4,174.83	4,323.05	4,320.77	15.75	129.54	-142.12	-2,548.70	-4,638.05	5,621.60	5,476.71	144.90	38.798	
4,300.00	4,274.10	4,405.35	4,403.05	16.14	132.00	-142.19	-2,549.36	-4,638.05	5,631.54	5,483.81	147.73	38.121	
4,400.00	4,373.38	4,536.92	4,534.38	16.53	135.95	-142.30	-2,550.70	-4,638.05	5,641.69	5,489.64	152.05	37.104	
4,500.00	4,472.65	4,636.19	4,633.65	16.91	138.92	-142.37	-2,550.70	-4,638.05	5,651.23	5,495.83	155.40	36.366	
4,600.00	4,571.93	4,735.47	4,732.93	17.30	141.90	-142.45	-2,550.70	-4,638.05	5,660.78	5,502.04	158.74	35.660	
4,700.00	4,671.20	4,820.06	4,817.48	17.68	144.43	-142.49	-2,548.69	-4,638.05	5,669.30	5,507.65	161.65	35.072	
4,800.00	4,770.48	4,902.10	4,899.49	18.07	146.89	-142.56	-2,549.32	-4,638.05	5,679.28	5,514.81	164.47	34.530	
4,900.00	4,869.75	5,033.59	5,030.75	18.45	150.83	-142.67	-2,550.70	-4,638.05	5,689.50	5,520.70	168.79	33.707	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,969.03	5,132.87	5,130.03	18.84	153.80	-142.74	-2,550.70	-4,638.05	5,699.09	5,526.95	172.14	33.107	
5,100.00	5,068.30	5,232.14	5,229.30	19.23	156.78	-142.81	-2,550.70	-4,638.05	5,708.69	5,533.20	175.49	32.530	
5,200.00	5,167.58	5,317.10	5,314.20	19.61	159.32	-142.86	-2,548.67	-4,638.05	5,717.23	5,538.83	178.40	32.047	
5,300.00	5,266.85	5,398.87	5,395.96	20.00	161.77	-142.92	-2,549.29	-4,638.05	5,727.25	5,546.03	181.22	31.604	
5,400.00	5,366.12	5,530.27	5,527.12	20.38	165.71	-143.03	-2,550.70	-4,638.05	5,737.54	5,552.00	185.54	30.924	
5,500.00	5,465.40	5,629.55	5,626.40	20.77	168.69	-143.10	-2,550.70	-4,638.05	5,747.18	5,558.29	188.88	30.427	
5,600.00	5,564.67	5,728.82	5,725.67	21.15	171.66	-143.18	-2,550.70	-4,638.05	5,756.82	5,564.59	192.23	29.948	
5,700.00	5,663.95	5,814.15	5,810.95	21.54	174.22	-143.22	-2,548.66	-4,638.05	5,765.39	5,570.24	195.15	29.543	
5,800.00	5,763.22	5,895.66	5,892.44	21.93	176.66	-143.28	-2,549.26	-4,638.05	5,775.45	5,577.49	197.96	29.175	
5,900.00	5,862.50	6,026.95	6,023.50	22.31	180.59	-143.39	-2,550.70	-4,638.05	5,785.81	5,583.53	202.28	28.603	
6,000.00	5,961.77	6,126.22	6,122.77	22.70	183.57	-143.46	-2,550.70	-4,638.05	5,795.49	5,589.86	205.63	28.185	
6,100.00	6,061.05	6,225.50	6,222.05	23.08	186.54	-143.53	-2,550.70	-4,638.05	5,805.18	5,596.21	208.97	27.780	
6,200.00	6,160.32	6,311.22	6,307.72	23.47	189.11	-143.57	-2,548.65	-4,638.05	5,813.78	5,601.87	211.91	27.435	
6,300.00	6,259.60	6,392.47	6,388.95	23.86	191.55	-143.64	-2,549.23	-4,638.05	5,823.87	5,609.16	214.71	27.125	
6,376.00	6,335.04	6,454.15	6,450.62	24.15	193.40	-143.69	-2,549.97	-4,638.05	5,831.75	5,614.92	216.83	26.895	
6,400.00	6,358.85	6,523.60	6,519.85	24.24	195.48	-158.62	-2,550.70	-4,638.05	5,834.67	5,615.65	219.02	26.640	
6,450.00	6,408.16	6,572.92	6,569.16	24.44	196.95	-178.21	-2,550.70	-4,638.05	5,842.71	5,622.03	220.68	26.476	
6,500.00	6,456.87	6,621.62	6,617.87	24.64	198.41	171.28	-2,550.70	-4,638.05	5,853.94	5,631.62	222.32	26.331	
6,550.00	6,504.65	6,669.41	6,665.65	24.85	199.85	164.82	-2,550.70	-4,638.05	5,868.30	5,644.38	223.92	26.207	
6,600.00	6,551.23	6,715.99	6,712.23	25.06	201.24	160.27	-2,550.70	-4,638.05	5,885.70	5,660.22	225.49	26.102	
6,650.00	6,596.31	6,759.01	6,755.21	25.26	202.53	156.70	-2,548.52	-4,638.05	5,904.86	5,677.92	226.93	26.020	
6,700.00	6,639.62	6,794.37	6,790.57	25.48	203.59	153.55	-2,548.59	-4,638.05	5,928.06	5,699.93	228.14	25.985	
6,750.00	6,680.88	6,828.05	6,824.24	25.69	204.60	150.59	-2,548.73	-4,638.05	5,954.01	5,724.73	229.28	25.968	SF
6,800.00	6,719.85	6,859.84	6,856.03	25.91	205.55	147.63	-2,548.94	-4,638.05	5,982.55	5,752.19	230.36	25.971	
6,850.00	6,756.28	6,889.56	6,885.73	26.13	206.44	144.54	-2,549.20	-4,638.05	6,013.49	5,782.13	231.36	25.992	
6,900.00	6,789.95	6,917.01	6,913.18	26.37	207.26	141.20	-2,549.49	-4,638.05	6,046.65	5,814.37	232.28	26.032	
6,950.00	6,820.65	6,942.03	6,938.19	26.61	208.01	137.51	-2,549.80	-4,638.05	6,081.84	5,848.72	233.12	26.089	
7,000.00	6,848.19	7,013.25	7,009.19	26.87	210.15	133.79	-2,550.70	-4,638.05	6,118.95	5,883.60	235.35	25.999	
7,050.00	6,872.41	7,037.47	7,033.41	27.13	210.87	129.23	-2,550.70	-4,638.05	6,157.33	5,921.19	236.14	26.075	
7,100.00	6,893.15	7,058.21	7,054.15	27.41	211.50	124.08	-2,550.70	-4,638.05	6,197.09	5,960.27	236.82	26.168	
7,150.00	6,910.28	7,075.34	7,071.28	27.71	212.01	118.27	-2,550.70	-4,638.05	6,237.98	6,000.60	237.37	26.279	
7,200.00	6,923.70	7,088.77	7,084.70	28.02	212.41	111.82	-2,550.70	-4,638.05	6,279.76	6,041.96	237.80	26.407	
7,250.00	6,933.33	7,098.39	7,094.33	28.34	212.70	104.81	-2,550.70	-4,638.05	6,322.19	6,084.08	238.11	26.551	
7,300.00	6,939.11	7,104.17	7,100.11	28.67	212.87	97.41	-2,550.70	-4,638.05	6,365.02	6,126.72	238.30	26.711	
7,349.12	6,941.00	7,106.06	7,102.00	29.00	212.93	90.01	-2,550.70	-4,638.05	6,407.22	6,168.86	238.35	26.881	
7,400.00	6,941.01	7,106.07	7,102.01	29.36	212.93	90.01	-2,550.70	-4,638.05	6,450.96	6,212.61	238.36	27.064	
7,500.00	6,941.02	7,106.08	7,102.02	30.11	212.93	90.01	-2,550.70	-4,638.05	6,537.24	6,298.87	238.38	27.424	
7,600.00	6,941.04	7,106.10	7,102.04	30.93	212.93	90.01	-2,550.70	-4,638.05	6,623.91	6,385.50	238.41	27.783	
7,700.00	6,941.05	7,106.11	7,102.05	31.80	212.93	90.02	-2,550.70	-4,638.05	6,710.95	6,472.48	238.47	28.142	
7,800.00	6,941.07	7,106.13	7,102.07	32.73	212.93	90.02	-2,550.70	-4,638.05	6,798.34	6,559.80	238.54	28.500	
7,900.00	6,941.08	7,106.14	7,102.08	33.71	212.93	90.02	-2,550.70	-4,638.05	6,886.08	6,647.45	238.62	28.858	
8,000.00	6,941.10	7,106.16	7,102.10	34.73	212.93	90.02	-2,550.70	-4,638.05	6,974.14	6,735.42	238.72	29.215	
8,100.00	6,941.11	7,106.17	7,102.11	35.79	212.93	90.02	-2,550.70	-4,638.05	7,062.53	6,823.70	238.83	29.571	
8,200.00	6,941.13	7,106.19	7,102.13	36.90	212.93	90.02	-2,550.70	-4,638.05	7,151.22	6,912.27	238.95	29.927	
8,300.00	6,941.14	7,106.20	7,102.14	38.03	212.93	90.02	-2,550.70	-4,638.05	7,240.21	7,001.12	239.08	30.283	
8,400.00	6,941.16	7,106.22	7,102.16	39.20	212.93	90.02	-2,550.70	-4,638.05	7,329.47	7,090.25	239.22	30.639	
8,500.00	6,941.17	7,106.23	7,102.17	40.40	212.93	90.02	-2,550.70	-4,638.05	7,419.02	7,179.65	239.37	30.994	
8,600.00	6,941.19	7,106.25	7,102.19	41.63	212.94	90.02	-2,550.70	-4,638.05	7,508.82	7,269.30	239.52	31.349	
8,700.00	6,941.20	7,106.26	7,102.20	42.88	212.94	90.02	-2,550.70	-4,638.05	7,598.89	7,359.20	239.69	31.704	
8,800.00	6,941.22	7,106.28	7,102.22	44.16	212.94	90.02	-2,550.70	-4,638.05	7,689.19	7,449.34	239.85	32.058	
8,900.00	6,941.23	7,106.29	7,102.23	45.45	212.94	90.02	-2,550.70	-4,638.05	7,779.74	7,539.71	240.02	32.412	
9,000.00	6,941.24	7,106.31	7,102.24	46.76	212.94	90.02	-2,550.70	-4,638.05	7,870.51	7,630.31	240.20	32.766	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	7,106.32	7,102.26	48.10	212.94	90.02	-2,550.70	-4,638.05	7,961.51	7,721.12	240.38	33.120	
9,200.00	6,941.27	7,106.34	7,102.27	49.44	212.94	90.02	-2,550.70	-4,638.05	8,052.71	7,812.15	240.57	33.474	
9,300.00	6,941.29	7,106.35	7,102.29	50.80	212.94	90.02	-2,550.70	-4,638.05	8,144.13	7,903.38	240.75	33.828	
9,400.00	6,941.30	7,106.37	7,102.30	52.18	212.94	90.02	-2,550.70	-4,638.05	8,235.74	7,994.80	240.94	34.181	
9,500.00	6,941.32	7,106.38	7,102.32	53.57	212.94	90.02	-2,550.70	-4,638.05	8,327.55	8,086.42	241.13	34.535	
9,600.00	6,941.33	7,106.39	7,102.33	54.97	212.94	90.02	-2,550.70	-4,638.05	8,419.54	8,178.22	241.33	34.888	
9,700.00	6,941.35	7,106.41	7,102.35	56.38	212.94	90.02	-2,550.70	-4,638.05	8,511.72	8,270.20	241.52	35.242	
9,800.00	6,941.36	7,106.42	7,102.36	57.80	212.94	90.02	-2,550.70	-4,638.05	8,604.07	8,362.35	241.72	35.595	
9,900.00	6,941.38	7,106.44	7,102.38	59.23	212.94	90.02	-2,550.70	-4,638.05	8,696.59	8,454.67	241.92	35.949	
10,000.00	6,941.39	7,106.45	7,102.39	60.67	212.94	90.02	-2,550.70	-4,638.05	8,789.27	8,547.15	242.11	36.302	
10,100.00	6,941.41	7,106.47	7,102.41	62.11	212.94	90.02	-2,550.70	-4,638.05	8,882.11	8,639.79	242.31	36.655	
10,200.00	6,941.42	7,106.48	7,102.42	63.57	212.94	90.02	-2,550.70	-4,638.05	8,975.10	8,732.59	242.51	37.009	
10,300.00	6,941.44	7,106.50	7,102.44	65.03	212.94	90.02	-2,550.70	-4,638.05	9,068.25	8,825.54	242.71	37.362	
10,400.00	6,941.45	7,106.51	7,102.45	66.50	212.94	90.02	-2,550.70	-4,638.05	9,161.54	8,918.62	242.91	37.716	
10,500.00	6,941.47	7,106.53	7,102.47	67.97	212.94	90.02	-2,550.70	-4,638.05	9,254.96	9,011.85	243.11	38.069	
10,600.00	6,941.48	7,106.54	7,102.48	69.45	212.94	90.02	-2,550.70	-4,638.05	9,348.53	9,105.22	243.31	38.423	
10,700.00	6,941.50	7,106.56	7,102.50	70.94	212.94	90.02	-2,550.70	-4,638.05	9,442.22	9,198.72	243.51	38.776	
10,800.00	6,941.51	7,106.57	7,102.51	72.43	212.95	90.02	-2,550.70	-4,638.05	9,536.05	9,292.34	243.70	39.130	
10,900.00	6,941.53	7,106.59	7,102.53	73.92	212.95	90.02	-2,550.70	-4,638.05	9,630.00	9,386.10	243.90	39.483	
11,000.00	6,941.54	7,106.60	7,102.54	75.42	212.95	90.02	-2,550.70	-4,638.05	9,724.07	9,479.97	244.10	39.837	
11,100.00	6,941.56	7,106.62	7,102.56	76.92	212.95	90.02	-2,550.70	-4,638.05	9,818.25	9,573.96	244.29	40.190	
11,200.00	6,941.57	7,106.63	7,102.57	78.43	212.95	90.02	-2,550.70	-4,638.05	9,912.55	9,668.07	244.49	40.544	
11,300.00	6,941.59	7,106.65	7,102.59	79.94	212.95	90.02	-2,550.70	-4,638.05	10,006.97	9,762.28	244.68	40.898	
11,400.00	6,941.60	7,106.66	7,102.60	81.46	212.95	90.02	-2,550.70	-4,638.05	10,101.48	9,856.61	244.88	41.252	
11,500.00	6,941.61	7,106.68	7,102.61	82.98	212.95	90.02	-2,550.70	-4,638.05	10,196.11	9,951.04	245.07	41.605	
11,600.00	6,941.63	7,106.69	7,102.63	84.50	212.95	90.03	-2,550.70	-4,638.05	10,290.83	10,045.57	245.26	41.959	
11,700.00	6,941.64	7,106.71	7,102.64	86.02	212.95	90.03	-2,550.70	-4,638.05	10,385.66	10,140.21	245.45	42.313	
11,800.00	6,941.66	7,106.72	7,102.66	87.55	212.95	90.03	-2,550.70	-4,638.05	10,480.58	10,234.94	245.64	42.667	
11,900.00	6,941.67	7,106.74	7,102.67	89.08	212.95	90.03	-2,550.70	-4,638.05	10,575.59	10,329.77	245.82	43.021	
12,000.00	6,941.69	7,106.75	7,102.69	90.61	212.95	90.03	-2,550.70	-4,638.05	10,670.70	10,424.68	246.01	43.375	
12,100.00	6,941.70	7,106.76	7,102.70	92.14	212.95	90.03	-2,550.70	-4,638.05	10,765.89	10,519.69	246.20	43.729	
12,200.00	6,941.72	7,106.78	7,102.72	93.68	212.95	90.03	-2,550.70	-4,638.05	10,861.17	10,614.79	246.38	44.083	
12,300.00	6,941.73	7,106.79	7,102.73	95.22	212.95	90.03	-2,550.70	-4,638.05	10,956.53	10,709.97	246.56	44.437	
12,400.00	6,941.75	7,106.81	7,102.75	96.76	212.95	90.03	-2,550.70	-4,638.05	11,051.98	10,805.23	246.75	44.791	
12,500.00	6,941.76	7,106.82	7,102.76	98.30	212.95	90.03	-2,550.70	-4,638.05	11,147.51	10,900.58	246.93	45.145	
12,600.00	6,941.78	7,106.84	7,102.78	99.85	212.95	90.03	-2,550.70	-4,638.05	11,243.11	10,996.00	247.11	45.499	
12,700.00	6,941.79	7,106.85	7,102.79	101.40	212.95	90.03	-2,550.70	-4,638.05	11,338.79	11,091.50	247.29	45.853	
12,800.00	6,941.81	7,106.87	7,102.81	102.95	212.95	90.03	-2,550.70	-4,638.05	11,434.54	11,187.08	247.46	46.207	
12,900.00	6,941.82	7,106.88	7,102.82	104.50	212.95	90.03	-2,550.70	-4,638.05	11,530.37	11,282.73	247.64	46.561	
13,000.00	6,941.84	7,106.90	7,102.84	106.05	212.95	90.03	-2,550.70	-4,638.05	11,626.26	11,378.45	247.81	46.915	
13,100.00	6,941.85	7,106.91	7,102.85	107.60	212.96	90.03	-2,550.70	-4,638.05	11,722.23	11,474.24	247.99	47.269	
13,200.00	6,941.87	7,106.93	7,102.87	109.16	212.96	90.03	-2,550.70	-4,638.05	11,818.26	11,570.10	248.16	47.624	
13,300.00	6,941.88	7,106.94	7,102.88	110.71	212.96	90.03	-2,550.70	-4,638.05	11,914.36	11,666.02	248.33	47.978	
13,400.00	6,941.90	7,106.96	7,102.90	112.27	212.96	90.03	-2,550.70	-4,638.05	12,010.52	11,762.01	248.50	48.332	
13,500.00	6,941.91	7,106.97	7,102.91	113.83	212.96	90.03	-2,550.70	-4,638.05	12,106.74	11,858.07	248.67	48.686	
13,600.00	6,941.93	7,106.99	7,102.93	115.39	212.96	90.03	-2,550.70	-4,638.05	12,203.02	11,954.18	248.84	49.040	
13,700.00	6,941.94	7,107.00	7,102.94	116.95	212.96	90.03	-2,550.70	-4,638.05	12,299.37	12,050.36	249.01	49.394	
13,800.00	6,941.96	7,107.02	7,102.96	118.51	212.96	90.03	-2,550.70	-4,638.05	12,395.77	12,146.59	249.17	49.748	
13,900.00	6,941.97	7,107.03	7,102.97	120.08	212.96	90.03	-2,550.70	-4,638.05	12,492.22	12,242.89	249.34	50.102	
14,000.00	6,941.99	7,107.05	7,102.99	121.64	212.96	90.03	-2,550.70	-4,638.05	12,588.74	12,339.23	249.50	50.455	
14,100.00	6,942.00	7,107.06	7,103.00	123.21	212.96	90.03	-2,550.70	-4,638.05	12,685.30	12,435.64	249.66	50.809	
14,200.00	6,942.01	7,107.08	7,103.01	124.77	212.96	90.03	-2,550.70	-4,638.05	12,781.92	12,532.10	249.83	51.163	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	7,107.09	7,103.03	126.34	212.96	90.03	-2,550.70	-4,638.05	12,878.59	12,628.61	249.99	51.517	
14,400.00	6,942.04	7,107.11	7,103.04	127.91	212.96	90.03	-2,550.70	-4,638.05	12,975.31	12,725.17	250.15	51.871	
14,500.00	6,942.06	7,107.12	7,103.06	129.48	212.96	90.03	-2,550.70	-4,638.05	13,072.09	12,821.78	250.31	52.224	
14,600.00	6,942.07	7,107.14	7,103.07	131.05	212.96	90.03	-2,550.70	-4,638.05	13,168.90	12,918.44	250.46	52.578	
14,700.00	6,942.09	7,107.15	7,103.09	132.62	212.96	90.03	-2,550.70	-4,638.05	13,265.77	13,015.15	250.62	52.931	
14,800.00	6,942.10	7,107.16	7,103.10	134.19	212.96	90.03	-2,550.70	-4,638.05	13,362.68	13,111.90	250.78	53.285	
14,900.00	6,942.12	7,107.18	7,103.12	135.76	212.96	90.03	-2,550.70	-4,638.05	13,459.64	13,208.71	250.93	53.638	
15,000.00	6,942.13	7,107.19	7,103.13	137.34	212.96	90.03	-2,550.70	-4,638.05	13,556.64	13,305.55	251.09	53.992	
15,100.00	6,942.15	7,107.21	7,103.15	138.91	212.96	90.03	-2,550.70	-4,638.05	13,653.69	13,402.45	251.24	54.345	
15,200.00	6,942.16	7,107.22	7,103.16	140.48	212.96	90.03	-2,550.70	-4,638.05	13,750.77	13,499.38	251.39	54.698	
15,300.00	6,942.18	7,107.24	7,103.18	142.06	212.97	90.03	-2,550.70	-4,638.05	13,847.90	13,596.36	251.55	55.051	
15,400.00	6,942.19	7,107.25	7,103.19	143.64	212.97	90.04	-2,550.70	-4,638.05	13,945.07	13,693.38	251.70	55.404	
15,500.00	6,942.21	7,107.27	7,103.21	145.21	212.97	90.04	-2,550.70	-4,638.05	14,042.28	13,790.44	251.85	55.757	
15,600.00	6,942.22	7,107.28	7,103.22	146.79	212.97	90.04	-2,550.70	-4,638.05	14,139.53	13,887.53	252.00	56.110	
15,700.00	6,942.24	7,107.30	7,103.24	148.37	212.97	90.04	-2,550.70	-4,638.05	14,236.82	13,984.67	252.14	56.463	
15,800.00	6,942.25	7,107.31	7,103.25	149.94	212.97	90.04	-2,550.70	-4,638.05	14,334.14	14,081.85	252.29	56.816	
15,900.00	6,942.27	7,107.33	7,103.27	151.52	212.97	90.04	-2,550.70	-4,638.05	14,431.50	14,179.06	252.44	57.168	
16,000.00	6,942.28	7,107.34	7,103.28	153.10	212.97	90.04	-2,550.70	-4,638.05	14,528.90	14,276.31	252.59	57.521	
16,100.00	6,942.30	7,107.36	7,103.30	154.68	212.97	90.04	-2,550.70	-4,638.05	14,626.33	14,373.60	252.73	57.873	
16,200.00	6,942.31	7,107.37	7,103.31	156.26	212.97	90.04	-2,550.70	-4,638.05	14,723.79	14,470.92	252.88	58.225	
16,300.00	6,942.33	7,107.39	7,103.33	157.84	212.97	90.04	-2,550.70	-4,638.05	14,821.29	14,568.27	253.02	58.577	
16,400.00	6,942.34	7,107.40	7,103.34	159.42	212.97	90.04	-2,550.70	-4,638.05	14,918.82	14,665.66	253.16	58.929	
16,500.00	6,942.36	7,107.42	7,103.36	161.00	212.97	90.04	-2,550.70	-4,638.05	15,016.39	14,763.08	253.31	59.281	
16,600.00	6,942.37	7,107.43	7,103.37	162.59	212.97	90.04	-2,550.70	-4,638.05	15,113.99	14,860.54	253.45	59.633	
16,700.00	6,942.38	7,107.45	7,103.38	164.17	212.97	90.04	-2,550.70	-4,638.05	15,211.61	14,958.02	253.59	59.985	
16,800.00	6,942.40	7,107.46	7,103.40	165.75	212.97	90.04	-2,550.70	-4,638.05	15,309.27	15,055.54	253.73	60.336	
16,900.00	6,942.41	7,107.48	7,103.41	167.33	212.97	90.04	-2,550.70	-4,638.05	15,406.96	15,153.09	253.87	60.688	
17,000.00	6,942.43	7,107.49	7,103.43	168.92	212.97	90.04	-2,550.70	-4,638.05	15,504.68	15,250.67	254.01	61.039	
17,100.00	6,942.44	7,107.51	7,103.44	170.50	212.97	90.04	-2,550.70	-4,638.05	15,602.43	15,348.28	254.15	61.390	
17,200.00	6,942.46	7,107.52	7,103.46	172.09	212.97	90.04	-2,550.70	-4,638.05	15,700.20	15,445.91	254.29	61.741	
17,300.00	6,942.47	7,107.53	7,103.47	173.67	212.97	90.04	-2,550.70	-4,638.05	15,798.00	15,543.58	254.43	62.092	
17,400.00	6,942.49	7,107.55	7,103.49	175.26	212.97	90.04	-2,550.70	-4,638.05	15,895.84	15,641.27	254.56	62.443	
17,500.00	6,942.50	7,107.56	7,103.50	176.84	212.97	90.04	-2,550.70	-4,638.05	15,993.69	15,738.99	254.70	62.794	
17,600.00	6,942.52	7,107.58	7,103.52	178.43	212.98	90.04	-2,550.70	-4,638.05	16,091.58	15,836.74	254.84	63.144	
17,700.00	6,942.53	7,107.59	7,103.53	180.01	212.98	90.04	-2,550.70	-4,638.05	16,189.49	15,934.51	254.97	63.495	
17,800.00	6,942.55	7,107.61	7,103.55	181.60	212.98	90.04	-2,550.70	-4,638.05	16,287.42	16,032.31	255.11	63.845	
17,900.00	6,942.56	7,107.62	7,103.56	183.19	212.98	90.04	-2,550.70	-4,638.05	16,385.38	16,130.14	255.24	64.195	
18,000.00	6,942.58	7,107.64	7,103.58	184.77	212.98	90.04	-2,550.70	-4,638.05	16,483.37	16,227.99	255.38	64.545	
18,100.00	6,942.59	7,107.65	7,103.59	186.36	212.98	90.04	-2,550.70	-4,638.05	16,581.37	16,325.86	255.51	64.894	
18,200.00	6,942.61	7,107.67	7,103.61	187.95	212.98	90.04	-2,550.70	-4,638.05	16,679.41	16,423.76	255.65	65.244	
18,300.00	6,942.62	7,107.68	7,103.62	189.54	212.98	90.04	-2,550.70	-4,638.05	16,777.46	16,521.68	255.78	65.593	
18,400.00	6,942.64	7,107.70	7,103.64	191.12	212.98	90.04	-2,550.70	-4,638.05	16,875.54	16,619.63	255.91	65.943	
18,500.00	6,942.65	7,107.71	7,103.65	192.71	212.98	90.04	-2,550.70	-4,638.05	16,973.64	16,717.60	256.04	66.292	
18,600.00	6,942.67	7,107.73	7,103.67	194.30	212.98	90.04	-2,550.70	-4,638.05	17,071.76	16,815.59	256.18	66.641	
18,700.00	6,942.68	7,107.74	7,103.68	195.89	212.98	90.04	-2,550.70	-4,638.05	17,169.91	16,913.60	256.31	66.989	
18,800.00	6,942.70	7,107.76	7,103.70	197.48	212.98	90.04	-2,550.70	-4,638.05	17,268.07	17,011.63	256.44	67.338	
18,900.00	6,942.71	7,107.77	7,103.71	199.07	212.98	90.04	-2,550.70	-4,638.05	17,366.26	17,109.69	256.57	67.686	
19,000.00	6,942.73	7,107.79	7,103.73	200.66	212.98	90.04	-2,550.70	-4,638.05	17,464.47	17,207.77	256.70	68.035	
19,100.00	6,942.74	7,107.80	7,103.74	202.25	212.98	90.04	-2,550.70	-4,638.05	17,562.69	17,305.86	256.83	68.383	
19,200.00	6,942.76	7,107.82	7,103.76	203.84	212.98	90.04	-2,550.70	-4,638.05	17,660.94	17,403.98	256.96	68.730	
19,300.00	6,942.77	7,107.83	7,103.77	205.43	212.98	90.05	-2,550.70	-4,638.05	17,759.21	17,502.12	257.09	69.078	
19,400.00	6,942.78	7,107.85	7,103.78	207.02	212.98	90.05	-2,550.70	-4,638.05	17,857.49	17,600.28	257.22	69.426	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	7,107.86	7,103.80	208.61	212.98	90.05	-2,550.70	-4,638.05	17,955.80	17,698.45	257.35	69.773	
19,600.00	6,942.81	7,107.88	7,103.81	210.20	212.98	90.05	-2,550.70	-4,638.05	18,054.12	17,796.65	257.47	70.120	
19,700.00	6,942.83	7,107.89	7,103.83	211.79	212.98	90.05	-2,550.70	-4,638.05	18,152.46	17,894.86	257.60	70.467	
19,800.00	6,942.84	7,107.91	7,103.84	213.38	212.98	90.05	-2,550.70	-4,638.05	18,250.82	17,993.10	257.73	70.814	
19,900.00	6,942.86	7,107.92	7,103.86	214.97	212.99	90.05	-2,550.70	-4,638.05	18,349.20	18,091.35	257.86	71.160	
20,000.00	6,942.87	7,107.93	7,103.87	216.56	212.99	90.05	-2,550.70	-4,638.05	18,447.60	18,189.61	257.98	71.507	
20,100.00	6,942.89	7,107.95	7,103.89	218.15	212.99	90.05	-2,550.70	-4,638.05	18,546.01	18,287.90	258.11	71.853	
20,200.00	6,942.90	7,107.96	7,103.90	219.75	212.99	90.05	-2,550.70	-4,638.05	18,644.44	18,386.20	258.24	72.199	
20,300.00	6,942.92	7,107.98	7,103.92	221.34	212.99	90.05	-2,550.70	-4,638.05	18,742.89	18,484.52	258.36	72.545	
20,400.00	6,942.93	7,107.99	7,103.93	222.93	212.99	90.05	-2,550.70	-4,638.05	18,841.35	18,582.86	258.49	72.890	
20,500.00	6,942.95	7,108.01	7,103.95	224.52	212.99	90.05	-2,550.70	-4,638.05	18,939.83	18,681.21	258.61	73.236	
20,600.00	6,942.96	7,108.02	7,103.96	226.12	212.99	90.05	-2,550.70	-4,638.05	19,038.32	18,779.58	258.74	73.581	
20,700.00	6,942.98	7,108.04	7,103.98	227.71	212.99	90.05	-2,550.70	-4,638.05	19,136.83	18,877.96	258.87	73.926	
20,800.00	6,942.99	7,108.05	7,103.99	229.30	212.99	90.05	-2,550.70	-4,638.05	19,235.35	18,976.36	258.99	74.271	
20,855.77	6,943.00	7,108.06	7,104.00	230.19	212.99	90.05	-2,550.70	-4,638.05	19,290.31	19,031.25	259.06	74.463	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	178.00	178.00	0.00	5.33	-129.60	-2,495.44	-3,016.19	3,914.66				
100.00	100.00	278.00	278.00	0.25	8.33	-129.60	-2,495.44	-3,016.19	3,914.66	3,906.08	8.58	456.193	
200.00	200.00	378.00	378.00	0.61	11.33	-129.60	-2,495.44	-3,016.19	3,914.66	3,902.73	11.94	327.970	
300.00	300.00	478.00	478.00	0.97	14.32	-129.60	-2,495.44	-3,016.19	3,914.66	3,899.37	15.29	256.012	
400.00	400.00	578.10	578.00	1.33	17.32	-129.60	-2,495.44	-3,016.19	3,914.66	3,896.01	18.65	209.914	
500.00	500.00	678.10	678.00	1.68	20.32	-129.60	-2,495.44	-3,016.19	3,914.66	3,892.66	22.00	177.908	
571.81	571.80	749.89	749.75	1.94	22.47	-150.31	-2,493.26	-3,016.19	3,914.06	3,889.64	24.41	160.333 CC	
600.00	599.98	773.90	773.76	2.04	23.19	-150.31	-2,493.28	-3,016.19	3,914.81	3,889.57	25.23	155.149 ES	
700.00	699.84	858.96	858.81	2.40	25.74	-150.30	-2,493.67	-3,016.19	3,919.65	3,891.51	28.14	139.285	
800.00	799.45	943.75	943.57	2.77	28.28	-150.28	-2,494.57	-3,016.19	3,927.90	3,896.86	31.04	126.531	
845.27	844.44	1,022.84	1,022.44	2.93	30.65	-150.31	-2,495.44	-3,016.19	3,932.74	3,899.16	33.58	117.120	
900.00	898.77	1,077.17	1,076.77	3.13	32.28	-150.36	-2,495.44	-3,016.19	3,938.46	3,903.06	35.40	111.244	
1,000.00	998.04	1,176.45	1,176.04	3.50	35.25	-150.44	-2,495.44	-3,016.19	3,948.94	3,910.20	38.74	101.937	
1,100.00	1,097.32	1,271.83	1,271.38	3.87	38.11	-150.50	-2,493.27	-3,016.19	3,958.03	3,916.07	41.96	94.330	
1,200.00	1,196.59	1,356.12	1,355.66	4.24	40.64	-150.58	-2,493.65	-3,016.19	3,968.80	3,923.96	44.85	88.495	
1,300.00	1,295.87	1,440.33	1,439.84	4.62	43.16	-150.66	-2,494.52	-3,016.19	3,979.96	3,932.23	47.73	83.378	
1,400.00	1,395.14	1,573.85	1,573.14	5.00	47.16	-150.78	-2,495.44	-3,016.19	3,990.91	3,938.81	52.10	76.597	
1,500.00	1,494.42	1,673.13	1,672.42	5.38	50.13	-150.87	-2,495.44	-3,016.19	4,001.43	3,945.99	55.44	72.171	
1,600.00	1,593.69	1,768.95	1,768.19	5.76	53.01	-150.93	-2,493.27	-3,016.19	4,010.55	3,951.87	58.68	68.344	
1,700.00	1,692.96	1,852.96	1,852.19	6.14	55.52	-151.00	-2,493.63	-3,016.19	4,021.36	3,959.79	61.56	65.319	
1,800.00	1,792.24	1,936.88	1,936.09	6.52	58.04	-151.08	-2,494.48	-3,016.19	4,032.55	3,968.11	64.44	62.575	
1,900.00	1,891.51	2,070.53	2,069.51	6.91	62.04	-151.20	-2,495.44	-3,016.19	4,043.58	3,974.76	68.82	58.755	
2,000.00	1,990.79	2,169.80	2,168.79	7.29	65.02	-151.28	-2,495.44	-3,016.19	4,054.14	3,981.97	72.16	56.180	
2,100.00	2,090.06	2,266.08	2,265.02	7.67	67.90	-151.34	-2,493.27	-3,016.19	4,063.28	3,987.87	75.42	53.878	
2,200.00	2,189.34	2,349.81	2,348.74	8.06	70.41	-151.41	-2,493.61	-3,016.19	4,074.12	3,995.83	78.29	52.038	
2,300.00	2,288.61	2,433.46	2,432.37	8.44	72.92	-151.49	-2,494.43	-3,016.19	4,085.34	4,004.18	81.16	50.336	
2,400.00	2,387.89	2,567.21	2,565.89	8.82	76.93	-151.60	-2,495.44	-3,016.19	4,096.45	4,010.90	85.55	47.886	
2,500.00	2,487.16	2,666.48	2,665.16	9.21	79.90	-151.68	-2,495.44	-3,016.19	4,107.05	4,018.16	88.89	46.205	
2,600.00	2,586.44	2,763.23	2,761.87	9.59	82.80	-151.74	-2,493.26	-3,016.19	4,116.22	4,024.06	92.16	44.666	
2,700.00	2,685.71	2,846.69	2,845.32	9.98	85.30	-151.81	-2,493.58	-3,016.19	4,127.08	4,032.06	95.02	43.433	
2,800.00	2,784.99	2,930.06	2,928.67	10.36	87.80	-151.88	-2,494.39	-3,016.19	4,138.34	4,040.45	97.88	42.278	
2,900.00	2,884.26	3,063.88	3,062.26	10.75	91.81	-152.00	-2,495.44	-3,016.19	4,149.51	4,047.24	102.27	40.574	
3,000.00	2,983.53	3,163.16	3,161.53	11.13	94.78	-152.08	-2,495.44	-3,016.19	4,160.15	4,054.54	105.62	39.390	
3,100.00	3,082.81	3,260.40	3,258.74	11.52	97.70	-152.13	-2,493.26	-3,016.19	4,169.35	4,060.45	108.90	38.287	
3,200.00	3,182.08	3,343.59	3,341.91	11.90	100.19	-152.20	-2,493.56	-3,016.19	4,180.24	4,068.49	111.76	37.405	
3,300.00	3,281.36	3,426.69	3,424.99	12.29	102.68	-152.27	-2,494.35	-3,016.19	4,191.52	4,076.91	114.61	36.573	
3,400.00	3,380.63	3,560.56	3,558.63	12.67	106.69	-152.38	-2,495.44	-3,016.19	4,202.77	4,083.77	119.00	35.318	
3,500.00	3,479.91	3,659.84	3,657.91	13.06	109.67	-152.46	-2,495.44	-3,016.19	4,213.44	4,091.10	122.34	34.440	
3,600.00	3,579.18	3,757.59	3,755.62	13.44	112.59	-152.51	-2,493.26	-3,016.19	4,222.67	4,097.03	125.64	33.609	
3,700.00	3,678.46	3,840.50	3,838.52	13.83	115.08	-152.58	-2,493.54	-3,016.19	4,233.58	4,105.09	128.49	32.949	
3,800.00	3,777.73	3,923.33	3,921.33	14.21	117.56	-152.65	-2,494.31	-3,016.19	4,244.89	4,113.56	131.33	32.322	
3,900.00	3,877.01	4,057.24	4,055.01	14.60	121.57	-152.76	-2,495.44	-3,016.19	4,256.21	4,120.48	135.73	31.359	
4,000.00	3,976.28	4,156.51	4,154.28	14.98	124.55	-152.83	-2,495.44	-3,016.19	4,266.92	4,127.85	139.07	30.682	
4,100.00	4,075.55	4,254.80	4,252.52	15.37	127.49	-152.88	-2,493.26	-3,016.19	4,276.17	4,133.78	142.38	30.033	
4,200.00	4,174.83	4,337.44	4,335.15	15.75	129.97	-152.95	-2,493.52	-3,016.19	4,287.11	4,141.88	145.22	29.521	
4,300.00	4,274.10	4,420.00	4,417.69	16.14	132.44	-153.01	-2,494.27	-3,016.19	4,298.44	4,150.38	148.06	29.032	
4,400.00	4,373.38	4,553.92	4,551.38	16.53	136.46	-153.12	-2,495.44	-3,016.19	4,309.83	4,157.37	152.45	28.270	
4,500.00	4,472.65	4,653.19	4,650.65	16.91	139.43	-153.19	-2,495.44	-3,016.19	4,320.57	4,164.77	155.80	27.732	
4,600.00	4,571.93	4,752.02	4,749.44	17.30	142.39	-153.24	-2,493.26	-3,016.19	4,329.84	4,170.71	159.13	27.210	
4,700.00	4,671.20	4,834.40	4,831.81	17.68	144.86	-153.31	-2,493.51	-3,016.19	4,340.80	4,178.84	161.96	26.802	
4,800.00	4,770.48	4,916.69	4,914.08	18.07	147.33	-153.37	-2,494.23	-3,016.19	4,352.15	4,187.37	164.79	26.411	
4,900.00	4,869.75	5,050.59	5,047.75	18.45	151.34	-153.48	-2,495.44	-3,016.19	4,363.61	4,194.43	169.18	25.792	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	5,149.87	5,147.03	18.84	154.31	-153.55	-2,495.44	-3,016.19	4,374.39	4,201.86	172.53	25.355	
5,100.00	5,068.30	5,249.14	5,246.30	19.23	157.29	-153.62	-2,495.44	-3,016.19	4,385.17	4,209.30	175.87	24.934	
5,200.00	5,167.58	5,331.38	5,328.48	19.61	159.75	-153.66	-2,493.49	-3,016.19	4,394.66	4,215.96	178.70	24.593	
5,300.00	5,266.85	5,413.40	5,410.49	20.00	162.21	-153.72	-2,494.19	-3,016.19	4,406.04	4,224.52	181.51	24.274	
5,400.00	5,366.12	5,547.27	5,544.12	20.38	166.22	-153.83	-2,495.44	-3,016.19	4,417.56	4,231.65	185.91	23.762	
5,500.00	5,465.40	5,638.40	5,635.23	20.77	168.95	-153.88	-2,494.42	-3,016.19	4,427.67	4,238.67	189.01	23.426	
5,600.00	5,564.67	5,745.97	5,742.67	21.15	172.18	-153.96	-2,495.44	-3,016.19	4,439.18	4,246.58	192.60	23.049	
5,700.00	5,663.95	5,845.24	5,841.95	21.54	175.15	-154.03	-2,495.44	-3,016.19	4,450.00	4,254.06	195.95	22.710	
5,800.00	5,763.22	5,922.76	5,919.44	21.93	177.47	-154.07	-2,494.49	-3,016.19	4,460.23	4,261.60	198.63	22.455	
5,900.00	5,862.50	6,043.95	6,040.50	22.31	181.10	-154.17	-2,495.44	-3,016.19	4,471.66	4,269.03	202.64	22.067	
6,000.00	5,961.77	6,143.22	6,139.77	22.70	184.08	-154.23	-2,495.44	-3,016.19	4,482.50	4,276.52	205.98	21.762	
6,100.00	6,061.05	6,242.50	6,239.05	23.08	187.05	-154.30	-2,495.44	-3,016.19	4,493.35	4,284.02	209.32	21.466	
6,200.00	6,160.32	6,317.00	6,313.36	23.47	189.29	-154.35	-2,495.44	-3,016.19	4,504.27	4,292.36	211.91	21.255 SF	
6,300.00	6,259.60	6,317.00	6,313.36	23.86	189.29	-154.35	-2,495.44	-3,016.19	4,516.77	4,304.60	212.17	21.289	
6,376.00	6,335.04	6,317.00	6,313.36	24.15	189.29	-154.35	-2,495.44	-3,016.19	4,527.72	4,315.42	212.29	21.328	
6,400.00	6,358.85	6,317.00	6,313.36	24.24	189.29	-169.35	-2,495.44	-3,016.19	4,531.76	4,319.43	212.32	21.344	
6,450.00	6,408.16	6,317.00	6,313.36	24.44	189.29	170.77	-2,495.44	-3,016.19	4,542.60	4,330.24	212.36	21.391	
6,500.00	6,456.87	6,317.00	6,313.36	24.64	189.29	159.90	-2,495.44	-3,016.19	4,556.64	4,344.27	212.38	21.455	
6,550.00	6,504.65	6,317.00	6,313.36	24.85	189.29	152.99	-2,495.44	-3,016.19	4,573.78	4,361.41	212.37	21.537	
6,600.00	6,551.23	6,317.00	6,313.36	25.06	189.29	147.91	-2,495.44	-3,016.19	4,593.86	4,381.52	212.34	21.634	
6,650.00	6,596.31	6,317.00	6,313.36	25.26	189.29	143.68	-2,495.44	-3,016.19	4,616.74	4,404.44	212.29	21.747	
6,700.00	6,639.62	6,317.00	6,313.36	25.48	189.29	139.82	-2,495.44	-3,016.19	4,642.22	4,429.99	212.23	21.873	
6,750.00	6,680.88	6,317.00	6,313.36	25.69	189.29	136.07	-2,495.44	-3,016.19	4,670.11	4,457.95	212.16	22.012	
6,800.00	6,719.85	6,317.00	6,313.36	25.91	189.29	132.24	-2,495.44	-3,016.19	4,700.19	4,488.11	212.08	22.163	
6,850.00	6,756.28	6,317.00	6,313.36	26.13	189.29	128.21	-2,495.44	-3,016.19	4,732.24	4,520.25	211.99	22.323	
6,900.00	6,789.95	6,317.00	6,313.36	26.37	189.29	123.92	-2,495.44	-3,016.19	4,766.03	4,554.12	211.91	22.491	
6,950.00	6,820.65	6,317.00	6,313.36	26.61	189.29	119.30	-2,495.44	-3,016.19	4,801.31	4,589.48	211.83	22.666	
7,000.00	6,848.19	6,317.00	6,313.36	26.87	189.29	114.35	-2,495.44	-3,016.19	4,837.84	4,626.08	211.76	22.846	
7,050.00	6,872.41	6,317.00	6,313.36	27.13	189.29	109.08	-2,495.44	-3,016.19	4,875.36	4,663.66	211.70	23.030	
7,100.00	6,893.15	6,317.00	6,313.36	27.41	189.29	103.55	-2,495.44	-3,016.19	4,913.62	4,701.96	211.65	23.216	
7,150.00	6,910.28	6,317.00	6,313.36	27.71	189.29	97.84	-2,495.44	-3,016.19	4,952.37	4,740.75	211.62	23.402	
7,200.00	6,923.70	6,317.00	6,313.36	28.02	189.29	92.10	-2,495.44	-3,016.19	4,991.36	4,779.75	211.61	23.588	
7,250.00	6,933.33	6,317.00	6,313.36	28.34	189.29	86.43	-2,495.44	-3,016.19	5,030.36	4,818.74	211.62	23.771	
7,300.00	6,939.11	6,317.00	6,313.36	28.67	189.29	80.99	-2,495.44	-3,016.19	5,069.12	4,857.47	211.65	23.950	
7,349.12	6,941.00	6,317.00	6,313.36	29.00	189.29	75.96	-2,495.44	-3,016.19	5,106.75	4,895.05	211.70	24.122	
7,400.00	6,941.01	6,317.00	6,313.36	29.36	189.29	75.96	-2,495.44	-3,016.19	5,145.52	4,933.75	211.77	24.297	
7,500.00	6,941.02	6,317.00	6,313.36	30.11	189.29	75.96	-2,495.44	-3,016.19	5,222.33	5,010.40	211.93	24.642	
7,600.00	6,941.04	6,317.00	6,313.36	30.93	189.29	75.96	-2,495.44	-3,016.19	5,299.91	5,087.80	212.11	24.987	
7,700.00	6,941.05	6,317.00	6,313.36	31.80	189.29	75.96	-2,495.44	-3,016.19	5,378.23	5,165.92	212.31	25.332	
7,800.00	6,941.07	6,317.00	6,313.36	32.73	189.29	75.96	-2,495.44	-3,016.19	5,457.26	5,244.74	212.52	25.679	
7,900.00	6,941.08	6,317.00	6,313.36	33.71	189.29	75.96	-2,495.44	-3,016.19	5,536.97	5,324.22	212.75	26.025	
8,000.00	6,941.10	6,317.00	6,313.36	34.73	189.29	75.96	-2,495.44	-3,016.19	5,617.33	5,404.33	212.99	26.373	
8,100.00	6,941.11	6,317.00	6,313.36	35.79	189.29	75.96	-2,495.44	-3,016.19	5,698.31	5,485.06	213.25	26.721	
8,200.00	6,941.13	6,317.00	6,313.36	36.90	189.29	75.96	-2,495.44	-3,016.19	5,779.88	5,566.37	213.51	27.071	
8,300.00	6,941.14	6,317.00	6,313.36	38.03	189.29	75.96	-2,495.44	-3,016.19	5,862.03	5,648.24	213.78	27.420	
8,400.00	6,941.16	6,317.00	6,313.36	39.20	189.29	75.96	-2,495.44	-3,016.19	5,944.72	5,730.66	214.06	27.771	
8,500.00	6,941.17	6,317.00	6,313.36	40.40	189.29	75.96	-2,495.44	-3,016.19	6,027.94	5,813.59	214.34	28.123	
8,600.00	6,941.19	6,317.00	6,313.36	41.63	189.29	75.96	-2,495.44	-3,016.19	6,111.66	5,897.03	214.63	28.475	
8,700.00	6,941.20	6,317.00	6,313.36	42.88	189.29	75.96	-2,495.44	-3,016.19	6,195.86	5,980.94	214.92	28.829	
8,800.00	6,941.22	6,317.00	6,313.36	44.16	189.29	75.96	-2,495.44	-3,016.19	6,280.53	6,065.31	215.21	29.183	
8,900.00	6,941.23	6,317.00	6,313.36	45.45	189.29	75.96	-2,495.44	-3,016.19	6,365.64	6,150.13	215.51	29.538	
9,000.00	6,941.24	6,317.00	6,313.36	46.76	189.29	75.96	-2,495.44	-3,016.19	6,451.18	6,235.37	215.80	29.894	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
9,100.00	6,941.26	6,317.00	6,313.36	48.10	189.29	75.96	-2,495.44	-3,016.19	6,537.12	6,321.03	216.10	30.251	
9,200.00	6,941.27	6,317.00	6,313.36	49.44	189.29	75.96	-2,495.44	-3,016.19	6,623.47	6,407.08	216.39	30.609	
9,300.00	6,941.29	6,317.00	6,313.36	50.80	189.29	75.96	-2,495.44	-3,016.19	6,710.19	6,493.51	216.69	30.967	
9,400.00	6,941.30	6,317.00	6,313.36	52.18	189.29	75.96	-2,495.44	-3,016.19	6,797.28	6,580.30	216.98	31.327	
9,500.00	6,941.32	6,317.00	6,313.36	53.57	189.29	75.96	-2,495.44	-3,016.19	6,884.72	6,667.45	217.27	31.688	
9,600.00	6,941.33	6,317.00	6,313.36	54.97	189.29	75.96	-2,495.44	-3,016.19	6,972.49	6,754.93	217.56	32.049	
9,700.00	6,941.35	6,317.00	6,313.36	56.38	189.29	75.96	-2,495.44	-3,016.19	7,060.59	6,842.75	217.85	32.411	
9,800.00	6,941.36	6,317.00	6,313.36	57.80	189.29	75.96	-2,495.44	-3,016.19	7,149.01	6,930.88	218.13	32.774	
9,900.00	6,941.38	6,317.00	6,313.36	59.23	189.29	75.96	-2,495.44	-3,016.19	7,237.72	7,019.31	218.41	33.138	
10,000.00	6,941.39	6,317.00	6,313.36	60.67	189.29	75.96	-2,495.44	-3,016.19	7,326.73	7,108.04	218.69	33.502	
10,100.00	6,941.41	6,317.00	6,313.36	62.11	189.29	75.96	-2,495.44	-3,016.19	7,416.02	7,197.05	218.97	33.868	
10,200.00	6,941.42	6,317.00	6,313.36	63.57	189.29	75.96	-2,495.44	-3,016.19	7,505.57	7,286.33	219.24	34.234	
10,300.00	6,941.44	6,317.00	6,313.36	65.03	189.29	75.96	-2,495.44	-3,016.19	7,595.39	7,375.88	219.51	34.601	
10,400.00	6,941.45	6,317.00	6,313.36	66.50	189.29	75.96	-2,495.44	-3,016.19	7,685.46	7,465.68	219.78	34.969	
10,500.00	6,941.47	6,317.00	6,313.36	67.97	189.29	75.96	-2,495.44	-3,016.19	7,775.77	7,555.73	220.05	35.337	
10,600.00	6,941.48	6,317.00	6,313.36	69.45	189.29	75.96	-2,495.44	-3,016.19	7,866.32	7,646.01	220.31	35.706	
10,700.00	6,941.50	6,317.00	6,313.36	70.94	189.29	75.96	-2,495.44	-3,016.19	7,957.09	7,736.53	220.57	36.076	
10,800.00	6,941.51	6,317.00	6,313.36	72.43	189.29	75.96	-2,495.44	-3,016.19	8,048.08	7,827.26	220.82	36.446	
10,900.00	6,941.53	6,317.00	6,313.36	73.92	189.29	75.96	-2,495.44	-3,016.19	8,139.29	7,918.21	221.07	36.817	
11,000.00	6,941.54	6,317.00	6,313.36	75.42	189.29	75.96	-2,495.44	-3,016.19	8,230.69	8,009.37	221.32	37.189	
11,100.00	6,941.56	6,317.00	6,313.36	76.92	189.29	75.96	-2,495.44	-3,016.19	8,322.30	8,100.73	221.57	37.561	
11,200.00	6,941.57	6,317.00	6,313.36	78.43	189.29	75.96	-2,495.44	-3,016.19	8,414.09	8,192.28	221.81	37.934	
11,300.00	6,941.59	6,317.00	6,313.36	79.94	189.29	75.96	-2,495.44	-3,016.19	8,506.07	8,284.03	222.05	38.308	
11,400.00	6,941.60	6,317.00	6,313.36	81.46	189.29	75.96	-2,495.44	-3,016.19	8,598.23	8,375.95	222.28	38.681	
11,500.00	6,941.61	6,317.00	6,313.36	82.98	189.29	75.96	-2,495.44	-3,016.19	8,690.57	8,468.05	222.52	39.056	
11,600.00	6,941.63	6,317.00	6,313.36	84.50	189.29	75.96	-2,495.44	-3,016.19	8,783.07	8,560.32	222.75	39.431	
11,700.00	6,941.64	6,317.00	6,313.36	86.02	189.29	75.96	-2,495.44	-3,016.19	8,875.73	8,652.76	222.97	39.806	
11,800.00	6,941.66	6,317.00	6,313.36	87.55	189.29	75.96	-2,495.44	-3,016.19	8,968.55	8,745.36	223.20	40.182	
11,900.00	6,941.67	6,317.00	6,313.36	89.08	189.29	75.96	-2,495.44	-3,016.19	9,061.53	8,838.11	223.42	40.559	
12,000.00	6,941.69	6,317.00	6,313.36	90.61	189.29	75.96	-2,495.44	-3,016.19	9,154.65	8,931.01	223.64	40.935	
12,100.00	6,941.70	6,317.00	6,313.36	92.14	189.29	75.96	-2,495.44	-3,016.19	9,247.92	9,024.06	223.85	41.313	
12,200.00	6,941.72	6,317.00	6,313.36	93.68	189.29	75.96	-2,495.44	-3,016.19	9,341.32	9,117.26	224.06	41.690	
12,300.00	6,941.73	6,317.00	6,313.36	95.22	189.29	75.96	-2,495.44	-3,016.19	9,434.86	9,210.59	224.27	42.068	
12,400.00	6,941.75	6,317.00	6,313.36	96.76	189.29	75.96	-2,495.44	-3,016.19	9,528.53	9,304.05	224.48	42.447	
12,500.00	6,941.76	6,317.00	6,313.36	98.30	189.29	75.96	-2,495.44	-3,016.19	9,622.33	9,397.64	224.69	42.825	
12,600.00	6,941.78	6,317.00	6,313.36	99.85	189.29	75.96	-2,495.44	-3,016.19	9,716.25	9,491.36	224.89	43.205	
12,700.00	6,941.79	6,317.00	6,313.36	101.40	189.29	75.96	-2,495.44	-3,016.19	9,810.30	9,585.21	225.09	43.584	
12,800.00	6,941.81	6,317.00	6,313.36	102.95	189.29	75.96	-2,495.44	-3,016.19	9,904.46	9,679.17	225.29	43.964	
12,900.00	6,941.82	6,317.00	6,313.36	104.50	189.29	75.96	-2,495.44	-3,016.19	9,998.73	9,773.25	225.48	44.344	
13,000.00	6,941.84	6,317.00	6,313.36	106.05	189.29	75.96	-2,495.44	-3,016.19	10,093.11	9,867.44	225.68	44.724	
13,100.00	6,941.85	6,317.00	6,313.36	107.60	189.29	75.96	-2,495.44	-3,016.19	10,187.60	9,961.74	225.87	45.105	
13,200.00	6,941.87	6,317.00	6,313.36	109.16	189.29	75.96	-2,495.44	-3,016.19	10,282.20	10,056.14	226.05	45.485	
13,300.00	6,941.88	6,317.00	6,313.36	110.71	189.29	75.96	-2,495.44	-3,016.19	10,376.89	10,150.65	226.24	45.866	
13,400.00	6,941.90	6,317.00	6,313.36	112.27	189.29	75.96	-2,495.44	-3,016.19	10,471.69	10,245.26	226.43	46.248	
13,500.00	6,941.91	6,317.00	6,313.36	113.83	189.29	75.96	-2,495.44	-3,016.19	10,566.58	10,339.97	226.61	46.629	
13,600.00	6,941.93	6,317.00	6,313.36	115.39	189.29	75.96	-2,495.44	-3,016.19	10,661.56	10,434.77	226.79	47.011	
13,700.00	6,941.94	6,317.00	6,313.36	116.95	189.29	75.96	-2,495.44	-3,016.19	10,756.64	10,529.67	226.97	47.393	
13,800.00	6,941.96	6,317.00	6,313.36	118.51	189.29	75.96	-2,495.44	-3,016.19	10,851.80	10,624.66	227.14	47.775	
13,900.00	6,941.97	6,317.00	6,313.36	120.08	189.29	75.96	-2,495.44	-3,016.19	10,947.05	10,719.73	227.32	48.157	
14,000.00	6,941.99	6,317.00	6,313.36	121.64	189.29	75.96	-2,495.44	-3,016.19	11,042.38	10,814.89	227.49	48.540	
14,100.00	6,942.00	6,317.00	6,313.36	123.21	189.29	75.96	-2,495.44	-3,016.19	11,137.80	10,910.14	227.66	48.922	
14,200.00	6,942.01	6,317.00	6,313.36	124.77	189.29	75.96	-2,495.44	-3,016.19	11,233.29	11,005.46	227.83	49.305	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,317.00	6,313.36	126.34	189.29	75.96	-2,495.44	-3,016.19	11,328.87	11,100.87	228.00	49.688	
14,400.00	6,942.04	6,317.00	6,313.36	127.91	189.29	75.96	-2,495.44	-3,016.19	11,424.52	11,196.35	228.17	50.071	
14,500.00	6,942.06	6,317.00	6,313.36	129.48	189.29	75.96	-2,495.44	-3,016.19	11,520.24	11,291.91	228.33	50.454	
14,600.00	6,942.07	6,317.00	6,313.36	131.05	189.29	75.96	-2,495.44	-3,016.19	11,616.03	11,387.54	228.49	50.838	
14,700.00	6,942.09	6,317.00	6,313.36	132.62	189.29	75.96	-2,495.44	-3,016.19	11,711.90	11,483.24	228.65	51.221	
14,800.00	6,942.10	6,317.00	6,313.36	134.19	189.29	75.96	-2,495.44	-3,016.19	11,807.83	11,579.02	228.81	51.604	
14,900.00	6,942.12	6,317.00	6,313.36	135.76	189.29	75.96	-2,495.44	-3,016.19	11,903.83	11,674.86	228.97	51.988	
15,000.00	6,942.13	6,317.00	6,313.36	137.34	189.29	75.96	-2,495.44	-3,016.19	11,999.90	11,770.77	229.13	52.371	
15,100.00	6,942.15	6,317.00	6,313.36	138.91	189.29	75.96	-2,495.44	-3,016.19	12,096.03	11,866.74	229.29	52.755	
15,200.00	6,942.16	6,317.00	6,313.36	140.48	189.29	75.96	-2,495.44	-3,016.19	12,192.22	11,962.78	229.44	53.139	
15,300.00	6,942.18	6,317.00	6,313.36	142.06	189.29	75.96	-2,495.44	-3,016.19	12,288.47	12,058.88	229.59	53.522	
15,400.00	6,942.19	6,317.00	6,313.36	143.64	189.29	75.96	-2,495.44	-3,016.19	12,384.78	12,155.04	229.75	53.906	
15,500.00	6,942.21	6,317.00	6,313.36	145.21	189.29	75.96	-2,495.44	-3,016.19	12,481.15	12,251.26	229.90	54.290	
15,600.00	6,942.22	6,317.00	6,313.36	146.79	189.29	75.96	-2,495.44	-3,016.19	12,577.58	12,347.53	230.05	54.674	
15,700.00	6,942.24	6,317.00	6,313.36	148.37	189.29	75.96	-2,495.44	-3,016.19	12,674.06	12,443.87	230.20	55.058	
15,800.00	6,942.25	6,317.00	6,313.36	149.94	189.29	75.96	-2,495.44	-3,016.19	12,770.60	12,540.26	230.34	55.442	
15,900.00	6,942.27	6,317.00	6,313.36	151.52	189.29	75.96	-2,495.44	-3,016.19	12,867.19	12,636.70	230.49	55.825	
16,000.00	6,942.28	6,317.00	6,313.36	153.10	189.29	75.96	-2,495.44	-3,016.19	12,963.83	12,733.19	230.64	56.209	
16,100.00	6,942.30	6,317.00	6,313.36	154.68	189.29	75.96	-2,495.44	-3,016.19	13,060.52	12,829.74	230.78	56.593	
16,200.00	6,942.31	6,317.00	6,313.36	156.26	189.29	75.96	-2,495.44	-3,016.19	13,157.26	12,926.34	230.92	56.977	
16,300.00	6,942.33	6,317.00	6,313.36	157.84	189.29	75.96	-2,495.44	-3,016.19	13,254.05	13,022.99	231.07	57.361	
16,400.00	6,942.34	6,317.00	6,313.36	159.42	189.29	75.96	-2,495.44	-3,016.19	13,350.89	13,119.68	231.21	57.744	
16,500.00	6,942.36	6,317.00	6,313.36	161.00	189.29	75.96	-2,495.44	-3,016.19	13,447.77	13,216.42	231.35	58.128	
16,600.00	6,942.37	6,317.00	6,313.36	162.59	189.29	75.96	-2,495.44	-3,016.19	13,544.70	13,313.21	231.49	58.512	
16,700.00	6,942.38	6,317.00	6,313.36	164.17	189.29	75.96	-2,495.44	-3,016.19	13,641.67	13,410.05	231.62	58.896	
16,800.00	6,942.40	6,317.00	6,313.36	165.75	189.29	75.96	-2,495.44	-3,016.19	13,738.69	13,506.92	231.76	59.279	
16,900.00	6,942.41	6,317.00	6,313.36	167.33	189.29	75.96	-2,495.44	-3,016.19	13,835.75	13,603.85	231.90	59.663	
17,000.00	6,942.43	6,317.00	6,313.36	168.92	189.29	75.96	-2,495.44	-3,016.19	13,932.85	13,700.81	232.04	60.046	
17,100.00	6,942.44	6,317.00	6,313.36	170.50	189.29	75.96	-2,495.44	-3,016.19	14,029.99	13,797.82	232.17	60.429	
17,200.00	6,942.46	6,317.00	6,313.36	172.09	189.29	75.96	-2,495.44	-3,016.19	14,127.17	13,894.86	232.31	60.813	
17,300.00	6,942.47	6,317.00	6,313.36	173.67	189.29	75.96	-2,495.44	-3,016.19	14,224.39	13,991.95	232.44	61.196	
17,400.00	6,942.49	6,317.00	6,313.36	175.26	189.29	75.96	-2,495.44	-3,016.19	14,321.64	14,089.07	232.57	61.579	
17,500.00	6,942.50	6,317.00	6,313.36	176.84	189.29	75.96	-2,495.44	-3,016.19	14,418.94	14,186.24	232.71	61.962	
17,600.00	6,942.52	6,317.00	6,313.36	178.43	189.29	75.96	-2,495.44	-3,016.19	14,516.27	14,283.44	232.84	62.345	
17,700.00	6,942.53	6,317.00	6,313.36	180.01	189.29	75.96	-2,495.44	-3,016.19	14,613.64	14,380.67	232.97	62.728	
17,800.00	6,942.55	6,317.00	6,313.36	181.60	189.29	75.96	-2,495.44	-3,016.19	14,711.04	14,477.95	233.10	63.111	
17,900.00	6,942.56	6,317.00	6,313.36	183.19	189.29	75.96	-2,495.44	-3,016.19	14,808.48	14,575.25	233.23	63.493	
18,000.00	6,942.58	6,317.00	6,313.36	184.77	189.29	75.96	-2,495.44	-3,016.19	14,905.96	14,672.60	233.36	63.876	
18,100.00	6,942.59	6,317.00	6,313.36	186.36	189.29	75.96	-2,495.44	-3,016.19	15,003.46	14,769.97	233.49	64.258	
18,200.00	6,942.61	6,317.00	6,313.36	187.95	189.29	75.96	-2,495.44	-3,016.19	15,101.00	14,867.38	233.61	64.641	
18,300.00	6,942.62	6,317.00	6,313.36	189.54	189.29	75.96	-2,495.44	-3,016.19	15,198.57	14,964.83	233.74	65.023	
18,400.00	6,942.64	6,317.00	6,313.36	191.12	189.29	75.96	-2,495.44	-3,016.19	15,296.17	15,062.30	233.87	65.405	
18,500.00	6,942.65	6,317.00	6,313.36	192.71	189.29	75.96	-2,495.44	-3,016.19	15,393.80	15,159.81	234.00	65.787	
18,600.00	6,942.67	6,317.00	6,313.36	194.30	189.29	75.96	-2,495.44	-3,016.19	15,491.47	15,257.34	234.12	66.169	
18,700.00	6,942.68	6,317.00	6,313.36	195.89	189.29	75.96	-2,495.44	-3,016.19	15,589.16	15,354.91	234.25	66.550	
18,800.00	6,942.70	6,317.00	6,313.36	197.48	189.29	75.96	-2,495.44	-3,016.19	15,686.88	15,452.51	234.37	66.932	
18,900.00	6,942.71	6,317.00	6,313.36	199.07	189.29	75.96	-2,495.44	-3,016.19	15,784.63	15,550.13	234.50	67.313	
19,000.00	6,942.73	6,317.00	6,313.36	200.66	189.29	75.96	-2,495.44	-3,016.19	15,882.41	15,647.79	234.62	67.694	
19,100.00	6,942.74	6,317.00	6,313.36	202.25	189.29	75.96	-2,495.44	-3,016.19	15,980.21	15,745.47	234.74	68.075	
19,200.00	6,942.76	6,317.00	6,313.36	203.84	189.29	75.96	-2,495.44	-3,016.19	16,078.04	15,843.18	234.87	68.456	
19,300.00	6,942.77	6,317.00	6,313.36	205.43	189.29	75.96	-2,495.44	-3,016.19	16,175.90	15,940.91	234.99	68.837	
19,400.00	6,942.78	6,317.00	6,313.36	207.02	189.29	75.96	-2,495.44	-3,016.19	16,273.79	16,038.68	235.11	69.217	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,317.00	6,313.36	208.61	189.29	75.96	-2,495.44	-3,016.19	16,371.70	16,136.46	235.23	69.598	
19,600.00	6,942.81	6,317.00	6,313.36	210.20	189.29	75.96	-2,495.44	-3,016.19	16,469.63	16,234.28	235.35	69.978	
19,700.00	6,942.83	6,317.00	6,313.36	211.79	189.29	75.96	-2,495.44	-3,016.19	16,567.59	16,332.12	235.48	70.358	
19,800.00	6,942.84	6,317.00	6,313.36	213.38	189.29	75.96	-2,495.44	-3,016.19	16,665.58	16,429.98	235.60	70.738	
19,900.00	6,942.86	6,317.00	6,313.36	214.97	189.29	75.96	-2,495.44	-3,016.19	16,763.59	16,527.87	235.72	71.117	
20,000.00	6,942.87	6,317.00	6,313.36	216.56	189.29	75.96	-2,495.44	-3,016.19	16,861.62	16,625.78	235.84	71.497	
20,100.00	6,942.89	6,317.00	6,313.36	218.15	189.29	75.96	-2,495.44	-3,016.19	16,959.67	16,723.71	235.96	71.876	
20,200.00	6,942.90	6,317.00	6,313.36	219.75	189.29	75.96	-2,495.44	-3,016.19	17,057.75	16,821.67	236.08	72.255	
20,300.00	6,942.92	6,317.00	6,313.36	221.34	189.29	75.96	-2,495.44	-3,016.19	17,155.85	16,919.65	236.20	72.634	
20,400.00	6,942.93	6,317.00	6,313.36	222.93	189.29	75.96	-2,495.44	-3,016.19	17,253.97	17,017.65	236.31	73.013	
20,500.00	6,942.95	6,317.00	6,313.36	224.52	189.29	75.96	-2,495.44	-3,016.19	17,352.11	17,115.68	236.43	73.391	
20,600.00	6,942.96	6,317.00	6,313.36	226.12	189.29	75.96	-2,495.44	-3,016.19	17,450.28	17,213.72	236.55	73.769	
20,700.00	6,942.98	6,317.00	6,313.36	227.71	189.29	75.96	-2,495.44	-3,016.19	17,548.46	17,311.79	236.67	74.148	
20,800.00	6,942.99	6,317.00	6,313.36	229.30	189.29	75.96	-2,495.44	-3,016.19	17,646.66	17,409.88	236.79	74.525	
20,855.77	6,943.00	6,317.00	6,313.36	230.19	189.29	75.96	-2,495.44	-3,016.19	17,701.44	17,464.59	236.85	74.736	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	-83.34	908.35	-7,781.31	7,834.15				
100.00	100.00	200.00	200.00	0.25	5.99	-83.34	908.35	-7,781.31	7,834.15	7,827.90	6.24	1,254.677	
200.00	200.00	300.00	300.00	0.61	8.99	-83.34	908.35	-7,781.31	7,834.15	7,824.55	9.60	816.156	
300.00	300.00	400.00	400.00	0.97	11.99	-83.34	908.35	-7,781.31	7,834.15	7,821.19	12.95	604.780	
400.00	400.00	500.10	500.00	1.33	14.99	-83.34	908.35	-7,781.31	7,834.15	7,817.84	16.31	480.279	
500.00	500.00	600.10	600.00	1.68	17.98	-83.34	908.35	-7,781.31	7,834.15	7,814.48	19.67	398.348 CC	
600.00	599.98	700.08	699.98	2.04	20.98	-104.08	908.35	-7,781.31	7,834.57	7,811.55	23.02	340.340	
700.00	699.84	803.34	803.19	2.40	24.07	-104.08	910.43	-7,781.31	7,836.09	7,809.62	26.47	296.024	
800.00	799.45	909.64	909.47	2.77	27.26	-104.11	909.64	-7,781.31	7,838.13	7,808.12	30.02	261.129	
845.27	844.44	957.60	957.41	2.93	28.69	-104.13	909.02	-7,781.31	7,839.32	7,807.70	31.62	247.940	
900.00	898.77	1,015.47	1,015.26	3.13	30.43	-104.19	908.07	-7,781.31	7,840.83	7,807.28	33.55	233.691	
1,000.00	998.04	1,098.45	1,098.04	3.50	32.91	-104.26	908.35	-7,781.31	7,843.82	7,807.41	36.41	215.444	
1,100.00	1,097.32	1,197.72	1,197.32	3.87	35.89	-104.34	908.35	-7,781.31	7,846.81	7,807.06	39.75	197.381	
1,200.00	1,196.59	1,300.00	1,299.55	4.24	38.95	-104.42	910.44	-7,781.31	7,850.05	7,806.85	43.19	181.741	
1,300.00	1,295.87	1,405.49	1,405.01	4.62	42.11	-104.51	909.68	-7,781.31	7,852.99	7,806.26	46.73	168.048	
1,400.00	1,395.14	1,510.83	1,510.32	5.00	45.27	-104.61	908.15	-7,781.31	7,855.88	7,805.62	50.26	156.290	
1,500.00	1,494.42	1,595.13	1,594.42	5.38	47.80	-104.68	908.35	-7,781.31	7,858.95	7,805.78	53.17	147.811	
1,600.00	1,593.69	1,694.40	1,693.69	5.76	50.77	-104.76	908.35	-7,781.31	7,862.02	7,805.50	56.52	139.095	
1,700.00	1,692.96	1,796.27	1,795.51	6.14	53.82	-104.84	910.45	-7,781.31	7,865.33	7,805.37	59.96	131.187	
1,800.00	1,792.24	1,901.32	1,900.55	6.52	56.97	-104.93	909.73	-7,781.31	7,868.37	7,804.88	63.48	123.944	
1,900.00	1,891.51	2,006.23	2,005.42	6.91	60.12	-105.03	908.24	-7,781.31	7,871.35	7,804.35	67.01	117.469	
2,000.00	1,990.79	2,091.80	2,090.79	7.29	62.68	-105.10	908.35	-7,781.31	7,874.50	7,804.55	69.95	112.569	
2,100.00	2,090.06	2,191.08	2,190.06	7.67	65.65	-105.18	908.35	-7,781.31	7,877.66	7,804.35	73.31	107.458	
2,200.00	2,189.34	2,292.57	2,291.51	8.06	68.70	-105.26	910.47	-7,781.31	7,881.04	7,804.31	76.73	102.708	
2,300.00	2,288.61	2,397.19	2,396.11	8.44	71.83	-105.35	909.77	-7,781.31	7,884.17	7,803.92	80.25	98.246	
2,400.00	2,387.89	2,501.67	2,500.55	8.82	74.96	-105.45	908.32	-7,781.31	7,887.26	7,803.49	83.76	94.163	
2,500.00	2,487.16	2,588.48	2,587.16	9.21	77.56	-105.52	908.35	-7,781.31	7,890.48	7,803.73	86.75	90.962	
2,600.00	2,586.44	2,687.76	2,686.44	9.59	80.54	-105.60	908.35	-7,781.31	7,893.73	7,803.62	90.10	87.608	
2,700.00	2,685.71	2,788.91	2,787.54	9.98	83.57	-105.67	910.48	-7,781.31	7,897.17	7,803.66	93.52	84.447	
2,800.00	2,784.99	2,893.10	2,891.71	10.36	86.69	-105.76	909.81	-7,781.31	7,900.40	7,803.38	97.02	81.430	
2,900.00	2,884.26	2,997.15	2,995.73	10.75	89.81	-105.86	908.40	-7,781.31	7,903.58	7,803.06	100.52	78.626	
3,000.00	2,983.53	3,085.16	3,083.53	11.13	92.45	-105.94	908.35	-7,781.31	7,906.89	7,803.34	103.54	76.365	
3,100.00	3,082.81	3,184.43	3,182.81	11.52	95.42	-106.02	908.35	-7,781.31	7,910.22	7,803.32	106.90	73.997	
3,200.00	3,182.08	3,285.27	3,283.60	11.90	98.44	-106.09	910.49	-7,781.31	7,913.73	7,803.43	110.30	71.745	
3,300.00	3,281.36	3,389.04	3,387.35	12.29	101.55	-106.18	909.85	-7,781.31	7,917.05	7,803.25	113.80	69.573	
3,400.00	3,380.63	3,492.66	3,490.94	12.67	104.66	-106.28	908.47	-7,781.31	7,920.33	7,803.05	117.28	67.531 ES	
3,500.00	3,479.91	3,581.84	3,579.91	13.06	107.33	-106.35	908.35	-7,781.31	7,923.71	7,803.38	120.34	65.845	
3,600.00	3,579.18	3,681.11	3,679.18	13.44	110.30	-106.43	908.35	-7,781.31	7,927.13	7,803.43	123.70	64.085	
3,700.00	3,678.46	3,781.66	3,779.69	13.83	113.32	-106.50	910.49	-7,781.31	7,930.72	7,803.62	127.09	62.401	
3,800.00	3,777.73	3,885.01	3,883.01	14.21	116.41	-106.59	909.89	-7,781.31	7,934.12	7,803.55	130.57	60.764	
3,900.00	3,877.01	3,988.21	3,986.19	14.60	119.50	-106.69	908.55	-7,781.31	7,937.50	7,803.45	134.05	59.214	
4,000.00	3,976.28	4,078.51	4,076.28	14.98	122.21	-106.77	908.35	-7,781.31	7,940.96	7,803.82	137.14	57.905	
4,100.00	4,075.55	4,177.79	4,175.55	15.37	125.19	-106.85	908.35	-7,781.31	7,944.46	7,803.97	140.49	56.546	
4,200.00	4,174.83	4,278.09	4,275.81	15.75	128.19	-106.92	910.50	-7,781.31	7,948.12	7,804.23	143.88	55.240	
4,300.00	4,274.10	4,381.01	4,378.71	16.14	131.27	-107.00	909.93	-7,781.31	7,951.61	7,804.26	147.35	53.964	
4,400.00	4,373.38	4,483.80	4,481.47	16.53	134.35	-107.10	908.62	-7,781.31	7,955.08	7,804.27	150.81	52.748	
4,500.00	4,472.65	4,575.19	4,572.65	16.91	137.09	-107.18	908.35	-7,781.31	7,958.63	7,804.69	153.93	51.701	
4,600.00	4,571.93	4,674.47	4,671.93	17.30	140.07	-107.26	908.35	-7,781.31	7,962.21	7,804.92	157.29	50.620	
4,700.00	4,671.20	4,774.54	4,771.96	17.68	143.07	-107.33	910.51	-7,781.31	7,965.93	7,805.26	160.67	49.578	
4,800.00	4,770.48	4,877.05	4,874.45	18.07	146.14	-107.41	909.96	-7,781.31	7,969.51	7,805.38	164.13	48.556	
4,900.00	4,869.75	4,979.42	4,976.79	18.45	149.21	-107.51	908.69	-7,781.31	7,973.08	7,805.50	167.58	47.578	
5,000.00	4,969.03	5,071.87	5,069.03	18.84	151.98	-107.59	908.35	-7,781.31	7,976.70	7,805.97	170.73	46.720	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	Rule Assigned: Warning
5,100.00	5,068.30	5,171.14	5,168.30	19.23	154.95	-107.67	908.35	-7,781.31	7,980.37	7,806.28	174.09	45.840	
5,200.00	5,167.58	5,271.02	5,268.13	19.61	157.94	-107.73	910.51	-7,781.31	7,984.16	7,806.69	177.47	44.990	
5,300.00	5,266.85	5,373.12	5,370.21	20.00	161.00	-107.82	910.00	-7,781.31	7,987.83	7,806.92	180.91	44.154	
5,400.00	5,366.12	5,475.08	5,472.14	20.38	164.06	-107.92	908.76	-7,781.31	7,991.48	7,807.14	184.35	43.350	
5,500.00	5,465.40	5,568.55	5,565.40	20.77	166.86	-107.99	908.35	-7,781.31	7,995.19	7,807.66	187.53	42.634	
5,600.00	5,564.67	5,667.82	5,664.67	21.15	169.83	-108.08	908.35	-7,781.31	7,998.94	7,808.05	190.89	41.904	
5,700.00	5,663.95	5,767.53	5,764.34	21.54	172.82	-108.14	910.52	-7,781.31	8,002.80	7,808.54	194.26	41.197	
5,800.00	5,763.22	5,869.22	5,866.01	21.93	175.87	-108.23	910.03	-7,781.31	8,006.55	7,808.86	197.69	40.501	
5,900.00	5,862.50	5,970.77	5,967.53	22.31	178.91	-108.32	908.83	-7,781.31	8,010.30	7,809.18	201.12	39.829	
6,000.00	5,961.77	6,065.22	6,061.77	22.70	181.74	-108.40	908.35	-7,781.31	8,014.09	7,809.76	204.33	39.222	
6,100.00	6,061.05	6,164.50	6,161.05	23.08	184.72	-108.48	908.35	-7,781.31	8,017.92	7,810.23	207.69	38.606	
6,200.00	6,160.32	6,264.06	6,260.57	23.47	187.70	-108.55	910.52	-7,781.31	8,021.84	7,810.79	211.05	38.009	
6,300.00	6,259.60	6,365.35	6,361.84	23.86	190.73	-108.63	910.06	-7,781.31	8,025.68	7,811.21	214.47	37.421	
6,376.00	6,335.04	6,442.23	6,438.70	24.15	193.04	-108.70	909.24	-7,781.31	8,028.60	7,811.53	217.06	36.987	
6,400.00	6,358.85	6,466.47	6,462.93	24.24	193.76	-123.46	908.89	-7,781.31	8,029.97	7,812.09	217.88	36.855	
6,450.00	6,408.16	6,511.92	6,508.16	24.44	195.13	-142.67	908.35	-7,781.31	8,035.73	7,816.29	219.44	36.620	
6,500.00	6,456.87	6,560.62	6,556.87	24.64	196.59	-152.62	908.35	-7,781.31	8,045.39	7,824.30	221.09	36.390	
6,550.00	6,504.65	6,608.41	6,604.65	24.85	198.02	-158.34	908.35	-7,781.31	8,058.87	7,836.16	222.71	36.186	
6,600.00	6,551.23	6,654.99	6,651.23	25.06	199.41	-161.96	908.35	-7,781.31	8,076.08	7,851.79	224.29	36.007	
6,650.00	6,596.31	6,700.07	6,696.31	25.26	200.76	-164.42	908.35	-7,781.31	8,096.93	7,871.11	225.82	35.856	
6,700.00	6,639.62	6,743.37	6,739.62	25.48	202.06	-166.16	908.35	-7,781.31	8,121.28	7,894.00	227.29	35.731	
6,750.00	6,680.88	6,785.22	6,781.42	25.69	203.32	-167.43	910.49	-7,781.31	8,149.05	7,920.34	228.70	35.632	
6,800.00	6,719.85	6,824.82	6,821.01	25.91	204.50	-168.38	910.33	-7,781.31	8,179.92	7,949.88	230.04	35.558	
6,850.00	6,756.28	6,861.83	6,858.01	26.13	205.61	-169.09	910.09	-7,781.31	8,213.79	7,982.50	231.29	35.513	
6,900.00	6,789.95	6,896.02	6,892.19	26.37	206.64	-169.61	909.78	-7,781.31	8,250.44	8,017.99	232.44	35.494	SF
6,950.00	6,820.65	6,927.18	6,923.35	26.61	207.57	-169.97	909.43	-7,781.31	8,289.64	8,056.15	233.49	35.503	
7,000.00	6,848.19	6,955.12	6,951.28	26.87	208.41	-170.18	909.06	-7,781.31	8,331.15	8,096.72	234.43	35.538	
7,050.00	6,872.41	6,979.69	6,975.84	27.13	209.14	-170.22	908.69	-7,781.31	8,374.72	8,139.47	235.26	35.598	
7,100.00	6,893.15	7,000.72	6,996.86	27.41	209.77	-170.07	908.33	-7,781.31	8,420.08	8,184.12	235.96	35.684	
7,150.00	6,910.28	7,014.34	7,010.28	27.71	210.18	-169.62	908.35	-7,781.31	8,466.95	8,230.52	236.43	35.812	
7,200.00	6,923.70	7,027.77	7,023.70	28.02	210.58	-168.69	908.35	-7,781.31	8,515.04	8,278.16	236.88	35.947	
7,250.00	6,933.33	7,037.39	7,033.33	28.34	210.87	-166.61	908.35	-7,781.31	8,564.05	8,326.85	237.20	36.105	
7,300.00	6,939.11	7,043.17	7,039.11	28.67	211.05	-160.27	908.35	-7,781.31	8,613.67	8,376.28	237.40	36.284	
7,349.12	6,941.00	7,045.06	7,041.00	29.00	211.10	-90.45	908.35	-7,781.31	8,662.73	8,425.27	237.47	36.480	
7,400.00	6,941.01	7,045.07	7,041.01	29.36	211.10	-90.46	908.35	-7,781.31	8,713.60	8,476.13	237.48	36.692	
7,500.00	6,941.02	7,045.08	7,041.02	30.11	211.10	-90.46	908.35	-7,781.31	8,813.59	8,576.09	237.49	37.111	
7,600.00	6,941.04	7,045.10	7,041.04	30.93	211.10	-90.47	908.35	-7,781.31	8,913.57	8,676.06	237.51	37.529	
7,700.00	6,941.05	7,045.11	7,041.05	31.80	211.10	-90.47	908.35	-7,781.31	9,013.55	8,776.02	237.53	37.946	
7,800.00	6,941.07	7,045.13	7,041.07	32.73	211.10	-90.48	908.35	-7,781.31	9,113.54	8,875.98	237.55	38.364	
7,900.00	6,941.08	7,045.14	7,041.08	33.71	211.10	-90.48	908.35	-7,781.31	9,213.52	8,975.95	237.58	38.781	
8,000.00	6,941.10	7,045.16	7,041.10	34.73	211.10	-90.49	908.35	-7,781.31	9,313.51	9,075.91	237.60	39.199	
8,100.00	6,941.11	7,045.17	7,041.11	35.79	211.11	-90.49	908.35	-7,781.31	9,413.49	9,175.87	237.62	39.616	
8,200.00	6,941.13	7,045.19	7,041.13	36.90	211.11	-90.50	908.35	-7,781.31	9,513.48	9,275.83	237.64	40.032	
8,300.00	6,941.14	7,045.20	7,041.14	38.03	211.11	-90.50	908.35	-7,781.31	9,613.46	9,375.79	237.67	40.449	
8,400.00	6,941.16	7,045.22	7,041.16	39.20	211.11	-90.51	908.35	-7,781.31	9,713.45	9,475.75	237.69	40.865	
8,500.00	6,941.17	7,045.23	7,041.17	40.40	211.11	-90.51	908.35	-7,781.31	9,813.43	9,575.72	237.72	41.282	
8,600.00	6,941.19	7,045.25	7,041.19	41.63	211.11	-90.52	908.35	-7,781.31	9,913.42	9,675.68	237.75	41.698	
8,700.00	6,941.20	7,045.26	7,041.20	42.88	211.11	-90.53	908.35	-7,781.31	10,013.41	9,775.63	237.77	42.113	
8,800.00	6,941.22	7,045.28	7,041.22	44.16	211.11	-90.53	908.35	-7,781.31	10,113.39	9,875.59	237.80	42.529	
8,900.00	6,941.23	7,045.29	7,041.23	45.45	211.11	-90.54	908.35	-7,781.31	10,213.38	9,975.55	237.83	42.944	
9,000.00	6,941.24	7,045.31	7,041.24	46.76	211.11	-90.54	908.35	-7,781.31	10,313.37	10,075.51	237.86	43.359	
9,100.00	6,941.26	7,045.32	7,041.26	48.10	211.11	-90.55	908.35	-7,781.31	10,413.36	10,175.47	237.89	43.774	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	7,045.34	7,041.27	49.44	211.11	-90.55	908.35	-7,781.31	10,513.35	10,275.42	237.92	44.188	
9,300.00	6,941.29	7,045.35	7,041.29	50.80	211.11	-90.56	908.35	-7,781.31	10,613.33	10,375.38	237.95	44.603	
9,400.00	6,941.30	7,045.37	7,041.30	52.18	211.11	-90.56	908.35	-7,781.31	10,713.32	10,475.34	237.99	45.017	
9,500.00	6,941.32	7,045.38	7,041.32	53.57	211.11	-90.57	908.35	-7,781.31	10,813.31	10,575.29	238.02	45.430	
9,600.00	6,941.33	7,045.39	7,041.33	54.97	211.11	-90.57	908.35	-7,781.31	10,913.30	10,675.25	238.05	45.844	
9,700.00	6,941.35	7,045.41	7,041.35	56.38	211.11	-90.58	908.35	-7,781.31	11,013.29	10,775.20	238.09	46.257	
9,800.00	6,941.36	7,045.42	7,041.36	57.80	211.11	-90.58	908.35	-7,781.31	11,113.28	10,875.15	238.12	46.670	
9,900.00	6,941.38	7,045.44	7,041.38	59.23	211.11	-90.59	908.35	-7,781.31	11,213.27	10,975.11	238.16	47.083	
10,000.00	6,941.39	7,045.45	7,041.39	60.67	211.11	-90.59	908.35	-7,781.31	11,313.26	11,075.06	238.20	47.495	
10,100.00	6,941.41	7,045.47	7,041.41	62.11	211.11	-90.60	908.35	-7,781.31	11,413.25	11,175.01	238.23	47.908	
10,200.00	6,941.42	7,045.48	7,041.42	63.57	211.11	-90.60	908.35	-7,781.31	11,513.24	11,274.96	238.27	48.319	
10,300.00	6,941.44	7,045.50	7,041.44	65.03	211.11	-90.61	908.35	-7,781.31	11,613.23	11,374.91	238.31	48.731	
10,400.00	6,941.45	7,045.51	7,041.45	66.50	211.12	-90.61	908.35	-7,781.31	11,713.22	11,474.87	238.35	49.142	
10,500.00	6,941.47	7,045.53	7,041.47	67.97	211.12	-90.62	908.35	-7,781.31	11,813.21	11,574.81	238.39	49.553	
10,600.00	6,941.48	7,045.54	7,041.48	69.45	211.12	-90.62	908.35	-7,781.31	11,913.20	11,674.76	238.44	49.964	
10,700.00	6,941.50	7,045.56	7,041.50	70.94	211.12	-90.63	908.35	-7,781.31	12,013.19	11,774.71	238.48	50.374	
10,800.00	6,941.51	7,045.57	7,041.51	72.43	211.12	-90.64	908.35	-7,781.31	12,113.18	11,874.66	238.52	50.785	
10,900.00	6,941.53	7,045.59	7,041.53	73.92	211.12	-90.64	908.35	-7,781.31	12,213.17	11,974.61	238.56	51.194	
11,000.00	6,941.54	7,045.60	7,041.54	75.42	211.12	-90.65	908.35	-7,781.31	12,313.16	12,074.55	238.61	51.604	
11,100.00	6,941.56	7,045.62	7,041.56	76.92	211.12	-90.65	908.35	-7,781.31	12,413.16	12,174.50	238.65	52.013	
11,200.00	6,941.57	7,045.63	7,041.57	78.43	211.12	-90.66	908.35	-7,781.31	12,513.15	12,274.45	238.70	52.422	
11,300.00	6,941.59	7,045.65	7,041.59	79.94	211.12	-90.66	908.35	-7,781.31	12,613.14	12,374.39	238.75	52.831	
11,400.00	6,941.60	7,045.66	7,041.60	81.46	211.12	-90.67	908.35	-7,781.31	12,713.13	12,474.34	238.79	53.239	
11,500.00	6,941.61	7,045.68	7,041.61	82.98	211.12	-90.67	908.35	-7,781.31	12,813.12	12,574.28	238.84	53.647	
11,600.00	6,941.63	7,045.69	7,041.63	84.50	211.12	-90.68	908.35	-7,781.31	12,913.11	12,674.22	238.89	54.054	
11,700.00	6,941.64	7,045.71	7,041.64	86.02	211.12	-90.68	908.35	-7,781.31	13,013.11	12,774.17	238.94	54.462	
11,800.00	6,941.66	7,045.72	7,041.66	87.55	211.12	-90.69	908.35	-7,781.31	13,113.10	12,874.11	238.99	54.868	
11,900.00	6,941.67	7,045.74	7,041.67	89.08	211.12	-90.69	908.35	-7,781.31	13,213.09	12,974.05	239.04	55.275	
12,000.00	6,941.69	7,045.75	7,041.69	90.61	211.12	-90.70	908.35	-7,781.31	13,313.08	13,073.99	239.09	55.681	
12,100.00	6,941.70	7,045.76	7,041.70	92.14	211.12	-90.70	908.35	-7,781.31	13,413.08	13,173.93	239.15	56.087	
12,200.00	6,941.72	7,045.78	7,041.72	93.68	211.12	-90.71	908.35	-7,781.31	13,513.07	13,273.87	239.20	56.493	
12,300.00	6,941.73	7,045.79	7,041.73	95.22	211.12	-90.71	908.35	-7,781.31	13,613.06	13,373.81	239.25	56.898	
12,400.00	6,941.75	7,045.81	7,041.75	96.76	211.12	-90.72	908.35	-7,781.31	13,713.06	13,473.75	239.31	57.303	
12,500.00	6,941.76	7,045.82	7,041.76	98.30	211.12	-90.72	908.35	-7,781.31	13,813.05	13,573.68	239.36	57.707	
12,600.00	6,941.78	7,045.84	7,041.78	99.85	211.13	-90.73	908.35	-7,781.31	13,913.04	13,673.62	239.42	58.112	
12,700.00	6,941.79	7,045.85	7,041.79	101.40	211.13	-90.73	908.35	-7,781.31	14,013.03	13,773.56	239.48	58.515	
12,800.00	6,941.81	7,045.87	7,041.81	102.95	211.13	-90.74	908.35	-7,781.31	14,113.03	13,873.49	239.53	58.919	
12,900.00	6,941.82	7,045.88	7,041.82	104.50	211.13	-90.75	908.35	-7,781.31	14,213.02	13,973.43	239.59	59.322	
13,000.00	6,941.84	7,045.90	7,041.84	106.05	211.13	-90.75	908.35	-7,781.31	14,313.02	14,073.36	239.65	59.725	
13,100.00	6,941.85	7,045.91	7,041.85	107.60	211.13	-90.76	908.35	-7,781.31	14,413.01	14,173.30	239.71	60.127	
13,200.00	6,941.87	7,045.93	7,041.87	109.16	211.13	-90.76	908.35	-7,781.31	14,513.00	14,273.23	239.77	60.529	
13,300.00	6,941.88	7,045.94	7,041.88	110.71	211.13	-90.77	908.35	-7,781.31	14,613.00	14,373.17	239.83	60.931	
13,400.00	6,941.90	7,045.96	7,041.90	112.27	211.13	-90.77	908.35	-7,781.31	14,712.99	14,473.10	239.89	61.332	
13,500.00	6,941.91	7,045.97	7,041.91	113.83	211.13	-90.78	908.35	-7,781.31	14,812.98	14,573.03	239.95	61.733	
13,600.00	6,941.93	7,045.99	7,041.93	115.39	211.13	-90.78	908.35	-7,781.31	14,912.98	14,672.96	240.02	62.133	
13,700.00	6,941.94	7,046.00	7,041.94	116.95	211.13	-90.79	908.35	-7,781.31	15,012.97	14,772.89	240.08	62.533	
13,800.00	6,941.96	7,046.02	7,041.96	118.51	211.13	-90.79	908.35	-7,781.31	15,112.97	14,872.82	240.14	62.933	
13,900.00	6,941.97	7,046.03	7,041.97	120.08	211.13	-90.80	908.35	-7,781.31	15,212.96	14,972.75	240.21	63.332	
14,000.00	6,941.99	7,046.05	7,041.99	121.64	211.13	-90.80	908.35	-7,781.31	15,312.96	15,072.68	240.27	63.731	
14,100.00	6,942.00	7,046.06	7,042.00	123.21	211.13	-90.81	908.35	-7,781.31	15,412.95	15,172.61	240.34	64.130	
14,200.00	6,942.01	7,046.08	7,042.01	124.77	211.13	-90.81	908.35	-7,781.31	15,512.94	15,272.54	240.41	64.528	
14,300.00	6,942.03	7,046.09	7,042.03	126.34	211.13	-90.82	908.35	-7,781.31	15,612.94	15,372.47	240.47	64.926	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	7,046.11	7,042.04	127.91	211.13	-90.82	908.35	-7,781.31	15,712.93	15,472.39	240.54	65.323	
14,500.00	6,942.06	7,046.12	7,042.06	129.48	211.13	-90.83	908.35	-7,781.31	15,812.93	15,572.32	240.61	65.720	
14,600.00	6,942.07	7,046.14	7,042.07	131.05	211.13	-90.83	908.35	-7,781.31	15,912.92	15,672.25	240.68	66.117	
14,700.00	6,942.09	7,046.15	7,042.09	132.62	211.13	-90.84	908.35	-7,781.31	16,012.92	15,772.17	240.75	66.513	
14,800.00	6,942.10	7,046.16	7,042.10	134.19	211.13	-90.85	908.35	-7,781.31	16,112.91	15,872.10	240.82	66.909	
14,900.00	6,942.12	7,046.18	7,042.12	135.76	211.14	-90.85	908.35	-7,781.31	16,212.91	15,972.02	240.89	67.305	
15,000.00	6,942.13	7,046.19	7,042.13	137.34	211.14	-90.86	908.35	-7,781.31	16,312.90	16,071.94	240.96	67.700	
15,100.00	6,942.15	7,046.21	7,042.15	138.91	211.14	-90.86	908.35	-7,781.31	16,412.90	16,171.87	241.03	68.094	
15,200.00	6,942.16	7,046.22	7,042.16	140.48	211.14	-90.87	908.35	-7,781.31	16,512.89	16,271.79	241.10	68.488	
15,300.00	6,942.18	7,046.24	7,042.18	142.06	211.14	-90.87	908.35	-7,781.31	16,612.89	16,371.71	241.18	68.882	
15,400.00	6,942.19	7,046.25	7,042.19	143.64	211.14	-90.88	908.35	-7,781.31	16,712.88	16,471.63	241.25	69.276	
15,500.00	6,942.21	7,046.27	7,042.21	145.21	211.14	-90.88	908.35	-7,781.31	16,812.88	16,571.55	241.33	69.669	
15,600.00	6,942.22	7,046.28	7,042.22	146.79	211.14	-90.89	908.35	-7,781.31	16,912.87	16,671.47	241.40	70.061	
15,700.00	6,942.24	7,046.30	7,042.24	148.37	211.14	-90.89	908.35	-7,781.31	17,012.87	16,771.39	241.48	70.453	
15,800.00	6,942.25	7,046.31	7,042.25	149.94	211.14	-90.90	908.35	-7,781.31	17,112.87	16,871.31	241.55	70.845	
15,900.00	6,942.27	7,046.33	7,042.27	151.52	211.14	-90.90	908.35	-7,781.31	17,212.86	16,971.23	241.63	71.237	
16,000.00	6,942.28	7,046.34	7,042.28	153.10	211.14	-90.91	908.35	-7,781.31	17,312.86	17,071.15	241.71	71.628	
16,100.00	6,942.30	7,046.36	7,042.30	154.68	211.14	-90.91	908.35	-7,781.31	17,412.85	17,171.07	241.78	72.018	
16,200.00	6,942.31	7,046.37	7,042.31	156.26	211.14	-90.92	908.35	-7,781.31	17,512.85	17,270.99	241.86	72.408	
16,300.00	6,942.33	7,046.39	7,042.33	157.84	211.14	-90.92	908.35	-7,781.31	17,612.84	17,370.90	241.94	72.798	
16,400.00	6,942.34	7,046.40	7,042.34	159.42	211.14	-90.93	908.35	-7,781.31	17,712.84	17,470.82	242.02	73.187	
16,500.00	6,942.36	7,046.42	7,042.36	161.00	211.14	-90.93	908.35	-7,781.31	17,812.84	17,570.73	242.10	73.576	
16,600.00	6,942.37	7,046.43	7,042.37	162.59	211.14	-90.94	908.35	-7,781.31	17,912.83	17,670.65	242.18	73.964	
16,700.00	6,942.38	7,046.45	7,042.38	164.17	211.14	-90.94	908.35	-7,781.31	18,012.83	17,770.56	242.26	74.352	
16,800.00	6,942.40	7,046.46	7,042.40	165.75	211.14	-90.95	908.35	-7,781.31	18,112.82	17,870.48	242.34	74.740	
16,900.00	6,942.41	7,046.48	7,042.41	167.33	211.14	-90.96	908.35	-7,781.31	18,212.82	17,970.39	242.43	75.127	
17,000.00	6,942.43	7,046.49	7,042.43	168.92	211.14	-90.96	908.35	-7,781.31	18,312.82	18,070.31	242.51	75.514	
17,100.00	6,942.44	7,046.51	7,042.44	170.50	211.15	-90.97	908.35	-7,781.31	18,412.81	18,170.22	242.59	75.900	
17,200.00	6,942.46	7,046.52	7,042.46	172.09	211.15	-90.97	908.35	-7,781.31	18,512.81	18,270.13	242.68	76.286	
17,300.00	6,942.47	7,046.53	7,042.47	173.67	211.15	-90.98	908.35	-7,781.31	18,612.80	18,370.04	242.76	76.671	
17,400.00	6,942.49	7,046.55	7,042.49	175.26	211.15	-90.98	908.35	-7,781.31	18,712.80	18,469.95	242.85	77.056	
17,500.00	6,942.50	7,046.56	7,042.50	176.84	211.15	-90.99	908.35	-7,781.31	18,812.80	18,569.87	242.93	77.441	
17,600.00	6,942.52	7,046.58	7,042.52	178.43	211.15	-90.99	908.35	-7,781.31	18,912.79	18,669.78	243.02	77.825	
17,700.00	6,942.53	7,046.59	7,042.53	180.01	211.15	-91.00	908.35	-7,781.31	19,012.79	18,769.69	243.10	78.209	
17,800.00	6,942.55	7,046.61	7,042.55	181.60	211.15	-91.00	908.35	-7,781.31	19,112.79	18,869.60	243.19	78.592	
17,900.00	6,942.56	7,046.62	7,042.56	183.19	211.15	-91.01	908.35	-7,781.31	19,212.78	18,969.50	243.28	78.975	
18,000.00	6,942.58	7,046.64	7,042.58	184.77	211.15	-91.01	908.35	-7,781.31	19,312.78	19,069.41	243.36	79.357	
18,100.00	6,942.59	7,046.65	7,042.59	186.36	211.15	-91.02	908.35	-7,781.31	19,412.78	19,169.32	243.45	79.739	
18,200.00	6,942.61	7,046.67	7,042.61	187.95	211.15	-91.02	908.35	-7,781.31	19,512.77	19,269.23	243.54	80.121	
18,300.00	6,942.62	7,046.68	7,042.62	189.54	211.15	-91.03	908.35	-7,781.31	19,612.77	19,369.14	243.63	80.502	
18,400.00	6,942.64	7,046.70	7,042.64	191.12	211.15	-91.03	908.35	-7,781.31	19,712.76	19,469.04	243.72	80.883	
18,500.00	6,942.65	7,046.71	7,042.65	192.71	211.15	-91.04	908.35	-7,781.31	19,812.76	19,568.95	243.81	81.263	
18,600.00	6,942.67	7,046.73	7,042.67	194.30	211.15	-91.04	908.35	-7,781.31	19,912.76	19,668.86	243.90	81.643	
18,700.00	6,942.68	7,046.74	7,042.68	195.89	211.15	-91.05	908.35	-7,781.31	20,012.75	19,768.76	243.99	82.022	
18,800.00	6,942.70	7,046.76	7,042.70	197.48	211.15	-91.05	908.35	-7,781.31	20,112.75	19,868.67	244.08	82.401	
18,900.00	6,942.71	7,046.77	7,042.71	199.07	211.15	-91.06	908.35	-7,781.31	20,212.75	19,968.57	244.18	82.779	
19,000.00	6,942.73	7,046.79	7,042.73	200.66	211.15	-91.07	908.35	-7,781.31	20,312.75	20,068.48	244.27	83.157	
19,100.00	6,942.74	7,046.80	7,042.74	202.25	211.15	-91.07	908.35	-7,781.31	20,412.74	20,168.38	244.36	83.535	
19,200.00	6,942.76	7,046.82	7,042.76	203.84	211.15	-91.08	908.35	-7,781.31	20,512.74	20,268.28	244.45	83.912	
19,300.00	6,942.77	7,046.83	7,042.77	205.43	211.15	-91.08	908.35	-7,781.31	20,612.74	20,368.19	244.55	84.289	
19,400.00	6,942.78	7,046.85	7,042.78	207.02	211.16	-91.09	908.35	-7,781.31	20,712.73	20,468.09	244.64	84.665	
19,500.00	6,942.80	7,046.86	7,042.80	208.61	211.16	-91.09	908.35	-7,781.31	20,812.73	20,567.99	244.74	85.041	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,600.00	6,942.81	7,046.88	7,042.81	210.20	211.16	-91.10	908.35	-7,781.31	20,912.73	20,667.89	244.83	85.417	
19,700.00	6,942.83	7,046.89	7,042.83	211.79	211.16	-91.10	908.35	-7,781.31	21,012.72	20,767.80	244.93	85.792	
19,800.00	6,942.84	7,046.91	7,042.84	213.38	211.16	-91.11	908.35	-7,781.31	21,112.72	20,867.70	245.02	86.166	
19,900.00	6,942.86	7,046.92	7,042.86	214.97	211.16	-91.11	908.35	-7,781.31	21,212.72	20,967.60	245.12	86.540	
20,000.00	6,942.87	7,046.93	7,042.87	216.56	211.16	-91.12	908.35	-7,781.31	21,312.71	21,067.50	245.22	86.914	
20,100.00	6,942.89	7,046.95	7,042.89	218.15	211.16	-91.12	908.35	-7,781.31	21,412.71	21,167.40	245.31	87.287	
20,200.00	6,942.90	7,046.96	7,042.90	219.75	211.16	-91.13	908.35	-7,781.31	21,512.71	21,267.30	245.41	87.660	
20,300.00	6,942.92	7,046.98	7,042.92	221.34	211.16	-91.13	908.35	-7,781.31	21,612.71	21,367.20	245.51	88.032	
20,400.00	6,942.93	7,046.99	7,042.93	222.93	211.16	-91.14	908.35	-7,781.31	21,712.70	21,467.10	245.61	88.404	
20,500.00	6,942.95	7,047.01	7,042.95	224.52	211.16	-91.14	908.35	-7,781.31	21,812.70	21,566.99	245.71	88.775	
20,600.00	6,942.96	7,047.02	7,042.96	226.12	211.16	-91.15	908.35	-7,781.31	21,912.70	21,666.89	245.81	89.146	
20,700.00	6,942.98	7,047.04	7,042.98	227.71	211.16	-91.15	908.35	-7,781.31	22,012.70	21,766.79	245.91	89.517	
20,800.00	6,942.99	7,047.05	7,042.99	229.30	211.16	-91.16	908.35	-7,781.31	22,112.69	21,866.69	246.01	89.887	
20,855.77	6,943.00	7,047.06	7,043.00	230.19	211.16	-91.16	908.35	-7,781.31	22,168.46	21,922.40	246.06	90.093	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	79.40	79.40	0.00	0.14	-84.27	899.23	-8,963.58	9,008.59				
100.00	100.00	162.12	162.11	0.25	0.29	-84.27	899.20	-8,963.81	9,008.87	9,008.32	0.54	N/A	
200.00	200.00	244.83	244.82	0.61	0.44	-84.27	899.14	-8,964.21	9,009.34	9,008.29	1.05	8,592.331 ES	
300.00	300.00	327.46	327.45	0.97	0.64	-84.27	899.07	-8,964.77	9,010.00	9,008.40	1.60	5,615.819	
400.00	400.00	372.00	372.00	1.33	0.80	-84.27	899.02	-8,965.14	9,010.96	9,008.83	2.12	4,244.778	
500.00	500.00	372.00	372.00	1.68	0.80	-84.27	899.02	-8,965.14	9,012.89	9,010.41	2.48	3,630.835	
600.00	599.98	372.00	372.00	2.04	0.80	-104.94	899.02	-8,965.14	9,016.38	9,013.54	2.84	3,172.991	
700.00	699.84	372.00	372.00	2.40	0.80	-104.84	899.02	-8,965.14	9,021.87	9,018.67	3.20	2,818.061	
800.00	799.45	372.00	372.00	2.77	0.80	-104.69	899.02	-8,965.14	9,029.37	9,025.80	3.56	2,533.527	
845.27	844.44	386.57	386.56	2.93	0.86	-104.63	898.88	-8,965.67	9,033.02	9,029.23	3.78	2,387.542	
900.00	898.77	402.00	401.91	3.13	0.93	-104.64	898.49	-8,967.08	9,038.58	9,034.54	4.04	2,239.858	
1,000.00	998.04	584.00	582.83	3.50	1.60	-104.87	885.21	-8,978.74	9,047.07	9,041.99	5.08	1,781.415	
1,100.00	1,097.32	616.00	614.60	3.87	1.72	-104.91	882.17	-8,981.05	9,056.33	9,050.77	5.57	1,626.568	
1,200.00	1,196.59	632.68	631.12	4.24	1.78	-104.93	880.37	-8,982.40	9,066.37	9,060.37	6.00	1,510.599	
1,300.00	1,295.87	668.78	666.82	4.62	1.92	-104.99	876.03	-8,985.55	9,077.19	9,070.67	6.51	1,393.648	
1,400.00	1,395.14	709.00	706.49	5.00	2.08	-105.06	870.59	-8,989.36	9,088.69	9,081.64	7.04	1,290.427	
1,500.00	1,494.42	782.49	778.79	5.38	2.39	-105.18	859.66	-8,996.71	9,100.69	9,092.97	7.71	1,179.668	
1,600.00	1,593.69	834.00	829.43	5.76	2.61	-105.27	851.79	-9,001.94	9,112.98	9,104.68	8.30	1,098.024	
1,700.00	1,692.96	898.00	892.34	6.14	2.88	-105.38	842.34	-9,008.93	9,125.96	9,117.03	8.94	1,020.993	
1,800.00	1,792.24	1,032.64	1,024.67	6.52	3.47	-105.61	822.39	-9,023.62	9,139.15	9,129.27	9.88	924.901	
1,900.00	1,891.51	1,088.00	1,079.08	6.91	3.71	-105.71	814.13	-9,029.64	9,152.23	9,141.74	10.49	872.678	
2,000.00	1,990.79	1,220.22	1,208.82	7.29	4.30	-105.94	793.03	-9,043.94	9,165.34	9,153.91	11.43	801.585	
2,100.00	2,090.06	1,389.30	1,374.78	7.67	5.06	-106.24	765.64	-9,061.08	9,177.83	9,165.29	12.55	731.499	
2,200.00	2,189.34	1,438.87	1,423.53	8.06	5.28	-106.32	758.07	-9,065.98	9,190.31	9,177.18	13.13	699.843	
2,300.00	2,288.61	1,497.83	1,481.47	8.44	5.54	-106.42	749.11	-9,072.21	9,203.44	9,189.68	13.76	668.953	
2,400.00	2,387.89	1,630.84	1,612.14	8.82	6.13	-106.65	728.57	-9,086.14	9,216.58	9,201.87	14.71	626.539	
2,500.00	2,487.16	1,691.07	1,671.37	9.21	6.40	-106.75	719.57	-9,092.37	9,229.72	9,214.38	15.34	601.646	
2,600.00	2,586.44	1,739.47	1,718.99	9.59	6.61	-106.83	712.70	-9,097.61	9,243.41	9,227.49	15.92	580.705	
2,700.00	2,685.71	1,824.07	1,802.20	9.98	6.99	-106.97	700.72	-9,107.12	9,257.55	9,240.90	16.65	555.971	
2,800.00	2,784.99	1,902.00	1,878.82	10.36	7.33	-107.10	689.51	-9,115.86	9,271.76	9,254.40	17.36	534.197	
2,900.00	2,884.26	2,127.45	2,100.45	10.75	8.34	-107.47	655.99	-9,139.96	9,285.46	9,266.75	18.71	496.191	
3,000.00	2,983.53	2,298.27	2,268.63	11.13	9.09	-107.75	631.00	-9,156.39	9,298.27	9,278.45	19.82	469.045	
3,100.00	3,082.81	2,383.96	2,353.09	11.52	9.46	-107.89	618.97	-9,164.40	9,310.89	9,290.33	20.56	452.869	
3,200.00	3,182.08	2,466.00	2,433.96	11.90	9.82	-108.02	607.43	-9,172.02	9,323.55	9,302.27	21.28	438.151	
3,300.00	3,281.36	2,529.00	2,496.00	12.29	10.10	-108.12	598.41	-9,178.15	9,336.64	9,314.73	21.92	425.990	
3,400.00	3,380.63	2,592.00	2,557.98	12.67	10.38	-108.22	589.08	-9,184.51	9,350.15	9,327.60	22.56	414.508	
3,500.00	3,479.91	2,682.99	2,647.49	13.06	10.78	-108.37	575.63	-9,193.78	9,363.87	9,340.55	23.32	401.534	
3,600.00	3,579.18	2,782.00	2,744.79	13.44	11.22	-108.54	560.31	-9,203.87	9,377.63	9,353.51	24.12	388.761	
3,700.00	3,678.46	2,844.00	2,805.67	13.83	11.50	-108.64	550.50	-9,210.29	9,391.65	9,366.89	24.76	379.311	
3,800.00	3,777.73	2,907.00	2,867.50	14.21	11.79	-108.75	540.48	-9,217.05	9,406.08	9,380.68	25.40	370.289	
3,900.00	3,877.01	2,990.83	2,949.83	14.60	12.17	-108.89	527.53	-9,226.11	9,420.69	9,394.56	26.14	360.460	
4,000.00	3,976.28	3,034.00	2,992.24	14.98	12.36	-108.96	521.12	-9,231.00	9,435.83	9,409.14	26.68	353.620	
4,100.00	4,075.55	3,260.19	3,214.97	15.37	13.36	-109.31	489.79	-9,254.89	9,449.93	9,421.90	28.03	337.094	
4,200.00	4,174.83	3,305.31	3,259.41	15.75	13.55	-109.37	483.60	-9,259.59	9,464.37	9,435.78	28.59	331.070	
4,300.00	4,274.10	3,831.36	3,779.19	16.14	15.75	-110.13	419.32	-9,305.07	9,477.95	9,446.80	31.15	304.231	
4,400.00	4,373.38	3,938.74	3,886.06	16.53	16.14	-110.25	411.23	-9,311.70	9,488.35	9,456.43	31.92	297.260	
4,500.00	4,472.65	4,046.20	3,993.02	16.91	16.53	-110.37	403.28	-9,318.23	9,498.68	9,465.99	32.69	290.611	
4,600.00	4,571.93	4,153.73	4,100.07	17.30	16.92	-110.49	395.45	-9,324.65	9,508.94	9,475.49	33.45	284.262	
4,700.00	4,671.20	4,261.33	4,207.21	17.68	17.31	-110.61	387.75	-9,330.97	9,519.14	9,484.92	34.22	278.193	
4,800.00	4,770.48	4,369.01	4,314.44	18.07	17.70	-110.73	380.17	-9,337.18	9,529.28	9,494.29	34.98	272.385	
4,900.00	4,869.75	4,476.75	4,421.75	18.45	18.09	-110.85	372.73	-9,343.28	9,539.34	9,503.59	35.75	266.823	
5,000.00	4,969.03	4,584.57	4,529.16	18.84	18.49	-110.96	365.41	-9,349.28	9,549.34	9,512.82	36.52	261.490	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	4,692.46	4,636.65	19.23	18.88	-111.08	358.23	-9,355.18	9,559.27	9,521.98	37.29	256.373	
5,200.00	5,167.58	4,800.42	4,744.22	19.61	19.27	-111.19	351.17	-9,360.97	9,569.13	9,531.07	38.05	251.459	
5,300.00	5,266.85	4,908.45	4,851.88	20.00	19.66	-111.31	344.24	-9,366.65	9,578.92	9,540.09	38.82	246.735	
5,400.00	5,366.12	5,016.55	4,959.62	20.38	20.06	-111.42	337.45	-9,372.22	9,588.63	9,549.04	39.59	242.192	
5,500.00	5,465.40	5,124.72	5,067.44	20.77	20.45	-111.53	330.78	-9,377.69	9,598.28	9,557.92	40.36	237.818	
5,600.00	5,564.67	5,232.96	5,175.35	21.15	20.84	-111.64	324.25	-9,383.05	9,607.85	9,566.72	41.13	233.604	
5,700.00	5,663.95	5,341.26	5,283.34	21.54	21.24	-111.75	317.84	-9,388.30	9,617.35	9,575.45	41.90	229.542	
5,800.00	5,763.22	5,449.63	5,391.41	21.93	21.63	-111.86	311.57	-9,393.45	9,626.77	9,584.10	42.67	225.624	
5,900.00	5,862.50	5,558.07	5,499.56	22.31	22.03	-111.97	305.43	-9,398.48	9,636.11	9,592.68	43.44	221.841	
6,000.00	5,961.77	5,666.58	5,607.78	22.70	22.42	-112.07	299.42	-9,403.41	9,645.38	9,601.18	44.21	218.187	
6,100.00	6,061.05	5,775.15	5,716.09	23.08	22.82	-112.18	293.54	-9,408.23	9,654.58	9,609.60	44.98	214.655	
6,200.00	6,160.32	5,883.79	5,824.47	23.47	23.21	-112.29	287.80	-9,412.94	9,663.69	9,617.94	45.75	211.239	
6,300.00	6,259.60	5,992.49	5,932.93	23.86	23.61	-112.39	282.19	-9,417.54	9,672.73	9,626.21	46.52	207.934	
6,376.00	6,335.04	6,075.15	6,015.41	24.15	23.91	-112.47	278.01	-9,420.97	9,679.54	9,632.44	47.10	205.493	
6,400.00	6,358.85	6,101.22	6,041.42	24.24	24.01	-127.24	276.71	-9,422.04	9,682.13	9,634.84	47.29	204.743	
6,450.00	6,408.16	6,155.10	6,095.20	24.44	24.20	-146.50	274.05	-9,424.22	9,690.39	9,642.72	47.67	203.267	
6,500.00	6,456.87	6,208.16	6,148.16	24.64	24.40	-156.53	271.46	-9,426.34	9,702.47	9,654.42	48.05	201.913	
6,550.00	6,504.65	6,260.08	6,199.97	24.85	24.59	-162.35	268.96	-9,428.40	9,718.30	9,669.87	48.42	200.691	
6,600.00	6,551.23	6,310.53	6,250.32	25.06	24.77	-166.11	266.56	-9,430.37	9,737.77	9,688.99	48.78	199.608	
6,650.00	6,596.31	6,359.21	6,298.92	25.26	24.95	-168.73	264.27	-9,432.24	9,760.78	9,711.65	49.13	198.667	
6,700.00	6,639.62	6,405.83	6,345.45	25.48	25.12	-170.68	262.10	-9,434.02	9,787.17	9,737.71	49.46	197.873	
6,750.00	6,680.88	6,450.09	6,389.63	25.69	25.28	-172.22	260.07	-9,435.69	9,816.80	9,767.03	49.77	197.227	
6,800.00	6,719.85	6,491.73	6,431.20	25.91	25.43	-173.49	258.17	-9,437.24	9,849.48	9,799.41	50.07	196.732	
6,850.00	6,756.28	6,530.49	6,469.89	26.13	25.57	-174.60	256.43	-9,438.67	9,885.00	9,834.67	50.33	196.387	
6,900.00	6,789.95	6,566.12	6,505.47	26.37	25.70	-175.62	254.84	-9,439.98	9,923.16	9,872.58	50.58	196.193	
6,950.00	6,820.65	6,598.41	6,537.71	26.61	25.82	-176.62	253.41	-9,441.15	9,963.72	9,912.93	50.80	196.148	SF
7,000.00	6,848.19	6,627.16	6,566.41	26.87	25.93	-177.69	252.15	-9,442.18	10,006.44	9,955.45	50.99	196.249	
7,050.00	6,872.41	6,652.18	6,591.39	27.13	26.02	-178.92	251.06	-9,443.07	10,051.04	9,999.89	51.15	196.494	
7,100.00	6,893.15	6,673.31	6,612.49	27.41	26.09	179.51	250.15	-9,443.82	10,097.27	10,045.98	51.29	196.878	
7,150.00	6,910.28	6,690.42	6,629.57	27.71	26.16	177.24	249.41	-9,444.43	10,144.83	10,093.44	51.39	197.396	
7,200.00	6,923.70	6,703.40	6,642.52	28.02	26.20	173.40	248.86	-9,444.88	10,193.44	10,141.97	51.47	198.041	
7,250.00	6,933.33	6,712.15	6,651.26	28.34	26.24	164.95	248.48	-9,445.19	10,242.80	10,191.27	51.52	198.805	
7,300.00	6,939.11	6,716.62	6,655.73	28.67	26.25	134.61	248.29	-9,445.34	10,292.60	10,241.05	51.55	199.678	
7,349.12	6,941.00	6,716.81	6,655.92	29.00	26.25	53.12	248.29	-9,445.35	10,341.65	10,290.11	51.55	200.633	
7,400.00	6,941.01	6,714.85	6,653.96	29.36	26.25	52.97	248.37	-9,445.28	10,392.44	10,340.91	51.53	201.668	
7,500.00	6,941.02	6,710.98	6,650.09	30.11	26.23	52.69	248.53	-9,445.15	10,492.25	10,440.75	51.51	203.699	
7,600.00	6,941.04	6,707.10	6,646.22	30.93	26.22	52.40	248.70	-9,445.01	10,592.07	10,540.59	51.49	205.727	
7,700.00	6,941.05	6,703.22	6,642.34	31.80	26.20	52.12	248.87	-9,444.88	10,691.89	10,640.43	51.47	207.750	
7,800.00	6,941.07	6,699.32	6,638.46	32.73	26.19	51.83	249.03	-9,444.74	10,791.71	10,740.27	51.45	209.770	
7,900.00	6,941.08	6,695.42	6,634.56	33.71	26.17	51.55	249.20	-9,444.60	10,891.54	10,840.11	51.43	211.785	
8,000.00	6,941.10	6,691.51	6,630.66	34.73	26.16	51.27	249.37	-9,444.46	10,991.36	10,939.95	51.41	213.796	
8,100.00	6,941.11	6,687.59	6,626.74	35.79	26.15	50.99	249.54	-9,444.33	11,091.19	11,039.79	51.39	215.803	
8,200.00	6,941.13	6,683.66	6,622.82	36.90	26.13	50.72	249.70	-9,444.19	11,191.02	11,139.64	51.38	217.806	
8,300.00	6,941.14	6,679.73	6,618.89	38.03	26.12	50.44	249.87	-9,444.05	11,290.85	11,239.48	51.37	219.804	
8,400.00	6,941.16	6,675.78	6,614.95	39.20	26.10	50.17	250.04	-9,443.91	11,390.68	11,339.33	51.36	221.797	
8,500.00	6,941.17	6,671.83	6,611.01	40.40	26.09	49.89	250.21	-9,443.77	11,490.52	11,439.17	51.35	223.786	
8,600.00	6,941.19	6,667.87	6,607.05	41.63	26.07	49.62	250.39	-9,443.63	11,590.35	11,539.02	51.34	225.769	
8,700.00	6,941.20	6,663.90	6,603.09	42.88	26.06	49.35	250.56	-9,443.49	11,690.19	11,638.86	51.33	227.748	
8,800.00	6,941.22	6,659.93	6,599.12	44.16	26.05	49.08	250.73	-9,443.35	11,790.03	11,738.71	51.32	229.722	
8,900.00	6,941.23	6,655.94	6,595.14	45.45	26.03	48.81	250.90	-9,443.21	11,889.87	11,838.55	51.32	231.691	
9,000.00	6,941.24	6,651.95	6,591.15	46.76	26.02	48.55	251.07	-9,443.06	11,989.71	11,938.40	51.31	233.655	
9,100.00	6,941.26	6,647.94	6,587.16	48.10	26.00	48.28	251.25	-9,442.92	12,089.56	12,038.25	51.31	235.614	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,643.93	6,583.15	49.44	25.99	48.02	251.42	-9,442.78	12,189.40	12,138.09	51.31	237.567	
9,300.00	6,941.29	6,639.91	6,579.14	50.80	25.97	47.76	251.60	-9,442.64	12,289.25	12,237.94	51.31	239.515	
9,400.00	6,941.30	6,635.88	6,575.11	52.18	25.96	47.50	251.77	-9,442.49	12,389.10	12,337.79	51.31	241.458	
9,500.00	6,941.32	6,631.84	6,571.08	53.57	25.94	47.24	251.95	-9,442.35	12,488.95	12,437.64	51.31	243.394	
9,600.00	6,941.33	6,627.80	6,567.04	54.97	25.93	46.98	252.13	-9,442.20	12,588.80	12,537.48	51.31	245.326	
9,700.00	6,941.35	6,623.74	6,563.00	56.38	25.91	46.73	252.30	-9,442.06	12,688.65	12,637.33	51.32	247.251	
9,800.00	6,941.36	6,619.68	6,558.94	57.80	25.90	46.47	252.48	-9,441.91	12,788.50	12,737.18	51.32	249.171	
9,900.00	6,941.38	6,615.61	6,554.87	59.23	25.88	46.22	252.66	-9,441.76	12,888.36	12,837.03	51.33	251.085	
10,000.00	6,941.39	6,611.53	6,550.80	60.67	25.87	45.97	252.84	-9,441.62	12,988.21	12,936.87	51.34	252.993	
10,100.00	6,941.41	6,607.44	6,546.71	62.11	25.85	45.72	253.02	-9,441.47	13,088.07	13,036.72	51.35	254.895	
10,200.00	6,941.42	6,603.34	6,542.62	63.57	25.84	45.47	253.20	-9,441.32	13,187.93	13,136.57	51.36	256.790	
10,300.00	6,941.44	6,599.23	6,538.52	65.03	25.82	45.22	253.38	-9,441.18	13,287.78	13,236.42	51.37	258.680	
10,400.00	6,941.45	6,595.11	6,534.41	66.50	25.81	44.97	253.56	-9,441.03	13,387.64	13,336.26	51.38	260.563	
10,500.00	6,941.47	6,590.99	6,530.29	67.97	25.79	44.73	253.74	-9,440.88	13,487.50	13,436.11	51.39	262.441	
10,600.00	6,941.48	6,586.85	6,526.16	69.45	25.78	44.48	253.92	-9,440.73	13,587.37	13,535.96	51.41	264.311	
10,700.00	6,941.50	6,582.71	6,522.03	70.94	25.76	44.24	254.11	-9,440.58	13,687.23	13,635.81	51.42	266.176	
10,800.00	6,941.51	6,578.56	6,517.88	72.43	25.75	44.00	254.29	-9,440.43	13,787.09	13,735.65	51.44	268.034	
10,900.00	6,941.53	6,574.39	6,513.73	73.92	25.73	43.76	254.47	-9,440.28	13,886.96	13,835.50	51.46	269.885	
11,000.00	6,941.54	6,570.22	6,509.56	75.42	25.72	43.52	254.66	-9,440.12	13,986.82	13,935.35	51.47	271.730	
11,100.00	6,941.56	6,566.04	6,505.39	76.92	25.70	43.29	254.84	-9,439.97	14,086.69	14,035.19	51.49	273.568	
11,200.00	6,941.57	6,561.85	6,501.21	78.43	25.69	43.05	255.03	-9,439.82	14,186.55	14,135.04	51.51	275.399	
11,300.00	6,941.59	6,557.66	6,497.02	79.94	25.67	42.82	255.22	-9,439.67	14,286.42	14,234.89	51.53	277.224	
11,400.00	6,941.60	6,553.45	6,492.82	81.46	25.66	42.58	255.40	-9,439.51	14,386.29	14,334.73	51.56	279.041	
11,500.00	6,941.61	6,549.23	6,488.61	82.98	25.64	42.35	255.59	-9,439.36	14,486.16	14,434.58	51.58	280.852	
11,600.00	6,941.63	6,545.01	6,484.39	84.50	25.63	42.12	255.78	-9,439.21	14,586.03	14,534.42	51.60	282.656	
11,700.00	6,941.64	6,540.77	6,480.16	86.02	25.61	41.89	255.97	-9,439.05	14,685.90	14,634.27	51.63	284.453	
11,800.00	6,941.66	6,536.53	6,475.92	87.55	25.59	41.67	256.16	-9,438.89	14,785.77	14,734.12	51.65	286.243	
11,900.00	6,941.67	6,532.27	6,471.67	89.08	25.58	41.44	256.35	-9,438.74	14,885.64	14,833.96	51.68	288.026	
12,000.00	6,941.69	6,528.01	6,467.42	90.61	25.56	41.22	256.54	-9,438.58	14,985.51	14,933.80	51.71	289.802	
12,100.00	6,941.70	6,523.74	6,463.15	92.14	25.55	40.99	256.73	-9,438.42	15,085.39	15,033.65	51.74	291.571	
12,200.00	6,941.72	6,519.45	6,458.88	93.68	25.53	40.77	256.92	-9,438.27	15,185.26	15,133.49	51.77	293.332	
12,300.00	6,941.73	6,515.16	6,454.59	95.22	25.52	40.55	257.12	-9,438.11	15,285.14	15,233.34	51.80	295.086	
12,400.00	6,941.75	6,510.86	6,450.30	96.76	25.50	40.33	257.31	-9,437.95	15,385.01	15,333.18	51.83	296.833	
12,500.00	6,941.76	6,506.55	6,445.99	98.30	25.49	40.11	257.50	-9,437.79	15,484.89	15,433.02	51.86	298.573	
12,600.00	6,941.78	6,502.23	6,441.68	99.85	25.47	39.90	257.70	-9,437.63	15,584.76	15,532.87	51.90	300.306	
12,700.00	6,941.79	6,497.90	6,437.36	101.40	25.45	39.68	257.89	-9,437.47	15,684.64	15,632.71	51.93	302.031	
12,800.00	6,941.81	6,493.56	6,433.03	102.95	25.44	39.47	258.09	-9,437.31	15,784.52	15,732.55	51.97	303.748	
12,900.00	6,941.82	6,489.21	6,428.68	104.50	25.42	39.25	258.29	-9,437.15	15,884.40	15,832.39	52.00	305.459	
13,000.00	6,941.84	6,484.85	6,424.33	106.05	25.41	39.04	258.48	-9,436.99	15,984.27	15,932.24	52.04	307.161	
13,100.00	6,941.85	6,480.48	6,419.97	107.60	25.39	38.83	258.68	-9,436.82	16,084.15	16,032.08	52.08	308.857	
13,200.00	6,941.87	6,476.10	6,415.60	109.16	25.37	38.62	258.88	-9,436.66	16,184.03	16,131.92	52.11	310.545	
13,300.00	6,941.88	6,471.71	6,411.22	110.71	25.36	38.41	259.08	-9,436.50	16,283.91	16,231.76	52.15	312.225	
13,400.00	6,941.90	6,467.32	6,406.83	112.27	25.34	38.21	259.28	-9,436.33	16,383.79	16,331.60	52.19	313.898	
13,500.00	6,941.91	6,462.91	6,402.43	113.83	25.33	38.00	259.48	-9,436.17	16,483.67	16,431.44	52.24	315.563	
13,600.00	6,941.93	6,458.49	6,398.02	115.39	25.31	37.80	259.68	-9,436.00	16,583.56	16,531.28	52.28	317.221	
13,700.00	6,941.94	6,454.06	6,393.60	116.95	25.29	37.59	259.88	-9,435.84	16,683.44	16,631.12	52.32	318.871	
13,800.00	6,941.96	6,449.62	6,389.17	118.51	25.28	37.39	260.09	-9,435.67	16,783.32	16,730.96	52.36	320.514	
13,900.00	6,941.97	6,445.17	6,384.73	120.08	25.26	37.19	260.29	-9,435.51	16,883.20	16,830.79	52.41	322.149	
14,000.00	6,941.99	6,440.72	6,380.28	121.64	25.25	36.99	260.49	-9,435.34	16,983.09	16,930.63	52.45	323.776	
14,100.00	6,942.00	6,436.25	6,375.82	123.21	25.23	36.80	260.70	-9,435.17	17,082.97	17,030.47	52.50	325.396	
14,200.00	6,942.01	6,431.77	6,371.34	124.77	25.21	36.60	260.90	-9,435.00	17,182.85	17,130.31	52.55	327.008	
14,300.00	6,942.03	6,427.28	6,366.86	126.34	25.20	36.40	261.11	-9,434.83	17,282.74	17,230.14	52.59	328.613	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	6,422.78	6,362.37	127.91	25.18	36.21	261.32	-9,434.66	17,382.62	17,329.98	52.64	330.209	
14,500.00	6,942.06	6,418.27	6,357.87	129.48	25.16	36.01	261.53	-9,434.49	17,482.51	17,429.82	52.69	331.799	
14,600.00	6,942.07	6,413.75	6,353.36	131.05	25.15	35.82	261.73	-9,434.32	17,582.39	17,529.65	52.74	333.380	
14,700.00	6,942.09	6,409.22	6,348.84	132.62	25.13	35.63	261.94	-9,434.15	17,682.28	17,629.49	52.79	334.954	
14,800.00	6,942.10	6,404.68	6,344.31	134.19	25.11	35.44	262.15	-9,433.98	17,782.16	17,729.32	52.84	336.520	
14,900.00	6,942.12	6,400.13	6,339.77	135.76	25.10	35.25	262.36	-9,433.81	17,882.05	17,829.16	52.89	338.078	
15,000.00	6,942.13	6,395.57	6,335.21	137.34	25.08	35.07	262.57	-9,433.63	17,981.94	17,928.99	52.95	339.629	
15,100.00	6,942.15	6,391.00	6,330.65	138.91	25.06	34.88	262.79	-9,433.46	18,081.82	18,028.82	53.00	341.172	
15,200.00	6,942.16	6,386.42	6,326.08	140.48	25.05	34.69	263.00	-9,433.28	18,181.71	18,128.66	53.05	342.708	
15,300.00	6,942.18	6,381.83	6,321.49	142.06	25.03	34.51	263.21	-9,433.11	18,281.60	18,228.49	53.11	344.236	
15,400.00	6,942.19	6,377.23	6,316.90	143.64	25.01	34.33	263.43	-9,432.93	18,381.49	18,328.32	53.16	345.756	
15,500.00	6,942.21	6,372.61	6,312.30	145.21	25.00	34.14	263.64	-9,432.76	18,481.37	18,428.15	53.22	347.268	
15,600.00	6,942.22	6,367.99	6,307.68	146.79	24.98	33.96	263.86	-9,432.58	18,581.26	18,527.99	53.28	348.773	
15,700.00	6,942.24	6,363.36	6,303.05	148.37	24.96	33.78	264.07	-9,432.40	18,681.15	18,627.82	53.33	350.270	
15,800.00	6,942.25	6,358.71	6,298.42	149.94	24.95	33.61	264.29	-9,432.22	18,781.04	18,727.65	53.39	351.760	
15,900.00	6,942.27	6,354.06	6,293.77	151.52	24.93	33.43	264.51	-9,432.05	18,880.93	18,827.48	53.45	353.242	
16,000.00	6,942.28	6,349.39	6,289.11	153.10	24.91	33.25	264.73	-9,431.87	18,980.82	18,927.31	53.51	354.716	
16,100.00	6,942.30	6,344.71	6,284.44	154.68	24.90	33.08	264.95	-9,431.69	19,080.71	19,027.14	53.57	356.183	
16,200.00	6,942.31	6,340.02	6,279.76	156.26	24.88	32.90	265.17	-9,431.51	19,180.60	19,126.97	53.63	357.642	
16,300.00	6,942.33	6,335.32	6,275.07	157.84	24.86	32.73	265.39	-9,431.33	19,280.49	19,226.79	53.69	359.094	
16,400.00	6,942.34	6,330.61	6,270.37	159.42	24.84	32.56	265.61	-9,431.14	19,380.38	19,326.62	53.75	360.538	
16,500.00	6,942.36	6,325.89	6,265.66	161.00	24.83	32.38	265.83	-9,430.96	19,480.27	19,426.45	53.82	361.975	
16,600.00	6,942.37	6,321.16	6,260.94	162.59	24.81	32.21	266.05	-9,430.78	19,580.16	19,526.28	53.88	363.404	
16,700.00	6,942.38	6,316.42	6,256.20	164.17	24.79	32.05	266.28	-9,430.59	19,680.05	19,626.10	53.94	364.825	
16,800.00	6,942.40	6,311.66	6,251.46	165.75	24.77	31.88	266.50	-9,430.41	19,779.94	19,725.93	54.01	366.239	
16,900.00	6,942.41	6,306.90	6,246.70	167.33	24.76	31.71	266.73	-9,430.23	19,879.83	19,825.76	54.07	367.646	
17,000.00	6,942.43	6,302.12	6,241.93	168.92	24.74	31.54	266.95	-9,430.04	19,979.72	19,925.58	54.14	369.045	
17,100.00	6,942.44	6,297.34	6,237.16	170.50	24.72	31.38	267.18	-9,429.85	20,079.61	20,025.41	54.21	370.437	
17,200.00	6,942.46	6,292.54	6,232.37	172.09	24.70	31.21	267.41	-9,429.67	20,179.51	20,125.23	54.27	371.821	
17,300.00	6,942.47	6,287.73	6,227.57	173.67	24.69	31.05	267.64	-9,429.48	20,279.40	20,225.06	54.34	373.198	
17,400.00	6,942.49	6,282.91	6,222.75	175.26	24.67	30.89	267.87	-9,429.29	20,379.29	20,324.88	54.41	374.568	
17,500.00	6,942.50	6,278.07	6,217.93	176.84	24.65	30.73	268.10	-9,429.10	20,479.18	20,424.70	54.48	375.930	
17,600.00	6,942.52	6,273.23	6,213.10	178.43	24.63	30.57	268.33	-9,428.91	20,579.07	20,524.53	54.55	377.285	
17,700.00	6,942.53	6,268.37	6,208.25	180.01	24.62	30.41	268.56	-9,428.72	20,678.97	20,624.35	54.61	378.632	
17,800.00	6,942.55	6,263.51	6,203.39	181.60	24.60	30.25	268.79	-9,428.53	20,778.86	20,724.17	54.69	379.973	
17,900.00	6,942.56	6,258.63	6,198.52	183.19	24.58	30.09	269.03	-9,428.34	20,878.75	20,823.99	54.76	381.306	
18,000.00	6,942.58	6,253.74	6,193.64	184.77	24.56	29.94	269.26	-9,428.15	20,978.64	20,923.82	54.83	382.632	
18,100.00	6,942.59	6,248.84	6,188.75	186.36	24.55	29.78	269.50	-9,427.95	21,078.54	21,023.64	54.90	383.951	
18,200.00	6,942.61	6,243.92	6,183.85	187.95	24.53	29.63	269.73	-9,427.76	21,178.43	21,123.46	54.97	385.262	
18,300.00	6,942.62	6,239.00	6,178.93	189.54	24.51	29.47	269.97	-9,427.57	21,278.32	21,223.28	55.04	386.567	
18,400.00	6,942.64	6,234.06	6,174.01	191.12	24.49	29.32	270.21	-9,427.37	21,378.21	21,323.10	55.12	387.864	
18,500.00	6,942.65	6,229.12	6,169.07	192.71	24.47	29.17	270.45	-9,427.18	21,478.11	21,422.92	55.19	389.155	
18,600.00	6,942.67	6,224.16	6,164.12	194.30	24.46	29.02	270.69	-9,426.98	21,578.00	21,522.73	55.27	390.438	
18,700.00	6,942.68	6,219.18	6,159.15	195.89	24.44	28.87	270.93	-9,426.78	21,677.89	21,622.55	55.34	391.714	
18,800.00	6,942.70	6,214.20	6,154.18	197.48	24.42	28.72	271.17	-9,426.58	21,777.79	21,722.37	55.42	392.983	
18,900.00	6,942.71	6,209.20	6,149.20	199.07	24.40	28.57	271.41	-9,426.39	21,877.68	21,822.19	55.49	394.246	
19,000.00	6,942.73	6,204.20	6,144.20	200.66	24.38	28.42	271.65	-9,426.19	21,977.57	21,922.01	55.57	395.501	
19,100.00	6,942.74	6,199.18	6,139.19	202.25	24.36	28.28	271.90	-9,425.99	22,077.47	22,021.82	55.65	396.750	
19,200.00	6,942.76	6,194.15	6,134.17	203.84	24.35	28.13	272.14	-9,425.79	22,177.36	22,121.64	55.72	397.991	
19,300.00	6,942.77	6,189.10	6,129.13	205.43	24.33	27.99	272.39	-9,425.58	22,277.26	22,221.46	55.80	399.226	
19,400.00	6,942.78	6,184.05	6,124.09	207.02	24.31	27.84	272.63	-9,425.38	22,377.15	22,321.27	55.88	400.454	
19,500.00	6,942.80	6,178.98	6,119.03	208.61	24.29	27.70	272.88	-9,425.18	22,477.04	22,421.09	55.96	401.675	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 **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
19,600.00	6,942.81	6,173.90	6,113.96	210.20	24.27	27.56	273.13	-9,424.98	22,576.94	22,520.90	56.04	402.890	
19,700.00	6,942.83	6,168.81	6,108.88	211.79	24.25	27.42	273.38	-9,424.77	22,676.83	22,620.71	56.12	404.098	
19,800.00	6,942.84	6,163.70	6,103.78	213.38	24.23	27.28	273.63	-9,424.57	22,776.73	22,720.53	56.20	405.299	
19,900.00	6,942.86	6,158.58	6,098.68	214.97	24.22	27.14	273.88	-9,424.36	22,876.62	22,820.34	56.28	406.493	
20,000.00	6,942.87	6,153.45	6,093.56	216.56	24.20	27.00	274.13	-9,424.15	22,976.51	22,920.15	56.36	407.681	
20,100.00	6,942.89	6,148.31	6,088.42	218.15	24.18	26.86	274.38	-9,423.95	23,076.41	23,019.97	56.44	408.862	
20,200.00	6,942.90	6,143.16	6,083.28	219.75	24.16	26.72	274.64	-9,423.74	23,176.30	23,119.78	56.52	410.037	
20,300.00	6,942.92	6,137.99	6,078.12	221.34	24.14	26.59	274.89	-9,423.53	23,276.20	23,219.59	56.60	411.205	
20,400.00	6,942.93	6,132.81	6,072.96	222.93	24.12	26.45	275.15	-9,423.32	23,376.09	23,319.40	56.69	412.367	
20,500.00	6,942.95	6,127.62	6,067.77	224.52	24.10	26.32	275.40	-9,423.11	23,475.98	23,419.21	56.77	413.523	
20,600.00	6,942.96	6,122.41	6,062.58	226.12	24.08	26.18	275.66	-9,422.90	23,575.88	23,519.02	56.85	414.672	
20,700.00	6,942.98	6,117.20	6,057.37	227.71	24.07	26.05	275.92	-9,422.69	23,675.77	23,618.83	56.94	415.814	
20,800.00	6,942.99	6,111.97	6,052.15	229.30	24.05	25.92	276.18	-9,422.47	23,775.67	23,718.64	57.02	416.950	
20,855.77	6,943.00	6,109.04	6,049.24	230.19	24.04	25.84	276.32	-9,422.35	23,831.38	23,774.31	57.07	417.581	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	87.04	936.43	18,091.93	18,116.15				
100.00	100.00	588.10	588.00	0.25	17.62	87.04	936.43	18,091.93	18,116.15	18,098.28	17.87	1,013.598	
200.00	200.00	688.10	688.00	0.61	20.62	87.04	936.43	18,091.93	18,116.15	18,094.92	21.23	853.407	
300.00	300.00	790.77	790.63	0.97	23.70	87.03	938.55	18,091.93	18,116.26	18,091.60	24.66	734.553	
400.00	400.00	897.78	897.61	1.33	26.90	87.03	937.85	18,091.93	18,116.23	18,088.00	28.23	641.784	
500.00	500.00	1,004.82	1,004.61	1.68	30.11	87.04	936.34	18,091.93	18,116.15	18,084.36	31.79	569.803	
600.00	599.98	1,088.39	1,087.98	2.04	32.61	66.32	936.43	18,091.93	18,115.45	18,080.79	34.66	522.733	
700.00	699.84	1,188.24	1,187.84	2.40	35.61	66.37	936.43	18,091.93	18,113.35	18,075.34	38.00	476.605	
800.00	799.45	1,290.47	1,290.02	2.77	38.67	66.45	938.55	18,091.93	18,109.96	18,068.53	41.43	437.142	
845.27	844.44	1,338.52	1,338.06	2.93	40.11	66.51	938.34	18,091.93	18,107.90	18,064.87	43.03	420.796	
900.00	898.77	1,396.51	1,396.03	3.13	41.85	66.53	937.86	18,091.93	18,105.24	18,060.27	44.97	402.608	
1,000.00	998.04	1,502.35	1,501.85	3.50	45.02	66.57	936.39	18,091.93	18,100.36	18,051.85	48.51	373.132	
1,100.00	1,097.32	1,586.03	1,585.32	3.87	47.52	66.60	936.43	18,091.93	18,095.55	18,044.16	51.39	352.142	
1,200.00	1,196.59	1,685.30	1,684.59	4.24	50.50	66.64	936.43	18,091.93	18,090.75	18,036.01	54.73	330.517	
1,300.00	1,295.87	1,786.81	1,786.05	4.62	53.54	66.66	938.56	18,091.93	18,086.05	18,027.90	58.15	311.021	
1,400.00	1,395.14	1,892.36	1,891.58	5.00	56.70	66.70	937.90	18,091.93	18,081.24	18,019.55	61.69	293.102	
1,500.00	1,494.42	1,997.77	1,996.96	5.38	59.86	66.74	936.47	18,091.93	18,076.39	18,011.17	65.22	277.141	
1,600.00	1,593.69	2,082.71	2,081.69	5.76	62.41	66.77	936.43	18,091.93	18,071.61	18,003.46	68.15	265.185	
1,700.00	1,692.96	2,181.98	2,180.96	6.14	65.38	66.81	936.43	18,091.93	18,066.84	17,995.34	71.50	252.683	
1,800.00	1,792.24	2,283.13	2,282.07	6.52	68.41	66.84	938.57	18,091.93	18,062.18	17,987.27	74.91	241.119	
1,900.00	1,891.51	2,388.25	2,387.17	6.91	71.56	66.88	937.94	18,091.93	18,057.40	17,978.96	78.44	230.210	
2,000.00	1,990.79	2,493.22	2,492.11	7.29	74.71	66.92	936.55	18,091.93	18,052.59	17,970.63	81.96	220.250	
2,100.00	2,090.06	2,579.38	2,578.06	7.67	77.29	66.95	936.43	18,091.93	18,047.84	17,962.92	84.93	212.513	
2,200.00	2,189.34	2,678.66	2,677.34	8.06	80.26	66.98	936.43	18,091.93	18,043.11	17,954.83	88.28	204.383	
2,300.00	2,288.61	2,779.49	2,778.12	8.44	83.29	67.01	938.58	18,091.93	18,038.47	17,946.79	91.68	196.749	
2,400.00	2,387.89	2,884.17	2,882.79	8.82	86.42	67.05	937.98	18,091.93	18,033.73	17,938.53	95.20	189.429	
2,500.00	2,487.16	2,988.71	2,987.30	9.21	89.56	67.09	936.62	18,091.93	18,028.96	17,930.25	98.71	182.639	
2,600.00	2,586.44	3,076.06	3,074.44	9.59	92.17	67.12	936.43	18,091.93	18,024.24	17,922.53	101.71	177.208	
2,700.00	2,685.71	3,175.33	3,173.71	9.98	95.15	67.16	936.43	18,091.93	18,019.54	17,914.48	105.07	171.503	
2,800.00	2,784.99	3,275.87	3,274.21	10.36	98.16	67.19	938.59	18,091.93	18,014.93	17,906.47	108.46	166.093	
2,900.00	2,884.26	3,380.13	3,378.44	10.75	101.28	67.23	938.02	18,091.93	18,010.23	17,898.26	111.97	160.851	
3,000.00	2,983.53	3,484.24	3,482.52	11.13	104.40	67.27	936.70	18,091.93	18,005.50	17,890.03	115.47	155.933	
3,100.00	3,082.81	3,572.74	3,570.81	11.52	107.06	67.30	936.43	18,091.93	18,000.82	17,882.31	118.50	151.901	
3,200.00	3,182.08	3,672.01	3,670.08	11.90	110.03	67.33	936.43	18,091.93	17,996.15	17,874.29	121.86	147.679	
3,300.00	3,281.36	3,772.29	3,770.32	12.29	113.03	67.36	938.59	18,091.93	17,991.57	17,866.32	125.25	143.649	
3,400.00	3,380.63	3,876.12	3,874.13	12.67	116.15	67.40	938.06	18,091.93	17,986.90	17,858.16	128.74	139.715	
3,500.00	3,479.91	3,979.80	3,977.78	13.06	119.25	67.44	936.77	18,091.93	17,982.21	17,849.98	132.23	135.993	
3,600.00	3,579.18	4,069.42	4,067.18	13.44	121.94	67.47	936.43	18,091.93	17,977.56	17,842.26	135.30	132.875	
3,700.00	3,678.46	4,168.69	4,166.46	13.83	124.91	67.51	936.43	18,091.93	17,972.92	17,834.27	138.65	129.624	
3,800.00	3,777.73	4,268.73	4,266.46	14.21	127.91	67.54	938.60	18,091.93	17,968.37	17,826.34	142.03	126.508	
3,900.00	3,877.01	4,372.14	4,369.84	14.60	131.01	67.58	938.09	18,091.93	17,963.74	17,818.22	145.51	123.450	
4,000.00	3,976.28	4,475.41	4,473.08	14.98	134.10	67.62	936.84	18,091.93	17,959.09	17,810.10	148.99	120.538	
4,100.00	4,075.55	4,566.09	4,563.55	15.37	136.82	67.65	936.43	18,091.93	17,954.47	17,802.38	152.09	118.050	
4,200.00	4,174.83	4,665.37	4,662.83	15.75	139.80	67.69	936.43	18,091.93	17,949.87	17,794.42	155.45	115.471	
4,300.00	4,274.10	4,765.21	4,762.63	16.14	142.79	67.71	938.60	18,091.93	17,945.34	17,786.52	158.82	112.989	
4,400.00	4,373.38	4,868.19	4,865.59	16.53	145.87	67.75	938.12	18,091.93	17,940.75	17,778.45	162.29	110.546	
4,500.00	4,472.65	4,971.04	4,968.41	16.91	148.95	67.79	936.90	18,091.93	17,936.14	17,770.38	165.76	108.208	
4,600.00	4,571.93	5,062.77	5,059.93	17.30	151.70	67.83	936.43	18,091.93	17,931.55	17,762.66	168.89	106.174	
4,700.00	4,671.20	5,162.05	5,159.20	17.68	154.68	67.86	936.43	18,091.93	17,926.99	17,754.74	172.25	104.078	
4,800.00	4,770.48	5,261.71	5,258.83	18.07	157.66	67.89	938.61	18,091.93	17,922.49	17,746.88	175.62	102.055	
4,900.00	4,869.75	5,364.28	5,361.38	18.45	160.74	67.93	938.16	18,091.93	17,917.93	17,738.86	179.07	100.060	
5,000.00	4,969.03	5,466.71	5,463.78	18.84	163.81	67.97	936.97	18,091.93	17,913.36	17,730.83	182.52	98.143	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,559.45	5,556.30	19.23	166.59	68.00	936.43	18,091.93	17,908.81	17,723.12	185.69	96.447	
5,200.00	5,167.58	5,658.72	5,655.58	19.61	169.56	68.04	936.43	18,091.93	17,904.28	17,715.24	189.04	94.710	
5,300.00	5,266.85	5,758.24	5,755.05	20.00	172.54	68.07	938.61	18,091.93	17,899.81	17,707.40	192.41	93.030	
5,400.00	5,366.12	5,860.40	5,857.19	20.38	175.60	68.11	938.19	18,091.93	17,895.29	17,699.43	195.85	91.371	
5,500.00	5,465.40	5,962.42	5,959.19	20.77	178.66	68.15	937.04	18,091.93	17,890.75	17,691.46	199.29	89.771	
5,600.00	5,564.67	6,056.13	6,052.67	21.15	181.47	68.18	936.43	18,091.93	17,886.24	17,683.75	202.48	88.334	
5,700.00	5,663.95	6,155.40	6,151.95	21.54	184.44	68.22	936.43	18,091.93	17,881.75	17,675.90	205.84	86.871	
5,800.00	5,763.22	6,254.80	6,251.31	21.93	187.42	68.25	938.61	18,091.93	17,877.30	17,668.10	209.20	85.454	
5,900.00	5,862.50	6,356.55	6,353.04	22.31	190.47	68.28	938.22	18,091.93	17,872.81	17,660.18	212.64	84.053	
6,000.00	5,961.77	6,458.16	6,454.62	22.70	193.52	68.32	937.10	18,091.93	17,868.32	17,652.26	216.06	82.699	
6,100.00	6,061.05	6,552.80	6,549.05	23.08	196.35	68.36	936.43	18,091.93	17,863.84	17,644.56	219.28	81.464	
6,200.00	6,160.32	6,652.08	6,648.32	23.47	199.33	68.40	936.43	18,091.93	17,859.38	17,636.74	222.64	80.216	
6,300.00	6,259.60	6,751.38	6,747.59	23.86	202.30	68.42	938.61	18,091.93	17,854.97	17,628.97	226.00	79.004	
6,376.00	6,335.04	6,828.42	6,824.61	24.15	204.61	68.45	938.40	18,091.93	17,851.59	17,622.99	228.60	78.091	
6,400.00	6,358.85	6,852.70	6,848.89	24.24	205.34	53.72	938.24	18,091.93	17,850.07	17,620.64	229.42	77.805	
6,450.00	6,408.16	6,903.00	6,899.17	24.44	206.85	34.55	937.79	18,091.93	17,844.01	17,612.89	231.12	77.207	
6,500.00	6,456.87	6,952.63	6,948.79	24.64	208.33	24.61	937.18	18,091.93	17,834.07	17,601.27	232.80	76.607	
6,550.00	6,504.65	7,001.31	6,997.45	24.85	209.79	18.89	936.41	18,091.93	17,820.33	17,585.88	234.44	76.011	
6,600.00	6,551.23	7,043.29	7,039.23	25.06	211.05	15.25	936.43	18,091.93	17,802.87	17,566.98	235.89	75.472	
6,650.00	6,596.31	7,088.37	7,084.31	25.26	212.40	12.75	936.43	18,091.93	17,781.79	17,544.37	237.41	74.898	
6,700.00	6,639.62	7,131.68	7,127.62	25.48	213.70	10.94	936.43	18,091.93	17,757.22	17,518.34	238.88	74.336	
6,750.00	6,680.88	7,172.94	7,168.88	25.69	214.93	9.56	936.43	18,091.93	17,729.31	17,489.03	240.27	73.788	
6,800.00	6,719.85	7,211.91	7,207.85	25.91	216.10	8.48	936.43	18,091.93	17,698.24	17,456.65	241.59	73.257	
6,850.00	6,756.28	7,248.34	7,244.28	26.13	217.19	7.60	936.43	18,091.93	17,664.19	17,421.37	242.82	72.746	
6,900.00	6,789.95	7,282.56	7,278.46	26.37	218.22	6.84	938.58	18,091.93	17,627.40	17,383.44	243.97	72.253	
6,950.00	6,820.65	7,313.78	7,309.67	26.61	219.15	6.19	938.47	18,091.93	17,588.05	17,343.04	245.01	71.784	
7,000.00	6,848.19	7,341.78	7,337.67	26.87	219.99	5.58	938.32	18,091.93	17,546.40	17,300.45	245.95	71.341	
7,050.00	6,872.41	7,366.39	7,362.27	27.13	220.73	4.97	938.14	18,091.93	17,502.71	17,255.94	246.77	70.927	
7,100.00	6,893.15	7,387.46	7,383.34	27.41	221.36	4.30	937.95	18,091.93	17,457.25	17,209.79	247.47	70.543	
7,150.00	6,910.28	7,404.87	7,400.74	27.71	221.88	3.46	937.77	18,091.93	17,410.31	17,162.26	248.04	70.190	
7,200.00	6,923.70	7,418.50	7,414.37	28.02	222.29	2.23	937.62	18,091.93	17,362.16	17,113.66	248.49	69.870	
7,250.00	6,933.33	7,428.28	7,424.14	28.34	222.58	-0.07	937.50	18,091.93	17,313.11	17,064.29	248.81	69.583	
7,300.00	6,939.11	7,434.15	7,430.01	28.67	222.76	-6.83	937.43	18,091.93	17,263.45	17,014.45	249.00	69.330	
7,349.12	6,941.00	7,436.07	7,431.93	29.00	222.82	-90.07	937.40	18,091.93	17,214.39	16,965.32	249.07	69.115	
7,400.00	6,941.01	7,436.08	7,431.94	29.36	222.82	-90.07	937.40	18,091.93	17,163.51	16,914.44	249.07	68.911	
7,500.00	6,941.02	7,436.10	7,431.96	30.11	222.82	-90.08	937.40	18,091.93	17,063.53	16,814.46	249.07	68.508	
7,600.00	6,941.04	7,436.12	7,431.99	30.93	222.82	-90.08	937.40	18,091.93	16,963.55	16,714.47	249.08	68.106	
7,700.00	6,941.05	7,436.15	7,432.01	31.80	222.82	-90.09	937.40	18,091.93	16,863.56	16,614.48	249.08	67.704	
7,800.00	6,941.07	7,436.17	7,432.03	32.73	222.82	-90.09	937.40	18,091.93	16,763.58	16,514.50	249.08	67.301	
7,900.00	6,941.08	7,436.19	7,432.05	33.71	222.82	-90.09	937.40	18,091.93	16,663.60	16,414.51	249.09	66.898	
8,000.00	6,941.10	7,436.21	7,432.07	34.73	222.82	-90.10	937.40	18,091.93	16,563.61	16,314.52	249.10	66.495	
8,100.00	6,941.11	7,436.23	7,432.09	35.79	222.82	-90.10	937.40	18,091.93	16,463.63	16,214.53	249.10	66.091	
8,200.00	6,941.13	7,436.26	7,432.12	36.90	222.82	-90.11	937.40	18,091.93	16,363.65	16,114.54	249.11	65.688	
8,300.00	6,941.14	7,436.28	7,432.14	38.03	222.82	-90.11	937.40	18,091.93	16,263.67	16,014.55	249.12	65.284	
8,400.00	6,941.16	7,436.30	7,432.16	39.20	222.83	-90.11	937.40	18,091.93	16,163.69	15,914.55	249.13	64.880	
8,500.00	6,941.17	7,436.32	7,432.18	40.40	222.83	-90.12	937.40	18,091.93	16,063.70	15,814.56	249.14	64.476	
8,600.00	6,941.19	7,436.34	7,432.20	41.63	222.83	-90.12	937.40	18,091.93	15,963.72	15,714.57	249.15	64.072	
8,700.00	6,941.20	7,436.37	7,432.23	42.88	222.83	-90.13	937.40	18,091.93	15,863.74	15,614.57	249.17	63.667	
8,800.00	6,941.22	7,436.39	7,432.25	44.16	222.83	-90.13	937.40	18,091.93	15,763.76	15,514.58	249.18	63.262	
8,900.00	6,941.23	7,436.41	7,432.27	45.45	222.83	-90.13	937.40	18,091.93	15,663.78	15,414.58	249.19	62.858	
9,000.00	6,941.24	7,436.43	7,432.29	46.76	222.83	-90.14	937.40	18,091.93	15,563.80	15,314.59	249.21	62.453	
9,100.00	6,941.26	7,436.45	7,432.31	48.10	222.83	-90.14	937.40	18,091.93	15,463.82	15,214.59	249.23	62.047	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	7,436.48	7,432.34	49.44	222.83	-90.15	937.40	18,091.93	15,363.84	15,114.60	249.24	61.642	
9,300.00	6,941.29	7,436.50	7,432.36	50.80	222.83	-90.15	937.40	18,091.93	15,263.86	15,014.60	249.26	61.237	
9,400.00	6,941.30	7,436.52	7,432.38	52.18	222.83	-90.15	937.40	18,091.93	15,163.88	14,914.60	249.28	60.831	
9,500.00	6,941.32	7,436.54	7,432.40	53.57	222.83	-90.16	937.40	18,091.93	15,063.90	14,814.60	249.30	60.425	
9,600.00	6,941.33	7,436.56	7,432.42	54.97	222.83	-90.16	937.40	18,091.93	14,963.92	14,714.60	249.32	60.020	
9,700.00	6,941.35	7,436.59	7,432.45	56.38	222.83	-90.17	937.40	18,091.93	14,863.94	14,614.61	249.34	59.614	
9,800.00	6,941.36	7,436.61	7,432.47	57.80	222.83	-90.17	937.40	18,091.93	14,763.96	14,514.61	249.36	59.208	
9,900.00	6,941.38	7,436.63	7,432.49	59.23	222.84	-90.17	937.39	18,091.93	14,663.99	14,414.61	249.38	58.801	
10,000.00	6,941.39	7,436.65	7,432.51	60.67	222.84	-90.18	937.39	18,091.93	14,564.01	14,314.60	249.41	58.395	
10,100.00	6,941.41	7,436.67	7,432.53	62.11	222.84	-90.18	937.39	18,091.93	14,464.03	14,214.60	249.43	57.989	
10,200.00	6,941.42	7,436.70	7,432.56	63.57	222.84	-90.19	937.39	18,091.93	14,364.05	14,114.60	249.45	57.582	
10,300.00	6,941.44	7,436.72	7,432.58	65.03	222.84	-90.19	937.39	18,091.93	14,264.08	14,014.60	249.48	57.175	
10,400.00	6,941.45	7,436.74	7,432.60	66.50	222.84	-90.20	937.39	18,091.93	14,164.10	13,914.60	249.51	56.769	
10,500.00	6,941.47	7,436.76	7,432.62	67.97	222.84	-90.20	937.39	18,091.93	14,064.13	13,814.59	249.53	56.362	
10,600.00	6,941.48	7,436.78	7,432.64	69.45	222.84	-90.20	937.39	18,091.93	13,964.15	13,714.59	249.56	55.955	
10,700.00	6,941.50	7,436.81	7,432.67	70.94	222.84	-90.21	937.39	18,091.93	13,864.17	13,614.58	249.59	55.548	
10,800.00	6,941.51	7,436.83	7,432.69	72.43	222.84	-90.21	937.39	18,091.93	13,764.20	13,514.58	249.62	55.141	
10,900.00	6,941.53	7,436.85	7,432.71	73.92	222.84	-90.22	937.39	18,091.93	13,664.22	13,414.58	249.65	54.734	
11,000.00	6,941.54	7,436.87	7,432.73	75.42	222.84	-90.22	937.39	18,091.93	13,564.25	13,314.57	249.68	54.326	
11,100.00	6,941.56	7,436.89	7,432.75	76.92	222.84	-90.22	937.39	18,091.93	13,464.28	13,214.56	249.71	53.919	
11,200.00	6,941.57	7,436.92	7,432.78	78.43	222.84	-90.23	937.39	18,091.93	13,364.30	13,114.56	249.75	53.512	
11,300.00	6,941.59	7,436.94	7,432.80	79.94	222.84	-90.23	937.39	18,091.93	13,264.33	13,014.55	249.78	53.104	
11,400.00	6,941.60	7,436.96	7,432.82	81.46	222.84	-90.24	937.39	18,091.93	13,164.36	12,914.54	249.81	52.697	
11,500.00	6,941.61	7,436.98	7,432.84	82.98	222.85	-90.24	937.39	18,091.93	13,064.38	12,814.54	249.85	52.289	
11,600.00	6,941.63	7,437.00	7,432.86	84.50	222.85	-90.24	937.39	18,091.93	12,964.41	12,714.53	249.88	51.882	
11,700.00	6,941.64	7,437.03	7,432.89	86.02	222.85	-90.25	937.39	18,091.93	12,864.44	12,614.52	249.92	51.474	
11,800.00	6,941.66	7,437.05	7,432.91	87.55	222.85	-90.25	937.39	18,091.93	12,764.47	12,514.51	249.96	51.067	
11,900.00	6,941.67	7,437.07	7,432.93	89.08	222.85	-90.26	937.39	18,091.93	12,664.50	12,414.50	250.00	50.659	
12,000.00	6,941.69	7,437.09	7,432.95	90.61	222.85	-90.26	937.39	18,091.93	12,564.53	12,314.50	250.03	50.251	
12,100.00	6,941.70	7,437.11	7,432.97	92.14	222.85	-90.26	937.39	18,091.93	12,464.56	12,214.49	250.07	49.844	
12,200.00	6,941.72	7,437.14	7,433.00	93.68	222.85	-90.27	937.39	18,091.93	12,364.59	12,114.48	250.11	49.436	
12,300.00	6,941.73	7,437.16	7,433.02	95.22	222.85	-90.27	937.39	18,091.93	12,264.62	12,014.47	250.16	49.028	
12,400.00	6,941.75	7,437.18	7,433.04	96.76	222.85	-90.28	937.39	18,091.93	12,164.65	11,914.46	250.20	48.620	
12,500.00	6,941.76	7,437.20	7,433.06	98.30	222.85	-90.28	937.39	18,091.93	12,064.69	11,814.45	250.24	48.213	
12,600.00	6,941.78	7,437.22	7,433.08	99.85	222.85	-90.28	937.39	18,091.93	11,964.72	11,714.44	250.28	47.805	
12,700.00	6,941.79	7,437.25	7,433.11	101.40	222.85	-90.29	937.39	18,091.93	11,864.75	11,614.43	250.33	47.397	
12,800.00	6,941.81	7,437.27	7,433.13	102.95	222.85	-90.29	937.39	18,091.93	11,764.79	11,514.42	250.37	46.989	
12,900.00	6,941.82	7,437.29	7,433.15	104.50	222.85	-90.30	937.39	18,091.93	11,664.82	11,414.40	250.42	46.582	
13,000.00	6,941.84	7,437.31	7,433.17	106.05	222.86	-90.30	937.39	18,091.93	11,564.86	11,314.39	250.46	46.174	
13,100.00	6,941.85	7,437.33	7,433.19	107.60	222.86	-90.31	937.39	18,091.93	11,464.89	11,214.38	250.51	45.766	
13,200.00	6,941.87	7,437.36	7,433.22	109.16	222.86	-90.31	937.39	18,091.93	11,364.93	11,114.37	250.56	45.358	
13,300.00	6,941.88	7,437.38	7,433.24	110.71	222.86	-90.31	937.39	18,091.93	11,264.97	11,014.36	250.61	44.951	
13,400.00	6,941.90	7,437.40	7,433.26	112.27	222.86	-90.32	937.38	18,091.93	11,165.00	10,914.35	250.66	44.543	
13,500.00	6,941.91	7,437.42	7,433.28	113.83	222.86	-90.32	937.38	18,091.93	11,065.04	10,814.34	250.71	44.135	
13,600.00	6,941.93	7,437.44	7,433.30	115.39	222.86	-90.33	937.38	18,091.93	10,965.08	10,714.33	250.76	43.728	
13,700.00	6,941.94	7,437.47	7,433.33	116.95	222.86	-90.33	937.38	18,091.93	10,865.12	10,614.31	250.81	43.320	
13,800.00	6,941.96	7,437.49	7,433.35	118.51	222.86	-90.33	937.38	18,091.93	10,765.16	10,514.30	250.86	42.913	
13,900.00	6,941.97	7,437.51	7,433.37	120.08	222.86	-90.34	937.38	18,091.93	10,665.20	10,414.29	250.91	42.505	
14,000.00	6,941.99	7,437.53	7,433.39	121.64	222.86	-90.34	937.38	18,091.93	10,565.25	10,314.28	250.97	42.098	
14,100.00	6,942.00	7,437.55	7,433.41	123.21	222.86	-90.35	937.38	18,091.93	10,465.29	10,214.27	251.02	41.691	
14,200.00	6,942.01	7,437.58	7,433.44	124.77	222.86	-90.35	937.38	18,091.93	10,365.33	10,114.26	251.08	41.283	
14,300.00	6,942.03	7,437.60	7,433.46	126.34	222.86	-90.35	937.38	18,091.93	10,265.38	10,014.24	251.13	40.876	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	7,437.62	7,433.48	127.91	222.86	-90.36	937.38	18,091.93	10,165.42	9,914.23	251.19	40.469	
14,500.00	6,942.06	7,437.64	7,433.50	129.48	222.87	-90.36	937.38	18,091.93	10,065.47	9,814.22	251.25	40.062	
14,600.00	6,942.07	7,437.66	7,433.52	131.05	222.87	-90.37	937.38	18,091.93	9,965.52	9,714.21	251.31	39.655	
14,700.00	6,942.09	7,437.69	7,433.55	132.62	222.87	-90.37	937.38	18,091.93	9,865.57	9,614.20	251.37	39.248	
14,800.00	6,942.10	7,437.71	7,433.57	134.19	222.87	-90.37	937.38	18,091.93	9,765.62	9,514.19	251.43	38.841	
14,900.00	6,942.12	7,437.73	7,433.59	135.76	222.87	-90.38	937.38	18,091.93	9,665.67	9,414.18	251.49	38.434	
15,000.00	6,942.13	7,437.75	7,433.61	137.34	222.87	-90.38	937.38	18,091.93	9,565.72	9,314.17	251.55	38.027	
15,100.00	6,942.15	7,437.77	7,433.63	138.91	222.87	-90.39	937.38	18,091.93	9,465.77	9,214.16	251.61	37.621	
15,200.00	6,942.16	7,437.80	7,433.66	140.48	222.87	-90.39	937.38	18,091.93	9,365.82	9,114.15	251.67	37.214	
15,300.00	6,942.18	7,437.82	7,433.68	142.06	222.87	-90.40	937.38	18,091.93	9,265.88	9,014.14	251.74	36.808	
15,400.00	6,942.19	7,437.84	7,433.70	143.64	222.87	-90.40	937.38	18,091.93	9,165.94	8,914.13	251.80	36.401	
15,500.00	6,942.21	7,437.86	7,433.72	145.21	222.87	-90.40	937.38	18,091.93	9,065.99	8,814.12	251.87	35.995	
15,600.00	6,942.22	7,437.88	7,433.74	146.79	222.87	-90.41	937.38	18,091.93	8,966.05	8,714.12	251.93	35.589	
15,700.00	6,942.24	7,437.91	7,433.77	148.37	222.87	-90.41	937.38	18,091.93	8,866.11	8,614.11	252.00	35.183	
15,800.00	6,942.25	7,437.93	7,433.79	149.94	222.87	-90.42	937.38	18,091.93	8,766.17	8,514.10	252.07	34.777	
15,900.00	6,942.27	7,437.95	7,433.81	151.52	222.87	-90.42	937.38	18,091.93	8,666.23	8,414.10	252.14	34.371	
16,000.00	6,942.28	7,437.97	7,433.83	153.10	222.88	-90.42	937.38	18,091.93	8,566.30	8,314.09	252.21	33.965	
16,100.00	6,942.30	7,438.00	7,433.85	154.68	222.88	-90.43	937.38	18,091.93	8,466.36	8,214.08	252.28	33.559	
16,200.00	6,942.31	7,438.02	7,433.88	156.26	222.88	-90.43	937.38	18,091.93	8,366.43	8,114.08	252.35	33.154	
16,300.00	6,942.33	7,438.04	7,433.90	157.84	222.88	-90.44	937.38	18,091.93	8,266.50	8,014.08	252.43	32.748	
16,400.00	6,942.34	7,438.06	7,433.92	159.42	222.88	-90.44	937.38	18,091.93	8,166.57	7,914.07	252.50	32.343	
16,500.00	6,942.36	7,438.08	7,433.94	161.00	222.88	-90.44	937.38	18,091.93	8,066.64	7,814.07	252.57	31.938	
16,600.00	6,942.37	7,438.11	7,433.96	162.59	222.88	-90.45	937.38	18,091.93	7,966.72	7,714.07	252.65	31.533	
16,700.00	6,942.38	7,438.13	7,433.99	164.17	222.88	-90.45	937.38	18,091.93	7,866.79	7,614.07	252.73	31.128	
16,800.00	6,942.40	7,438.15	7,434.01	165.75	222.88	-90.46	937.37	18,091.93	7,766.87	7,514.07	252.81	30.723	
16,900.00	6,942.41	7,438.17	7,434.03	167.33	222.88	-90.46	937.37	18,091.93	7,666.95	7,414.07	252.89	30.318	
17,000.00	6,942.43	7,438.19	7,434.05	168.92	222.88	-90.47	937.37	18,091.93	7,567.03	7,314.07	252.97	29.913	
17,100.00	6,942.44	7,438.22	7,434.08	170.50	222.88	-90.47	937.37	18,091.93	7,467.12	7,214.07	253.05	29.509	
17,200.00	6,942.46	7,438.24	7,434.10	172.09	222.88	-90.47	937.37	18,091.93	7,367.20	7,114.07	253.13	29.104	
17,300.00	6,942.47	7,438.26	7,434.12	173.67	222.88	-90.48	937.37	18,091.93	7,267.29	7,014.08	253.22	28.700	
17,400.00	6,942.49	7,438.28	7,434.14	175.26	222.88	-90.48	937.37	18,091.93	7,167.38	6,914.08	253.30	28.296	
17,500.00	6,942.50	7,438.30	7,434.16	176.84	222.89	-90.49	937.37	18,091.93	7,067.48	6,814.09	253.39	27.892	
17,600.00	6,942.52	7,438.33	7,434.19	178.43	222.89	-90.49	937.37	18,091.93	6,967.58	6,714.10	253.48	27.488	
17,700.00	6,942.53	7,438.35	7,434.21	180.01	222.89	-90.49	937.37	18,091.93	6,867.68	6,614.10	253.57	27.084	
17,800.00	6,942.55	7,438.37	7,434.23	181.60	222.89	-90.50	937.37	18,091.93	6,767.78	6,514.11	253.66	26.680	
17,900.00	6,942.56	7,438.39	7,434.25	183.19	222.89	-90.50	937.37	18,091.93	6,667.88	6,414.12	253.76	26.276	
18,000.00	6,942.58	7,438.41	7,434.27	184.77	222.89	-90.51	937.37	18,091.93	6,567.99	6,314.14	253.85	25.873	
18,100.00	6,942.59	7,438.44	7,434.30	186.36	222.89	-90.51	937.37	18,091.93	6,468.10	6,214.15	253.95	25.470	
18,200.00	6,942.61	7,438.46	7,434.32	187.95	222.89	-90.51	937.37	18,091.93	6,368.22	6,114.17	254.05	25.066	
18,300.00	6,942.62	7,438.48	7,434.34	189.54	222.89	-90.52	937.37	18,091.93	6,268.34	6,014.18	254.16	24.663	
18,400.00	6,942.64	7,438.50	7,434.36	191.12	222.89	-90.52	937.37	18,091.93	6,168.46	5,914.20	254.26	24.260	
18,500.00	6,942.65	7,438.53	7,434.38	192.71	222.89	-90.53	937.37	18,091.93	6,068.59	5,814.22	254.37	23.857	
18,600.00	6,942.67	7,438.55	7,434.41	194.30	222.89	-90.53	937.37	18,091.93	5,968.72	5,714.24	254.48	23.454	
18,700.00	6,942.68	7,438.57	7,434.43	195.89	222.89	-90.53	937.37	18,091.93	5,868.86	5,614.26	254.60	23.052	
18,800.00	6,942.70	7,438.59	7,434.45	197.48	222.89	-90.54	937.37	18,091.93	5,769.00	5,514.29	254.71	22.649	
18,900.00	6,942.71	7,438.61	7,434.47	199.07	222.89	-90.54	937.37	18,091.93	5,669.14	5,414.31	254.83	22.247	
19,000.00	6,942.73	7,438.64	7,434.50	200.66	222.90	-90.55	937.37	18,091.93	5,569.29	5,314.34	254.96	21.844	
19,100.00	6,942.74	7,438.66	7,434.52	202.25	222.90	-90.55	937.37	18,091.93	5,469.45	5,214.37	255.08	21.442	
19,200.00	6,942.76	7,438.68	7,434.54	203.84	222.90	-90.56	937.37	18,091.93	5,369.61	5,114.40	255.22	21.039	
19,300.00	6,942.77	7,438.70	7,434.56	205.43	222.90	-90.56	937.37	18,091.93	5,269.78	5,014.43	255.35	20.637	
19,400.00	6,942.78	7,438.72	7,434.58	207.02	222.90	-90.56	937.37	18,091.93	5,169.96	4,914.46	255.50	20.235	
19,500.00	6,942.80	7,438.75	7,434.61	208.61	222.90	-90.57	937.37	18,091.93	5,070.14	4,814.50	255.64	19.833	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,600.00	6,942.81	7,438.77	7,434.63	210.20	222.90	-90.57	937.37	18,091.93	4,970.33	4,714.53	255.79	19.431	
19,700.00	6,942.83	7,438.79	7,434.65	211.79	222.90	-90.58	937.37	18,091.93	4,870.52	4,614.57	255.95	19.029	
19,800.00	6,942.84	7,438.81	7,434.67	213.38	222.90	-90.58	937.37	18,091.93	4,770.73	4,514.61	256.12	18.627	
19,900.00	6,942.86	7,438.83	7,434.69	214.97	222.90	-90.58	937.37	18,091.93	4,670.94	4,414.65	256.29	18.225	
20,000.00	6,942.87	7,438.86	7,434.72	216.56	222.90	-90.59	937.37	18,091.93	4,571.17	4,314.69	256.47	17.823	
20,100.00	6,942.89	7,438.88	7,434.74	218.15	222.90	-90.59	937.37	18,091.93	4,471.40	4,214.73	256.66	17.421	
20,200.00	6,942.90	7,438.90	7,434.76	219.75	222.90	-90.60	937.37	18,091.93	4,371.64	4,114.78	256.86	17.019	
20,300.00	6,942.92	7,438.92	7,434.78	221.34	222.90	-90.60	937.36	18,091.93	4,271.90	4,014.82	257.08	16.617	
20,400.00	6,942.93	7,438.95	7,434.80	222.93	222.90	-90.60	937.36	18,091.93	4,172.17	3,914.87	257.30	16.215	
20,500.00	6,942.95	7,438.97	7,434.83	224.52	222.91	-90.61	937.36	18,091.93	4,072.45	3,814.91	257.53	15.813	
20,600.00	6,942.96	7,438.99	7,434.85	226.12	222.91	-90.61	937.36	18,091.93	3,972.74	3,714.96	257.78	15.411	
20,700.00	6,942.98	7,439.01	7,434.87	227.71	222.91	-90.62	937.36	18,091.93	3,873.05	3,615.00	258.05	15.009	
20,800.00	6,942.99	7,439.03	7,434.89	229.30	222.91	-90.62	937.36	18,091.93	3,773.38	3,515.05	258.33	14.607	
20,855.77	6,943.00	7,439.05	7,434.91	230.19	222.91	-90.62	937.36	18,091.93	3,717.80	3,459.30	258.50	14.382	CC, ES, SF

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
0.00	0.00	23.00	23.00	0.00	0.69	68.30	1,824.49	4,585.42	4,935.06				
100.00	100.00	123.00	123.00	0.25	3.69	68.30	1,824.49	4,585.42	4,935.06	4,931.13	3.94	1,253.598	
200.00	200.00	223.00	223.00	0.61	6.68	68.30	1,824.49	4,585.42	4,935.06	4,927.77	7.29	676.815	
300.00	300.00	323.00	323.00	0.97	9.68	68.30	1,824.49	4,585.42	4,935.06	4,924.42	10.65	463.539	
400.00	400.00	423.00	423.00	1.33	12.68	68.30	1,824.49	4,585.42	4,935.06	4,921.06	14.00	352.470	
500.00	500.00	523.10	523.00	1.68	15.67	68.30	1,824.49	4,585.42	4,935.06	4,917.70	17.36	284.289	
600.00	599.98	623.08	622.98	2.04	18.67	47.60	1,824.49	4,585.42	4,933.89	4,913.17	20.71	238.203	
700.00	699.84	722.94	722.84	2.40	21.66	47.69	1,824.49	4,585.42	4,930.36	4,906.29	24.06	204.888	
800.00	799.45	833.14	832.98	2.77	24.96	47.85	1,826.42	4,585.42	4,925.21	4,897.48	27.73	177.637	
845.27	844.44	884.63	884.47	2.93	26.51	47.95	1,826.03	4,585.42	4,921.66	4,892.23	29.43	167.208	
900.00	898.77	946.77	946.59	3.13	28.37	48.02	1,825.31	4,585.42	4,917.01	4,885.51	31.49	156.121	
1,000.00	998.04	1,021.45	1,021.04	3.50	30.61	48.11	1,824.49	4,585.42	4,908.57	4,874.48	34.10	143.962	
1,100.00	1,097.32	1,120.72	1,120.32	3.87	33.58	48.22	1,824.49	4,585.42	4,900.52	4,863.09	37.44	130.899	
1,200.00	1,196.59	1,220.00	1,219.59	4.24	36.56	48.32	1,824.49	4,585.42	4,892.49	4,851.71	40.78	119.971	
1,300.00	1,295.87	1,329.02	1,328.57	4.62	39.82	48.41	1,826.45	4,585.42	4,885.18	4,840.76	44.42	109.984	
1,400.00	1,395.14	1,442.11	1,441.62	5.00	43.21	48.55	1,825.38	4,585.42	4,876.84	4,828.66	48.18	101.230	
1,500.00	1,494.42	1,518.13	1,517.42	5.38	45.49	48.64	1,824.49	4,585.42	4,868.48	4,817.65	50.83	95.786	
1,600.00	1,593.69	1,617.40	1,616.69	5.76	48.46	48.74	1,824.49	4,585.42	4,860.51	4,806.34	54.17	89.720	
1,700.00	1,692.96	1,716.68	1,715.96	6.14	51.44	48.85	1,824.49	4,585.42	4,852.56	4,795.04	57.52	84.360	
1,800.00	1,792.24	1,824.90	1,824.14	6.52	54.68	48.94	1,826.47	4,585.42	4,845.32	4,784.19	61.14	79.252	
1,900.00	1,891.51	1,937.48	1,936.69	6.91	58.06	49.08	1,825.44	4,585.42	4,837.08	4,772.20	64.88	74.549	
2,000.00	1,990.79	2,014.80	2,013.79	7.29	60.37	49.17	1,824.49	4,585.42	4,828.80	4,761.22	67.58	71.455	
2,100.00	2,090.06	2,114.08	2,113.06	7.67	63.35	49.28	1,824.49	4,585.42	4,820.91	4,749.99	70.93	67.969	
2,200.00	2,189.34	2,213.35	2,212.34	8.06	66.32	49.39	1,824.49	4,585.42	4,813.05	4,738.77	74.28	64.798	
2,300.00	2,288.61	2,320.81	2,319.74	8.44	69.54	49.48	1,826.49	4,585.42	4,805.89	4,728.01	77.87	61.715	
2,400.00	2,387.89	2,432.89	2,431.80	8.82	72.90	49.61	1,825.50	4,585.42	4,797.75	4,716.15	81.61	58.792	
2,500.00	2,487.16	2,511.48	2,510.16	9.21	75.26	49.71	1,824.49	4,585.42	4,789.55	4,705.21	84.34	56.789	
2,600.00	2,586.44	2,610.76	2,609.44	9.59	78.23	49.82	1,824.49	4,585.42	4,781.75	4,694.06	87.69	54.530	
2,700.00	2,685.71	2,710.03	2,708.71	9.98	81.20	49.93	1,824.49	4,585.42	4,773.97	4,682.92	91.04	52.437	
2,800.00	2,784.99	2,816.76	2,815.39	10.36	84.40	50.03	1,826.51	4,585.42	4,766.88	4,672.27	94.61	50.382	
2,900.00	2,884.26	2,928.35	2,926.95	10.75	87.75	50.16	1,825.55	4,585.42	4,758.85	4,660.52	98.33	48.395	
3,000.00	2,983.53	3,008.16	3,006.53	11.13	90.14	50.26	1,824.49	4,585.42	4,750.73	4,649.62	101.11	46.988	
3,100.00	3,082.81	3,107.43	3,105.81	11.52	93.11	50.37	1,824.49	4,585.42	4,743.02	4,638.56	104.46	45.406	
3,200.00	3,182.08	3,206.71	3,205.08	11.90	96.09	50.48	1,824.49	4,585.42	4,735.33	4,627.52	107.81	43.923	
3,300.00	3,281.36	3,312.74	3,311.07	12.29	99.26	50.58	1,826.53	4,585.42	4,728.32	4,616.95	111.36	42.459	
3,400.00	3,380.63	3,423.84	3,422.14	12.67	102.59	50.72	1,825.61	4,585.42	4,720.39	4,605.33	115.07	41.023	
3,500.00	3,479.91	3,504.84	3,502.91	13.06	105.02	50.82	1,824.49	4,585.42	4,712.36	4,594.48	117.88	39.977	
3,600.00	3,579.18	3,604.11	3,602.18	13.44	108.00	50.93	1,824.49	4,585.42	4,704.74	4,583.51	121.23	38.809	
3,700.00	3,678.46	3,703.39	3,701.46	13.83	110.97	51.05	1,824.49	4,585.42	4,697.14	4,572.56	124.58	37.703	
3,800.00	3,777.73	3,808.76	3,806.78	14.21	114.13	51.14	1,826.54	4,585.42	4,690.21	4,562.09	128.12	36.609	
3,900.00	3,877.01	3,919.38	3,917.37	14.60	117.44	51.28	1,825.66	4,585.42	4,682.39	4,550.58	131.81	35.525	
4,000.00	3,976.28	4,001.51	3,999.28	14.98	119.90	51.39	1,824.49	4,585.42	4,674.45	4,539.80	134.65	34.716	
4,100.00	4,075.55	4,100.79	4,098.55	15.37	122.88	51.51	1,824.49	4,585.42	4,666.92	4,528.92	138.00	33.818	
4,200.00	4,174.83	4,200.06	4,197.83	15.75	125.85	51.62	1,824.49	4,585.42	4,659.41	4,518.05	141.36	32.962	
4,300.00	4,274.10	4,304.81	4,302.53	16.14	128.99	51.72	1,826.56	4,585.42	4,652.56	4,507.68	144.87	32.115	
4,400.00	4,373.38	4,414.95	4,412.64	16.53	132.29	51.86	1,825.71	4,585.42	4,644.85	4,496.30	148.55	31.268	
4,500.00	4,472.65	4,524.93	4,522.58	16.91	135.59	52.01	1,824.02	4,585.42	4,636.94	4,484.72	152.22	30.462	
4,600.00	4,571.93	4,597.47	4,594.93	17.30	137.76	52.08	1,824.49	4,585.42	4,629.57	4,474.79	154.78	29.911	
4,700.00	4,671.20	4,696.74	4,694.20	17.68	140.74	52.20	1,824.49	4,585.42	4,622.16	4,464.03	158.13	29.229	
4,800.00	4,770.48	4,800.90	4,798.31	18.07	143.86	52.30	1,826.57	4,585.42	4,615.39	4,453.75	161.63	28.555	
4,900.00	4,869.75	4,910.56	4,907.95	18.45	147.14	52.44	1,825.76	4,585.42	4,607.79	4,442.50	165.30	27.876	
5,000.00	4,969.03	5,020.07	5,017.42	18.84	150.42	52.59	1,824.12	4,585.42	4,600.00	4,431.05	168.95	27.226	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,100.00	5,068.30	5,094.14	5,091.30	19.23	152.64	52.67	1,824.49	4,585.42	4,592.71	4,421.15	171.56	26.770	
5,200.00	5,167.58	5,193.42	5,190.58	19.61	155.62	52.79	1,824.49	4,585.42	4,585.39	4,410.48	174.91	26.215	
5,300.00	5,266.85	5,297.02	5,294.13	20.00	158.72	52.89	1,826.59	4,585.42	4,578.70	4,400.30	178.40	25.666	
5,400.00	5,366.12	5,406.21	5,403.30	20.38	161.99	53.03	1,825.81	4,585.42	4,571.22	4,389.18	182.05	25.110	
5,500.00	5,465.40	5,515.25	5,512.29	20.77	165.26	53.18	1,824.21	4,585.42	4,563.56	4,377.87	185.69	24.576	
5,600.00	5,564.67	5,590.82	5,587.67	21.15	167.53	53.27	1,824.49	4,585.42	4,556.34	4,367.99	188.34	24.192	
5,700.00	5,663.95	5,690.10	5,686.95	21.54	170.50	53.39	1,824.49	4,585.42	4,549.12	4,357.43	191.70	23.731	
5,800.00	5,763.22	5,793.17	5,789.98	21.93	173.59	53.49	1,826.60	4,585.42	4,542.51	4,347.35	195.17	23.275	
5,900.00	5,862.50	5,901.90	5,898.68	22.31	176.85	53.64	1,825.86	4,585.42	4,535.15	4,336.35	198.80	22.812	
6,000.00	5,961.77	6,010.47	6,007.21	22.70	180.10	53.79	1,824.30	4,585.42	4,527.61	4,325.18	202.43	22.366	
6,100.00	6,061.05	6,087.50	6,084.05	23.08	182.41	53.88	1,824.49	4,585.42	4,520.47	4,315.35	205.13	22.037	
6,200.00	6,160.32	6,186.77	6,183.32	23.47	185.38	54.00	1,824.49	4,585.42	4,513.36	4,304.88	208.48	21.649	
6,300.00	6,259.60	6,289.36	6,285.86	23.86	188.46	54.10	1,826.61	4,585.42	4,506.84	4,294.90	211.94	21.265	
6,376.00	6,335.04	6,371.65	6,368.14	24.15	190.92	54.21	1,826.15	4,585.42	4,501.35	4,286.66	214.69	20.967	
6,400.00	6,358.85	6,397.60	6,394.08	24.24	191.70	39.45	1,825.90	4,585.42	4,499.16	4,283.60	215.56	20.872	
6,450.00	6,408.16	6,451.32	6,447.79	24.44	193.31	20.16	1,825.25	4,585.42	4,491.79	4,274.43	217.36	20.666	
6,500.00	6,456.87	6,504.34	6,500.78	24.64	194.90	9.99	1,824.41	4,585.42	4,480.66	4,261.53	219.13	20.448	
6,550.00	6,504.65	6,531.41	6,527.65	24.85	195.71	3.91	1,824.49	4,585.42	4,466.05	4,245.93	220.13	20.289	
6,600.00	6,551.23	6,577.99	6,574.23	25.06	197.11	-0.21	1,824.49	4,585.42	4,447.91	4,226.22	221.69	20.063	
6,650.00	6,596.31	6,623.07	6,619.31	25.26	198.46	-3.31	1,824.49	4,585.42	4,426.32	4,203.12	223.21	19.831	
6,700.00	6,639.62	6,666.37	6,662.62	25.48	199.75	-5.90	1,824.49	4,585.42	4,401.42	4,176.76	224.66	19.592	
6,750.00	6,680.88	6,707.64	6,703.88	25.69	200.99	-8.24	1,824.49	4,585.42	4,373.35	4,147.32	226.03	19.348	
6,800.00	6,719.85	6,746.60	6,742.85	25.91	202.16	-10.53	1,824.49	4,585.42	4,342.30	4,114.97	227.33	19.102	
6,850.00	6,756.28	6,785.92	6,782.12	26.13	203.34	-12.95	1,826.62	4,585.42	4,309.02	4,080.40	228.62	18.848	
6,900.00	6,789.95	6,822.50	6,818.69	26.37	204.43	-15.59	1,826.48	4,585.42	4,272.57	4,042.76	229.81	18.592	
6,950.00	6,820.65	6,855.84	6,852.03	26.61	205.43	-18.62	1,826.27	4,585.42	4,233.75	4,002.86	230.89	18.337	
7,000.00	6,848.19	6,885.75	6,881.92	26.87	206.33	-22.26	1,826.02	4,585.42	4,192.81	3,960.96	231.85	18.084	
7,050.00	6,872.41	6,912.03	6,908.20	27.13	207.12	-26.77	1,825.75	4,585.42	4,150.02	3,917.33	232.69	17.835	
7,100.00	6,893.15	6,934.53	6,930.69	27.41	207.79	-32.51	1,825.47	4,585.42	4,105.65	3,872.26	233.40	17.591	
7,150.00	6,910.28	6,953.11	6,949.27	27.71	208.35	-39.95	1,825.22	4,585.42	4,059.99	3,826.02	233.97	17.352	
7,200.00	6,923.70	6,967.67	6,963.83	28.02	208.78	-49.62	1,825.01	4,585.42	4,013.33	3,778.92	234.41	17.121	
7,250.00	6,933.33	6,978.12	6,974.27	28.34	209.10	-61.85	1,824.85	4,585.42	3,965.97	3,731.26	234.72	16.897	
7,300.00	6,939.11	6,984.38	6,980.53	28.67	209.28	-76.22	1,824.75	4,585.42	3,918.21	3,683.33	234.88	16.682	
7,349.12	6,941.00	6,986.44	6,982.58	29.00	209.35	-90.91	1,824.71	4,585.42	3,871.20	3,636.29	234.91	16.479	
7,400.00	6,941.01	6,986.45	6,982.59	29.36	209.35	-90.91	1,824.71	4,585.42	3,822.58	3,587.70	234.88	16.275	
7,500.00	6,941.02	6,986.47	6,982.62	30.11	209.35	-90.91	1,824.71	4,585.42	3,727.21	3,492.39	234.82	15.872	
7,600.00	6,941.04	6,986.50	6,982.64	30.93	209.35	-90.91	1,824.71	4,585.42	3,632.08	3,397.30	234.78	15.470	
7,700.00	6,941.05	6,986.52	6,982.67	31.80	209.35	-90.92	1,824.71	4,585.42	3,537.22	3,302.48	234.75	15.068	
7,800.00	6,941.07	6,986.55	6,982.69	32.73	209.35	-90.92	1,824.71	4,585.42	3,442.66	3,207.92	234.73	14.666	
7,900.00	6,941.08	6,986.57	6,982.72	33.71	209.35	-90.92	1,824.71	4,585.42	3,348.40	3,113.67	234.74	14.264	
8,000.00	6,941.10	6,986.59	6,982.74	34.73	209.35	-90.92	1,824.71	4,585.42	3,254.50	3,019.73	234.77	13.863	
8,100.00	6,941.11	6,986.62	6,982.77	35.79	209.35	-90.92	1,824.71	4,585.42	3,160.96	2,926.13	234.83	13.461	
8,200.00	6,941.13	6,986.64	6,982.79	36.90	209.35	-90.92	1,824.71	4,585.42	3,067.83	2,832.91	234.92	13.059	
8,300.00	6,941.14	6,986.67	6,982.82	38.03	209.35	-90.92	1,824.71	4,585.42	2,975.15	2,740.10	235.05	12.657	
8,400.00	6,941.16	6,986.69	6,982.84	39.20	209.35	-90.92	1,824.71	4,585.42	2,882.96	2,647.74	235.23	12.256	
8,500.00	6,941.17	6,986.72	6,982.86	40.40	209.35	-90.93	1,824.71	4,585.42	2,791.31	2,555.86	235.45	11.855	
8,600.00	6,941.19	6,986.74	6,982.89	41.63	209.35	-90.93	1,824.71	4,585.42	2,700.25	2,464.51	235.74	11.454	
8,700.00	6,941.20	6,986.77	6,982.91	42.88	209.36	-90.93	1,824.71	4,585.42	2,609.84	2,373.75	236.09	11.054	
8,800.00	6,941.22	6,986.79	6,982.94	44.16	209.36	-90.93	1,824.71	4,585.42	2,520.16	2,283.63	236.53	10.655	
8,900.00	6,941.23	6,986.82	6,982.96	45.45	209.36	-90.93	1,824.71	4,585.42	2,431.28	2,194.23	237.05	10.256	
9,000.00	6,941.24	6,986.84	6,982.99	46.76	209.36	-90.93	1,824.71	4,585.42	2,343.30	2,105.63	237.68	9.859	
9,100.00	6,941.26	6,986.86	6,983.01	48.10	209.36	-90.93	1,824.70	4,585.42	2,256.33	2,017.91	238.42	9.464	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,986.89	6,983.04	49.44	209.36	-90.93	1,824.70	4,585.42	2,170.47	1,931.18	239.29	9.071	
9,300.00	6,941.29	6,986.91	6,983.06	50.80	209.36	-90.93	1,824.70	4,585.42	2,085.87	1,845.57	240.30	8.680	
9,400.00	6,941.30	6,986.94	6,983.09	52.18	209.36	-90.94	1,824.70	4,585.42	2,002.70	1,761.22	241.48	8.294	
9,500.00	6,941.32	6,986.96	6,983.11	53.57	209.36	-90.94	1,824.70	4,585.42	1,921.13	1,678.30	242.83	7.912	
9,600.00	6,941.33	6,986.99	6,983.13	54.97	209.36	-90.94	1,824.70	4,585.42	1,841.38	1,597.01	244.37	7.535	
9,700.00	6,941.35	6,987.01	6,983.16	56.38	209.36	-90.94	1,824.70	4,585.42	1,763.69	1,517.57	246.12	7.166	
9,800.00	6,941.36	6,987.04	6,983.18	57.80	209.36	-90.94	1,824.70	4,585.42	1,688.35	1,440.26	248.10	6.805	
9,900.00	6,941.38	6,987.06	6,983.21	59.23	209.36	-90.94	1,824.70	4,585.42	1,615.70	1,365.39	250.30	6.455	
10,000.00	6,941.39	6,987.09	6,983.23	60.67	209.36	-90.94	1,824.70	4,585.42	1,546.09	1,293.34	252.75	6.117	
10,100.00	6,941.41	6,987.11	6,983.26	62.11	209.37	-90.94	1,824.70	4,585.42	1,479.98	1,224.54	255.44	5.794	
10,200.00	6,941.42	6,987.14	6,983.28	63.57	209.37	-90.95	1,824.70	4,585.42	1,417.84	1,159.48	258.36	5.488	
10,300.00	6,941.44	6,987.16	6,983.31	65.03	209.37	-90.95	1,824.70	4,585.42	1,360.22	1,098.72	261.50	5.202	
10,400.00	6,941.45	6,987.18	6,983.33	66.50	209.37	-90.95	1,824.70	4,585.42	1,307.72	1,042.92	264.81	4.938	
10,500.00	6,941.47	6,987.21	6,983.36	67.97	209.37	-90.95	1,824.70	4,585.42	1,260.98	992.74	268.24	4.701	
10,600.00	6,941.48	6,987.23	6,983.38	69.45	209.37	-90.95	1,824.70	4,585.42	1,220.66	948.95	271.71	4.492	
10,700.00	6,941.50	6,987.26	6,983.41	70.94	209.37	-90.95	1,824.70	4,585.42	1,187.41	912.28	275.13	4.316	
10,800.00	6,941.51	6,987.28	6,983.43	72.43	209.37	-90.95	1,824.70	4,585.42	1,161.84	883.45	278.39	4.173	
10,900.00	6,941.53	6,987.31	6,983.45	73.92	209.37	-90.95	1,824.70	4,585.42	1,144.47	863.09	281.37	4.067	
11,000.00	6,941.54	6,987.33	6,983.48	75.42	209.37	-90.96	1,824.70	4,585.42	1,135.67	851.70	283.97	3.999	
11,050.34	6,941.55	6,987.34	6,983.49	76.18	209.37	-90.96	1,824.70	4,585.42	1,134.55	849.45	285.10	3.979	CC, ES
11,100.00	6,941.56	6,987.36	6,983.50	76.92	209.37	-90.96	1,824.70	4,585.42	1,135.64	849.55	286.09	3.970	SF
11,200.00	6,941.57	6,987.38	6,983.53	78.43	209.37	-90.96	1,824.70	4,585.42	1,144.38	856.70	287.68	3.978	
11,300.00	6,941.59	6,987.41	6,983.55	79.94	209.37	-90.96	1,824.70	4,585.42	1,161.69	872.97	288.73	4.023	
11,400.00	6,941.60	6,987.43	6,983.58	81.46	209.38	-90.96	1,824.70	4,585.42	1,187.21	897.96	289.25	4.104	
11,500.00	6,941.61	6,987.46	6,983.60	82.98	209.38	-90.96	1,824.70	4,585.42	1,220.41	931.11	289.30	4.218	
11,600.00	6,941.63	6,987.48	6,983.63	84.50	209.38	-90.96	1,824.69	4,585.42	1,260.69	971.73	288.95	4.363	
11,700.00	6,941.64	6,987.50	6,983.65	86.02	209.38	-90.96	1,824.69	4,585.42	1,307.39	1,019.11	288.28	4.535	
11,800.00	6,941.66	6,987.53	6,983.68	87.55	209.38	-90.97	1,824.69	4,585.42	1,359.85	1,072.49	287.37	4.732	
11,900.00	6,941.67	6,987.55	6,983.70	89.08	209.38	-90.97	1,824.69	4,585.42	1,417.44	1,131.16	286.28	4.951	
12,000.00	6,941.69	6,987.58	6,983.73	90.61	209.38	-90.97	1,824.69	4,585.42	1,479.55	1,194.48	285.07	5.190	
12,100.00	6,941.70	6,987.60	6,983.75	92.14	209.38	-90.97	1,824.69	4,585.42	1,545.64	1,261.83	283.80	5.446	
12,200.00	6,941.72	6,987.63	6,983.77	93.68	209.38	-90.97	1,824.69	4,585.42	1,615.22	1,332.71	282.51	5.717	
12,300.00	6,941.73	6,987.65	6,983.80	95.22	209.38	-90.97	1,824.69	4,585.42	1,687.86	1,406.65	281.21	6.002	
12,400.00	6,941.75	6,987.68	6,983.82	96.76	209.38	-90.97	1,824.69	4,585.42	1,763.18	1,483.24	279.94	6.298	
12,500.00	6,941.76	6,987.70	6,983.85	98.30	209.38	-90.97	1,824.69	4,585.42	1,840.85	1,562.15	278.70	6.605	
12,600.00	6,941.78	6,987.73	6,983.87	99.85	209.38	-90.98	1,824.69	4,585.42	1,920.59	1,643.09	277.50	6.921	
12,700.00	6,941.79	6,987.75	6,983.90	101.40	209.38	-90.98	1,824.69	4,585.42	2,002.15	1,725.79	276.36	7.245	
12,800.00	6,941.81	6,987.78	6,983.92	102.95	209.39	-90.98	1,824.69	4,585.42	2,085.31	1,810.04	275.27	7.576	
12,900.00	6,941.82	6,987.80	6,983.95	104.50	209.39	-90.98	1,824.69	4,585.42	2,169.90	1,895.67	274.23	7.913	
13,000.00	6,941.84	6,987.82	6,983.97	106.05	209.39	-90.98	1,824.69	4,585.42	2,255.75	1,982.49	273.25	8.255	
13,100.00	6,941.85	6,987.85	6,984.00	107.60	209.39	-90.98	1,824.69	4,585.42	2,342.72	2,070.39	272.33	8.603	
13,200.00	6,941.87	6,987.87	6,984.02	109.16	209.39	-90.98	1,824.69	4,585.42	2,430.69	2,159.24	271.45	8.954	
13,300.00	6,941.88	6,987.90	6,984.05	110.71	209.39	-90.98	1,824.69	4,585.42	2,519.56	2,248.94	270.62	9.310	
13,400.00	6,941.90	6,987.92	6,984.07	112.27	209.39	-90.99	1,824.69	4,585.42	2,609.24	2,339.39	269.85	9.669	
13,500.00	6,941.91	6,987.95	6,984.09	113.83	209.39	-90.99	1,824.69	4,585.42	2,699.64	2,430.53	269.11	10.032	
13,600.00	6,941.93	6,987.97	6,984.12	115.39	209.39	-90.99	1,824.69	4,585.42	2,790.70	2,522.28	268.42	10.397	
13,700.00	6,941.94	6,988.00	6,984.14	116.95	209.39	-90.99	1,824.69	4,585.42	2,882.35	2,614.58	267.77	10.764	
13,800.00	6,941.96	6,988.02	6,984.17	118.51	209.39	-90.99	1,824.69	4,585.42	2,974.54	2,707.38	267.15	11.134	
13,900.00	6,941.97	6,988.05	6,984.19	120.08	209.39	-90.99	1,824.69	4,585.42	3,067.21	2,800.64	266.57	11.506	
14,000.00	6,941.99	6,988.07	6,984.22	121.64	209.39	-90.99	1,824.68	4,585.42	3,160.34	2,894.31	266.02	11.880	
14,100.00	6,942.00	6,988.10	6,984.24	123.21	209.39	-90.99	1,824.68	4,585.42	3,253.87	2,988.36	265.51	12.255	
14,200.00	6,942.01	6,988.12	6,984.27	124.77	209.40	-91.00	1,824.68	4,585.42	3,347.77	3,082.76	265.02	12.632	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,988.15	6,984.29	126.34	209.40	-91.00	1,824.68	4,585.42	3,442.02	3,177.47	264.56	13.010	
14,400.00	6,942.04	6,988.17	6,984.32	127.91	209.40	-91.00	1,824.68	4,585.42	3,536.59	3,272.47	264.12	13.390	
14,500.00	6,942.06	6,988.19	6,984.34	129.48	209.40	-91.00	1,824.68	4,585.42	3,631.44	3,367.73	263.71	13.771	
14,600.00	6,942.07	6,988.22	6,984.37	131.05	209.40	-91.00	1,824.68	4,585.42	3,726.57	3,463.25	263.32	14.152	
14,700.00	6,942.09	6,988.24	6,984.39	132.62	209.40	-91.00	1,824.68	4,585.42	3,821.94	3,558.99	262.95	14.535	
14,800.00	6,942.10	6,988.27	6,984.41	134.19	209.40	-91.00	1,824.68	4,585.42	3,917.55	3,654.95	262.60	14.918	
14,900.00	6,942.12	6,988.29	6,984.44	135.76	209.40	-91.00	1,824.68	4,585.42	4,013.37	3,751.10	262.27	15.302	
15,000.00	6,942.13	6,988.32	6,984.46	137.34	209.40	-91.01	1,824.68	4,585.42	4,109.39	3,847.43	261.96	15.687	
15,100.00	6,942.15	6,988.34	6,984.49	138.91	209.40	-91.01	1,824.68	4,585.42	4,205.59	3,943.93	261.66	16.073	
15,200.00	6,942.16	6,988.37	6,984.51	140.48	209.40	-91.01	1,824.68	4,585.42	4,301.97	4,040.59	261.38	16.459	
15,300.00	6,942.18	6,988.39	6,984.54	142.06	209.40	-91.01	1,824.68	4,585.42	4,398.51	4,137.40	261.11	16.845	
15,400.00	6,942.19	6,988.42	6,984.56	143.64	209.40	-91.01	1,824.68	4,585.42	4,495.20	4,234.34	260.86	17.232	
15,500.00	6,942.21	6,988.44	6,984.59	145.21	209.41	-91.01	1,824.68	4,585.42	4,592.03	4,331.41	260.62	17.620	
15,600.00	6,942.22	6,988.47	6,984.61	146.79	209.41	-91.01	1,824.68	4,585.42	4,688.99	4,428.60	260.39	18.008	
15,700.00	6,942.24	6,988.49	6,984.64	148.37	209.41	-91.01	1,824.68	4,585.42	4,786.08	4,525.91	260.17	18.396	
15,800.00	6,942.25	6,988.52	6,984.66	149.94	209.41	-91.02	1,824.68	4,585.42	4,883.29	4,623.32	259.97	18.784	
15,900.00	6,942.27	6,988.54	6,984.69	151.52	209.41	-91.02	1,824.68	4,585.42	4,980.61	4,720.84	259.77	19.173	
16,000.00	6,942.28	6,988.56	6,984.71	153.10	209.41	-91.02	1,824.68	4,585.42	5,078.03	4,818.44	259.59	19.562	
16,100.00	6,942.30	6,988.59	6,984.74	154.68	209.41	-91.02	1,824.68	4,585.42	5,175.55	4,916.14	259.41	19.951	
16,200.00	6,942.31	6,988.61	6,984.76	156.26	209.41	-91.02	1,824.68	4,585.42	5,273.16	5,013.92	259.24	20.341	
16,300.00	6,942.33	6,988.64	6,984.79	157.84	209.41	-91.02	1,824.68	4,585.42	5,370.86	5,111.78	259.09	20.730	
16,400.00	6,942.34	6,988.66	6,984.81	159.42	209.41	-91.02	1,824.67	4,585.42	5,468.65	5,209.71	258.94	21.120	
16,500.00	6,942.36	6,988.69	6,984.83	161.00	209.41	-91.02	1,824.67	4,585.42	5,566.51	5,307.72	258.79	21.509	
16,600.00	6,942.37	6,988.71	6,984.86	162.59	209.41	-91.03	1,824.67	4,585.42	5,664.45	5,405.79	258.66	21.899	
16,700.00	6,942.38	6,988.74	6,984.88	164.17	209.41	-91.03	1,824.67	4,585.42	5,762.46	5,503.93	258.53	22.289	
16,800.00	6,942.40	6,988.76	6,984.91	165.75	209.41	-91.03	1,824.67	4,585.42	5,860.53	5,602.12	258.41	22.679	
16,900.00	6,942.41	6,988.79	6,984.93	167.33	209.42	-91.03	1,824.67	4,585.42	5,958.67	5,700.38	258.30	23.069	
17,000.00	6,942.43	6,988.81	6,984.96	168.92	209.42	-91.03	1,824.67	4,585.42	6,056.87	5,798.69	258.19	23.459	
17,100.00	6,942.44	6,988.84	6,984.98	170.50	209.42	-91.03	1,824.67	4,585.42	6,155.13	5,897.05	258.08	23.849	
17,200.00	6,942.46	6,988.86	6,985.01	172.09	209.42	-91.03	1,824.67	4,585.42	6,253.45	5,995.46	257.99	24.239	
17,300.00	6,942.47	6,988.89	6,985.03	173.67	209.42	-91.03	1,824.67	4,585.42	6,351.81	6,093.92	257.90	24.629	
17,400.00	6,942.49	6,988.91	6,985.06	175.26	209.42	-91.04	1,824.67	4,585.42	6,450.23	6,192.42	257.81	25.019	
17,500.00	6,942.50	6,988.94	6,985.08	176.84	209.42	-91.04	1,824.67	4,585.42	6,548.69	6,290.96	257.73	25.409	
17,600.00	6,942.52	6,988.96	6,985.11	178.43	209.42	-91.04	1,824.67	4,585.42	6,647.20	6,389.55	257.65	25.799	
17,700.00	6,942.53	6,988.98	6,985.13	180.01	209.42	-91.04	1,824.67	4,585.42	6,745.76	6,488.18	257.58	26.189	
17,800.00	6,942.55	6,989.01	6,985.16	181.60	209.42	-91.04	1,824.67	4,585.42	6,844.35	6,586.84	257.51	26.578	
17,900.00	6,942.56	6,989.03	6,985.18	183.19	209.42	-91.04	1,824.67	4,585.42	6,942.99	6,685.54	257.45	26.968	
18,000.00	6,942.58	6,989.06	6,985.21	184.77	209.42	-91.04	1,824.67	4,585.42	7,041.67	6,784.27	257.39	27.358	
18,100.00	6,942.59	6,989.08	6,985.23	186.36	209.42	-91.04	1,824.67	4,585.42	7,140.38	6,883.04	257.34	27.747	
18,200.00	6,942.61	6,989.11	6,985.25	187.95	209.43	-91.05	1,824.67	4,585.42	7,239.12	6,981.84	257.29	28.136	
18,300.00	6,942.62	6,989.13	6,985.28	189.54	209.43	-91.05	1,824.67	4,585.42	7,337.90	7,080.66	257.24	28.525	
18,400.00	6,942.64	6,989.16	6,985.30	191.12	209.43	-91.05	1,824.67	4,585.42	7,436.72	7,179.52	257.20	28.914	
18,500.00	6,942.65	6,989.18	6,985.33	192.71	209.43	-91.05	1,824.67	4,585.42	7,535.56	7,278.41	257.16	29.303	
18,600.00	6,942.67	6,989.21	6,985.35	194.30	209.43	-91.05	1,824.67	4,585.42	7,634.44	7,377.32	257.12	29.692	
18,700.00	6,942.68	6,989.23	6,985.38	195.89	209.43	-91.05	1,824.67	4,585.42	7,733.34	7,476.26	257.09	30.081	
18,800.00	6,942.70	6,989.26	6,985.40	197.48	209.43	-91.05	1,824.67	4,585.42	7,832.27	7,575.22	257.06	30.469	
18,900.00	6,942.71	6,989.28	6,985.43	199.07	209.43	-91.05	1,824.66	4,585.42	7,931.23	7,674.20	257.03	30.857	
19,000.00	6,942.73	6,989.31	6,985.45	200.66	209.43	-91.06	1,824.66	4,585.42	8,030.22	7,773.21	257.00	31.245	
19,100.00	6,942.74	6,989.33	6,985.48	202.25	209.43	-91.06	1,824.66	4,585.42	8,129.23	7,872.24	256.98	31.633	
19,200.00	6,942.76	6,989.36	6,985.50	203.84	209.43	-91.06	1,824.66	4,585.42	8,228.26	7,971.30	256.96	32.021	
19,300.00	6,942.77	6,989.38	6,985.53	205.43	209.43	-91.06	1,824.66	4,585.42	8,327.32	8,070.37	256.95	32.409	
19,400.00	6,942.78	6,989.41	6,985.55	207.02	209.43	-91.06	1,824.66	4,585.42	8,426.39	8,169.46	256.93	32.796	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,500.00	6,942.80	6,989.43	6,985.58	208.61	209.43	-91.06	1,824.66	4,585.42	8,525.49	8,268.57	256.92	33.183	
19,600.00	6,942.81	6,989.45	6,985.60	210.20	209.44	-91.06	1,824.66	4,585.42	8,624.61	8,367.70	256.91	33.570	
19,700.00	6,942.83	6,989.48	6,985.63	211.79	209.44	-91.06	1,824.66	4,585.42	8,723.76	8,466.85	256.91	33.957	
19,800.00	6,942.84	6,989.50	6,985.65	213.38	209.44	-91.07	1,824.66	4,585.42	8,822.92	8,566.01	256.90	34.343	
19,900.00	6,942.86	6,989.53	6,985.68	214.97	209.44	-91.07	1,824.66	4,585.42	8,922.09	8,665.19	256.90	34.730	
20,000.00	6,942.87	6,989.55	6,985.70	216.56	209.44	-91.07	1,824.66	4,585.42	9,021.29	8,764.39	256.90	35.116	
20,100.00	6,942.89	6,989.58	6,985.72	218.15	209.44	-91.07	1,824.66	4,585.42	9,120.51	8,863.60	256.91	35.501	
20,200.00	6,942.90	6,989.60	6,985.75	219.75	209.44	-91.07	1,824.66	4,585.42	9,219.74	8,962.83	256.91	35.887	
20,300.00	6,942.92	6,989.63	6,985.77	221.34	209.44	-91.07	1,824.66	4,585.42	9,318.99	9,062.07	256.92	36.272	
20,400.00	6,942.93	6,989.65	6,985.80	222.93	209.44	-91.07	1,824.66	4,585.42	9,418.25	9,161.32	256.93	36.658	
20,500.00	6,942.95	6,989.68	6,985.82	224.52	209.44	-91.07	1,824.66	4,585.42	9,517.53	9,260.59	256.94	37.042	
20,600.00	6,942.96	6,989.70	6,985.85	226.12	209.44	-91.08	1,824.66	4,585.42	9,616.82	9,359.88	256.95	37.427	
20,700.00	6,942.98	6,989.73	6,985.87	227.71	209.44	-91.08	1,824.66	4,585.42	9,716.13	9,459.17	256.96	37.811	
20,800.00	6,942.99	6,989.75	6,985.90	229.30	209.44	-91.08	1,824.66	4,585.42	9,815.46	9,558.48	256.98	38.196	
20,855.77	6,943.00	6,989.77	6,985.91	230.19	209.44	-91.08	1,824.66	4,585.42	9,870.85	9,613.86	256.99	38.410	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	233.00	233.00	0.00	6.98	103.49	-1,773.37	7,391.73	7,601.48				
100.00	100.00	333.00	333.00	0.25	9.98	103.49	-1,773.37	7,391.73	7,601.48	7,591.25	10.23	743.117	
200.00	200.00	433.00	433.00	0.61	12.97	103.49	-1,773.37	7,391.73	7,601.48	7,587.90	13.58	559.588	
300.00	300.00	533.10	533.00	0.97	15.97	103.49	-1,773.37	7,391.73	7,601.48	7,584.54	16.94	448.676	
400.00	400.00	633.10	633.00	1.33	18.97	103.49	-1,773.37	7,391.73	7,601.48	7,581.18	20.30	374.514	
500.00	500.00	733.10	733.00	1.68	21.97	103.49	-1,773.37	7,391.73	7,601.48	7,577.83	23.65	321.390	
600.00	599.98	823.94	823.79	2.04	24.69	82.75	-1,771.38	7,391.73	7,600.80	7,574.07	26.73	284.341	
700.00	699.84	912.81	912.64	2.40	27.35	82.80	-1,772.11	7,391.73	7,600.34	7,570.59	29.75	255.462	
800.00	799.45	1,032.86	1,032.45	2.77	30.95	82.91	-1,773.37	7,391.73	7,599.52	7,565.81	33.71	225.448	
845.27	844.44	1,077.84	1,077.44	2.93	32.30	82.96	-1,773.37	7,391.73	7,598.89	7,563.67	35.22	215.749	
900.00	898.77	1,132.17	1,131.77	3.13	33.93	83.01	-1,773.37	7,391.73	7,598.08	7,561.03	37.05	205.079	
1,000.00	998.04	1,231.45	1,231.04	3.50	36.90	83.10	-1,773.37	7,391.73	7,596.61	7,556.22	40.39	188.063	
1,100.00	1,097.32	1,321.64	1,321.18	3.87	39.60	83.16	-1,771.37	7,391.73	7,594.69	7,551.22	43.47	174.713	
1,200.00	1,196.59	1,409.67	1,409.19	4.24	42.24	83.25	-1,772.08	7,391.73	7,593.46	7,546.97	46.48	163.361	
1,300.00	1,295.87	1,529.58	1,528.87	4.62	45.83	83.37	-1,773.37	7,391.73	7,592.33	7,541.88	50.45	150.484	
1,400.00	1,395.14	1,628.85	1,628.14	5.00	48.81	83.46	-1,773.37	7,391.73	7,590.94	7,537.14	53.81	141.080	
1,500.00	1,494.42	1,728.13	1,727.42	5.38	51.78	83.55	-1,773.37	7,391.73	7,589.57	7,532.41	57.16	132.777	
1,600.00	1,593.69	1,818.45	1,817.69	5.76	54.49	83.61	-1,771.35	7,391.73	7,587.73	7,527.48	60.25	125.944	
1,700.00	1,692.96	1,906.18	1,905.40	6.14	57.12	83.70	-1,772.04	7,391.73	7,586.58	7,523.33	63.26	119.933	
1,800.00	1,792.24	2,026.25	2,025.24	6.52	60.72	83.81	-1,773.37	7,391.73	7,585.57	7,518.33	67.24	112.819	
1,900.00	1,891.51	2,125.53	2,124.51	6.91	63.69	83.90	-1,773.37	7,391.73	7,584.28	7,513.68	70.59	107.436	
2,000.00	1,990.79	2,224.80	2,223.79	7.29	66.67	83.99	-1,773.37	7,391.73	7,583.00	7,509.05	73.95	102.541	
2,100.00	2,090.06	2,315.28	2,314.22	7.67	69.38	84.06	-1,771.34	7,391.73	7,581.23	7,504.18	77.04	98.400	
2,200.00	2,189.34	2,402.71	2,401.62	8.06	72.00	84.14	-1,772.00	7,391.73	7,580.18	7,500.13	80.05	94.696	
2,300.00	2,288.61	2,522.93	2,521.61	8.44	75.60	84.26	-1,773.37	7,391.73	7,579.28	7,495.25	84.03	90.193	
2,400.00	2,387.89	2,622.21	2,620.89	8.82	78.57	84.35	-1,773.37	7,391.73	7,578.08	7,490.69	87.39	86.713	
2,500.00	2,487.16	2,721.48	2,720.16	9.21	81.55	84.44	-1,773.37	7,391.73	7,576.90	7,486.15	90.75	83.491	
2,600.00	2,586.44	2,812.14	2,810.77	9.59	84.26	84.51	-1,771.32	7,391.73	7,575.20	7,481.35	93.85	80.715	
2,700.00	2,685.71	2,899.26	2,897.88	9.98	86.88	84.59	-1,771.97	7,391.73	7,574.25	7,477.40	96.85	78.209	
2,800.00	2,784.99	3,019.61	3,017.99	10.36	90.48	84.71	-1,773.37	7,391.73	7,573.46	7,472.63	100.84	75.106	
2,900.00	2,884.26	3,118.88	3,117.26	10.75	93.46	84.80	-1,773.37	7,391.73	7,572.36	7,468.16	104.20	72.674	
3,000.00	2,983.53	3,218.16	3,216.53	11.13	96.43	84.89	-1,773.37	7,391.73	7,571.27	7,463.71	107.56	70.394	
3,100.00	3,082.81	3,309.01	3,307.34	11.52	99.15	84.96	-1,771.31	7,391.73	7,569.65	7,458.99	110.66	68.403	
3,200.00	3,182.08	3,395.84	3,394.15	11.90	101.75	85.04	-1,771.93	7,391.73	7,568.79	7,455.14	113.65	66.598	
3,300.00	3,281.36	3,516.29	3,514.36	12.29	105.36	85.16	-1,773.37	7,391.73	7,568.12	7,450.48	117.64	64.331	
3,400.00	3,380.63	3,615.56	3,613.63	12.67	108.34	85.25	-1,773.37	7,391.73	7,567.11	7,446.11	121.00	62.536	
3,500.00	3,479.91	3,714.84	3,712.91	13.06	111.31	85.34	-1,773.37	7,391.73	7,566.12	7,441.75	124.36	60.839	
3,600.00	3,579.18	3,805.91	3,803.94	13.44	114.04	85.41	-1,771.30	7,391.73	7,564.57	7,437.09	127.48	59.340	
3,700.00	3,678.46	3,892.45	3,890.45	13.83	116.64	85.49	-1,771.90	7,391.73	7,563.80	7,433.35	130.46	57.980	
3,800.00	3,777.73	4,012.96	4,010.73	14.21	120.25	85.61	-1,773.37	7,391.73	7,563.25	7,428.80	134.45	56.252	
3,900.00	3,877.01	4,112.24	4,110.01	14.60	123.22	85.70	-1,773.37	7,391.73	7,562.33	7,424.52	137.81	54.874	
4,000.00	3,976.28	4,211.51	4,209.28	14.98	126.20	85.79	-1,773.37	7,391.73	7,561.44	7,420.26	141.17	53.561	
4,100.00	4,075.55	4,302.83	4,300.55	15.37	128.93	85.86	-1,771.29	7,391.73	7,559.97	7,415.67	144.29	52.392	
4,200.00	4,174.83	4,389.07	4,386.77	15.75	131.52	85.94	-1,771.86	7,391.73	7,559.29	7,412.03	147.26	51.331	
4,300.00	4,274.10	4,509.64	4,507.10	16.14	135.13	86.06	-1,773.37	7,391.73	7,558.86	7,407.59	151.26	49.972	
4,400.00	4,373.38	4,608.92	4,606.38	16.53	138.10	86.15	-1,773.37	7,391.73	7,558.03	7,403.41	154.62	48.880	
4,500.00	4,472.65	4,708.19	4,705.65	16.91	141.08	86.24	-1,773.37	7,391.73	7,557.23	7,399.25	157.98	47.835	
4,600.00	4,571.93	4,799.77	4,797.19	17.30	143.82	86.31	-1,771.28	7,391.73	7,555.84	7,394.72	161.11	46.898	
4,700.00	4,671.20	4,885.72	4,883.12	17.68	146.40	86.39	-1,771.83	7,391.73	7,555.26	7,391.18	164.07	46.048	
4,800.00	4,770.48	5,006.32	5,003.48	18.07	150.01	86.51	-1,773.37	7,391.73	7,554.94	7,386.86	168.07	44.950	
4,900.00	4,869.75	5,105.59	5,102.75	18.45	152.99	86.61	-1,773.37	7,391.73	7,554.21	7,382.77	171.43	44.065	
5,000.00	4,969.03	5,204.87	5,202.03	18.84	155.96	86.70	-1,773.37	7,391.73	7,553.50	7,378.71	174.80	43.213	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,296.73	5,293.85	19.23	158.71	86.76	-1,771.26	7,391.73	7,552.18	7,374.25	177.93	42.444	
5,200.00	5,167.58	5,382.39	5,379.49	19.61	161.28	86.85	-1,771.80	7,391.73	7,551.70	7,370.81	180.89	41.748	
5,300.00	5,266.85	5,503.00	5,499.85	20.00	164.89	86.97	-1,773.37	7,391.73	7,551.49	7,366.61	184.89	40.844	
5,400.00	5,366.12	5,602.27	5,599.12	20.38	167.87	87.06	-1,773.37	7,391.73	7,550.86	7,362.62	188.25	40.111	
5,500.00	5,465.40	5,701.55	5,698.40	20.77	170.84	87.15	-1,773.37	7,391.73	7,550.25	7,358.64	191.61	39.405	
5,600.00	5,564.67	5,793.72	5,790.52	21.15	173.61	87.22	-1,771.26	7,391.73	7,549.01	7,354.25	194.76	38.761	
5,700.00	5,663.95	5,879.09	5,875.88	21.54	176.16	87.30	-1,771.77	7,391.73	7,548.62	7,350.92	197.70	38.182	
5,800.00	5,763.22	5,964.36	5,961.13	21.93	178.72	87.38	-1,772.79	7,391.73	7,548.43	7,347.79	200.64	37.622	
5,900.00	5,862.50	6,098.95	6,095.50	22.31	182.75	87.51	-1,773.37	7,391.73	7,547.99	7,342.93	205.06	36.809	
5,957.57	5,919.65	6,117.00	6,113.48	22.53	183.29	87.53	-1,773.37	7,391.73	7,547.79	7,341.97	205.82	36.672	
6,000.00	5,961.77	6,117.00	6,113.48	22.70	183.29	87.53	-1,773.37	7,391.73	7,547.91	7,341.94	205.98	36.645	
6,100.00	6,061.05	6,117.00	6,113.48	23.08	183.29	87.53	-1,773.37	7,391.73	7,549.14	7,342.82	206.32	36.590	
6,200.00	6,160.32	6,117.00	6,113.48	23.47	183.29	87.53	-1,773.37	7,391.73	7,551.69	7,345.06	206.62	36.548	
6,300.00	6,259.60	6,117.00	6,113.48	23.86	183.29	87.53	-1,773.37	7,391.73	7,555.56	7,348.66	206.89	36.519	
6,376.00	6,335.04	6,117.00	6,113.48	24.15	183.29	87.53	-1,773.37	7,391.73	7,559.38	7,352.31	207.08	36.505	
6,400.00	6,358.85	6,117.00	6,113.48	24.24	183.29	72.76	-1,773.37	7,391.73	7,560.32	7,353.19	207.13	36.500	
6,450.00	6,408.16	6,117.00	6,113.48	24.44	183.29	53.60	-1,773.37	7,391.73	7,559.75	7,352.51	207.24	36.478	
6,500.00	6,456.87	6,117.00	6,113.48	24.64	183.29	43.77	-1,773.37	7,391.73	7,555.78	7,348.43	207.35	36.440	
6,550.00	6,504.65	6,117.00	6,113.48	24.85	183.29	38.26	-1,773.37	7,391.73	7,548.42	7,340.97	207.45	36.387	
6,600.00	6,551.23	6,117.00	6,113.48	25.06	183.29	34.95	-1,773.37	7,391.73	7,537.72	7,330.18	207.54	36.319	
6,650.00	6,596.31	6,117.00	6,113.48	25.26	183.29	32.90	-1,773.37	7,391.73	7,523.72	7,316.09	207.63	36.236	
6,700.00	6,639.62	6,117.00	6,113.48	25.48	183.29	31.68	-1,773.37	7,391.73	7,506.49	7,298.78	207.71	36.139	
6,750.00	6,680.88	6,117.00	6,113.48	25.69	183.29	31.04	-1,773.37	7,391.73	7,486.12	7,278.33	207.79	36.028	
6,800.00	6,719.85	6,117.00	6,113.48	25.91	183.29	30.86	-1,773.37	7,391.73	7,462.70	7,254.84	207.86	35.902	
6,850.00	6,756.28	6,117.00	6,113.48	26.13	183.29	31.09	-1,773.37	7,391.73	7,436.36	7,228.43	207.93	35.764	
6,900.00	6,789.95	6,117.00	6,113.48	26.37	183.29	31.71	-1,773.37	7,391.73	7,407.22	7,199.23	207.99	35.613	
6,950.00	6,820.65	6,117.00	6,113.48	26.61	183.29	32.71	-1,773.37	7,391.73	7,375.44	7,167.38	208.06	35.449	
7,000.00	6,848.19	6,117.00	6,113.48	26.87	183.29	34.14	-1,773.37	7,391.73	7,341.17	7,133.05	208.12	35.274	
7,050.00	6,872.41	6,117.00	6,113.48	27.13	183.29	36.07	-1,773.37	7,391.73	7,304.60	7,096.42	208.18	35.088	
7,100.00	6,893.15	6,117.00	6,113.48	27.41	183.29	38.58	-1,773.37	7,391.73	7,265.91	7,057.67	208.25	34.891	
7,150.00	6,910.28	6,117.00	6,113.48	27.71	183.29	41.82	-1,773.37	7,391.73	7,225.32	7,017.00	208.31	34.685	
7,200.00	6,923.70	6,117.00	6,113.48	28.02	183.29	45.98	-1,773.37	7,391.73	7,183.04	6,974.65	208.39	34.470	
7,250.00	6,933.33	6,117.00	6,113.48	28.34	183.29	51.32	-1,773.37	7,391.73	7,139.30	6,930.84	208.46	34.247	
7,300.00	6,939.11	6,117.00	6,113.48	28.67	183.29	58.15	-1,773.37	7,391.73	7,094.36	6,885.81	208.55	34.018	
7,349.12	6,941.00	6,117.00	6,113.48	29.00	183.29	66.58	-1,773.37	7,391.73	7,049.27	6,840.63	208.64	33.787	
7,400.00	6,941.01	6,117.00	6,113.48	29.36	183.29	66.58	-1,773.37	7,391.73	7,002.21	6,793.47	208.74	33.545	
7,500.00	6,941.02	6,117.00	6,113.48	30.11	183.29	66.58	-1,773.37	7,391.73	6,909.88	6,700.93	208.95	33.070	
7,600.00	6,941.04	6,117.00	6,113.48	30.93	183.29	66.58	-1,773.37	7,391.73	6,817.76	6,608.59	209.17	32.594	
7,700.00	6,941.05	6,117.00	6,113.48	31.80	183.29	66.58	-1,773.37	7,391.73	6,725.87	6,516.45	209.41	32.117	
7,800.00	6,941.07	6,117.00	6,113.48	32.73	183.29	66.58	-1,773.37	7,391.73	6,634.21	6,424.54	209.67	31.641	
7,900.00	6,941.08	6,117.00	6,113.48	33.71	183.29	66.58	-1,773.37	7,391.73	6,542.80	6,332.84	209.95	31.163	
8,000.00	6,941.10	6,117.00	6,113.48	34.73	183.29	66.58	-1,773.37	7,391.73	6,451.64	6,241.39	210.25	30.685	
8,100.00	6,941.11	6,117.00	6,113.48	35.79	183.29	66.58	-1,773.37	7,391.73	6,360.74	6,150.17	210.57	30.207	
8,200.00	6,941.13	6,117.00	6,113.48	36.90	183.29	66.58	-1,773.37	7,391.73	6,270.13	6,059.22	210.91	29.729	
8,300.00	6,941.14	6,117.00	6,113.48	38.03	183.29	66.58	-1,773.37	7,391.73	6,179.80	5,968.53	211.27	29.251	
8,400.00	6,941.16	6,117.00	6,113.48	39.20	183.29	66.58	-1,773.37	7,391.73	6,089.77	5,878.12	211.65	28.773	
8,500.00	6,941.17	6,117.00	6,113.48	40.40	183.29	66.58	-1,773.37	7,391.73	6,000.06	5,788.01	212.06	28.294	
8,600.00	6,941.19	6,117.00	6,113.48	41.63	183.29	66.58	-1,773.37	7,391.73	5,910.69	5,698.20	212.49	27.816	
8,700.00	6,941.20	6,117.00	6,113.48	42.88	183.29	66.58	-1,773.37	7,391.73	5,821.65	5,608.71	212.95	27.339	
8,800.00	6,941.22	6,117.00	6,113.48	44.16	183.29	66.58	-1,773.37	7,391.73	5,732.98	5,519.55	213.43	26.861	
8,900.00	6,941.23	6,117.00	6,113.48	45.45	183.29	66.58	-1,773.37	7,391.73	5,644.69	5,430.75	213.94	26.385	
9,000.00	6,941.24	6,117.00	6,113.48	46.76	183.29	66.58	-1,773.37	7,391.73	5,556.79	5,342.32	214.47	25.909	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,117.00	6,113.48	48.10	183.29	66.58	-1,773.37	7,391.73	5,469.31	5,254.27	215.04	25.434	
9,200.00	6,941.27	6,117.00	6,113.48	49.44	183.29	66.58	-1,773.37	7,391.73	5,382.27	5,166.64	215.63	24.960	
9,300.00	6,941.29	6,117.00	6,113.48	50.80	183.29	66.58	-1,773.37	7,391.73	5,295.68	5,079.43	216.26	24.488	
9,400.00	6,941.30	6,117.00	6,113.48	52.18	183.29	66.58	-1,773.37	7,391.73	5,209.58	4,992.66	216.91	24.017	
9,500.00	6,941.32	6,117.00	6,113.48	53.57	183.29	66.58	-1,773.37	7,391.73	5,123.98	4,906.38	217.60	23.548	
9,600.00	6,941.33	6,117.00	6,113.48	54.97	183.29	66.58	-1,773.37	7,391.73	5,038.90	4,820.58	218.32	23.080	
9,700.00	6,941.35	6,117.00	6,113.48	56.38	183.29	66.58	-1,773.37	7,391.73	4,954.39	4,735.32	219.07	22.615	
9,800.00	6,941.36	6,117.00	6,113.48	57.80	183.29	66.58	-1,773.37	7,391.73	4,870.46	4,650.60	219.86	22.152	
9,900.00	6,941.38	6,117.00	6,113.48	59.23	183.29	66.58	-1,773.37	7,391.73	4,787.16	4,566.47	220.69	21.692	
10,000.00	6,941.39	6,117.00	6,113.48	60.67	183.29	66.58	-1,773.37	7,391.73	4,704.50	4,482.95	221.55	21.234	
10,100.00	6,941.41	6,117.00	6,113.48	62.11	183.29	66.58	-1,773.37	7,391.73	4,622.52	4,400.07	222.45	20.780	
10,200.00	6,941.42	6,117.00	6,113.48	63.57	183.29	66.58	-1,773.37	7,391.73	4,541.27	4,317.88	223.39	20.329	
10,300.00	6,941.44	6,117.00	6,113.48	65.03	183.29	66.58	-1,773.37	7,391.73	4,460.78	4,236.42	224.37	19.881	
10,400.00	6,941.45	6,117.00	6,113.48	66.50	183.29	66.58	-1,773.37	7,391.73	4,381.10	4,155.71	225.39	19.438	
10,500.00	6,941.47	6,117.00	6,113.48	67.97	183.29	66.58	-1,773.37	7,391.73	4,302.26	4,075.81	226.45	18.999	
10,600.00	6,941.48	6,117.00	6,113.48	69.45	183.29	66.58	-1,773.37	7,391.73	4,224.32	3,996.77	227.55	18.564	
10,700.00	6,941.50	6,117.00	6,113.48	70.94	183.29	66.58	-1,773.37	7,391.73	4,147.33	3,918.63	228.70	18.135	
10,800.00	6,941.51	6,117.00	6,113.48	72.43	183.29	66.58	-1,773.37	7,391.73	4,071.34	3,841.45	229.88	17.710	
10,900.00	6,941.53	6,117.00	6,113.48	73.92	183.29	66.58	-1,773.37	7,391.73	3,996.40	3,765.28	231.12	17.292	
11,000.00	6,941.54	6,117.00	6,113.48	75.42	183.29	66.58	-1,773.37	7,391.73	3,922.58	3,690.19	232.40	16.879	
11,100.00	6,941.56	6,117.00	6,113.48	76.92	183.29	66.58	-1,773.37	7,391.73	3,849.94	3,616.23	233.72	16.473	
11,200.00	6,941.57	6,117.00	6,113.48	78.43	183.29	66.58	-1,773.37	7,391.73	3,778.56	3,543.47	235.08	16.073	
11,300.00	6,941.59	6,117.00	6,113.48	79.94	183.29	66.58	-1,773.37	7,391.73	3,708.50	3,472.00	236.50	15.681	
11,400.00	6,941.60	6,117.00	6,113.48	81.46	183.29	66.58	-1,773.37	7,391.73	3,639.83	3,401.88	237.95	15.296	
11,500.00	6,941.61	6,117.00	6,113.48	82.98	183.29	66.58	-1,773.37	7,391.73	3,572.65	3,333.19	239.45	14.920	
11,600.00	6,941.63	6,117.00	6,113.48	84.50	183.29	66.58	-1,773.37	7,391.73	3,507.03	3,266.03	241.00	14.552	
11,700.00	6,941.64	6,117.00	6,113.48	86.02	183.29	66.58	-1,773.37	7,391.73	3,443.06	3,200.48	242.58	14.193	
11,800.00	6,941.66	6,117.00	6,113.48	87.55	183.29	66.58	-1,773.37	7,391.73	3,380.85	3,136.64	244.21	13.844	
11,900.00	6,941.67	6,117.00	6,113.48	89.08	183.29	66.58	-1,773.37	7,391.73	3,320.47	3,074.60	245.87	13.505	
12,000.00	6,941.69	6,117.00	6,113.48	90.61	183.29	66.58	-1,773.37	7,391.73	3,262.05	3,014.48	247.57	13.176	
12,100.00	6,941.70	6,117.00	6,113.48	92.14	183.29	66.58	-1,773.37	7,391.73	3,205.69	2,956.39	249.30	12.859	
12,200.00	6,941.72	6,117.00	6,113.48	93.68	183.29	66.58	-1,773.37	7,391.73	3,151.48	2,900.42	251.06	12.553	
12,300.00	6,941.73	6,117.00	6,113.48	95.22	183.29	66.58	-1,773.37	7,391.73	3,099.56	2,846.72	252.84	12.259	
12,400.00	6,941.75	6,117.00	6,113.48	96.76	183.29	66.58	-1,773.37	7,391.73	3,050.04	2,795.39	254.65	11.977	
12,500.00	6,941.76	6,117.00	6,113.48	98.30	183.29	66.58	-1,773.37	7,391.73	3,003.02	2,746.56	256.47	11.709	
12,600.00	6,941.78	6,117.00	6,113.48	99.85	183.29	66.58	-1,773.37	7,391.73	2,958.65	2,700.35	258.30	11.454	
12,700.00	6,941.79	6,117.00	6,113.48	101.40	183.29	66.58	-1,773.37	7,391.73	2,917.02	2,656.90	260.12	11.214	
12,800.00	6,941.81	6,117.00	6,113.48	102.95	183.29	66.58	-1,773.37	7,391.73	2,878.27	2,616.33	261.95	10.988	
12,900.00	6,941.82	6,117.00	6,113.48	104.50	183.29	66.58	-1,773.37	7,391.73	2,842.51	2,578.76	263.76	10.777	
13,000.00	6,941.84	6,117.00	6,113.48	106.05	183.29	66.58	-1,773.37	7,391.73	2,809.86	2,544.32	265.55	10.581	
13,100.00	6,941.85	6,117.00	6,113.48	107.60	183.29	66.58	-1,773.37	7,391.73	2,780.42	2,513.12	267.30	10.402	
13,200.00	6,941.87	6,117.00	6,113.48	109.16	183.29	66.58	-1,773.37	7,391.73	2,754.30	2,485.28	269.02	10.238	
13,300.00	6,941.88	6,117.00	6,113.48	110.71	183.29	66.58	-1,773.37	7,391.73	2,731.60	2,460.91	270.69	10.091	
13,400.00	6,941.90	6,117.00	6,113.48	112.27	183.29	66.58	-1,773.37	7,391.73	2,712.39	2,440.09	272.31	9.961	
13,500.00	6,941.91	6,117.00	6,113.48	113.83	183.29	66.58	-1,773.37	7,391.73	2,696.76	2,422.91	273.85	9.848	
13,600.00	6,941.93	6,117.00	6,113.48	115.39	183.29	66.58	-1,773.37	7,391.73	2,684.76	2,409.44	275.32	9.751	
13,700.00	6,941.94	6,117.00	6,113.48	116.95	183.29	66.58	-1,773.37	7,391.73	2,676.45	2,399.74	276.71	9.672	
13,800.00	6,941.96	6,117.00	6,113.48	118.51	183.29	66.58	-1,773.37	7,391.73	2,671.85	2,393.85	278.01	9.611	
13,872.83	6,941.97	6,117.00	6,113.48	119.65	183.29	66.58	-1,773.37	7,391.73	2,670.86	2,391.97	278.89	9.577	CC
13,900.00	6,941.97	6,117.00	6,113.48	120.08	183.29	66.58	-1,773.37	7,391.73	2,671.00	2,391.79	279.21	9.566	ES
14,000.00	6,941.99	6,117.00	6,113.48	121.64	183.29	66.58	-1,773.37	7,391.73	2,673.89	2,393.58	280.31	9.539	
14,100.00	6,942.00	6,117.00	6,113.48	123.21	183.29	66.58	-1,773.37	7,391.73	2,680.50	2,399.21	281.30	9.529	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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,200.00	6,942.01	6,117.00	6,113.48	124.77	183.29	66.58	-1,773.37	7,391.73	2,690.82	2,408.64	282.18	9.536	
14,300.00	6,942.03	6,117.00	6,113.48	126.34	183.29	66.58	-1,773.37	7,391.73	2,704.81	2,421.85	282.95	9.559	
14,400.00	6,942.04	6,117.00	6,113.48	127.91	183.29	66.58	-1,773.37	7,391.73	2,722.39	2,438.78	283.61	9.599	
14,500.00	6,942.06	6,117.00	6,113.48	129.48	183.29	66.58	-1,773.37	7,391.73	2,743.51	2,459.35	284.16	9.655	
14,600.00	6,942.07	6,117.00	6,113.48	131.05	183.29	66.58	-1,773.37	7,391.73	2,768.08	2,483.48	284.60	9.726	
14,700.00	6,942.09	6,117.00	6,113.48	132.62	183.29	66.58	-1,773.37	7,391.73	2,796.02	2,511.08	284.94	9.813	
14,800.00	6,942.10	6,117.00	6,113.48	134.19	183.29	66.58	-1,773.37	7,391.73	2,827.22	2,542.05	285.17	9.914	
14,900.00	6,942.12	6,117.00	6,113.48	135.76	183.29	66.58	-1,773.37	7,391.73	2,861.57	2,576.27	285.30	10.030	
15,000.00	6,942.13	6,117.00	6,113.48	137.34	183.29	66.58	-1,773.37	7,391.73	2,898.97	2,613.63	285.34	10.160	
15,100.00	6,942.15	6,117.00	6,113.48	138.91	183.29	66.58	-1,773.37	7,391.73	2,939.29	2,654.00	285.29	10.303	
15,200.00	6,942.16	6,117.00	6,113.48	140.48	183.29	66.58	-1,773.37	7,391.73	2,982.43	2,697.26	285.17	10.458	
15,300.00	6,942.18	6,117.00	6,113.48	142.06	183.29	66.58	-1,773.37	7,391.73	3,028.25	2,743.29	284.97	10.627	
15,400.00	6,942.19	6,117.00	6,113.48	143.64	183.29	66.58	-1,773.37	7,391.73	3,076.65	2,791.95	284.70	10.807	
15,500.00	6,942.21	6,117.00	6,113.48	145.21	183.29	66.58	-1,773.37	7,391.73	3,127.49	2,843.12	284.37	10.998	
15,600.00	6,942.22	6,117.00	6,113.48	146.79	183.29	66.58	-1,773.37	7,391.73	3,180.66	2,896.68	283.99	11.200	
15,700.00	6,942.24	6,117.00	6,113.48	148.37	183.29	66.58	-1,773.37	7,391.73	3,236.06	2,952.50	283.55	11.413	
15,800.00	6,942.25	6,117.00	6,113.48	149.94	183.29	66.58	-1,773.37	7,391.73	3,293.55	3,010.48	283.08	11.635	
15,900.00	6,942.27	6,117.00	6,113.48	151.52	183.29	66.58	-1,773.37	7,391.73	3,353.05	3,070.48	282.56	11.867	
16,000.00	6,942.28	6,117.00	6,113.48	153.10	183.29	66.58	-1,773.37	7,391.73	3,414.43	3,132.42	282.02	12.107	
16,100.00	6,942.30	6,117.00	6,113.48	154.68	183.29	66.58	-1,773.37	7,391.73	3,477.61	3,196.17	281.45	12.356	
16,200.00	6,942.31	6,117.00	6,113.48	156.26	183.29	66.58	-1,773.37	7,391.73	3,542.49	3,261.64	280.85	12.613	
16,300.00	6,942.33	6,117.00	6,113.48	157.84	183.29	66.58	-1,773.37	7,391.73	3,608.97	3,328.73	280.24	12.878	
16,400.00	6,942.34	6,117.00	6,113.48	159.42	183.29	66.58	-1,773.37	7,391.73	3,676.97	3,397.36	279.61	13.150	
16,500.00	6,942.36	6,117.00	6,113.48	161.00	183.29	66.58	-1,773.37	7,391.73	3,746.40	3,467.43	278.97	13.429	
16,600.00	6,942.37	6,117.00	6,113.48	162.59	183.29	66.58	-1,773.37	7,391.73	3,817.19	3,538.87	278.32	13.715	
16,700.00	6,942.38	6,117.00	6,113.48	164.17	183.29	66.58	-1,773.37	7,391.73	3,889.27	3,611.60	277.67	14.007	
16,800.00	6,942.40	6,117.00	6,113.48	165.75	183.29	66.58	-1,773.37	7,391.73	3,962.55	3,685.54	277.02	14.304	
16,900.00	6,942.41	6,117.00	6,113.48	167.33	183.29	66.58	-1,773.37	7,391.73	4,036.99	3,760.63	276.36	14.608	
17,000.00	6,942.43	6,117.00	6,113.48	168.92	183.29	66.58	-1,773.37	7,391.73	4,112.51	3,836.80	275.70	14.916	
17,100.00	6,942.44	6,117.00	6,113.48	170.50	183.29	66.58	-1,773.37	7,391.73	4,189.05	3,914.00	275.05	15.230	
17,200.00	6,942.46	6,117.00	6,113.48	172.09	183.29	66.58	-1,773.37	7,391.73	4,266.56	3,992.16	274.40	15.548	
17,300.00	6,942.47	6,117.00	6,113.48	173.67	183.29	66.58	-1,773.37	7,391.73	4,345.00	4,071.24	273.76	15.871	
17,400.00	6,942.49	6,117.00	6,113.48	175.26	183.29	66.58	-1,773.37	7,391.73	4,424.30	4,151.17	273.13	16.199	
17,500.00	6,942.50	6,117.00	6,113.48	176.84	183.29	66.58	-1,773.37	7,391.73	4,504.43	4,231.93	272.50	16.530	
17,600.00	6,942.52	6,117.00	6,113.48	178.43	183.29	66.58	-1,773.37	7,391.73	4,585.34	4,313.46	271.88	16.865	
17,700.00	6,942.53	6,117.00	6,113.48	180.01	183.29	66.58	-1,773.37	7,391.73	4,666.98	4,395.71	271.27	17.204	
17,800.00	6,942.55	6,117.00	6,113.48	181.60	183.29	66.58	-1,773.37	7,391.73	4,749.33	4,478.66	270.67	17.547	
17,900.00	6,942.56	6,117.00	6,113.48	183.19	183.29	66.58	-1,773.37	7,391.73	4,832.35	4,562.27	270.08	17.892	
18,000.00	6,942.58	6,117.00	6,113.48	184.77	183.29	66.58	-1,773.37	7,391.73	4,916.00	4,646.50	269.50	18.241	
18,100.00	6,942.59	6,117.00	6,113.48	186.36	183.29	66.58	-1,773.37	7,391.73	5,000.25	4,731.31	268.93	18.593	
18,200.00	6,942.61	6,117.00	6,113.48	187.95	183.29	66.58	-1,773.37	7,391.73	5,085.07	4,816.69	268.38	18.947	
18,300.00	6,942.62	6,117.00	6,113.48	189.54	183.29	66.58	-1,773.37	7,391.73	5,170.43	4,902.60	267.83	19.305	
18,400.00	6,942.64	6,117.00	6,113.48	191.12	183.29	66.58	-1,773.37	7,391.73	5,256.31	4,989.01	267.30	19.665	
18,500.00	6,942.65	6,117.00	6,113.48	192.71	183.29	66.58	-1,773.37	7,391.73	5,342.68	5,075.91	266.77	20.027	
18,600.00	6,942.67	6,117.00	6,113.48	194.30	183.29	66.58	-1,773.37	7,391.73	5,429.52	5,163.26	266.26	20.392	
18,700.00	6,942.68	6,117.00	6,113.48	195.89	183.29	66.58	-1,773.37	7,391.73	5,516.80	5,251.04	265.76	20.759	
18,800.00	6,942.70	6,117.00	6,113.48	197.48	183.29	66.58	-1,773.37	7,391.73	5,604.51	5,339.24	265.27	21.127	
18,900.00	6,942.71	6,117.00	6,113.48	199.07	183.29	66.58	-1,773.37	7,391.73	5,692.62	5,427.83	264.79	21.498	
19,000.00	6,942.73	6,117.00	6,113.48	200.66	183.29	66.58	-1,773.37	7,391.73	5,781.12	5,516.80	264.33	21.871	
19,100.00	6,942.74	6,117.00	6,113.48	202.25	183.29	66.58	-1,773.37	7,391.73	5,869.99	5,606.12	263.87	22.246	
19,200.00	6,942.76	6,117.00	6,113.48	203.84	183.29	66.58	-1,773.37	7,391.73	5,959.22	5,695.79	263.43	22.622	
19,300.00	6,942.77	6,117.00	6,113.48	205.43	183.29	66.58	-1,773.37	7,391.73	6,048.78	5,785.78	262.99	23.000	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,400.00	6,942.78	6,117.00	6,113.48	207.02	183.29	66.58	-1,773.37	7,391.73	6,138.66	5,876.09	262.57	23.379	
19,500.00	6,942.80	6,117.00	6,113.48	208.61	183.29	66.58	-1,773.37	7,391.73	6,228.85	5,966.69	262.15	23.760	
19,600.00	6,942.81	6,117.00	6,113.48	210.20	183.29	66.58	-1,773.37	7,391.73	6,319.34	6,057.58	261.75	24.142	
19,700.00	6,942.83	6,117.00	6,113.48	211.79	183.29	66.58	-1,773.37	7,391.73	6,410.10	6,148.75	261.36	24.526	
19,800.00	6,942.84	6,117.00	6,113.48	213.38	183.29	66.58	-1,773.37	7,391.73	6,501.14	6,240.17	260.98	24.911	
19,900.00	6,942.86	6,117.00	6,113.48	214.97	183.29	66.58	-1,773.37	7,391.73	6,592.44	6,331.84	260.60	25.297	
20,000.00	6,942.87	6,117.00	6,113.48	216.56	183.29	66.58	-1,773.37	7,391.73	6,683.99	6,423.75	260.24	25.684	
20,100.00	6,942.89	6,117.00	6,113.48	218.15	183.29	66.58	-1,773.37	7,391.73	6,775.78	6,515.90	259.88	26.072	
20,200.00	6,942.90	6,117.00	6,113.48	219.75	183.29	66.58	-1,773.37	7,391.73	6,867.79	6,608.26	259.54	26.462	
20,300.00	6,942.92	6,117.00	6,113.48	221.34	183.29	66.58	-1,773.37	7,391.73	6,960.03	6,700.83	259.20	26.852	
20,400.00	6,942.93	6,117.00	6,113.48	222.93	183.29	66.58	-1,773.37	7,391.73	7,052.48	6,793.61	258.87	27.243	
20,500.00	6,942.95	6,117.00	6,113.48	224.52	183.29	66.58	-1,773.37	7,391.73	7,145.13	6,886.58	258.55	27.635	
20,600.00	6,942.96	6,117.00	6,113.48	226.12	183.29	66.58	-1,773.37	7,391.73	7,237.98	6,979.74	258.24	28.028	
20,700.00	6,942.98	6,117.00	6,113.48	227.71	183.29	66.58	-1,773.37	7,391.73	7,331.01	7,073.08	257.94	28.422	
20,800.00	6,942.99	6,117.00	6,113.48	229.30	183.29	66.58	-1,773.37	7,391.73	7,424.23	7,166.59	257.64	28.816	
20,855.77	6,943.00	6,117.00	6,113.48	230.19	183.29	66.58	-1,773.37	7,391.73	7,476.29	7,218.81	257.48	29.037	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	122.17	-2,581.32	4,103.41	4,849.65				
100.00	100.00	0.00	0.00	0.25	0.00	122.17	-2,581.32	4,103.41	4,847.92	4,847.67	0.25	N/A	
134.00	134.00	0.00	0.00	0.37	0.00	122.17	-2,581.32	4,103.41	4,847.80	4,847.43	0.37	N/A	
200.00	200.00	61.66	61.66	0.61	0.07	122.17	-2,581.33	4,103.44	4,847.83	4,847.15	0.68	7,141.256	
300.00	300.00	155.09	155.09	0.97	0.17	122.17	-2,581.34	4,103.60	4,847.99	4,846.85	1.14	4,244.300	
400.00	400.00	248.52	248.52	1.33	0.28	122.17	-2,581.37	4,103.91	4,848.28	4,846.67	1.61	3,019.547	
500.00	500.00	354.01	354.01	1.68	0.43	122.17	-2,581.24	4,104.48	4,848.68	4,846.56	2.12	2,290.501	
600.00	599.98	500.11	499.94	2.04	0.76	101.38	-2,575.69	4,107.27	4,848.54	4,845.74	2.80	1,734.659	
620.03	619.99	526.29	526.02	2.12	0.83	101.37	-2,573.64	4,108.23	4,848.47	4,845.53	2.93	1,652.952	
700.00	699.84	569.31	568.80	2.40	0.94	101.33	-2,569.65	4,110.51	4,848.99	4,845.66	3.33	1,456.607	
800.00	799.45	627.67	626.64	2.77	1.09	101.26	-2,563.23	4,114.82	4,851.09	4,847.24	3.85	1,259.697	
845.27	844.44	655.50	654.19	2.93	1.17	101.22	-2,559.99	4,117.17	4,852.54	4,848.44	4.10	1,183.991	
900.00	898.77	692.10	690.36	3.13	1.29	101.20	-2,555.59	4,120.52	4,854.58	4,850.17	4.41	1,099.594	
1,000.00	998.04	876.79	871.71	3.50	1.96	101.05	-2,527.26	4,140.58	4,858.37	4,852.91	5.46	890.033	
1,100.00	1,097.32	969.68	961.75	3.87	2.38	100.91	-2,507.82	4,152.57	4,860.62	4,854.37	6.25	777.448	
1,200.00	1,196.59	1,066.88	1,054.83	4.24	2.90	100.71	-2,484.06	4,167.30	4,862.98	4,855.84	7.14	681.132	
1,300.00	1,295.87	1,140.00	1,123.88	4.62	3.33	100.52	-2,463.65	4,179.98	4,865.52	4,857.57	7.95	612.223	
1,400.00	1,395.14	1,214.48	1,193.34	5.00	3.82	100.31	-2,440.98	4,194.46	4,868.64	4,859.82	8.82	552.034	
1,500.00	1,494.42	1,313.85	1,284.76	5.38	4.53	99.98	-2,408.41	4,215.79	4,872.38	4,862.47	9.91	491.705	
1,600.00	1,593.69	1,382.52	1,347.19	5.76	5.06	99.73	-2,384.46	4,231.39	4,876.33	4,865.52	10.82	450.872	
1,700.00	1,692.96	1,447.60	1,405.88	6.14	5.58	99.49	-2,361.13	4,247.07	4,881.12	4,869.40	11.71	416.774	
1,800.00	1,792.24	1,518.99	1,469.88	6.52	6.17	99.21	-2,335.04	4,264.98	4,886.61	4,873.93	12.68	385.511	
1,900.00	1,891.51	1,612.82	1,553.24	6.91	6.98	98.82	-2,299.58	4,289.42	4,892.57	4,878.71	13.86	353.038	
2,000.00	1,990.79	1,723.55	1,650.91	7.29	7.94	98.35	-2,256.30	4,318.56	4,898.39	4,883.19	15.20	322.294	
2,100.00	2,090.06	1,794.00	1,712.67	7.67	8.56	98.05	-2,228.32	4,337.69	4,904.87	4,888.68	16.19	302.878	
2,200.00	2,189.34	1,867.89	1,777.37	8.06	9.18	97.73	-2,199.04	4,358.06	4,912.03	4,894.85	17.18	285.907	
2,300.00	2,288.61	2,448.00	2,289.37	8.44	13.81	95.32	-1,961.28	4,483.96	4,909.73	4,887.54	22.18	221.341	
2,380.62	2,368.64	2,448.00	2,289.37	8.75	13.81	95.32	-1,961.28	4,483.96	4,909.06	4,886.56	22.50	218.175	
2,400.00	2,387.89	2,448.00	2,289.37	8.82	13.81	95.32	-1,961.28	4,483.96	4,909.10	4,886.53	22.58	217.443	
2,500.00	2,487.16	2,448.00	2,289.37	9.21	13.81	95.32	-1,961.28	4,483.96	4,910.52	4,887.55	22.96	213.844	
2,600.00	2,586.44	2,448.00	2,289.37	9.59	13.81	95.32	-1,961.28	4,483.96	4,913.96	4,890.62	23.34	210.528	
2,700.00	2,685.71	2,448.00	2,289.37	9.98	13.81	95.32	-1,961.28	4,483.96	4,919.44	4,895.73	23.71	207.483	
2,800.00	2,784.99	2,609.16	2,430.94	10.36	15.18	94.63	-1,895.32	4,523.70	4,925.16	4,899.71	25.45	193.503	
2,900.00	2,884.26	2,703.47	2,514.57	10.75	15.94	94.25	-1,857.82	4,545.87	4,930.74	4,904.16	26.58	185.491	
3,000.00	2,983.53	2,788.34	2,590.85	11.13	16.59	93.92	-1,825.94	4,565.08	4,936.63	4,909.02	27.60	178.835	
3,100.00	3,082.81	2,872.82	2,667.77	11.52	17.22	93.63	-1,796.28	4,583.51	4,942.93	4,914.34	28.60	172.858	
3,200.00	3,182.08	2,990.55	2,776.08	11.90	18.05	93.26	-1,757.30	4,608.19	4,949.44	4,919.64	29.80	166.111	
3,300.00	3,281.36	3,117.03	2,894.51	12.29	18.85	92.92	-1,719.85	4,631.90	4,955.41	4,924.43	30.98	159.979	
3,400.00	3,380.63	3,233.40	3,005.46	12.67	19.51	92.67	-1,690.39	4,650.97	4,960.98	4,928.98	32.00	155.035	
3,500.00	3,479.91	3,373.09	3,140.33	13.06	20.20	92.45	-1,660.11	4,671.03	4,966.23	4,933.16	33.07	150.194	
3,600.00	3,579.18	3,547.95	3,311.68	13.44	20.88	92.30	-1,630.63	4,689.31	4,969.40	4,935.27	34.13	145.596	
3,700.00	3,678.46	3,631.40	3,394.09	13.83	21.13	92.26	-1,619.72	4,696.55	4,972.76	4,937.99	34.76	143.045	
3,800.00	3,777.73	3,716.06	3,478.23	14.21	21.36	92.28	-1,612.53	4,702.56	4,976.44	4,941.07	35.37	140.693	
3,900.00	3,877.01	3,803.09	3,564.84	14.60	21.55	92.31	-1,606.45	4,708.43	4,980.40	4,944.46	35.94	138.559	
4,000.00	3,976.28	3,890.09	3,651.44	14.98	21.75	92.34	-1,600.59	4,714.45	4,984.62	4,948.10	36.52	136.500	
4,100.00	4,075.55	3,992.00	3,752.87	15.37	21.97	92.38	-1,594.01	4,721.70	4,989.13	4,952.00	37.13	134.386	
4,200.00	4,174.83	4,085.84	3,846.30	15.75	22.17	92.41	-1,588.16	4,728.32	4,993.66	4,955.96	37.70	132.445	
4,300.00	4,274.10	4,199.13	3,959.13	16.14	22.41	92.46	-1,581.31	4,735.91	4,997.96	4,959.63	38.33	130.409	
4,400.00	4,373.38	4,312.42	4,071.99	16.53	22.65	92.52	-1,574.69	4,743.08	5,001.99	4,963.05	38.95	128.429	
4,500.00	4,472.65	4,425.70	4,184.89	16.91	22.89	92.57	-1,568.30	4,749.81	5,005.76	4,966.19	39.57	126.505	
4,600.00	4,571.93	4,525.58	4,284.47	17.30	23.08	92.63	-1,562.92	4,755.45	5,009.36	4,969.21	40.15	124.774	
4,700.00	4,671.20	4,618.30	4,376.93	17.68	23.25	92.69	-1,558.36	4,760.60	5,013.07	4,972.37	40.70	123.166	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,770.48	4,710.96	4,469.36	18.07	23.43	92.75	-1,554.26	4,765.70	5,016.93	4,975.68	41.26	121.605	
4,900.00	4,869.75	4,803.57	4,561.76	18.45	23.60	92.81	-1,550.61	4,770.74	5,020.94	4,979.13	41.81	120.088	
5,000.00	4,969.03	4,896.10	4,654.10	18.84	23.77	92.88	-1,547.42	4,775.72	5,025.10	4,982.74	42.37	118.614	
5,100.00	5,068.30	4,986.96	4,744.79	19.23	23.92	92.96	-1,544.72	4,780.57	5,029.42	4,986.52	42.90	117.232	
5,200.00	5,167.58	5,076.22	4,833.90	19.61	24.06	93.04	-1,542.56	4,785.31	5,033.95	4,990.53	43.42	115.936	
5,300.00	5,266.85	5,165.40	4,922.94	20.00	24.20	93.12	-1,540.88	4,790.03	5,038.70	4,994.76	43.94	114.675	
5,400.00	5,366.12	5,254.48	5,011.88	20.38	24.34	93.21	-1,539.70	4,794.72	5,043.66	4,999.20	44.46	113.449	
5,500.00	5,465.40	5,343.46	5,100.74	20.77	24.48	93.30	-1,539.00	4,799.40	5,048.85	5,003.87	44.98	112.256	
5,600.00	5,564.67	5,434.44	5,191.60	21.15	24.61	93.40	-1,538.77	4,804.17	5,054.25	5,008.76	45.49	111.097	
5,700.00	5,663.95	5,531.28	5,288.30	21.54	24.75	93.51	-1,538.76	4,809.23	5,059.77	5,013.76	46.01	109.973	
5,800.00	5,763.22	5,628.09	5,384.98	21.93	24.88	93.62	-1,538.88	4,814.28	5,065.35	5,018.83	46.52	108.875	
5,900.00	5,862.50	5,724.87	5,481.63	22.31	25.02	93.73	-1,539.13	4,819.33	5,071.01	5,023.97	47.04	107.802	
6,000.00	5,961.77	5,821.62	5,578.25	22.70	25.15	93.84	-1,539.50	4,824.38	5,076.73	5,029.18	47.56	106.753	
6,100.00	6,061.05	5,921.07	5,677.56	23.08	25.29	93.95	-1,539.99	4,829.56	5,082.52	5,034.44	48.08	105.715	
6,200.00	6,160.32	6,024.35	5,780.70	23.47	25.44	94.07	-1,540.35	4,834.94	5,088.27	5,039.66	48.61	104.681	
6,300.00	6,259.60	6,127.67	5,883.88	23.86	25.59	94.19	-1,540.52	4,840.32	5,093.96	5,044.82	49.14	103.667	
6,376.00	6,335.04	6,206.23	5,962.33	24.15	25.70	94.27	-1,540.52	4,844.42	5,098.25	5,048.71	49.54	102.910	
6,400.00	6,358.85	6,231.04	5,987.11	24.24	25.73	79.53	-1,540.50	4,845.71	5,099.18	5,049.52	49.67	102.663	
6,450.00	6,408.16	6,282.62	6,038.61	24.44	25.81	60.45	-1,540.41	4,848.40	5,098.48	5,048.54	49.94	102.091	
6,500.00	6,456.87	6,333.77	6,089.70	24.64	25.88	50.77	-1,540.28	4,851.07	5,094.21	5,043.99	50.22	101.444	
6,550.00	6,504.65	6,385.18	6,141.03	24.85	25.95	45.47	-1,540.10	4,853.75	5,086.40	5,035.91	50.50	100.727	
6,600.00	6,551.23	6,440.33	6,196.12	25.06	26.02	42.45	-1,540.02	4,856.51	5,075.08	5,024.30	50.78	99.948	
6,650.00	6,596.31	6,493.79	6,249.52	25.26	26.08	40.77	-1,540.11	4,859.00	5,060.31	5,009.25	51.06	99.110	
6,700.00	6,639.62	6,545.17	6,300.85	25.48	26.15	39.99	-1,540.37	4,861.24	5,042.21	4,990.87	51.34	98.219	
6,750.00	6,680.88	6,594.15	6,349.79	25.69	26.20	39.90	-1,540.77	4,863.22	5,020.89	4,969.28	51.61	97.281	
6,800.00	6,719.85	6,640.41	6,396.01	25.91	26.26	40.37	-1,541.29	4,864.96	4,996.53	4,944.65	51.88	96.301	
6,850.00	6,756.28	6,683.65	6,439.22	26.13	26.31	41.37	-1,541.89	4,866.47	4,969.29	4,917.14	52.15	95.284	
6,900.00	6,789.95	6,723.60	6,479.14	26.37	26.36	42.87	-1,542.55	4,867.76	4,939.37	4,886.95	52.42	94.235	
6,950.00	6,820.65	6,760.02	6,515.55	26.61	26.41	44.91	-1,543.24	4,868.85	4,906.96	4,854.29	52.67	93.160	
7,000.00	6,848.19	6,792.72	6,548.22	26.87	26.45	47.52	-1,543.93	4,869.77	4,872.30	4,819.37	52.92	92.064	
7,050.00	6,872.41	6,821.50	6,576.98	27.13	26.48	50.77	-1,544.59	4,870.52	4,835.61	4,782.44	53.17	90.950	
7,100.00	6,893.15	6,846.22	6,601.69	27.41	26.51	54.73	-1,545.20	4,871.12	4,797.14	4,743.73	53.41	89.824	
7,150.00	6,910.28	6,866.76	6,622.22	27.71	26.54	59.47	-1,545.73	4,871.59	4,757.14	4,703.50	53.64	88.690	
7,200.00	6,923.70	6,888.43	6,643.87	28.02	26.56	65.15	-1,546.32	4,872.06	4,715.86	4,662.00	53.86	87.552	
7,250.00	6,933.33	6,906.60	6,662.03	28.34	26.57	71.72	-1,546.82	4,872.41	4,673.57	4,619.48	54.08	86.414	
7,300.00	6,939.11	6,917.93	6,673.36	28.67	26.58	79.01	-1,547.13	4,872.61	4,630.53	4,576.24	54.30	85.282	
7,349.12	6,941.00	6,922.51	6,677.94	29.00	26.58	86.68	-1,547.26	4,872.69	4,587.80	4,533.30	54.50	84.180	
7,400.00	6,941.01	6,923.94	6,679.37	29.36	26.58	86.72	-1,547.30	4,872.71	4,543.47	4,488.76	54.71	83.044	
7,500.00	6,941.02	6,926.67	6,682.10	30.11	26.58	86.79	-1,547.38	4,872.76	4,456.74	4,401.58	55.15	80.808	
7,600.00	6,941.04	6,929.30	6,684.73	30.93	26.59	86.86	-1,547.45	4,872.80	4,370.57	4,314.94	55.63	78.565	
7,700.00	6,941.05	6,931.84	6,687.26	31.80	26.59	86.92	-1,547.52	4,872.84	4,285.01	4,228.86	56.15	76.318	
7,800.00	6,941.07	6,934.29	6,689.72	32.73	26.59	86.98	-1,547.59	4,872.88	4,200.08	4,143.38	56.70	74.071	
7,900.00	6,941.08	6,936.66	6,692.08	33.71	26.59	87.04	-1,547.66	4,872.91	4,115.83	4,058.53	57.30	71.826	
8,000.00	6,941.10	6,938.95	6,694.37	34.73	26.59	87.10	-1,547.72	4,872.95	4,032.30	3,974.35	57.95	69.587	
8,100.00	6,941.11	6,941.17	6,696.58	35.79	26.59	87.16	-1,547.78	4,872.98	3,949.53	3,890.89	58.64	67.356	
8,200.00	6,941.13	6,943.31	6,698.73	36.90	26.60	87.21	-1,547.84	4,873.01	3,867.57	3,808.20	59.37	65.139	
8,300.00	6,941.14	6,945.39	6,700.80	38.03	26.60	87.27	-1,547.90	4,873.04	3,786.48	3,726.32	60.16	62.939	
8,400.00	6,941.16	6,947.40	6,702.81	39.20	26.60	87.32	-1,547.96	4,873.07	3,706.32	3,645.32	61.00	60.759	
8,500.00	6,941.17	6,949.34	6,704.76	40.40	26.60	87.37	-1,548.01	4,873.09	3,627.14	3,565.25	61.89	58.604	
8,600.00	6,941.19	6,951.23	6,706.65	41.63	26.60	87.42	-1,548.07	4,873.12	3,549.01	3,486.17	62.84	56.479	
8,700.00	6,941.20	6,953.07	6,708.48	42.88	26.60	87.46	-1,548.12	4,873.14	3,472.00	3,408.16	63.84	54.386	
8,800.00	6,941.22	6,954.85	6,710.26	44.16	26.60	87.51	-1,548.17	4,873.17	3,396.19	3,331.29	64.90	52.331	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
8,900.00	6,941.23	6,956.57	6,711.98	45.45	26.61	87.55	-1,548.22	4,873.19	3,321.66	3,255.65	66.01	50.317	
9,000.00	6,941.24	6,958.25	6,713.66	46.76	26.61	87.60	-1,548.27	4,873.21	3,248.50	3,181.31	67.19	48.349	
9,100.00	6,941.26	6,959.88	6,715.29	48.10	26.61	87.64	-1,548.31	4,873.23	3,176.80	3,108.38	68.42	46.431	
9,200.00	6,941.27	6,961.47	6,716.88	49.44	26.61	87.68	-1,548.36	4,873.25	3,106.66	3,036.96	69.71	44.566	
9,300.00	6,941.29	6,963.01	6,718.42	50.80	26.61	87.72	-1,548.40	4,873.27	3,038.20	2,967.15	71.05	42.759	
9,400.00	6,941.30	6,964.51	6,719.92	52.18	26.61	87.76	-1,548.45	4,873.29	2,971.52	2,899.07	72.45	41.012	
9,500.00	6,941.32	6,965.97	6,721.38	53.57	26.61	87.79	-1,548.49	4,873.30	2,906.76	2,832.85	73.91	39.330	
9,600.00	6,941.33	6,967.39	6,722.80	54.97	26.61	87.83	-1,548.53	4,873.32	2,844.04	2,768.63	75.41	37.715	
9,700.00	6,941.35	6,968.78	6,724.18	56.38	26.61	87.87	-1,548.57	4,873.34	2,783.49	2,706.54	76.96	36.170	
9,800.00	6,941.36	6,970.13	6,725.53	57.80	26.62	87.90	-1,548.61	4,873.35	2,725.27	2,646.73	78.54	34.698	
9,900.00	6,941.38	6,971.45	6,726.85	59.23	26.62	87.93	-1,548.64	4,873.37	2,669.53	2,589.37	80.16	33.301	
10,000.00	6,941.39	6,972.73	6,728.13	60.67	26.62	87.97	-1,548.68	4,873.38	2,616.42	2,534.61	81.81	31.982	
10,100.00	6,941.41	6,973.98	6,729.38	62.11	26.62	88.00	-1,548.72	4,873.39	2,566.11	2,482.64	83.47	30.742	
10,200.00	6,941.42	6,975.20	6,730.60	63.57	26.62	88.03	-1,548.75	4,873.41	2,518.77	2,433.63	85.14	29.583	
10,300.00	6,941.44	6,976.39	6,731.79	65.03	26.62	88.06	-1,548.79	4,873.42	2,474.56	2,387.75	86.81	28.505	
10,400.00	6,941.45	6,977.55	6,732.95	66.50	26.62	88.09	-1,548.82	4,873.43	2,433.67	2,345.21	88.46	27.511	
10,500.00	6,941.47	6,978.69	6,734.09	67.97	26.62	88.12	-1,548.85	4,873.44	2,396.25	2,306.17	90.08	26.601	
10,600.00	6,941.48	6,979.80	6,735.20	69.45	26.62	88.15	-1,548.88	4,873.45	2,362.47	2,270.81	91.65	25.776	
10,700.00	6,941.50	6,980.88	6,736.28	70.94	26.62	88.17	-1,548.92	4,873.47	2,332.49	2,239.32	93.17	25.035	
10,800.00	6,941.51	6,981.94	6,737.34	72.43	26.62	88.20	-1,548.95	4,873.48	2,306.46	2,211.85	94.61	24.378	
10,900.00	6,941.53	6,982.98	6,738.37	73.92	26.63	88.23	-1,548.98	4,873.49	2,284.52	2,188.55	95.97	23.806	
11,000.00	6,941.54	6,983.99	6,739.38	75.42	26.63	88.25	-1,549.01	4,873.50	2,266.78	2,169.56	97.22	23.317	
11,100.00	6,941.56	6,984.98	6,740.37	76.92	26.63	88.28	-1,549.03	4,873.51	2,253.34	2,154.98	98.36	22.910	
11,200.00	6,941.57	6,985.95	6,741.34	78.43	26.63	88.30	-1,549.06	4,873.51	2,244.28	2,144.91	99.37	22.585	
11,300.00	6,941.59	6,986.89	6,742.29	79.94	26.63	88.33	-1,549.09	4,873.52	2,239.65	2,139.39	100.25	22.340	
11,353.78	6,941.59	6,987.39	6,742.79	80.76	26.63	88.34	-1,549.10	4,873.53	2,239.00	2,138.33	100.67	22.240	CC, ES
11,400.00	6,941.60	6,987.82	6,743.22	81.46	26.63	88.35	-1,549.12	4,873.53	2,239.48	2,138.48	101.00	22.173	
11,500.00	6,941.61	6,988.73	6,744.12	82.98	26.63	88.38	-1,549.14	4,873.54	2,243.77	2,142.16	101.61	22.083	
11,600.00	6,941.63	6,989.62	6,745.01	84.50	26.63	88.40	-1,549.17	4,873.55	2,252.50	2,150.42	102.08	22.067	SF
11,700.00	6,941.64	6,990.49	6,745.88	86.02	26.63	88.42	-1,549.19	4,873.56	2,265.61	2,163.20	102.41	22.122	
11,800.00	6,941.66	6,991.34	6,746.73	87.55	26.63	88.44	-1,549.22	4,873.56	2,283.03	2,180.41	102.62	22.248	
11,900.00	6,941.67	6,992.18	6,747.57	89.08	26.63	88.46	-1,549.24	4,873.57	2,304.66	2,201.96	102.70	22.440	
12,000.00	6,941.69	6,993.00	6,748.39	90.61	26.63	88.48	-1,549.27	4,873.58	2,330.39	2,227.71	102.68	22.696	
12,100.00	6,941.70	6,993.80	6,749.19	92.14	26.63	88.51	-1,549.29	4,873.59	2,360.07	2,257.52	102.55	23.014	
12,200.00	6,941.72	6,994.58	6,749.98	93.68	26.63	88.53	-1,549.31	4,873.59	2,393.57	2,291.23	102.33	23.390	
12,300.00	6,941.73	6,995.36	6,750.75	95.22	26.63	88.55	-1,549.34	4,873.60	2,430.72	2,328.68	102.04	23.822	
12,400.00	6,941.75	6,996.11	6,751.50	96.76	26.63	88.56	-1,549.36	4,873.61	2,471.36	2,369.69	101.67	24.307	
12,500.00	6,941.76	6,996.86	6,752.25	98.30	26.64	88.58	-1,549.38	4,873.61	2,515.32	2,414.07	101.25	24.842	
12,600.00	6,941.78	6,997.58	6,752.97	99.85	26.64	88.60	-1,549.40	4,873.62	2,562.43	2,461.65	100.78	25.425	
12,700.00	6,941.79	6,998.30	6,753.69	101.40	26.64	88.62	-1,549.42	4,873.62	2,612.53	2,512.25	100.28	26.053	
12,800.00	6,941.81	6,999.00	6,754.39	102.95	26.64	88.64	-1,549.44	4,873.63	2,665.43	2,565.69	99.74	26.723	
12,900.00	6,941.82	6,999.69	6,755.08	104.50	26.64	88.66	-1,549.46	4,873.64	2,720.98	2,621.80	99.18	27.434	
13,000.00	6,941.84	7,000.37	6,755.75	106.05	26.64	88.67	-1,549.48	4,873.64	2,779.02	2,680.41	98.61	28.182	
13,100.00	6,941.85	7,001.03	6,756.42	107.60	26.64	88.69	-1,549.50	4,873.65	2,839.40	2,741.38	98.02	28.967	
13,200.00	6,941.87	7,001.68	6,757.07	109.16	26.64	88.71	-1,549.52	4,873.65	2,901.97	2,804.54	97.43	29.786	
13,300.00	6,941.88	7,002.32	6,757.71	110.71	26.64	88.72	-1,549.54	4,873.66	2,966.58	2,869.76	96.83	30.637	
13,400.00	6,941.90	7,002.95	6,758.34	112.27	26.64	88.74	-1,549.56	4,873.66	3,033.12	2,936.89	96.23	31.519	
13,500.00	6,941.91	7,003.57	6,758.96	113.83	26.64	88.76	-1,549.58	4,873.67	3,101.46	3,005.82	95.64	32.430	
13,600.00	6,941.93	7,004.18	6,759.57	115.39	26.64	88.77	-1,549.59	4,873.67	3,171.48	3,076.43	95.05	33.368	
13,700.00	6,941.94	7,004.77	6,760.16	116.95	26.64	88.79	-1,549.61	4,873.67	3,243.07	3,148.60	94.46	34.332	
13,800.00	6,941.96	7,005.36	6,760.75	118.51	26.64	88.80	-1,549.63	4,873.68	3,316.13	3,222.24	93.89	35.320	
13,900.00	6,941.97	7,005.94	6,761.33	120.08	26.64	88.82	-1,549.64	4,873.68	3,390.56	3,297.24	93.32	36.331	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,000.00	6,941.99	7,006.51	6,761.89	121.64	26.64	88.83	-1,549.66	4,873.69	3,466.28	3,373.51	92.77	37.364	
14,100.00	6,942.00	7,007.07	6,762.45	123.21	26.64	88.84	-1,549.68	4,873.69	3,543.21	3,450.98	92.23	38.418	
14,200.00	6,942.01	7,007.61	6,763.00	124.77	26.64	88.86	-1,549.69	4,873.69	3,621.26	3,529.57	91.70	39.492	
14,300.00	6,942.03	7,008.16	6,763.54	126.34	26.64	88.87	-1,549.71	4,873.70	3,700.37	3,609.19	91.18	40.584	
14,400.00	6,942.04	7,008.69	6,764.07	127.91	26.64	88.89	-1,549.73	4,873.70	3,780.47	3,689.80	90.67	41.693	
14,500.00	6,942.06	7,009.21	6,764.60	129.48	26.64	88.90	-1,549.74	4,873.71	3,861.50	3,771.32	90.18	42.819	
14,600.00	6,942.07	7,009.72	6,765.11	131.05	26.64	88.91	-1,549.76	4,873.71	3,943.40	3,853.69	89.70	43.960	
14,700.00	6,942.09	7,010.23	6,765.62	132.62	26.65	88.93	-1,549.77	4,873.71	4,026.11	3,936.87	89.24	45.116	
14,800.00	6,942.10	7,010.73	6,766.11	134.19	26.65	88.94	-1,549.79	4,873.72	4,109.60	4,020.81	88.79	46.286	
14,900.00	6,942.12	7,011.22	6,766.61	135.76	26.65	88.95	-1,549.80	4,873.72	4,193.80	4,105.46	88.35	47.469	
15,000.00	6,942.13	7,011.70	6,767.09	137.34	26.65	88.96	-1,549.81	4,873.72	4,278.69	4,190.77	87.92	48.664	
15,100.00	6,942.15	7,012.18	6,767.56	138.91	26.65	88.98	-1,549.83	4,873.73	4,364.22	4,276.71	87.51	49.871	
15,200.00	6,942.16	7,012.65	6,768.03	140.48	26.65	88.99	-1,549.84	4,873.73	4,450.35	4,363.24	87.11	51.089	
15,300.00	6,942.18	7,013.11	6,768.49	142.06	26.65	89.00	-1,549.86	4,873.73	4,537.05	4,450.33	86.72	52.317	
15,400.00	6,942.19	7,013.57	6,768.95	143.64	26.65	89.01	-1,549.87	4,873.74	4,624.28	4,537.94	86.35	53.555	
15,500.00	6,942.21	7,014.01	6,769.40	145.21	26.65	89.02	-1,549.88	4,873.74	4,712.03	4,626.05	85.98	54.802	
15,600.00	6,942.22	7,014.46	6,769.84	146.79	26.65	89.03	-1,549.90	4,873.74	4,800.25	4,714.62	85.63	56.057	
15,700.00	6,942.24	7,014.89	6,770.27	148.37	26.65	89.05	-1,549.91	4,873.74	4,888.93	4,803.64	85.29	57.321	
15,800.00	6,942.25	7,015.32	6,770.70	149.94	26.65	89.06	-1,549.92	4,873.75	4,978.03	4,893.07	84.96	58.592	
15,900.00	6,942.27	7,015.74	6,771.12	151.52	26.65	89.07	-1,549.93	4,873.75	5,067.54	4,982.90	84.64	59.871	
16,000.00	6,942.28	7,016.16	6,771.54	153.10	26.65	89.08	-1,549.95	4,873.75	5,157.44	5,073.11	84.33	61.156	
16,100.00	6,942.30	7,016.57	6,771.95	154.68	26.65	89.09	-1,549.96	4,873.75	5,247.70	5,163.67	84.03	62.447	
16,200.00	6,942.31	7,016.97	6,772.36	156.26	26.65	89.10	-1,549.97	4,873.76	5,338.31	5,254.57	83.75	63.744	
16,300.00	6,942.33	7,017.37	6,772.76	157.84	26.65	89.11	-1,549.98	4,873.76	5,429.25	5,345.79	83.47	65.046	
16,400.00	6,942.34	7,017.77	6,773.15	159.42	26.65	89.12	-1,549.99	4,873.76	5,520.51	5,437.31	83.20	66.354	
16,500.00	6,942.36	7,018.16	6,773.54	161.00	26.65	89.13	-1,550.00	4,873.76	5,612.06	5,529.12	82.94	67.666	
16,600.00	6,942.37	7,018.54	6,773.92	162.59	26.65	89.14	-1,550.02	4,873.77	5,703.89	5,621.21	82.69	68.982	
16,700.00	6,942.38	7,018.92	6,774.30	164.17	26.65	89.15	-1,550.03	4,873.77	5,796.00	5,713.55	82.44	70.303	
16,800.00	6,942.40	7,019.29	6,774.67	165.75	26.65	89.16	-1,550.04	4,873.77	5,888.36	5,806.15	82.21	71.627	
16,900.00	6,942.41	7,019.66	6,775.04	167.33	26.65	89.17	-1,550.05	4,873.77	5,980.97	5,898.99	81.98	72.955	
17,000.00	6,942.43	7,020.02	6,775.40	168.92	26.65	89.18	-1,550.06	4,873.77	6,073.81	5,992.05	81.76	74.286	
17,100.00	6,942.44	7,020.38	6,775.76	170.50	26.65	89.19	-1,550.07	4,873.78	6,166.88	6,085.32	81.55	75.620	
17,200.00	6,942.46	7,020.73	6,776.11	172.09	26.65	89.19	-1,550.08	4,873.78	6,260.16	6,178.81	81.35	76.957	
17,300.00	6,942.47	7,021.08	6,776.46	173.67	26.65	89.20	-1,550.09	4,873.78	6,353.64	6,272.49	81.15	78.296	
17,400.00	6,942.49	7,021.42	6,776.80	175.26	26.65	89.21	-1,550.10	4,873.78	6,447.32	6,366.36	80.96	79.637	
17,500.00	6,942.50	7,021.76	6,777.14	176.84	26.65	89.22	-1,550.11	4,873.78	6,541.19	6,460.41	80.78	80.980	
17,600.00	6,942.52	7,022.10	6,777.48	178.43	26.65	89.23	-1,550.12	4,873.79	6,635.23	6,554.63	80.60	82.325	
17,700.00	6,942.53	7,022.43	6,777.81	180.01	26.65	89.24	-1,550.13	4,873.79	6,729.45	6,649.02	80.43	83.671	
17,800.00	6,942.55	7,022.76	6,778.14	181.60	26.65	89.25	-1,550.14	4,873.79	6,823.83	6,743.57	80.26	85.019	
17,900.00	6,942.56	7,023.08	6,778.46	183.19	26.65	89.25	-1,550.15	4,873.79	6,918.37	6,838.27	80.10	86.367	
18,000.00	6,942.58	7,023.40	6,778.78	184.77	26.65	89.26	-1,550.16	4,873.79	7,013.06	6,933.11	79.95	87.717	
18,100.00	6,942.59	7,023.71	6,779.09	186.36	26.66	89.27	-1,550.17	4,873.79	7,107.90	7,028.10	79.80	89.068	
18,200.00	6,942.61	7,024.02	6,779.40	187.95	26.66	89.28	-1,550.18	4,873.80	7,202.88	7,123.22	79.66	90.419	
18,300.00	6,942.62	7,024.33	6,779.71	189.54	26.66	89.29	-1,550.19	4,873.80	7,297.99	7,218.46	79.52	91.771	
18,400.00	6,942.64	7,024.63	6,780.01	191.12	26.66	89.29	-1,550.20	4,873.80	7,393.23	7,313.84	79.39	93.123	
18,500.00	6,942.65	7,024.93	6,780.31	192.71	26.66	89.30	-1,550.20	4,873.80	7,488.59	7,409.33	79.27	94.475	
18,600.00	6,942.67	7,025.23	6,780.61	194.30	26.66	89.31	-1,550.21	4,873.80	7,584.08	7,504.93	79.14	95.827	
18,700.00	6,942.68	7,025.52	6,780.90	195.89	26.66	89.32	-1,550.22	4,873.80	7,679.67	7,600.65	79.03	97.179	
18,800.00	6,942.70	7,025.81	6,781.19	197.48	26.66	89.32	-1,550.23	4,873.81	7,775.38	7,696.47	78.91	98.531	
18,900.00	6,942.71	7,026.10	6,781.47	199.07	26.66	89.33	-1,550.24	4,873.81	7,871.20	7,792.39	78.81	99.882	
19,000.00	6,942.73	7,026.38	6,781.76	200.66	26.66	89.34	-1,550.25	4,873.81	7,967.12	7,888.42	78.70	101.233	
19,100.00	6,942.74	7,026.66	6,782.04	202.25	26.66	89.35	-1,550.26	4,873.81	8,063.13	7,984.53	78.60	102.583	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis 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
19,200.00	6,942.76	7,026.93	6,782.31	203.84	26.66	89.35	-1,550.26	4,873.81	8,159.25	8,080.74	78.51	103.933	
19,300.00	6,942.77	7,027.21	6,782.58	205.43	26.66	89.36	-1,550.27	4,873.81	8,255.45	8,177.04	78.41	105.281	
19,400.00	6,942.78	7,027.48	6,782.85	207.02	26.66	89.37	-1,550.28	4,873.81	8,351.75	8,273.42	78.33	106.629	
19,500.00	6,942.80	7,027.74	6,783.12	208.61	26.66	89.37	-1,550.29	4,873.82	8,448.13	8,369.89	78.24	107.976	
19,600.00	6,942.81	7,028.00	6,783.38	210.20	26.66	89.38	-1,550.30	4,873.82	8,544.59	8,466.43	78.16	109.321	
19,700.00	6,942.83	7,028.26	6,783.64	211.79	26.66	89.39	-1,550.30	4,873.82	8,641.14	8,563.05	78.08	110.665	
19,800.00	6,942.84	7,028.52	6,783.90	213.38	26.66	89.39	-1,550.31	4,873.82	8,737.76	8,659.75	78.01	112.008	
19,900.00	6,942.86	7,028.78	6,784.15	214.97	26.66	89.40	-1,550.32	4,873.82	8,834.46	8,756.52	77.94	113.350	
20,000.00	6,942.87	7,029.03	6,784.40	216.56	26.66	89.41	-1,550.33	4,873.82	8,931.23	8,853.35	77.87	114.690	
20,100.00	6,942.89	7,029.28	6,784.65	218.15	26.66	89.41	-1,550.33	4,873.82	9,028.07	8,950.26	77.81	116.028	
20,200.00	6,942.90	7,029.52	6,784.90	219.75	26.66	89.42	-1,550.34	4,873.82	9,124.97	9,047.23	77.75	117.365	
20,300.00	6,942.92	7,029.77	6,785.14	221.34	26.66	89.43	-1,550.35	4,873.82	9,221.95	9,144.26	77.69	118.700	
20,400.00	6,942.93	7,030.01	6,785.38	222.93	26.66	89.43	-1,550.36	4,873.83	9,318.99	9,241.35	77.64	120.033	
20,500.00	6,942.95	7,030.25	6,785.62	224.52	26.66	89.44	-1,550.36	4,873.83	9,416.09	9,338.50	77.59	121.365	
20,600.00	6,942.96	7,030.48	6,785.86	226.12	26.66	89.44	-1,550.37	4,873.83	9,513.25	9,435.71	77.54	122.694	
20,700.00	6,942.98	7,030.71	6,786.09	227.71	26.66	89.45	-1,550.38	4,873.83	9,610.47	9,532.98	77.49	124.021	
20,800.00	6,942.99	7,030.95	6,786.32	229.30	26.66	89.46	-1,550.38	4,873.83	9,707.74	9,630.29	77.45	125.347	
20,855.77	6,943.00	7,031.07	6,786.45	230.19	26.66	89.46	-1,550.39	4,873.83	9,762.01	9,684.59	77.42	126.085	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	80.92	2,099.24	13,135.43	13,302.12				
100.00	100.00	293.00	293.00	0.25	8.78	80.92	2,099.24	13,135.43	13,302.12	13,293.09	9.03	1,473.002	
200.00	200.00	393.00	393.00	0.61	11.78	80.92	2,099.24	13,135.43	13,302.12	13,289.73	12.39	1,074.007	
300.00	300.00	493.00	493.00	0.97	14.77	80.92	2,099.24	13,135.43	13,302.12	13,286.38	15.74	845.095	
400.00	400.00	593.10	593.00	1.33	17.77	80.92	2,099.24	13,135.43	13,302.12	13,283.02	19.10	696.506	
500.00	500.00	693.10	693.00	1.68	20.77	80.92	2,099.24	13,135.43	13,302.12	13,279.67	22.45	592.436	
600.00	599.98	800.52	800.37	2.04	23.99	60.20	2,101.33	13,135.43	13,301.58	13,275.55	26.03	511.020	
700.00	699.84	917.51	917.34	2.40	27.49	60.27	2,100.44	13,135.43	13,298.86	13,268.97	29.89	444.882	
800.00	799.45	1,034.09	1,033.87	2.77	30.99	60.40	2,098.60	13,135.43	13,294.29	13,260.54	33.75	393.949	
845.27	844.44	1,037.84	1,037.44	2.93	31.10	60.44	2,099.24	13,135.43	13,291.80	13,257.77	34.02	390.665	
900.00	898.77	1,092.17	1,091.77	3.13	32.73	60.46	2,099.24	13,135.43	13,288.54	13,252.68	35.85	370.662	
1,000.00	998.04	1,191.45	1,191.04	3.50	35.70	60.51	2,099.24	13,135.43	13,282.58	13,243.39	39.19	338.910	
1,100.00	1,097.32	1,297.57	1,297.12	3.87	38.88	60.55	2,101.34	13,135.43	13,276.96	13,234.22	42.74	310.635	
1,200.00	1,196.59	1,413.36	1,412.88	4.24	42.35	60.60	2,100.48	13,135.43	13,270.90	13,224.32	46.58	284.892	
1,300.00	1,295.87	1,528.97	1,528.45	4.62	45.81	60.66	2,098.70	13,135.43	13,264.74	13,214.32	50.42	263.089	
1,400.00	1,395.14	1,588.85	1,588.14	5.00	47.61	60.69	2,099.24	13,135.43	13,258.84	13,206.25	52.59	252.125	
1,500.00	1,494.42	1,688.13	1,687.42	5.38	50.58	60.73	2,099.24	13,135.43	13,252.92	13,196.99	55.94	236.920	
1,600.00	1,593.69	1,793.49	1,792.74	5.76	53.74	60.77	2,101.35	13,135.43	13,247.34	13,187.87	59.47	222.751	
1,700.00	1,692.96	1,908.75	1,907.97	6.14	57.19	60.83	2,100.54	13,135.43	13,241.33	13,178.03	63.30	209.178	
1,800.00	1,792.24	2,023.84	2,023.02	6.52	60.64	60.89	2,098.80	13,135.43	13,235.22	13,168.09	67.13	197.166	
1,900.00	1,891.51	2,085.53	2,084.51	6.91	62.49	60.91	2,099.24	13,135.43	13,229.35	13,160.00	69.35	190.751	
2,000.00	1,990.79	2,184.80	2,183.79	7.29	65.47	60.96	2,099.24	13,135.43	13,223.48	13,150.77	72.71	181.873	
2,100.00	2,090.06	2,289.45	2,288.39	7.67	68.60	61.00	2,101.36	13,135.43	13,217.92	13,141.70	76.22	173.416	
2,200.00	2,189.34	2,404.19	2,403.11	8.06	72.04	61.05	2,100.59	13,135.43	13,211.97	13,131.93	80.04	165.072	
2,300.00	2,288.61	2,518.76	2,517.63	8.44	75.47	61.11	2,098.89	13,135.43	13,205.91	13,122.06	83.85	157.496	
2,400.00	2,387.89	2,582.21	2,580.89	8.82	77.37	61.14	2,099.24	13,135.43	13,200.07	13,113.94	86.13	153.257	
2,500.00	2,487.16	2,681.48	2,680.16	9.21	80.35	61.19	2,099.24	13,135.43	13,194.24	13,104.75	89.48	147.447	
2,600.00	2,586.44	2,785.44	2,784.08	9.59	83.46	61.23	2,101.37	13,135.43	13,188.72	13,095.74	92.98	141.846	
2,700.00	2,685.71	2,899.67	2,898.28	9.98	86.89	61.28	2,100.63	13,135.43	13,182.81	13,086.03	96.78	136.212	
2,800.00	2,784.99	3,013.72	3,012.30	10.36	90.30	61.34	2,098.99	13,135.43	13,176.80	13,076.22	100.58	131.010	
2,900.00	2,884.26	3,078.88	3,077.26	10.75	92.26	61.37	2,099.24	13,135.43	13,171.00	13,068.08	102.91	127.983	
3,000.00	2,983.53	3,178.16	3,176.53	11.13	95.23	61.41	2,099.24	13,135.43	13,165.21	13,058.94	106.27	123.888	
3,100.00	3,082.81	3,281.47	3,279.81	11.52	98.33	61.45	2,101.38	13,135.43	13,159.72	13,049.98	109.74	119.914	
3,200.00	3,182.08	3,395.19	3,393.50	11.90	101.74	61.51	2,100.68	13,135.43	13,153.86	13,040.33	113.53	115.862	
3,300.00	3,281.36	3,508.73	3,507.00	12.29	105.14	61.57	2,099.08	13,135.43	13,147.91	13,030.60	117.31	112.076	
3,400.00	3,380.63	3,575.56	3,573.63	12.67	107.14	61.60	2,099.24	13,135.43	13,142.13	13,022.44	119.70	109.795	
3,500.00	3,479.91	3,674.84	3,672.91	13.06	110.11	61.64	2,099.24	13,135.43	13,136.39	13,013.33	123.05	106.754	
3,600.00	3,579.18	3,777.54	3,775.57	13.44	113.19	61.68	2,101.39	13,135.43	13,130.94	13,004.43	126.51	103.793	
3,700.00	3,678.46	3,890.75	3,888.75	13.83	116.58	61.74	2,100.72	13,135.43	13,125.13	12,994.85	130.28	100.743	
3,800.00	3,777.73	4,003.79	4,001.75	14.21	119.97	61.80	2,099.17	13,135.43	13,119.22	12,985.17	134.05	97.868	
3,900.00	3,877.01	4,072.24	4,070.01	14.60	122.02	61.83	2,099.24	13,135.43	13,113.48	12,977.00	136.48	96.081	
4,000.00	3,976.28	4,171.51	4,169.28	14.98	125.00	61.87	2,099.24	13,135.43	13,107.78	12,967.94	139.84	93.734	
4,100.00	4,075.55	4,273.64	4,271.37	15.37	128.06	61.91	2,101.40	13,135.43	13,102.37	12,959.09	143.28	91.445	
4,200.00	4,174.83	4,386.35	4,384.05	15.75	131.43	61.97	2,100.77	13,135.43	13,096.61	12,949.57	147.04	89.069	
4,300.00	4,274.10	4,498.89	4,496.55	16.14	134.81	62.03	2,099.25	13,135.43	13,090.75	12,939.96	150.79	86.814	
4,400.00	4,373.38	4,568.92	4,566.38	16.53	136.91	62.06	2,099.24	13,135.43	13,085.05	12,931.78	153.27	85.371	
4,500.00	4,472.65	4,668.19	4,665.65	16.91	139.88	62.10	2,099.24	13,135.43	13,079.39	12,922.76	156.63	83.505	
4,600.00	4,571.93	4,769.78	4,767.20	17.30	142.92	62.14	2,101.40	13,135.43	13,074.01	12,913.95	160.05	81.685	
4,700.00	4,671.20	4,881.98	4,879.38	17.68	146.29	62.20	2,100.81	13,135.43	13,068.30	12,904.50	163.80	79.783	
4,800.00	4,770.48	4,994.03	4,991.39	18.07	149.64	62.26	2,099.34	13,135.43	13,062.50	12,894.96	167.54	77.968	
4,900.00	4,869.75	5,065.59	5,062.75	18.45	151.79	62.29	2,099.24	13,135.43	13,056.83	12,886.76	170.06	76.776	
5,000.00	4,969.03	5,164.87	5,162.03	18.84	154.76	62.34	2,099.24	13,135.43	13,051.21	12,877.79	173.42	75.258	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,068.30	5,265.95	5,263.06	19.23	157.79	62.37	2,101.41	13,135.43	13,045.86	12,869.03	176.83	73.776	
5,200.00	5,167.58	5,377.66	5,374.76	19.61	161.14	62.43	2,100.85	13,135.43	13,040.20	12,859.64	180.56	72.221	
5,300.00	5,266.85	5,489.21	5,486.27	20.00	164.48	62.49	2,099.42	13,135.43	13,034.45	12,850.17	184.28	70.731	
5,400.00	5,366.12	5,562.27	5,559.12	20.38	166.67	62.52	2,099.24	13,135.43	13,028.82	12,841.97	186.86	69.727	
5,500.00	5,465.40	5,661.55	5,658.40	20.77	169.65	62.57	2,099.24	13,135.43	13,023.25	12,833.04	190.21	68.467	
5,600.00	5,564.67	5,762.15	5,758.96	21.15	172.66	62.61	2,101.41	13,135.43	13,017.94	12,824.33	193.61	67.239	
5,700.00	5,663.95	5,873.37	5,870.17	21.54	175.99	62.66	2,100.88	13,135.43	13,012.32	12,815.00	197.32	65.945	
5,800.00	5,763.22	5,984.44	5,981.20	21.93	179.32	62.72	2,099.50	13,135.43	13,006.63	12,805.60	201.03	64.700	
5,900.00	5,862.50	6,058.95	6,055.50	22.31	181.55	62.76	2,099.24	13,135.43	13,001.03	12,797.39	203.65	63.841	
6,000.00	5,961.77	6,158.22	6,154.77	22.70	184.53	62.80	2,099.24	13,135.43	12,995.50	12,788.50	207.00	62.779	
6,100.00	6,061.05	6,258.39	6,254.90	23.08	187.53	62.84	2,101.41	13,135.43	12,990.23	12,779.84	210.39	61.744	
6,200.00	6,160.32	6,369.13	6,365.61	23.47	190.85	62.90	2,100.92	13,135.43	12,984.66	12,770.58	214.09	60.651	
6,300.00	6,259.60	6,479.71	6,476.16	23.86	194.16	62.95	2,099.57	13,135.43	12,979.02	12,761.24	217.78	59.596	
6,376.00	6,335.04	6,518.00	6,514.23	24.15	195.31	62.97	2,099.24	13,135.43	12,974.79	12,755.57	219.22	59.185	
6,400.00	6,358.85	6,518.00	6,514.23	24.24	195.31	48.21	2,099.24	13,135.43	12,973.07	12,753.76	219.32	59.152	
6,450.00	6,408.16	6,518.00	6,514.23	24.44	195.31	28.97	2,099.24	13,135.43	12,966.76	12,747.26	219.51	59.072	
6,500.00	6,456.87	6,518.00	6,514.23	24.64	195.31	18.92	2,099.24	13,135.43	12,956.79	12,737.10	219.69	58.977	
6,550.00	6,504.65	6,518.00	6,514.23	24.85	195.31	13.06	2,099.24	13,135.43	12,943.22	12,723.35	219.87	58.868	
6,600.00	6,551.23	6,518.00	6,514.23	25.06	195.31	9.23	2,099.24	13,135.43	12,926.11	12,706.07	220.04	58.744	
6,650.00	6,596.31	6,518.00	6,514.23	25.26	195.31	6.50	2,099.24	13,135.43	12,905.56	12,685.36	220.20	58.608	
6,700.00	6,639.62	6,518.00	6,514.23	25.48	195.31	4.40	2,099.24	13,135.43	12,881.68	12,661.34	220.35	58.460	
6,750.00	6,680.88	6,518.00	6,514.23	25.69	195.31	2.68	2,099.24	13,135.43	12,854.60	12,634.12	220.49	58.301	
6,800.00	6,719.85	6,518.00	6,514.23	25.91	195.31	1.16	2,099.24	13,135.43	12,824.47	12,603.86	220.61	58.131	
6,850.00	6,756.28	6,518.00	6,514.23	26.13	195.31	-0.25	2,099.24	13,135.43	12,791.45	12,570.72	220.73	57.952	
6,900.00	6,789.95	6,518.00	6,514.23	26.37	195.31	-1.66	2,099.24	13,135.43	12,755.72	12,534.90	220.82	57.764	
6,950.00	6,820.65	6,518.00	6,514.23	26.61	195.31	-3.14	2,099.24	13,135.43	12,717.48	12,496.57	220.91	57.569	
7,000.00	6,848.19	6,518.00	6,514.23	26.87	195.31	-4.82	2,099.24	13,135.43	12,676.95	12,455.97	220.98	57.367	
7,050.00	6,872.41	6,518.00	6,514.23	27.13	195.31	-6.82	2,099.24	13,135.43	12,634.35	12,413.31	221.04	57.159	
7,100.00	6,893.15	6,518.00	6,514.23	27.41	195.31	-9.36	2,099.24	13,135.43	12,589.93	12,368.85	221.08	56.947	
7,150.00	6,910.28	6,518.00	6,514.23	27.71	195.31	-12.82	2,099.24	13,135.43	12,543.94	12,322.83	221.11	56.732	
7,200.00	6,923.70	6,518.00	6,514.23	28.02	195.31	-17.90	2,099.24	13,135.43	12,496.66	12,275.53	221.13	56.513	
7,250.00	6,933.33	6,518.00	6,514.23	28.34	195.31	-26.08	2,099.24	13,135.43	12,448.35	12,227.22	221.13	56.293	
7,300.00	6,939.11	6,518.00	6,514.23	28.67	195.31	-40.66	2,099.24	13,135.43	12,399.31	12,178.18	221.13	56.072	
7,349.12	6,941.00	6,518.00	6,514.23	29.00	195.31	-66.77	2,099.24	13,135.43	12,350.71	12,129.59	221.12	55.856	
7,400.00	6,941.01	6,518.00	6,514.23	29.36	195.31	-66.77	2,099.24	13,135.43	12,300.25	12,079.14	221.10	55.632	
7,500.00	6,941.02	6,518.00	6,514.23	30.11	195.31	-66.77	2,099.24	13,135.43	12,201.08	11,980.01	221.07	55.191	
7,600.00	6,941.04	6,518.00	6,514.23	30.93	195.31	-66.77	2,099.24	13,135.43	12,101.92	11,880.88	221.04	54.751	
7,700.00	6,941.05	6,518.00	6,514.23	31.80	195.31	-66.77	2,099.24	13,135.43	12,002.78	11,781.77	221.01	54.309	
7,800.00	6,941.07	6,518.00	6,514.23	32.73	195.31	-66.77	2,099.24	13,135.43	11,903.65	11,682.67	220.98	53.867	
7,900.00	6,941.08	6,518.00	6,514.23	33.71	195.31	-66.77	2,099.24	13,135.43	11,804.54	11,583.58	220.96	53.425	
8,000.00	6,941.10	6,518.00	6,514.23	34.73	195.31	-66.77	2,099.24	13,135.43	11,705.44	11,484.51	220.93	52.982	
8,100.00	6,941.11	6,518.00	6,514.23	35.79	195.31	-66.77	2,099.24	13,135.43	11,606.36	11,385.45	220.91	52.539	
8,200.00	6,941.13	6,518.00	6,514.23	36.90	195.31	-66.77	2,099.24	13,135.43	11,507.29	11,286.40	220.89	52.094	
8,300.00	6,941.14	6,518.00	6,514.23	38.03	195.31	-66.77	2,099.24	13,135.43	11,408.24	11,187.37	220.88	51.650	
8,400.00	6,941.16	6,518.00	6,514.23	39.20	195.31	-66.77	2,099.24	13,135.43	11,309.21	11,088.35	220.86	51.205	
8,500.00	6,941.17	6,518.00	6,514.23	40.40	195.31	-66.77	2,099.24	13,135.43	11,210.19	10,989.34	220.85	50.759	
8,600.00	6,941.19	6,518.00	6,514.23	41.63	195.31	-66.77	2,099.24	13,135.43	11,111.20	10,890.35	220.84	50.312	
8,700.00	6,941.20	6,518.00	6,514.23	42.88	195.31	-66.77	2,099.24	13,135.43	11,012.22	10,791.38	220.84	49.865	
8,800.00	6,941.22	6,518.00	6,514.23	44.16	195.31	-66.77	2,099.24	13,135.43	10,913.25	10,692.42	220.84	49.418	
8,900.00	6,941.23	6,518.00	6,514.23	45.45	195.31	-66.77	2,099.24	13,135.43	10,814.31	10,593.47	220.84	48.970	
9,000.00	6,941.24	6,518.00	6,514.23	46.76	195.31	-66.77	2,099.24	13,135.43	10,715.39	10,494.55	220.84	48.521	
9,100.00	6,941.26	6,518.00	6,514.23	48.10	195.31	-66.77	2,099.24	13,135.43	10,616.48	10,395.64	220.85	48.071	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,518.00	6,514.23	49.44	195.31	-66.77	2,099.24	13,135.43	10,517.60	10,296.74	220.86	47.621	
9,300.00	6,941.29	6,518.00	6,514.23	50.80	195.31	-66.77	2,099.24	13,135.43	10,418.74	10,197.87	220.87	47.170	
9,400.00	6,941.30	6,518.00	6,514.23	52.18	195.31	-66.77	2,099.24	13,135.43	10,319.90	10,099.01	220.89	46.719	
9,500.00	6,941.32	6,518.00	6,514.23	53.57	195.31	-66.77	2,099.24	13,135.43	10,221.09	10,000.17	220.92	46.267	
9,600.00	6,941.33	6,518.00	6,514.23	54.97	195.31	-66.77	2,099.24	13,135.43	10,122.29	9,901.35	220.94	45.814	
9,700.00	6,941.35	6,518.00	6,514.23	56.38	195.31	-66.77	2,099.24	13,135.43	10,023.53	9,802.55	220.97	45.361	
9,800.00	6,941.36	6,518.00	6,514.23	57.80	195.31	-66.77	2,099.24	13,135.43	9,924.78	9,703.77	221.01	44.907	
9,900.00	6,941.38	6,518.00	6,514.23	59.23	195.31	-66.77	2,099.24	13,135.43	9,826.06	9,605.01	221.05	44.452	
10,000.00	6,941.39	6,518.00	6,514.23	60.67	195.31	-66.77	2,099.24	13,135.43	9,727.37	9,506.28	221.09	43.997	
10,100.00	6,941.41	6,518.00	6,514.23	62.11	195.31	-66.77	2,099.24	13,135.43	9,628.70	9,407.56	221.14	43.540	
10,200.00	6,941.42	6,518.00	6,514.23	63.57	195.31	-66.77	2,099.24	13,135.43	9,530.07	9,308.87	221.20	43.084	
10,300.00	6,941.44	6,518.00	6,514.23	65.03	195.31	-66.77	2,099.24	13,135.43	9,431.46	9,210.19	221.26	42.626	
10,400.00	6,941.45	6,518.00	6,514.23	66.50	195.31	-66.77	2,099.24	13,135.43	9,332.88	9,111.55	221.33	42.168	
10,500.00	6,941.47	6,518.00	6,514.23	67.97	195.31	-66.77	2,099.24	13,135.43	9,234.33	9,012.93	221.40	41.708	
10,600.00	6,941.48	6,518.00	6,514.23	69.45	195.31	-66.77	2,099.24	13,135.43	9,135.81	8,914.33	221.48	41.249	
10,700.00	6,941.50	6,518.00	6,514.23	70.94	195.31	-66.77	2,099.24	13,135.43	9,037.32	8,815.76	221.57	40.788	
10,800.00	6,941.51	6,518.00	6,514.23	72.43	195.31	-66.77	2,099.24	13,135.43	8,938.87	8,717.21	221.66	40.327	
10,900.00	6,941.53	6,518.00	6,514.23	73.92	195.31	-66.77	2,099.24	13,135.43	8,840.46	8,618.69	221.76	39.865	
11,000.00	6,941.54	6,518.00	6,514.23	75.42	195.31	-66.77	2,099.24	13,135.43	8,742.08	8,520.21	221.87	39.402	
11,100.00	6,941.56	6,518.00	6,514.23	76.92	195.31	-66.77	2,099.24	13,135.43	8,643.73	8,421.75	221.99	38.938	
11,200.00	6,941.57	6,518.00	6,514.23	78.43	195.31	-66.77	2,099.24	13,135.43	8,545.43	8,323.32	222.11	38.474	
11,300.00	6,941.59	6,518.00	6,514.23	79.94	195.31	-66.77	2,099.24	13,135.43	8,447.16	8,224.92	222.25	38.008	
11,400.00	6,941.60	6,518.00	6,514.23	81.46	195.31	-66.77	2,099.24	13,135.43	8,348.94	8,126.55	222.39	37.542	
11,500.00	6,941.61	6,518.00	6,514.23	82.98	195.31	-66.77	2,099.24	13,135.43	8,250.76	8,028.22	222.54	37.075	
11,600.00	6,941.63	6,518.00	6,514.23	84.50	195.31	-66.77	2,099.24	13,135.43	8,152.62	7,929.92	222.70	36.608	
11,700.00	6,941.64	6,518.00	6,514.23	86.02	195.31	-66.77	2,099.24	13,135.43	8,054.53	7,831.65	222.87	36.139	
11,800.00	6,941.66	6,518.00	6,514.23	87.55	195.31	-66.77	2,099.24	13,135.43	7,956.48	7,733.43	223.06	35.670	
11,900.00	6,941.67	6,518.00	6,514.23	89.08	195.31	-66.77	2,099.24	13,135.43	7,858.49	7,635.24	223.25	35.200	
12,000.00	6,941.69	6,518.00	6,514.23	90.61	195.31	-66.77	2,099.24	13,135.43	7,760.55	7,537.09	223.46	34.730	
12,100.00	6,941.70	6,518.00	6,514.23	92.14	195.31	-66.77	2,099.24	13,135.43	7,662.66	7,438.98	223.68	34.258	
12,200.00	6,941.72	6,518.00	6,514.23	93.68	195.31	-66.77	2,099.24	13,135.43	7,564.82	7,340.91	223.91	33.786	
12,300.00	6,941.73	6,518.00	6,514.23	95.22	195.31	-66.77	2,099.24	13,135.43	7,467.04	7,242.89	224.15	33.313	
12,400.00	6,941.75	6,518.00	6,514.23	96.76	195.31	-66.77	2,099.24	13,135.43	7,369.32	7,144.91	224.41	32.839	
12,500.00	6,941.76	6,518.00	6,514.23	98.30	195.31	-66.77	2,099.24	13,135.43	7,271.67	7,046.98	224.68	32.364	
12,600.00	6,941.78	6,518.00	6,514.23	99.85	195.31	-66.77	2,099.24	13,135.43	7,174.08	6,949.10	224.97	31.889	
12,700.00	6,941.79	6,518.00	6,514.23	101.40	195.31	-66.77	2,099.24	13,135.43	7,076.55	6,851.28	225.28	31.413	
12,800.00	6,941.81	6,518.00	6,514.23	102.95	195.31	-66.77	2,099.24	13,135.43	6,979.10	6,753.50	225.60	30.936	
12,900.00	6,941.82	6,518.00	6,514.23	104.50	195.31	-66.77	2,099.24	13,135.43	6,881.72	6,655.78	225.94	30.459	
13,000.00	6,941.84	6,518.00	6,514.23	106.05	195.31	-66.77	2,099.24	13,135.43	6,784.41	6,558.12	226.29	29.981	
13,100.00	6,941.85	6,518.00	6,514.23	107.60	195.31	-66.77	2,099.24	13,135.43	6,687.19	6,460.52	226.67	29.502	
13,200.00	6,941.87	6,518.00	6,514.23	109.16	195.31	-66.77	2,099.24	13,135.43	6,590.04	6,362.98	227.06	29.023	
13,300.00	6,941.88	6,518.00	6,514.23	110.71	195.31	-66.77	2,099.24	13,135.43	6,492.99	6,265.51	227.48	28.543	
13,400.00	6,941.90	6,518.00	6,514.23	112.27	195.31	-66.77	2,099.24	13,135.43	6,396.02	6,168.10	227.92	28.063	
13,500.00	6,941.91	6,518.00	6,514.23	113.83	195.31	-66.77	2,099.24	13,135.43	6,299.15	6,070.77	228.38	27.582	
13,600.00	6,941.93	6,518.00	6,514.23	115.39	195.31	-66.77	2,099.24	13,135.43	6,202.38	5,973.52	228.87	27.101	
13,700.00	6,941.94	6,518.00	6,514.23	116.95	195.31	-66.77	2,099.24	13,135.43	6,105.72	5,876.34	229.37	26.619	
13,800.00	6,941.96	6,518.00	6,514.23	118.51	195.31	-66.77	2,099.24	13,135.43	6,009.16	5,779.25	229.91	26.137	
13,900.00	6,941.97	6,518.00	6,514.23	120.08	195.31	-66.77	2,099.24	13,135.43	5,912.72	5,682.24	230.47	25.655	
14,000.00	6,941.99	6,518.00	6,514.23	121.64	195.31	-66.77	2,099.24	13,135.43	5,816.39	5,585.33	231.06	25.172	
14,100.00	6,942.00	6,518.00	6,514.23	123.21	195.31	-66.77	2,099.24	13,135.43	5,720.20	5,488.51	231.69	24.690	
14,200.00	6,942.01	6,518.00	6,514.23	124.77	195.31	-66.77	2,099.24	13,135.43	5,624.13	5,391.79	232.34	24.207	
14,300.00	6,942.03	6,518.00	6,514.23	126.34	195.31	-66.77	2,099.24	13,135.43	5,528.21	5,295.18	233.02	23.724	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	6,518.00	6,514.23	127.91	195.31	-66.77	2,099.24	13,135.43	5,432.43	5,198.69	233.74	23.241	
14,500.00	6,942.06	6,518.00	6,514.23	129.48	195.31	-66.77	2,099.24	13,135.43	5,336.81	5,102.31	234.50	22.759	
14,600.00	6,942.07	6,518.00	6,514.23	131.05	195.31	-66.77	2,099.24	13,135.43	5,241.35	5,006.06	235.29	22.276	
14,700.00	6,942.09	6,518.00	6,514.23	132.62	195.31	-66.77	2,099.24	13,135.43	5,146.06	4,909.94	236.12	21.794	
14,800.00	6,942.10	6,518.00	6,514.23	134.19	195.31	-66.77	2,099.24	13,135.43	5,050.96	4,813.96	236.99	21.313	
14,900.00	6,942.12	6,518.00	6,514.23	135.76	195.31	-66.77	2,099.24	13,135.43	4,956.04	4,718.13	237.91	20.832	
15,000.00	6,942.13	6,518.00	6,514.23	137.34	195.31	-66.77	2,099.24	13,135.43	4,861.34	4,622.46	238.87	20.351	
15,100.00	6,942.15	6,518.00	6,514.23	138.91	195.31	-66.77	2,099.24	13,135.43	4,766.85	4,526.96	239.88	19.872	
15,200.00	6,942.16	6,518.00	6,514.23	140.48	195.31	-66.77	2,099.24	13,135.43	4,672.58	4,431.64	240.94	19.393	
15,300.00	6,942.18	6,518.00	6,514.23	142.06	195.31	-66.77	2,099.24	13,135.43	4,578.56	4,336.51	242.06	18.915	
15,400.00	6,942.19	6,518.00	6,514.23	143.64	195.31	-66.77	2,099.24	13,135.43	4,484.80	4,241.58	243.23	18.439	
15,500.00	6,942.21	6,518.00	6,514.23	145.21	195.31	-66.77	2,099.24	13,135.43	4,391.32	4,146.86	244.46	17.964	
15,600.00	6,942.22	6,518.00	6,514.23	146.79	195.31	-66.77	2,099.24	13,135.43	4,298.13	4,052.38	245.75	17.490	
15,700.00	6,942.24	6,518.00	6,514.23	148.37	195.31	-66.77	2,099.24	13,135.43	4,205.25	3,958.14	247.11	17.018	
15,800.00	6,942.25	6,518.00	6,514.23	149.94	195.31	-66.77	2,099.24	13,135.43	4,112.70	3,864.17	248.53	16.548	
15,900.00	6,942.27	6,518.00	6,514.23	151.52	195.31	-66.77	2,099.24	13,135.43	4,020.52	3,770.49	250.03	16.080	
16,000.00	6,942.28	6,518.00	6,514.23	153.10	195.31	-66.77	2,099.24	13,135.43	3,928.71	3,677.11	251.61	15.615	
16,100.00	6,942.30	6,518.00	6,514.23	154.68	195.31	-66.77	2,099.24	13,135.43	3,837.32	3,584.05	253.26	15.152	
16,200.00	6,942.31	6,518.00	6,514.23	156.26	195.31	-66.77	2,099.24	13,135.43	3,746.36	3,491.35	255.01	14.691	
16,300.00	6,942.33	6,518.00	6,514.23	157.84	195.31	-66.77	2,099.24	13,135.43	3,655.88	3,399.04	256.84	14.234	
16,400.00	6,942.34	6,518.00	6,514.23	159.42	195.31	-66.77	2,099.24	13,135.43	3,565.90	3,307.13	258.77	13.780	
16,500.00	6,942.36	6,518.00	6,514.23	161.00	195.31	-66.77	2,099.24	13,135.43	3,476.47	3,215.67	260.80	13.330	
16,600.00	6,942.37	6,518.00	6,514.23	162.59	195.31	-66.77	2,099.24	13,135.43	3,387.64	3,124.70	262.94	12.884	
16,700.00	6,942.38	6,518.00	6,514.23	164.17	195.31	-66.77	2,099.24	13,135.43	3,299.44	3,034.25	265.19	12.442	
16,800.00	6,942.40	6,518.00	6,514.23	165.75	195.31	-66.77	2,099.24	13,135.43	3,211.93	2,944.37	267.56	12.004	
16,900.00	6,942.41	6,518.00	6,514.23	167.33	195.31	-66.77	2,099.24	13,135.43	3,125.18	2,855.11	270.06	11.572	
17,000.00	6,942.43	6,518.00	6,514.23	168.92	195.31	-66.77	2,099.24	13,135.43	3,039.23	2,766.54	272.69	11.145	
17,100.00	6,942.44	6,518.00	6,514.23	170.50	195.31	-66.77	2,099.24	13,135.43	2,954.18	2,678.71	275.47	10.724	
17,200.00	6,942.46	6,518.00	6,514.23	172.09	195.31	-66.77	2,099.24	13,135.43	2,870.08	2,591.70	278.38	10.310	
17,300.00	6,942.47	6,518.00	6,514.23	173.67	195.31	-66.77	2,099.24	13,135.43	2,787.04	2,505.59	281.46	9.902	
17,400.00	6,942.49	6,518.00	6,514.23	175.26	195.31	-66.77	2,099.24	13,135.43	2,705.15	2,420.46	284.69	9.502	
17,500.00	6,942.50	6,518.00	6,514.23	176.84	195.31	-66.77	2,099.24	13,135.43	2,624.51	2,336.42	288.09	9.110	
17,600.00	6,942.52	6,518.00	6,514.23	178.43	195.31	-66.77	2,099.24	13,135.43	2,545.24	2,253.58	291.67	8.727	
17,700.00	6,942.53	6,518.00	6,514.23	180.01	195.31	-66.77	2,099.24	13,135.43	2,467.48	2,172.06	295.42	8.353	
17,800.00	6,942.55	6,518.00	6,514.23	181.60	195.31	-66.77	2,099.24	13,135.43	2,391.38	2,092.03	299.35	7.989	
17,900.00	6,942.56	6,518.00	6,514.23	183.19	195.31	-66.77	2,099.24	13,135.43	2,317.09	2,013.62	303.47	7.635	
18,000.00	6,942.58	6,518.00	6,514.23	184.77	195.31	-66.77	2,099.24	13,135.43	2,244.80	1,937.03	307.77	7.294	
18,100.00	6,942.59	6,518.00	6,514.23	186.36	195.31	-66.77	2,099.24	13,135.43	2,174.71	1,862.46	312.25	6.965	
18,200.00	6,942.61	6,518.00	6,514.23	187.95	195.31	-66.77	2,099.24	13,135.43	2,107.03	1,790.13	316.90	6.649	
18,300.00	6,942.62	6,518.00	6,514.23	189.54	195.31	-66.77	2,099.24	13,135.43	2,042.00	1,720.30	321.70	6.347	
18,400.00	6,942.64	6,518.00	6,514.23	191.12	195.31	-66.77	2,099.24	13,135.43	1,979.90	1,653.25	326.64	6.061	
18,500.00	6,942.65	6,518.00	6,514.23	192.71	195.31	-66.77	2,099.24	13,135.43	1,920.99	1,589.30	331.69	5.791	
18,600.00	6,942.67	6,518.00	6,514.23	194.30	195.31	-66.77	2,099.24	13,135.43	1,865.59	1,528.77	336.82	5.539	
18,700.00	6,942.68	6,518.00	6,514.23	195.89	195.31	-66.77	2,099.24	13,135.43	1,814.01	1,472.04	341.97	5.305	
18,800.00	6,942.70	6,518.00	6,514.23	197.48	195.31	-66.77	2,099.24	13,135.43	1,766.60	1,419.50	347.10	5.090	
18,900.00	6,942.71	6,518.00	6,514.23	199.07	195.31	-66.77	2,099.24	13,135.43	1,723.68	1,371.55	352.13	4.895	
19,000.00	6,942.73	6,518.00	6,514.23	200.66	195.31	-66.77	2,099.24	13,135.43	1,685.62	1,328.61	357.00	4.722	
19,100.00	6,942.74	6,518.00	6,514.23	202.25	195.31	-66.77	2,099.24	13,135.43	1,652.73	1,291.10	361.63	4.570	
19,200.00	6,942.76	6,518.00	6,514.23	203.84	195.31	-66.77	2,099.24	13,135.43	1,625.34	1,259.41	365.93	4.442	
19,300.00	6,942.77	6,518.00	6,514.23	205.43	195.31	-66.77	2,099.24	13,135.43	1,603.73	1,233.92	369.81	4.337	
19,400.00	6,942.78	6,518.00	6,514.23	207.02	195.31	-66.77	2,099.24	13,135.43	1,588.14	1,214.92	373.21	4.255	
19,500.00	6,942.80	6,518.00	6,514.23	208.61	195.31	-66.77	2,099.24	13,135.43	1,578.73	1,202.68	376.05	4.198	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,598.91	6,942.81	6,518.00	6,514.23	210.18	195.31	-66.77	2,099.24	13,135.43	1,575.63	1,197.37	378.26	4.166	CC
19,600.00	6,942.81	6,518.00	6,514.23	210.20	195.31	-66.77	2,099.24	13,135.43	1,575.63	1,197.35	378.28	4.165	ES
19,700.00	6,942.83	6,518.00	6,514.23	211.79	195.31	-66.77	2,099.24	13,135.43	1,578.87	1,199.01	379.86	4.156	SF
19,800.00	6,942.84	6,518.00	6,514.23	213.38	195.31	-66.77	2,099.24	13,135.43	1,588.41	1,207.63	380.78	4.171	
19,900.00	6,942.86	6,518.00	6,514.23	214.97	195.31	-66.77	2,099.24	13,135.43	1,604.14	1,223.08	381.06	4.210	
20,000.00	6,942.87	6,518.00	6,514.23	216.56	195.31	-66.77	2,099.24	13,135.43	1,625.88	1,245.16	380.72	4.271	
20,100.00	6,942.89	6,518.00	6,514.23	218.15	195.31	-66.77	2,099.24	13,135.43	1,653.39	1,273.58	379.81	4.353	
20,200.00	6,942.90	6,518.00	6,514.23	219.75	195.31	-66.77	2,099.24	13,135.43	1,686.39	1,308.00	378.39	4.457	
20,300.00	6,942.92	6,518.00	6,514.23	221.34	195.31	-66.77	2,099.24	13,135.43	1,724.57	1,348.03	376.53	4.580	
20,400.00	6,942.93	6,518.00	6,514.23	222.93	195.31	-66.77	2,099.24	13,135.43	1,767.58	1,393.28	374.30	4.722	
20,500.00	6,942.95	6,518.00	6,514.23	224.52	195.31	-66.77	2,099.24	13,135.43	1,815.09	1,443.33	371.77	4.882	
20,600.00	6,942.96	6,518.00	6,514.23	226.12	195.31	-66.77	2,099.24	13,135.43	1,866.76	1,497.76	369.00	5.059	
20,700.00	6,942.98	6,518.00	6,514.23	227.71	195.31	-66.77	2,099.24	13,135.43	1,922.24	1,556.17	366.06	5.251	
20,800.00	6,942.99	6,518.00	6,514.23	229.30	195.31	-66.77	2,099.24	13,135.43	1,981.22	1,618.21	363.01	5.458	
20,855.77	6,943.00	6,518.00	6,514.23	230.19	195.31	-66.77	2,099.24	13,135.43	2,015.51	1,654.24	361.27	5.579	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	Rule Assigned: Warning
0.00	0.00	0.00	0.00	0.00	0.00	106.87	-932.58	3,075.55	3,214.46				
100.00	100.00	36.00	36.00	0.25	1.08	106.87	-932.58	3,075.55	3,213.83	3,212.50	1.33	2,416.705	
200.00	200.00	136.00	136.00	0.61	4.08	106.87	-932.58	3,075.55	3,213.83	3,209.14	4.68	686.023	
300.00	300.00	236.00	236.00	0.97	7.07	106.87	-932.58	3,075.55	3,213.83	3,205.79	8.04	399.749	
400.00	400.00	336.00	336.00	1.33	10.07	106.87	-932.58	3,075.55	3,213.83	3,202.43	11.39	282.051	
500.00	500.00	436.00	436.00	1.68	13.06	106.87	-932.58	3,075.55	3,213.83	3,199.08	14.75	217.896	
600.00	599.98	536.08	535.98	2.04	16.06	86.16	-932.58	3,075.55	3,213.71	3,195.60	18.11	177.498	
700.00	699.84	635.94	635.84	2.40	19.06	86.26	-932.58	3,075.55	3,213.36	3,191.91	21.46	149.772	
800.00	799.45	735.55	735.45	2.77	22.04	86.43	-932.58	3,075.55	3,212.81	3,188.01	24.80	129.549	
845.27	844.44	778.64	778.50	2.93	23.33	86.49	-930.43	3,075.55	3,211.86	3,185.60	26.26	122.330	
900.00	898.77	829.59	829.44	3.13	24.86	86.60	-930.62	3,075.55	3,211.52	3,183.54	27.98	114.767	
1,000.00	998.04	922.61	922.43	3.50	27.65	86.81	-931.44	3,075.55	3,211.09	3,179.95	31.14	103.118	
1,100.00	1,097.32	1,033.72	1,033.32	3.87	30.98	87.07	-932.58	3,075.55	3,210.77	3,175.93	34.84	92.149	
1,200.00	1,196.59	1,133.00	1,132.59	4.24	33.95	87.28	-932.58	3,075.55	3,210.17	3,171.98	38.19	84.050	
1,300.00	1,295.87	1,232.27	1,231.87	4.62	36.92	87.49	-932.58	3,075.55	3,209.62	3,168.07	41.55	77.256	
1,400.00	1,395.14	1,326.20	1,325.74	5.00	39.74	87.66	-930.60	3,075.55	3,208.49	3,163.75	44.74	71.717	
1,500.00	1,494.42	1,418.87	1,418.39	5.38	42.52	87.87	-931.40	3,075.55	3,208.29	3,160.40	47.90	66.986	
1,600.00	1,593.69	1,530.40	1,529.69	5.76	45.86	88.13	-932.58	3,075.55	3,208.23	3,156.61	51.62	62.153	
1,700.00	1,692.96	1,629.68	1,628.96	6.14	48.83	88.34	-932.58	3,075.55	3,207.86	3,152.89	54.97	58.352	
1,800.00	1,792.24	1,728.95	1,728.24	6.52	51.81	88.56	-932.58	3,075.55	3,207.53	3,149.20	58.33	54.989	
1,900.00	1,891.51	1,822.82	1,822.06	6.91	54.62	88.73	-930.59	3,075.55	3,206.59	3,145.06	61.53	52.118	
1,937.29	1,928.53	1,857.27	1,856.50	7.05	55.65	88.80	-930.80	3,075.55	3,206.57	3,143.87	62.70	51.141	
2,000.00	1,990.79	1,915.16	1,914.38	7.29	57.39	88.94	-931.35	3,075.55	3,206.62	3,141.95	64.68	49.580	
2,100.00	2,090.06	2,027.08	2,026.06	7.67	60.74	89.20	-932.58	3,075.55	3,206.82	3,138.41	68.41	46.875	
2,200.00	2,189.34	2,126.35	2,125.34	8.06	63.72	89.41	-932.58	3,075.55	3,206.67	3,134.90	71.77	44.679	
2,300.00	2,288.61	2,225.63	2,224.61	8.44	66.69	89.62	-932.58	3,075.55	3,206.57	3,131.44	75.13	42.681	
2,352.72	2,340.95	2,275.94	2,274.88	8.64	68.20	89.70	-930.42	3,075.55	3,205.78	3,128.94	76.84	41.721	
2,400.00	2,387.89	2,319.47	2,318.41	8.82	69.50	89.79	-930.57	3,075.55	3,205.81	3,127.49	78.33	40.929	
2,500.00	2,487.16	2,411.48	2,410.39	9.21	72.26	90.00	-931.31	3,075.55	3,206.08	3,124.61	81.47	39.355	
2,600.00	2,586.44	2,523.76	2,522.44	9.59	75.62	90.26	-932.58	3,075.55	3,206.54	3,121.32	85.22	37.629	
2,700.00	2,685.71	2,623.03	2,621.71	9.98	78.60	90.48	-932.58	3,075.55	3,206.62	3,118.04	88.57	36.202	
2,800.00	2,784.99	2,722.30	2,720.99	10.36	81.57	90.69	-932.58	3,075.55	3,206.74	3,114.80	91.93	34.881	
2,837.06	2,821.78	2,758.40	2,757.04	10.50	82.65	90.73	-930.40	3,075.55	3,206.00	3,112.84	93.16	34.415	
2,900.00	2,884.26	2,816.15	2,814.78	10.75	84.38	90.86	-930.55	3,075.55	3,206.16	3,111.03	95.13	33.703	
3,000.00	2,983.53	2,907.82	2,906.43	11.13	87.13	91.07	-931.27	3,075.55	3,206.66	3,108.40	98.26	32.634	
3,100.00	3,082.81	3,020.43	3,018.81	11.52	90.51	91.33	-932.58	3,075.55	3,207.38	3,105.36	102.02	31.438	
3,200.00	3,182.08	3,119.71	3,118.08	11.90	93.48	91.54	-932.58	3,075.55	3,207.68	3,102.30	105.38	30.439	
3,300.00	3,281.36	3,218.98	3,217.36	12.29	96.46	91.76	-932.58	3,075.55	3,208.03	3,099.29	108.74	29.501	
3,332.32	3,313.44	3,250.97	3,249.31	12.41	97.41	91.79	-930.40	3,075.55	3,207.32	3,097.49	109.82	29.204	
3,400.00	3,380.63	3,312.85	3,311.18	12.67	99.27	91.92	-930.54	3,075.55	3,207.64	3,095.70	111.94	28.655	
3,500.00	3,479.91	3,404.19	3,402.50	13.06	102.00	92.13	-931.23	3,075.55	3,208.37	3,093.31	115.06	27.884	
3,600.00	3,579.18	3,517.11	3,515.18	13.44	105.39	92.40	-932.58	3,075.55	3,209.35	3,090.52	118.83	27.008	
3,700.00	3,678.46	3,616.39	3,614.46	13.83	108.36	92.61	-932.58	3,075.55	3,209.88	3,087.69	122.19	26.269	
3,800.00	3,777.73	3,715.66	3,713.73	14.21	111.34	92.82	-932.58	3,075.55	3,210.45	3,084.90	125.55	25.571	
3,837.44	3,814.89	3,752.58	3,750.61	14.36	112.44	92.86	-930.40	3,075.55	3,209.80	3,083.00	126.80	25.314	
3,900.00	3,877.01	3,809.57	3,807.60	14.60	114.15	92.99	-930.52	3,075.55	3,210.24	3,081.49	128.75	24.934	
4,000.00	3,976.28	3,900.59	3,898.59	14.98	116.88	93.19	-931.19	3,075.55	3,211.20	3,079.34	131.86	24.353	
4,100.00	4,075.55	4,013.79	4,011.55	15.37	120.27	93.46	-932.58	3,075.55	3,212.44	3,076.80	135.64	23.684	
4,200.00	4,174.83	4,113.06	4,110.83	15.75	123.25	93.67	-932.58	3,075.55	3,213.19	3,074.19	139.00	23.117	
4,300.00	4,274.10	4,212.34	4,210.10	16.14	126.22	93.88	-932.58	3,075.55	3,213.99	3,071.63	142.36	22.577	
4,337.79	4,311.62	4,249.85	4,247.58	16.29	127.34	93.93	-930.40	3,075.55	3,213.39	3,069.76	143.63	22.373	
4,400.00	4,373.38	4,306.32	4,304.04	16.53	129.04	94.05	-930.51	3,075.55	3,213.97	3,068.41	145.56	22.080	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
4,500.00	4,472.65	4,397.01	4,394.71	16.91	131.75	94.26	-931.16	3,075.55	3,215.15	3,066.49	148.66	21.627	
4,600.00	4,571.93	4,510.47	4,507.93	17.30	135.15	94.52	-932.58	3,075.55	3,216.65	3,064.20	152.45	21.100	
4,700.00	4,671.20	4,609.74	4,607.20	17.68	138.13	94.73	-932.58	3,075.55	3,217.63	3,061.82	155.81	20.651	
4,800.00	4,770.48	4,709.02	4,706.48	18.07	141.10	94.94	-932.58	3,075.55	3,218.65	3,059.48	159.17	20.222	
4,900.00	4,869.75	4,803.09	4,800.51	18.45	143.92	95.11	-930.50	3,075.55	3,218.81	3,056.44	162.37	19.824	
5,000.00	4,969.03	4,893.46	4,890.85	18.84	146.63	95.31	-931.12	3,075.55	3,220.22	3,054.75	165.46	19.462	
5,100.00	5,068.30	5,007.14	5,004.30	19.23	150.04	95.58	-932.58	3,075.55	3,221.98	3,052.72	169.26	19.036	
5,200.00	5,167.58	5,106.42	5,103.58	19.61	153.01	95.79	-932.58	3,075.55	3,223.18	3,050.56	172.62	18.672	
5,300.00	5,266.85	5,205.69	5,202.85	20.00	155.99	96.00	-932.58	3,075.55	3,224.43	3,048.45	175.98	18.323	
5,400.00	5,366.12	5,299.89	5,297.00	20.38	158.81	96.17	-930.49	3,075.55	3,224.77	3,045.58	179.19	17.997	
5,500.00	5,465.40	5,389.93	5,387.02	20.77	161.51	96.37	-931.08	3,075.55	3,226.40	3,044.13	182.27	17.701	
5,600.00	5,564.67	5,503.82	5,500.67	21.15	164.92	96.63	-932.58	3,075.55	3,228.42	3,042.36	186.07	17.351	
5,700.00	5,663.95	5,603.10	5,599.95	21.54	167.89	96.84	-932.58	3,075.55	3,229.84	3,040.42	189.43	17.051	
5,800.00	5,763.22	5,702.37	5,699.22	21.93	170.87	97.05	-932.58	3,075.55	3,231.31	3,038.52	192.79	16.761	
5,900.00	5,862.50	5,796.70	5,793.51	22.31	173.70	97.22	-930.48	3,075.55	3,231.83	3,035.83	196.00	16.489	
6,000.00	5,961.77	5,886.43	5,883.22	22.70	176.38	97.42	-931.05	3,075.55	3,233.68	3,034.61	199.07	16.244	
6,100.00	6,061.05	6,000.50	5,997.05	23.08	179.80	97.68	-932.58	3,075.55	3,235.97	3,033.09	202.88	15.950	
6,200.00	6,160.32	6,099.77	6,096.32	23.47	182.78	97.89	-932.58	3,075.55	3,237.61	3,031.37	206.24	15.699	
6,300.00	6,259.60	6,199.05	6,195.60	23.86	185.75	98.10	-932.58	3,075.55	3,239.29	3,029.70	209.59	15.455	
6,376.00	6,335.04	6,272.07	6,268.57	24.15	187.94	98.22	-930.42	3,075.55	3,239.55	3,027.48	212.08	15.275	
6,400.00	6,358.85	6,293.52	6,290.02	24.24	188.58	83.53	-930.47	3,075.55	3,239.60	3,026.79	212.81	15.223	
6,450.00	6,408.16	6,337.95	6,334.44	24.44	189.91	64.58	-930.67	3,075.55	3,237.22	3,022.88	214.34	15.103	
6,500.00	6,456.87	6,381.80	6,378.29	24.64	191.23	55.05	-931.01	3,075.55	3,231.50	3,015.65	215.86	14.971	
6,550.00	6,504.65	6,424.80	6,421.28	24.85	192.52	49.93	-931.47	3,075.55	3,222.51	3,005.16	217.35	14.826	
6,600.00	6,551.23	6,466.70	6,463.15	25.06	193.77	47.09	-932.04	3,075.55	3,210.31	2,991.50	218.81	14.672	
6,650.00	6,596.31	6,536.07	6,532.31	25.26	195.85	45.80	-932.58	3,075.55	3,194.80	2,973.69	221.11	14.449	
6,700.00	6,639.62	6,579.37	6,575.62	25.48	197.15	45.31	-932.58	3,075.55	3,176.06	2,953.44	222.62	14.267	
6,750.00	6,680.88	6,620.64	6,616.88	25.69	198.38	45.52	-932.58	3,075.55	3,154.41	2,930.34	224.07	14.078	
6,800.00	6,719.85	6,659.60	6,655.85	25.91	199.55	46.34	-932.58	3,075.55	3,130.00	2,904.55	225.46	13.883	
6,850.00	6,756.28	6,696.03	6,692.28	26.13	200.64	47.71	-932.58	3,075.55	3,103.02	2,876.26	226.77	13.684	
6,900.00	6,789.95	6,729.70	6,725.95	26.37	201.65	49.60	-932.58	3,075.55	3,073.66	2,845.67	227.99	13.481	
6,950.00	6,820.65	6,759.33	6,755.54	26.61	202.54	51.97	-930.40	3,075.55	3,040.96	2,811.86	229.10	13.274	
7,000.00	6,848.19	6,784.07	6,780.27	26.87	203.28	54.89	-930.44	3,075.55	3,007.49	2,777.43	230.06	13.073	
7,050.00	6,872.41	6,805.82	6,802.02	27.13	203.93	58.37	-930.51	3,075.55	2,972.32	2,741.39	230.93	12.871	
7,100.00	6,893.15	6,824.44	6,820.63	27.41	204.49	62.42	-930.59	3,075.55	2,935.69	2,703.98	231.72	12.669	
7,150.00	6,910.28	6,839.82	6,836.01	27.71	204.95	67.03	-930.68	3,075.55	2,897.85	2,665.44	232.41	12.469	
7,200.00	6,923.70	6,851.87	6,848.06	28.02	205.31	72.15	-930.76	3,075.55	2,859.04	2,626.04	233.00	12.271	
7,250.00	6,933.33	6,860.51	6,856.70	28.34	205.57	77.72	-930.83	3,075.55	2,819.51	2,586.02	233.50	12.075	
7,300.00	6,939.11	6,865.70	6,861.88	28.67	205.73	83.59	-930.87	3,075.55	2,779.53	2,545.63	233.90	11.884	
7,349.12	6,941.00	6,867.39	6,863.58	29.00	205.78	89.52	-930.88	3,075.55	2,740.04	2,505.85	234.19	11.700	
7,400.00	6,941.01	6,867.40	6,863.59	29.36	205.78	89.52	-930.88	3,075.55	2,699.28	2,464.83	234.45	11.513	
7,500.00	6,941.02	6,867.42	6,863.60	30.11	205.78	89.52	-930.88	3,075.55	2,620.21	2,385.20	235.02	11.149	
7,600.00	6,941.04	6,867.44	6,863.62	30.93	205.78	89.52	-930.88	3,075.55	2,542.62	2,306.98	235.64	10.790	
7,700.00	6,941.05	6,867.45	6,863.64	31.80	205.78	89.52	-930.88	3,075.55	2,466.64	2,230.30	236.34	10.437	
7,800.00	6,941.07	6,867.47	6,863.65	32.73	205.78	89.52	-930.88	3,075.55	2,392.43	2,155.32	237.11	10.090	
7,900.00	6,941.08	6,867.49	6,863.67	33.71	205.78	89.52	-930.88	3,075.55	2,320.15	2,082.19	237.96	9.750	
8,000.00	6,941.10	6,867.50	6,863.69	34.73	205.78	89.52	-930.88	3,075.55	2,250.00	2,011.11	238.89	9.419	
8,100.00	6,941.11	6,867.52	6,863.70	35.79	205.78	89.52	-930.88	3,075.55	2,182.18	1,942.28	239.90	9.096	
8,200.00	6,941.13	6,867.54	6,863.72	36.90	205.78	89.52	-930.88	3,075.55	2,116.91	1,875.91	241.00	8.784	
8,300.00	6,941.14	6,867.55	6,863.74	38.03	205.78	89.52	-930.88	3,075.55	2,054.44	1,812.26	242.18	8.483	
8,400.00	6,941.16	6,867.57	6,863.75	39.20	205.78	89.52	-930.88	3,075.55	1,995.02	1,751.58	243.44	8.195	
8,500.00	6,941.17	6,867.59	6,863.77	40.40	205.78	89.52	-930.88	3,075.55	1,938.94	1,694.17	244.77	7.921	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
8,600.00	6,941.19	6,867.60	6,863.79	41.63	205.78	89.52	-930.88	3,075.55	1,886.51	1,640.33	246.18	7.663	
8,700.00	6,941.20	6,867.62	6,863.80	42.88	205.78	89.52	-930.88	3,075.55	1,838.02	1,590.38	247.64	7.422	
8,800.00	6,941.22	6,867.64	6,863.82	44.16	205.79	89.52	-930.88	3,075.55	1,793.79	1,544.65	249.14	7.200	
8,900.00	6,941.23	6,867.65	6,863.84	45.45	205.79	89.53	-930.88	3,075.55	1,754.17	1,503.50	250.67	6.998	
9,000.00	6,941.24	6,867.67	6,863.85	46.76	205.79	89.53	-930.88	3,075.55	1,719.45	1,467.25	252.20	6.818	
9,100.00	6,941.26	6,867.69	6,863.87	48.10	205.79	89.53	-930.88	3,075.55	1,689.94	1,436.23	253.71	6.661	
9,200.00	6,941.27	6,867.70	6,863.89	49.44	205.79	89.53	-930.88	3,075.55	1,665.92	1,410.75	255.17	6.529	
9,300.00	6,941.29	6,867.72	6,863.90	50.80	205.79	89.53	-930.88	3,075.55	1,647.63	1,391.07	256.56	6.422	
9,400.00	6,941.30	6,867.74	6,863.92	52.18	205.79	89.53	-930.88	3,075.55	1,635.26	1,377.42	257.85	6.342	
9,500.00	6,941.32	6,867.76	6,863.94	53.57	205.79	89.53	-930.89	3,075.55	1,628.95	1,369.94	259.01	6.289	
9,553.01	6,941.33	6,867.76	6,863.95	54.31	205.79	89.53	-930.89	3,075.55	1,628.09	1,368.52	259.57	6.272	CC, ES
9,600.00	6,941.33	6,867.77	6,863.96	54.97	205.79	89.53	-930.89	3,075.55	1,628.77	1,368.74	260.03	6.264	SF
9,700.00	6,941.35	6,867.79	6,863.97	56.38	205.79	89.53	-930.89	3,075.55	1,634.71	1,373.81	260.90	6.266	
9,800.00	6,941.36	6,867.81	6,863.99	57.80	205.79	89.53	-930.89	3,075.55	1,646.72	1,385.12	261.60	6.295	
9,900.00	6,941.38	6,867.82	6,864.01	59.23	205.79	89.53	-930.89	3,075.55	1,664.66	1,402.53	262.13	6.350	
10,000.00	6,941.39	6,867.84	6,864.02	60.67	205.79	89.53	-930.89	3,075.55	1,688.33	1,425.84	262.50	6.432	
10,100.00	6,941.41	6,867.86	6,864.04	62.11	205.79	89.53	-930.89	3,075.55	1,717.52	1,454.80	262.71	6.538	
10,200.00	6,941.42	6,867.87	6,864.06	63.57	205.79	89.53	-930.89	3,075.55	1,751.93	1,489.15	262.79	6.667	
10,300.00	6,941.44	6,867.89	6,864.07	65.03	205.79	89.53	-930.89	3,075.55	1,791.28	1,528.54	262.74	6.818	
10,400.00	6,941.45	6,867.91	6,864.09	66.50	205.79	89.53	-930.89	3,075.55	1,835.23	1,572.66	262.57	6.989	
10,500.00	6,941.47	6,867.92	6,864.11	67.97	205.79	89.53	-930.89	3,075.55	1,883.47	1,621.15	262.32	7.180	
10,600.00	6,941.48	6,867.94	6,864.12	69.45	205.79	89.54	-930.89	3,075.55	1,935.68	1,673.70	261.98	7.389	
10,700.00	6,941.50	6,867.96	6,864.14	70.94	205.80	89.54	-930.89	3,075.55	1,991.55	1,729.96	261.59	7.613	
10,800.00	6,941.51	6,867.97	6,864.16	72.43	205.80	89.54	-930.89	3,075.55	2,050.77	1,789.62	261.15	7.853	
10,900.00	6,941.53	6,867.99	6,864.17	73.92	205.80	89.54	-930.89	3,075.55	2,113.07	1,852.39	260.68	8.106	
11,000.00	6,941.54	6,868.01	6,864.19	75.42	205.80	89.54	-930.89	3,075.55	2,178.18	1,918.00	260.18	8.372	
11,100.00	6,941.56	6,868.02	6,864.21	76.92	205.80	89.54	-930.89	3,075.55	2,245.85	1,986.18	259.67	8.649	
11,200.00	6,941.57	6,868.04	6,864.22	78.43	205.80	89.54	-930.89	3,075.55	2,315.87	2,056.72	259.15	8.936	
11,300.00	6,941.59	6,868.06	6,864.24	79.94	205.80	89.54	-930.89	3,075.55	2,388.02	2,129.39	258.63	9.233	
11,400.00	6,941.60	6,868.07	6,864.26	81.46	205.80	89.54	-930.89	3,075.55	2,462.12	2,204.01	258.11	9.539	
11,500.00	6,941.61	6,868.09	6,864.27	82.98	205.80	89.54	-930.89	3,075.55	2,538.00	2,280.40	257.60	9.852	
11,600.00	6,941.63	6,868.11	6,864.29	84.50	205.80	89.54	-930.89	3,075.55	2,615.50	2,358.40	257.10	10.173	
11,700.00	6,941.64	6,868.12	6,864.31	86.02	205.80	89.54	-930.89	3,075.55	2,694.48	2,437.87	256.61	10.500	
11,800.00	6,941.66	6,868.14	6,864.32	87.55	205.80	89.54	-930.89	3,075.55	2,774.82	2,518.68	256.14	10.833	
11,900.00	6,941.67	6,868.16	6,864.34	89.08	205.80	89.54	-930.89	3,075.55	2,856.40	2,600.72	255.68	11.172	
12,000.00	6,941.69	6,868.17	6,864.36	90.61	205.80	89.54	-930.89	3,075.55	2,939.12	2,683.88	255.24	11.515	
12,100.00	6,941.70	6,868.19	6,864.37	92.14	205.80	89.54	-930.89	3,075.55	3,022.88	2,768.07	254.81	11.863	
12,200.00	6,941.72	6,868.21	6,864.39	93.68	205.80	89.54	-930.89	3,075.55	3,107.61	2,853.21	254.40	12.215	
12,300.00	6,941.73	6,868.22	6,864.41	95.22	205.80	89.55	-930.89	3,075.55	3,193.22	2,939.21	254.01	12.571	
12,400.00	6,941.75	6,868.24	6,864.42	96.76	205.80	89.55	-930.89	3,075.55	3,279.64	3,026.00	253.63	12.931	
12,500.00	6,941.76	6,868.26	6,864.44	98.30	205.80	89.55	-930.89	3,075.55	3,366.81	3,113.54	253.27	13.293	
12,600.00	6,941.78	6,868.28	6,864.46	99.85	205.80	89.55	-930.89	3,075.55	3,454.68	3,201.75	252.93	13.659	
12,700.00	6,941.79	6,868.29	6,864.47	101.40	205.81	89.55	-930.89	3,075.55	3,543.19	3,290.59	252.60	14.027	
12,800.00	6,941.81	6,868.31	6,864.49	102.95	205.81	89.55	-930.89	3,075.55	3,632.30	3,380.02	252.29	14.398	
12,900.00	6,941.82	6,868.33	6,864.51	104.50	205.81	89.55	-930.89	3,075.55	3,721.96	3,469.98	251.99	14.771	
13,000.00	6,941.84	6,868.34	6,864.53	106.05	205.81	89.55	-930.89	3,075.55	3,812.14	3,560.44	251.70	15.146	
13,100.00	6,941.85	6,868.36	6,864.54	107.60	205.81	89.55	-930.89	3,075.55	3,902.80	3,651.37	251.43	15.523	
13,200.00	6,941.87	6,868.38	6,864.56	109.16	205.81	89.55	-930.89	3,075.55	3,993.90	3,742.73	251.17	15.901	
13,300.00	6,941.88	6,868.39	6,864.58	110.71	205.81	89.55	-930.89	3,075.55	4,085.41	3,834.50	250.92	16.282	
13,400.00	6,941.90	6,868.41	6,864.59	112.27	205.81	89.55	-930.89	3,075.55	4,177.32	3,926.64	250.68	16.664	
13,500.00	6,941.91	6,868.43	6,864.61	113.83	205.81	89.55	-930.89	3,075.55	4,269.59	4,019.13	250.46	17.047	
13,600.00	6,941.93	6,868.44	6,864.63	115.39	205.81	89.55	-930.89	3,075.55	4,362.20	4,111.96	250.24	17.432	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
13,700.00	6,941.94	6,868.46	6,864.64	116.95	205.81	89.55	-930.89	3,075.55	4,455.13	4,205.09	250.04	17.818	
13,800.00	6,941.96	6,868.48	6,864.66	118.51	205.81	89.55	-930.89	3,075.55	4,548.36	4,298.52	249.85	18.205	
13,900.00	6,941.97	6,868.49	6,864.68	120.08	205.81	89.55	-930.89	3,075.55	4,641.87	4,392.21	249.66	18.593	
14,000.00	6,941.99	6,868.51	6,864.69	121.64	205.81	89.56	-930.89	3,075.55	4,735.65	4,486.16	249.49	18.982	
14,100.00	6,942.00	6,868.53	6,864.71	123.21	205.81	89.56	-930.89	3,075.55	4,829.68	4,580.36	249.32	19.371	
14,200.00	6,942.01	6,868.54	6,864.73	124.77	205.81	89.56	-930.89	3,075.55	4,923.94	4,674.78	249.16	19.762	
14,300.00	6,942.03	6,868.56	6,864.74	126.34	205.81	89.56	-930.89	3,075.55	5,018.43	4,769.41	249.01	20.153	
14,400.00	6,942.04	6,868.58	6,864.76	127.91	205.81	89.56	-930.89	3,075.55	5,113.12	4,864.25	248.87	20.545	
14,500.00	6,942.06	6,868.59	6,864.78	129.48	205.81	89.56	-930.89	3,075.55	5,208.01	4,959.28	248.73	20.938	
14,600.00	6,942.07	6,868.61	6,864.79	131.05	205.81	89.56	-930.89	3,075.55	5,303.09	5,054.49	248.61	21.331	
14,700.00	6,942.09	6,868.63	6,864.81	132.62	205.82	89.56	-930.89	3,075.55	5,398.35	5,149.87	248.48	21.725	
14,800.00	6,942.10	6,868.64	6,864.83	134.19	205.82	89.56	-930.89	3,075.55	5,493.78	5,245.41	248.37	22.119	
14,900.00	6,942.12	6,868.66	6,864.84	135.76	205.82	89.56	-930.89	3,075.55	5,589.36	5,341.10	248.26	22.514	
15,000.00	6,942.13	6,868.68	6,864.86	137.34	205.82	89.56	-930.89	3,075.55	5,685.10	5,436.94	248.16	22.909	
15,100.00	6,942.15	6,868.70	6,864.88	138.91	205.82	89.56	-930.89	3,075.55	5,780.98	5,532.92	248.06	23.305	
15,200.00	6,942.16	6,868.71	6,864.89	140.48	205.82	89.56	-930.89	3,075.55	5,877.00	5,629.04	247.97	23.701	
15,300.00	6,942.18	6,868.73	6,864.91	142.06	205.82	89.56	-930.89	3,075.55	5,973.15	5,725.27	247.88	24.097	
15,400.00	6,942.19	6,868.75	6,864.93	143.64	205.82	89.56	-930.89	3,075.55	6,069.43	5,821.63	247.80	24.493	
15,500.00	6,942.21	6,868.76	6,864.95	145.21	205.82	89.56	-930.89	3,075.55	6,165.82	5,918.10	247.72	24.890	
15,600.00	6,942.22	6,868.78	6,864.96	146.79	205.82	89.56	-930.89	3,075.55	6,262.33	6,014.68	247.65	25.287	
15,700.00	6,942.24	6,868.80	6,864.98	148.37	205.82	89.57	-930.89	3,075.55	6,358.94	6,111.36	247.59	25.684	
15,800.00	6,942.25	6,868.81	6,865.00	149.94	205.82	89.57	-930.89	3,075.55	6,455.66	6,208.14	247.52	26.081	
15,900.00	6,942.27	6,868.83	6,865.01	151.52	205.82	89.57	-930.89	3,075.55	6,552.48	6,305.01	247.46	26.478	
16,000.00	6,942.28	6,868.85	6,865.03	153.10	205.82	89.57	-930.89	3,075.55	6,649.39	6,401.98	247.41	26.876	
16,100.00	6,942.30	6,868.86	6,865.05	154.68	205.82	89.57	-930.89	3,075.55	6,746.39	6,499.03	247.36	27.274	
16,200.00	6,942.31	6,868.88	6,865.06	156.26	205.82	89.57	-930.89	3,075.55	6,843.48	6,596.16	247.31	27.671	
16,300.00	6,942.33	6,868.90	6,865.08	157.84	205.82	89.57	-930.89	3,075.55	6,940.64	6,693.38	247.27	28.069	
16,400.00	6,942.34	6,868.91	6,865.10	159.42	205.82	89.57	-930.89	3,075.55	7,037.89	6,790.66	247.23	28.467	
16,500.00	6,942.36	6,868.93	6,865.11	161.00	205.82	89.57	-930.89	3,075.55	7,135.22	6,888.02	247.19	28.865	
16,600.00	6,942.37	6,868.95	6,865.13	162.59	205.82	89.57	-930.89	3,075.55	7,232.62	6,985.46	247.16	29.263	
16,700.00	6,942.38	6,868.96	6,865.15	164.17	205.83	89.57	-930.90	3,075.55	7,330.08	7,082.95	247.13	29.661	
16,800.00	6,942.40	6,868.98	6,865.16	165.75	205.83	89.57	-930.90	3,075.55	7,427.62	7,180.52	247.10	30.059	
16,900.00	6,942.41	6,869.00	6,865.18	167.33	205.83	89.57	-930.90	3,075.55	7,525.22	7,278.14	247.08	30.456	
17,000.00	6,942.43	6,869.01	6,865.20	168.92	205.83	89.57	-930.90	3,075.55	7,622.88	7,375.82	247.06	30.854	
17,100.00	6,942.44	6,869.03	6,865.21	170.50	205.83	89.57	-930.90	3,075.55	7,720.60	7,473.56	247.04	31.252	
17,200.00	6,942.46	6,869.05	6,865.23	172.09	205.83	89.57	-930.90	3,075.55	7,818.38	7,571.36	247.03	31.650	
17,300.00	6,942.47	6,869.07	6,865.25	173.67	205.83	89.57	-930.90	3,075.55	7,916.22	7,669.20	247.02	32.047	
17,400.00	6,942.49	6,869.08	6,865.26	175.26	205.83	89.58	-930.90	3,075.55	8,014.11	7,767.10	247.01	32.445	
17,500.00	6,942.50	6,869.10	6,865.28	176.84	205.83	89.58	-930.90	3,075.55	8,112.05	7,865.05	247.00	32.842	
17,600.00	6,942.52	6,869.12	6,865.30	178.43	205.83	89.58	-930.90	3,075.55	8,210.04	7,963.04	246.99	33.240	
17,700.00	6,942.53	6,869.13	6,865.32	180.01	205.83	89.58	-930.90	3,075.55	8,308.08	8,061.08	246.99	33.637	
17,800.00	6,942.55	6,869.15	6,865.33	181.60	205.83	89.58	-930.90	3,075.55	8,406.16	8,159.17	246.99	34.034	
17,900.00	6,942.56	6,869.17	6,865.35	183.19	205.83	89.58	-930.90	3,075.55	8,504.29	8,257.29	246.99	34.431	
18,000.00	6,942.58	6,869.18	6,865.37	184.77	205.83	89.58	-930.90	3,075.55	8,602.46	8,355.46	247.00	34.828	
18,100.00	6,942.59	6,869.20	6,865.38	186.36	205.83	89.58	-930.90	3,075.55	8,700.67	8,453.67	247.00	35.225	
18,200.00	6,942.61	6,869.22	6,865.40	187.95	205.83	89.58	-930.90	3,075.55	8,798.93	8,551.91	247.01	35.621	
18,300.00	6,942.62	6,869.23	6,865.42	189.54	205.83	89.58	-930.90	3,075.55	8,897.22	8,650.20	247.02	36.018	
18,400.00	6,942.64	6,869.25	6,865.43	191.12	205.83	89.58	-930.90	3,075.55	8,995.55	8,748.51	247.04	36.414	
18,500.00	6,942.65	6,869.27	6,865.45	192.71	205.83	89.58	-930.90	3,075.55	9,093.92	8,846.86	247.05	36.810	
18,600.00	6,942.67	6,869.28	6,865.47	194.30	205.83	89.58	-930.90	3,075.55	9,192.32	8,945.25	247.07	37.206	
18,700.00	6,942.68	6,869.30	6,865.48	195.89	205.84	89.58	-930.90	3,075.55	9,290.75	9,043.67	247.09	37.601	
18,800.00	6,942.70	6,869.32	6,865.50	197.48	205.84	89.58	-930.90	3,075.55	9,389.22	9,142.12	247.11	37.997	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
18,900.00	6,942.71	6,869.33	6,865.52	199.07	205.84	89.58	-930.90	3,075.55	9,487.72	9,240.60	247.13	38.392	
19,000.00	6,942.73	6,869.35	6,865.53	200.66	205.84	89.59	-930.90	3,075.55	9,586.26	9,339.10	247.15	38.787	
19,100.00	6,942.74	6,869.37	6,865.55	202.25	205.84	89.59	-930.90	3,075.55	9,684.82	9,437.64	247.18	39.182	
19,200.00	6,942.76	6,869.39	6,865.57	203.84	205.84	89.59	-930.90	3,075.55	9,783.41	9,536.21	247.20	39.576	
19,300.00	6,942.77	6,869.40	6,865.58	205.43	205.84	89.59	-930.90	3,075.55	9,882.03	9,634.80	247.23	39.971	
19,400.00	6,942.78	6,869.42	6,865.60	207.02	205.84	89.59	-930.90	3,075.55	9,980.68	9,733.42	247.26	40.365	
19,500.00	6,942.80	6,869.44	6,865.62	208.61	205.84	89.59	-930.90	3,075.55	10,079.35	9,832.06	247.29	40.759	
19,600.00	6,942.81	6,869.45	6,865.64	210.20	205.84	89.59	-930.90	3,075.55	10,178.05	9,930.72	247.32	41.153	
19,700.00	6,942.83	6,869.47	6,865.65	211.79	205.84	89.59	-930.90	3,075.55	10,276.77	10,029.41	247.36	41.546	
19,800.00	6,942.84	6,869.49	6,865.67	213.38	205.84	89.59	-930.90	3,075.55	10,375.52	10,128.13	247.39	41.939	
19,900.00	6,942.86	6,869.50	6,865.69	214.97	205.84	89.59	-930.90	3,075.55	10,474.30	10,226.86	247.43	42.332	
20,000.00	6,942.87	6,869.52	6,865.70	216.56	205.84	89.59	-930.90	3,075.55	10,573.09	10,325.62	247.47	42.725	
20,100.00	6,942.89	6,869.54	6,865.72	218.15	205.84	89.59	-930.90	3,075.55	10,671.91	10,424.40	247.51	43.117	
20,200.00	6,942.90	6,869.55	6,865.74	219.75	205.84	89.59	-930.90	3,075.55	10,770.75	10,523.20	247.55	43.509	
20,300.00	6,942.92	6,869.57	6,865.75	221.34	205.84	89.59	-930.90	3,075.55	10,869.61	10,622.02	247.59	43.901	
20,400.00	6,942.93	6,869.59	6,865.77	222.93	205.84	89.59	-930.90	3,075.55	10,968.49	10,720.86	247.64	44.293	
20,500.00	6,942.95	6,869.60	6,865.79	224.52	205.84	89.59	-930.90	3,075.55	11,067.40	10,819.71	247.68	44.684	
20,600.00	6,942.96	6,869.62	6,865.80	226.12	205.84	89.59	-930.90	3,075.55	11,166.32	10,918.59	247.73	45.075	
20,700.00	6,942.98	6,869.64	6,865.82	227.71	205.85	89.60	-930.90	3,075.55	11,265.26	11,017.48	247.78	45.466	
20,800.00	6,942.99	6,869.65	6,865.84	229.30	205.85	89.60	-930.90	3,075.55	11,364.22	11,116.39	247.82	45.856	
20,855.77	6,943.00	6,869.66	6,865.85	230.19	205.85	89.60	-930.90	3,075.55	11,419.41	11,171.56	247.85	46.074	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
0.00	0.00	0.00	0.00	0.00	0.00	70.07	1,035.14	2,855.63	3,037.75				
100.00	100.00	58.00	58.00	0.25	1.74	70.07	1,035.14	2,855.63	3,037.46	3,035.47	1.99	1,527.089	
200.00	200.00	158.00	158.00	0.61	4.73	70.07	1,035.14	2,855.63	3,037.46	3,032.11	5.34	568.393	
300.00	300.00	258.00	258.00	0.97	7.73	70.07	1,035.14	2,855.63	3,037.46	3,028.76	8.70	349.180	
400.00	400.00	358.00	358.00	1.33	10.73	70.07	1,035.14	2,855.63	3,037.46	3,025.40	12.05	251.994	
500.00	500.00	458.00	458.00	1.68	13.72	70.07	1,035.14	2,855.63	3,037.46	3,022.05	15.41	197.127	
600.00	599.98	558.08	557.98	2.04	16.72	49.38	1,035.14	2,855.63	3,036.32	3,017.55	18.77	161.806	
700.00	699.84	657.94	657.84	2.40	19.71	49.51	1,035.14	2,855.63	3,032.91	3,010.80	22.12	137.138	
800.00	799.45	758.15	758.01	2.77	22.72	49.68	1,037.32	2,855.63	3,027.99	3,002.51	25.48	118.843	
845.27	844.44	806.60	806.45	2.93	24.17	49.81	1,037.21	2,855.63	3,024.65	2,997.56	27.10	111.627	
900.00	898.77	865.08	864.92	3.13	25.92	49.92	1,036.85	2,855.63	3,020.28	2,991.24	29.05	103.980	
1,000.00	998.04	971.83	971.63	3.50	29.12	50.13	1,035.60	2,855.63	3,012.13	2,979.52	32.61	92.370	
1,100.00	1,097.32	1,055.72	1,055.32	3.87	31.63	50.29	1,035.14	2,855.63	3,004.21	2,968.72	35.49	84.648	
1,200.00	1,196.59	1,155.00	1,154.59	4.24	34.61	50.46	1,035.14	2,855.63	2,996.51	2,957.68	38.83	77.162	
1,300.00	1,295.87	1,254.59	1,254.15	4.62	37.59	50.60	1,037.32	2,855.63	2,989.54	2,947.35	42.19	70.861	
1,400.00	1,395.14	1,361.04	1,360.57	5.00	40.78	50.80	1,036.89	2,855.63	2,981.76	2,936.01	45.75	65.175	
1,500.00	1,494.42	1,467.33	1,466.84	5.38	43.97	51.01	1,035.67	2,855.63	2,973.78	2,924.47	49.31	60.312	
1,600.00	1,593.69	1,552.40	1,551.69	5.76	46.52	51.18	1,035.14	2,855.63	2,965.99	2,913.76	52.23	56.786	
1,700.00	1,692.96	1,651.68	1,650.96	6.14	49.49	51.36	1,035.14	2,855.63	2,958.44	2,902.86	55.58	53.229	
1,800.00	1,792.24	1,751.03	1,750.28	6.52	52.47	51.50	1,037.32	2,855.63	2,951.58	2,892.65	58.93	50.085	
1,900.00	1,891.51	1,857.02	1,856.25	6.91	55.64	51.70	1,036.92	2,855.63	2,943.96	2,881.48	62.48	47.117	
2,000.00	1,990.79	1,962.87	1,962.08	7.29	58.82	51.92	1,035.73	2,855.63	2,936.16	2,870.13	66.03	44.468	
2,100.00	2,090.06	2,049.08	2,048.06	7.67	61.40	52.09	1,035.14	2,855.63	2,928.51	2,859.52	68.99	42.449	
2,200.00	2,189.34	2,148.35	2,147.34	8.06	64.37	52.27	1,035.14	2,855.63	2,921.10	2,848.76	72.34	40.380	
2,300.00	2,288.61	2,247.63	2,246.61	8.44	67.35	52.46	1,035.14	2,855.63	2,913.73	2,838.04	75.69	38.494	
2,400.00	2,387.89	2,353.04	2,351.97	8.82	70.51	52.62	1,036.95	2,855.63	2,906.91	2,827.69	79.23	36.691	
2,500.00	2,487.16	2,458.45	2,457.35	9.21	73.67	52.84	1,035.80	2,855.63	2,899.29	2,816.53	82.76	35.032	
2,600.00	2,586.44	2,545.76	2,544.44	9.59	76.28	53.02	1,035.14	2,855.63	2,891.79	2,806.03	85.76	33.720	
2,700.00	2,685.71	2,645.03	2,643.71	9.98	79.26	53.21	1,035.14	2,855.63	2,884.54	2,795.43	89.11	32.370	
2,800.00	2,784.99	2,744.30	2,742.99	10.36	82.23	53.40	1,035.14	2,855.63	2,877.32	2,784.86	92.46	31.118	
2,900.00	2,884.26	2,849.09	2,847.72	10.75	85.37	53.57	1,036.97	2,855.63	2,870.65	2,774.66	95.98	29.908	
3,000.00	2,983.53	2,954.07	2,952.67	11.13	88.52	53.80	1,035.86	2,855.63	2,863.20	2,763.70	99.50	28.775	
3,100.00	3,082.81	3,042.43	3,040.81	11.52	91.17	53.98	1,035.14	2,855.63	2,855.87	2,753.33	102.53	27.853	
3,200.00	3,182.08	3,141.71	3,140.08	11.90	94.14	54.18	1,035.14	2,855.63	2,848.78	2,742.89	105.89	26.904	
3,300.00	3,281.36	3,240.98	3,239.36	12.29	97.11	54.37	1,035.14	2,855.63	2,841.72	2,732.48	109.24	26.013	
3,400.00	3,380.63	3,345.18	3,343.50	12.67	100.24	54.54	1,037.00	2,855.63	2,835.19	2,722.45	112.74	25.148	
3,500.00	3,479.91	3,449.72	3,448.02	13.06	103.37	54.77	1,035.92	2,855.63	2,827.93	2,711.68	116.25	24.326	
3,600.00	3,579.18	3,539.11	3,537.18	13.44	106.05	54.96	1,035.14	2,855.63	2,820.76	2,701.45	119.31	23.641	
3,700.00	3,678.46	3,638.39	3,636.46	13.83	109.02	55.16	1,035.14	2,855.63	2,813.85	2,691.18	122.67	22.939	
3,800.00	3,777.73	3,737.66	3,735.73	14.21	112.00	55.36	1,035.14	2,855.63	2,806.96	2,680.94	126.02	22.273	
3,900.00	3,877.01	3,841.30	3,839.31	14.60	115.10	55.54	1,037.03	2,855.63	2,800.57	2,671.06	129.51	21.625	
4,000.00	3,976.28	3,945.41	3,943.40	14.98	118.22	55.77	1,035.98	2,855.63	2,793.51	2,660.50	133.01	21.003	
4,100.00	4,075.55	4,035.79	4,033.55	15.37	120.93	55.97	1,035.14	2,855.63	2,786.52	2,650.42	136.10	20.474	
4,200.00	4,174.83	4,135.06	4,132.83	15.75	123.91	56.18	1,035.14	2,855.63	2,779.77	2,640.32	139.46	19.933	
4,300.00	4,274.10	4,234.34	4,232.10	16.14	126.88	56.38	1,035.14	2,855.63	2,773.06	2,630.25	142.81	19.418	
4,400.00	4,373.38	4,337.45	4,335.16	16.53	129.97	56.56	1,037.05	2,855.63	2,766.82	2,620.54	146.28	18.915	
4,500.00	4,472.65	4,441.14	4,438.82	16.91	133.08	56.79	1,036.04	2,855.63	2,759.97	2,610.20	149.77	18.428	
4,600.00	4,571.93	4,532.47	4,529.93	17.30	135.81	57.00	1,035.14	2,855.63	2,753.16	2,600.27	152.89	18.008	
4,700.00	4,671.20	4,631.74	4,629.20	17.68	138.79	57.21	1,035.14	2,855.63	2,746.59	2,590.35	156.25	17.579	
4,800.00	4,770.48	4,731.02	4,728.48	18.07	141.76	57.42	1,035.14	2,855.63	2,740.07	2,580.47	159.60	17.168	
4,900.00	4,869.75	4,833.63	4,831.04	18.45	144.84	57.60	1,037.07	2,855.63	2,733.98	2,570.92	163.06	16.767	
5,000.00	4,969.03	4,936.90	4,934.28	18.84	147.93	57.84	1,036.10	2,855.63	2,727.33	2,560.80	166.53	16.377	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,029.14	5,026.30	19.23	150.70	58.06	1,035.14	2,855.63	2,720.72	2,551.03	169.68	16.034	
5,200.00	5,167.58	5,128.42	5,125.58	19.61	153.67	58.27	1,035.14	2,855.63	2,714.34	2,541.30	173.04	15.686	
5,300.00	5,266.85	5,227.69	5,224.85	20.00	156.65	58.49	1,035.14	2,855.63	2,708.01	2,531.61	176.40	15.352	
5,400.00	5,366.12	5,329.84	5,326.94	20.38	159.71	58.67	1,037.09	2,855.63	2,702.07	2,522.23	179.84	15.025	
5,500.00	5,465.40	5,432.69	5,429.77	20.77	162.79	58.92	1,036.15	2,855.63	2,695.64	2,512.34	183.30	14.706	
5,600.00	5,564.67	5,525.82	5,522.67	21.15	165.58	59.14	1,035.14	2,855.63	2,689.23	2,502.75	186.48	14.421	
5,700.00	5,663.95	5,625.10	5,621.95	21.54	168.55	59.36	1,035.14	2,855.63	2,683.05	2,493.21	189.84	14.133	
5,800.00	5,763.22	5,724.37	5,721.22	21.93	171.53	59.58	1,035.14	2,855.63	2,676.91	2,483.71	193.20	13.856	
5,900.00	5,862.50	5,826.08	5,822.88	22.31	174.58	59.77	1,037.11	2,855.63	2,671.14	2,474.51	196.63	13.585	
6,000.00	5,961.77	5,928.52	5,925.30	22.70	177.65	60.01	1,036.20	2,855.63	2,664.93	2,464.85	200.08	13.319	
6,100.00	6,061.05	6,011.00	6,007.54	23.08	180.12	60.22	1,035.14	2,855.63	2,658.75	2,455.81	202.94	13.101	
6,200.00	6,160.32	6,011.00	6,007.54	23.47	180.12	60.22	1,035.14	2,855.63	2,655.06	2,451.87	203.19	13.067	
6,248.08	6,208.05	6,011.00	6,007.54	23.66	180.12	60.22	1,035.14	2,855.63	2,654.62	2,451.41	203.21	13.063	
6,300.00	6,259.60	6,011.00	6,007.54	23.86	180.12	60.22	1,035.14	2,855.63	2,655.13	2,451.97	203.16	13.069	
6,376.00	6,335.04	6,011.00	6,007.54	24.15	180.12	60.22	1,035.14	2,855.63	2,657.70	2,454.75	202.96	13.095	
6,400.00	6,358.85	6,011.00	6,007.54	24.24	180.12	45.49	1,035.14	2,855.63	2,658.52	2,455.66	202.86	13.105	
6,450.00	6,408.16	6,011.00	6,007.54	24.44	180.12	26.31	1,035.14	2,855.63	2,658.05	2,455.45	202.60	13.120	
6,500.00	6,456.87	6,011.00	6,007.54	24.64	180.12	16.32	1,035.14	2,855.63	2,654.66	2,452.38	202.27	13.124	
6,550.00	6,504.65	6,011.00	6,007.54	24.85	180.12	10.51	1,035.14	2,855.63	2,648.34	2,446.46	201.88	13.119	
6,600.00	6,551.23	6,011.00	6,007.54	25.06	180.12	6.75	1,035.14	2,855.63	2,639.11	2,437.70	201.41	13.103	
6,650.00	6,596.31	6,011.00	6,007.54	25.26	180.12	4.09	1,035.14	2,855.63	2,627.01	2,426.13	200.88	13.078	
6,700.00	6,639.62	6,011.00	6,007.54	25.48	180.12	2.07	1,035.14	2,855.63	2,612.07	2,411.79	200.28	13.042	
6,750.00	6,680.88	6,011.00	6,007.54	25.69	180.12	0.44	1,035.14	2,855.63	2,594.33	2,394.70	199.63	12.996	
6,800.00	6,719.85	6,011.00	6,007.54	25.91	180.12	-0.94	1,035.14	2,855.63	2,573.85	2,374.93	198.92	12.939	
6,850.00	6,756.28	6,011.00	6,007.54	26.13	180.12	-2.18	1,035.14	2,855.63	2,550.68	2,352.52	198.16	12.872	
6,900.00	6,789.95	6,011.00	6,007.54	26.37	180.12	-3.35	1,035.14	2,855.63	2,524.90	2,327.54	197.36	12.793	
6,950.00	6,820.65	6,011.00	6,007.54	26.61	180.12	-4.51	1,035.14	2,855.63	2,496.59	2,300.07	196.53	12.704	
7,000.00	6,848.19	6,011.00	6,007.54	26.87	180.12	-5.69	1,035.14	2,855.63	2,465.84	2,270.18	195.66	12.602	
7,050.00	6,872.41	6,011.00	6,007.54	27.13	180.12	-6.96	1,035.14	2,855.63	2,432.75	2,237.97	194.78	12.489	
7,100.00	6,893.15	6,011.00	6,007.54	27.41	180.12	-8.36	1,035.14	2,855.63	2,397.43	2,203.54	193.90	12.364	
7,150.00	6,910.28	6,011.00	6,007.54	27.71	180.12	-9.96	1,035.14	2,855.63	2,360.01	2,167.00	193.02	12.227	
7,200.00	6,923.70	6,011.00	6,007.54	28.02	180.12	-11.85	1,035.14	2,855.63	2,320.62	2,128.47	192.15	12.077	
7,250.00	6,933.33	6,011.00	6,007.54	28.34	180.12	-14.15	1,035.14	2,855.63	2,279.40	2,088.09	191.31	11.915	
7,300.00	6,939.11	6,011.00	6,007.54	28.67	180.12	-17.04	1,035.14	2,855.63	2,236.52	2,046.00	190.52	11.739	
7,349.12	6,941.00	6,011.00	6,007.54	29.00	180.12	-20.70	1,035.14	2,855.63	2,192.94	2,003.15	189.79	11.554	
7,400.00	6,941.01	6,011.00	6,007.54	29.36	180.12	-20.70	1,035.14	2,855.63	2,147.23	1,958.18	189.05	11.358	
7,500.00	6,941.02	6,011.00	6,007.54	30.11	180.12	-20.70	1,035.14	2,855.63	2,058.11	1,870.66	187.45	10.979	
7,600.00	6,941.04	6,011.00	6,007.54	30.93	180.12	-20.70	1,035.14	2,855.63	1,970.03	1,784.38	185.65	10.611	
7,700.00	6,941.05	6,011.00	6,007.54	31.80	180.12	-20.70	1,035.14	2,855.63	1,883.14	1,699.52	183.61	10.256	
7,800.00	6,941.07	6,011.00	6,007.54	32.73	180.12	-20.70	1,035.14	2,855.63	1,797.61	1,616.31	181.30	9.915	
7,900.00	6,941.08	6,011.00	6,007.54	33.71	180.12	-20.70	1,035.14	2,855.63	1,713.65	1,534.99	178.66	9.591	
8,000.00	6,941.10	6,011.00	6,007.54	34.73	180.12	-20.70	1,035.14	2,855.63	1,631.50	1,455.84	175.66	9.288	
8,100.00	6,941.11	6,011.00	6,007.54	35.79	180.12	-20.70	1,035.14	2,855.63	1,551.45	1,379.24	172.21	9.009	
8,200.00	6,941.13	6,011.00	6,007.54	36.90	180.12	-20.70	1,035.14	2,855.63	1,473.83	1,305.58	168.26	8.759	
8,300.00	6,941.14	6,011.00	6,007.54	38.03	180.12	-20.70	1,035.14	2,855.63	1,399.06	1,235.34	163.72	8.545	
8,400.00	6,941.16	6,011.00	6,007.54	39.20	180.12	-20.70	1,035.14	2,855.63	1,327.62	1,169.10	158.52	8.375	
8,500.00	6,941.17	6,011.00	6,007.54	40.40	180.12	-20.70	1,035.14	2,855.63	1,260.07	1,107.49	152.58	8.259	
8,600.00	6,941.19	6,011.00	6,007.54	41.63	180.12	-20.70	1,035.14	2,855.63	1,197.07	1,051.23	145.83	8.208	
8,700.00	6,941.20	6,011.00	6,007.54	42.88	180.12	-20.70	1,035.14	2,855.63	1,139.37	1,001.10	138.27	8.240	
8,800.00	6,941.22	6,011.00	6,007.54	44.16	180.12	-20.70	1,035.14	2,855.63	1,087.82	957.86	129.97	8.370	
8,900.00	6,941.23	6,011.00	6,007.54	45.45	180.12	-20.70	1,035.14	2,855.63	1,043.34	922.20	121.14	8.613	
9,000.00	6,941.24	6,011.00	6,007.54	46.76	180.12	-20.70	1,035.14	2,855.63	1,006.85	894.58	112.27	8.968	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,941.26	6,011.00	6,007.54	48.10	180.12	-20.70	1,035.14	2,855.63	979.26	875.04	104.22	9.396	
9,200.00	6,941.27	6,011.00	6,007.54	49.44	180.12	-20.70	1,035.14	2,855.63	961.33	863.06	98.27	9.783	
9,300.00	6,941.29	6,011.00	6,007.54	50.80	180.12	-20.70	1,035.14	2,855.63	953.60	857.70	95.89	9.945	
9,324.02	6,941.29	6,011.00	6,007.54	51.13	180.12	-20.70	1,035.14	2,855.63	953.29	857.31	95.98	9.932	CC, ES
9,400.00	6,941.30	6,011.00	6,007.54	52.18	180.12	-20.70	1,035.14	2,855.63	956.32	858.33	97.98	9.760	
9,500.00	6,941.32	6,011.00	6,007.54	53.57	180.12	-20.70	1,035.14	2,855.63	969.40	865.27	104.13	9.309	
9,600.00	6,941.33	6,011.00	6,007.54	54.97	180.12	-20.70	1,035.14	2,855.63	992.44	879.50	112.94	8.787	
9,700.00	6,941.35	6,011.00	6,007.54	56.38	180.12	-20.70	1,035.14	2,855.63	1,024.76	901.86	122.89	8.339	
9,800.00	6,941.36	6,011.00	6,007.54	57.80	180.12	-20.70	1,035.14	2,855.63	1,065.52	932.61	132.91	8.017	
9,900.00	6,941.38	6,011.00	6,007.54	59.23	180.12	-20.70	1,035.14	2,855.63	1,113.79	971.46	142.33	7.825	
10,000.00	6,941.39	6,011.00	6,007.54	60.67	180.12	-20.70	1,035.14	2,855.63	1,168.64	1,017.79	150.85	7.747	SF
10,100.00	6,941.41	6,011.00	6,007.54	62.11	180.12	-20.70	1,035.14	2,855.63	1,229.19	1,070.82	158.38	7.761	
10,200.00	6,941.42	6,011.00	6,007.54	63.57	180.12	-20.70	1,035.14	2,855.63	1,294.65	1,129.72	164.92	7.850	
10,300.00	6,941.44	6,011.00	6,007.54	65.03	180.12	-20.70	1,035.14	2,855.63	1,364.30	1,193.73	170.57	7.999	
10,400.00	6,941.45	6,011.00	6,007.54	66.50	180.12	-20.70	1,035.14	2,855.63	1,437.53	1,262.12	175.41	8.195	
10,500.00	6,941.47	6,011.00	6,007.54	67.97	180.12	-20.70	1,035.14	2,855.63	1,513.84	1,334.27	179.57	8.430	
10,600.00	6,941.48	6,011.00	6,007.54	69.45	180.12	-20.70	1,035.14	2,855.63	1,592.76	1,409.63	183.13	8.697	
10,700.00	6,941.50	6,011.00	6,007.54	70.94	180.12	-20.70	1,035.14	2,855.63	1,673.94	1,487.75	186.19	8.990	
10,800.00	6,941.51	6,011.00	6,007.54	72.43	180.12	-20.70	1,035.14	2,855.63	1,757.07	1,568.23	188.83	9.305	
10,900.00	6,941.53	6,011.00	6,007.54	73.92	180.12	-20.70	1,035.14	2,855.63	1,841.87	1,650.75	191.12	9.637	
11,000.00	6,941.54	6,011.00	6,007.54	75.42	180.12	-20.70	1,035.14	2,855.63	1,928.13	1,735.03	193.10	9.985	
11,100.00	6,941.56	6,011.00	6,007.54	76.92	180.12	-20.70	1,035.14	2,855.63	2,015.66	1,820.83	194.83	10.346	
11,200.00	6,941.57	6,011.00	6,007.54	78.43	180.12	-20.70	1,035.14	2,855.63	2,104.30	1,907.96	196.34	10.718	
11,300.00	6,941.59	6,011.00	6,007.54	79.94	180.12	-20.70	1,035.14	2,855.63	2,193.92	1,996.24	197.67	11.099	
11,400.00	6,941.60	6,011.00	6,007.54	81.46	180.12	-20.70	1,035.14	2,855.63	2,284.40	2,085.55	198.85	11.488	
11,500.00	6,941.61	6,011.00	6,007.54	82.98	180.12	-20.70	1,035.14	2,855.63	2,375.64	2,175.75	199.89	11.885	
11,600.00	6,941.63	6,011.00	6,007.54	84.50	180.12	-20.70	1,035.14	2,855.63	2,467.56	2,266.75	200.81	12.288	
11,700.00	6,941.64	6,011.00	6,007.54	86.02	180.12	-20.70	1,035.14	2,855.63	2,560.09	2,358.45	201.64	12.696	
11,800.00	6,941.66	6,011.00	6,007.54	87.55	180.12	-20.70	1,035.14	2,855.63	2,653.16	2,450.77	202.38	13.110	
11,900.00	6,941.67	6,011.00	6,007.54	89.08	180.12	-20.70	1,035.14	2,855.63	2,746.72	2,543.66	203.05	13.527	
12,000.00	6,941.69	6,011.00	6,007.54	90.61	180.12	-20.70	1,035.14	2,855.63	2,840.71	2,637.05	203.66	13.948	
12,100.00	6,941.70	6,011.00	6,007.54	92.14	180.12	-20.70	1,035.14	2,855.63	2,935.10	2,730.90	204.21	14.373	
12,200.00	6,941.72	6,011.00	6,007.54	93.68	180.12	-20.70	1,035.14	2,855.63	3,029.86	2,825.15	204.71	14.801	
12,300.00	6,941.73	6,011.00	6,007.54	95.22	180.12	-20.70	1,035.14	2,855.63	3,124.94	2,919.77	205.16	15.231	
12,400.00	6,941.75	6,011.00	6,007.54	96.76	180.12	-20.70	1,035.14	2,855.63	3,220.31	3,014.73	205.58	15.664	
12,500.00	6,941.76	6,011.00	6,007.54	98.30	180.12	-20.70	1,035.14	2,855.63	3,315.96	3,110.00	205.97	16.099	
12,600.00	6,941.78	6,011.00	6,007.54	99.85	180.12	-20.70	1,035.14	2,855.63	3,411.86	3,205.54	206.33	16.536	
12,700.00	6,941.79	6,011.00	6,007.54	101.40	180.12	-20.70	1,035.14	2,855.63	3,507.99	3,301.34	206.65	16.975	
12,800.00	6,941.81	6,011.00	6,007.54	102.95	180.12	-20.70	1,035.14	2,855.63	3,604.33	3,397.37	206.96	17.416	
12,900.00	6,941.82	6,011.00	6,007.54	104.50	180.12	-20.70	1,035.14	2,855.63	3,700.87	3,493.62	207.25	17.857	
13,000.00	6,941.84	6,011.00	6,007.54	106.05	180.12	-20.70	1,035.14	2,855.63	3,797.58	3,590.07	207.51	18.300	
13,100.00	6,941.85	6,011.00	6,007.54	107.60	180.12	-20.70	1,035.14	2,855.63	3,894.46	3,686.69	207.76	18.745	
13,200.00	6,941.87	6,011.00	6,007.54	109.16	180.12	-20.70	1,035.14	2,855.63	3,991.49	3,783.49	208.00	19.190	
13,300.00	6,941.88	6,011.00	6,007.54	110.71	180.12	-20.70	1,035.14	2,855.63	4,088.67	3,880.45	208.22	19.636	
13,400.00	6,941.90	6,011.00	6,007.54	112.27	180.12	-20.70	1,035.14	2,855.63	4,185.98	3,977.55	208.43	20.083	
13,500.00	6,941.91	6,011.00	6,007.54	113.83	180.12	-20.70	1,035.14	2,855.63	4,283.41	4,074.78	208.63	20.531	
13,600.00	6,941.93	6,011.00	6,007.54	115.39	180.12	-20.70	1,035.14	2,855.63	4,380.96	4,172.14	208.82	20.980	
13,700.00	6,941.94	6,011.00	6,007.54	116.95	180.12	-20.70	1,035.14	2,855.63	4,478.61	4,269.62	209.00	21.429	
13,800.00	6,941.96	6,011.00	6,007.54	118.51	180.12	-20.70	1,035.14	2,855.63	4,576.37	4,367.20	209.17	21.879	
13,900.00	6,941.97	6,011.00	6,007.54	120.08	180.12	-20.70	1,035.14	2,855.63	4,674.22	4,464.89	209.33	22.329	
14,000.00	6,941.99	6,011.00	6,007.54	121.64	180.12	-20.70	1,035.14	2,855.63	4,772.17	4,562.68	209.49	22.780	
14,100.00	6,942.00	6,011.00	6,007.54	123.21	180.12	-20.70	1,035.14	2,855.63	4,870.19	4,660.55	209.64	23.231	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,200.00	6,942.01	6,011.00	6,007.54	124.77	180.12	-20.70	1,035.14	2,855.63	4,968.30	4,758.51	209.79	23.683	
14,300.00	6,942.03	6,011.00	6,007.54	126.34	180.12	-20.70	1,035.14	2,855.63	5,066.47	4,856.55	209.93	24.135	
14,400.00	6,942.04	6,011.00	6,007.54	127.91	180.12	-20.70	1,035.14	2,855.63	5,164.72	4,954.66	210.06	24.587	
14,500.00	6,942.06	6,011.00	6,007.54	129.48	180.12	-20.70	1,035.14	2,855.63	5,263.04	5,052.84	210.19	25.039	
14,600.00	6,942.07	6,011.00	6,007.54	131.05	180.12	-20.70	1,035.14	2,855.63	5,361.41	5,151.09	210.32	25.491	
14,700.00	6,942.09	6,011.00	6,007.54	132.62	180.12	-20.70	1,035.14	2,855.63	5,459.85	5,249.40	210.45	25.944	
14,800.00	6,942.10	6,011.00	6,007.54	134.19	180.12	-20.70	1,035.14	2,855.63	5,558.34	5,347.77	210.57	26.397	
14,900.00	6,942.12	6,011.00	6,007.54	135.76	180.12	-20.70	1,035.14	2,855.63	5,656.88	5,446.20	210.69	26.850	
15,000.00	6,942.13	6,011.00	6,007.54	137.34	180.12	-20.70	1,035.14	2,855.63	5,755.48	5,544.67	210.80	27.302	
15,100.00	6,942.15	6,011.00	6,007.54	138.91	180.12	-20.70	1,035.14	2,855.63	5,854.12	5,643.20	210.92	27.755	
15,200.00	6,942.16	6,011.00	6,007.54	140.48	180.12	-20.70	1,035.14	2,855.63	5,952.81	5,741.78	211.03	28.208	
15,300.00	6,942.18	6,011.00	6,007.54	142.06	180.12	-20.70	1,035.14	2,855.63	6,051.54	5,840.40	211.14	28.661	
15,400.00	6,942.19	6,011.00	6,007.54	143.64	180.12	-20.70	1,035.14	2,855.63	6,150.31	5,939.06	211.25	29.114	
15,500.00	6,942.21	6,011.00	6,007.54	145.21	180.12	-20.70	1,035.14	2,855.63	6,249.12	6,037.77	211.35	29.567	
15,600.00	6,942.22	6,011.00	6,007.54	146.79	180.12	-20.70	1,035.14	2,855.63	6,347.97	6,136.51	211.46	30.020	
15,700.00	6,942.24	6,011.00	6,007.54	148.37	180.12	-20.70	1,035.14	2,855.63	6,446.85	6,235.29	211.56	30.473	
15,800.00	6,942.25	6,011.00	6,007.54	149.94	180.12	-20.70	1,035.14	2,855.63	6,545.77	6,334.11	211.66	30.926	
15,900.00	6,942.27	6,011.00	6,007.54	151.52	180.12	-20.70	1,035.14	2,855.63	6,644.72	6,432.96	211.76	31.378	
16,000.00	6,942.28	6,011.00	6,007.54	153.10	180.12	-20.70	1,035.14	2,855.63	6,743.70	6,531.84	211.86	31.831	
16,100.00	6,942.30	6,011.00	6,007.54	154.68	180.12	-20.70	1,035.14	2,855.63	6,842.71	6,630.75	211.96	32.283	
16,200.00	6,942.31	6,011.00	6,007.54	156.26	180.12	-20.70	1,035.14	2,855.63	6,941.75	6,729.69	212.06	32.735	
16,300.00	6,942.33	6,011.00	6,007.54	157.84	180.12	-20.70	1,035.14	2,855.63	7,040.82	6,828.66	212.16	33.187	
16,400.00	6,942.34	6,011.00	6,007.54	159.42	180.12	-20.70	1,035.14	2,855.63	7,139.91	6,927.66	212.25	33.639	
16,500.00	6,942.36	6,011.00	6,007.54	161.00	180.12	-20.70	1,035.14	2,855.63	7,239.02	7,026.68	212.35	34.090	
16,600.00	6,942.37	6,011.00	6,007.54	162.59	180.12	-20.70	1,035.14	2,855.63	7,338.17	7,125.72	212.44	34.542	
16,700.00	6,942.38	6,011.00	6,007.54	164.17	180.12	-20.70	1,035.14	2,855.63	7,437.33	7,224.79	212.54	34.993	
16,800.00	6,942.40	6,011.00	6,007.54	165.75	180.12	-20.70	1,035.14	2,855.63	7,536.52	7,323.88	212.63	35.444	
16,900.00	6,942.41	6,011.00	6,007.54	167.33	180.12	-20.70	1,035.14	2,855.63	7,635.72	7,423.00	212.73	35.895	
17,000.00	6,942.43	6,011.00	6,007.54	168.92	180.12	-20.70	1,035.14	2,855.63	7,734.95	7,522.13	212.82	36.345	
17,100.00	6,942.44	6,011.00	6,007.54	170.50	180.12	-20.70	1,035.14	2,855.63	7,834.20	7,621.29	212.91	36.795	
17,200.00	6,942.46	6,011.00	6,007.54	172.09	180.12	-20.70	1,035.14	2,855.63	7,933.46	7,720.46	213.01	37.245	
17,300.00	6,942.47	6,011.00	6,007.54	173.67	180.12	-20.70	1,035.14	2,855.63	8,032.75	7,819.65	213.10	37.695	
17,400.00	6,942.49	6,011.00	6,007.54	175.26	180.12	-20.70	1,035.14	2,855.63	8,132.05	7,918.86	213.19	38.144	
17,500.00	6,942.50	6,011.00	6,007.54	176.84	180.12	-20.70	1,035.14	2,855.63	8,231.37	8,018.09	213.28	38.594	
17,600.00	6,942.52	6,011.00	6,007.54	178.43	180.12	-20.70	1,035.14	2,855.63	8,330.70	8,117.33	213.38	39.042	
17,700.00	6,942.53	6,011.00	6,007.54	180.01	180.12	-20.70	1,035.14	2,855.63	8,430.06	8,216.59	213.47	39.491	
17,800.00	6,942.55	6,011.00	6,007.54	181.60	180.12	-20.70	1,035.14	2,855.63	8,529.42	8,315.86	213.56	39.939	
17,900.00	6,942.56	6,011.00	6,007.54	183.19	180.12	-20.70	1,035.14	2,855.63	8,628.80	8,415.15	213.65	40.387	
18,000.00	6,942.58	6,011.00	6,007.54	184.77	180.12	-20.70	1,035.14	2,855.63	8,728.20	8,514.45	213.74	40.835	
18,100.00	6,942.59	6,011.00	6,007.54	186.36	180.12	-20.70	1,035.14	2,855.63	8,827.61	8,613.77	213.84	41.282	
18,200.00	6,942.61	6,011.00	6,007.54	187.95	180.12	-20.70	1,035.14	2,855.63	8,927.03	8,713.10	213.93	41.729	
18,300.00	6,942.62	6,011.00	6,007.54	189.54	180.12	-20.70	1,035.14	2,855.63	9,026.46	8,812.44	214.02	42.176	
18,400.00	6,942.64	6,011.00	6,007.54	191.12	180.12	-20.70	1,035.14	2,855.63	9,125.91	8,911.79	214.11	42.622	
18,500.00	6,942.65	6,011.00	6,007.54	192.71	180.12	-20.70	1,035.14	2,855.63	9,225.37	9,011.16	214.21	43.068	
18,600.00	6,942.67	6,011.00	6,007.54	194.30	180.12	-20.70	1,035.14	2,855.63	9,324.84	9,110.54	214.30	43.513	
18,700.00	6,942.68	6,011.00	6,007.54	195.89	180.12	-20.70	1,035.14	2,855.63	9,424.32	9,209.93	214.39	43.958	
18,800.00	6,942.70	6,011.00	6,007.54	197.48	180.12	-20.70	1,035.14	2,855.63	9,523.81	9,309.33	214.48	44.403	
18,900.00	6,942.71	6,011.00	6,007.54	199.07	180.12	-20.70	1,035.14	2,855.63	9,623.31	9,408.74	214.58	44.848	
19,000.00	6,942.73	6,011.00	6,007.54	200.66	180.12	-20.70	1,035.14	2,855.63	9,722.83	9,508.16	214.67	45.292	
19,100.00	6,942.74	6,011.00	6,007.54	202.25	180.12	-20.70	1,035.14	2,855.63	9,822.35	9,607.59	214.76	45.736	
19,200.00	6,942.76	6,011.00	6,007.54	203.84	180.12	-20.70	1,035.14	2,855.63	9,921.88	9,707.03	214.86	46.179	
19,300.00	6,942.77	6,011.00	6,007.54	205.43	180.12	-20.70	1,035.14	2,855.63	10,021.43	9,806.47	214.95	46.622	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	6,942.78	6,011.00	6,007.54	207.02	180.12	-20.70	1,035.14	2,855.63	10,120.98	9,905.93	215.05	47.064	
19,500.00	6,942.80	6,011.00	6,007.54	208.61	180.12	-20.70	1,035.14	2,855.63	10,220.54	10,005.40	215.14	47.506	
19,600.00	6,942.81	6,011.00	6,007.54	210.20	180.12	-20.70	1,035.14	2,855.63	10,320.10	10,104.87	215.23	47.948	
19,700.00	6,942.83	6,011.00	6,007.54	211.79	180.12	-20.70	1,035.14	2,855.63	10,419.68	10,204.35	215.33	48.390	
19,800.00	6,942.84	6,011.00	6,007.54	213.38	180.12	-20.70	1,035.14	2,855.63	10,519.27	10,303.84	215.42	48.831	
19,900.00	6,942.86	6,011.00	6,007.54	214.97	180.12	-20.70	1,035.14	2,855.63	10,618.86	10,403.34	215.52	49.271	
20,000.00	6,942.87	6,011.00	6,007.54	216.56	180.12	-20.70	1,035.14	2,855.63	10,718.46	10,502.84	215.61	49.711	
20,100.00	6,942.89	6,011.00	6,007.54	218.15	180.12	-20.70	1,035.14	2,855.63	10,818.07	10,602.36	215.71	50.151	
20,200.00	6,942.90	6,011.00	6,007.54	219.75	180.12	-20.70	1,035.14	2,855.63	10,917.68	10,701.87	215.81	50.590	
20,300.00	6,942.92	6,011.00	6,007.54	221.34	180.12	-20.70	1,035.14	2,855.63	11,017.30	10,801.40	215.90	51.029	
20,400.00	6,942.93	6,011.00	6,007.54	222.93	180.12	-20.70	1,035.14	2,855.63	11,116.93	10,900.93	216.00	51.468	
20,500.00	6,942.95	6,011.00	6,007.54	224.52	180.12	-20.70	1,035.14	2,855.63	11,216.56	11,000.47	216.09	51.906	
20,600.00	6,942.96	6,011.00	6,007.54	226.12	180.12	-20.70	1,035.14	2,855.63	11,316.21	11,100.01	216.19	52.343	
20,700.00	6,942.98	6,011.00	6,007.54	227.71	180.12	-20.70	1,035.14	2,855.63	11,415.85	11,199.56	216.29	52.781	
20,800.00	6,942.99	6,011.00	6,007.54	229.30	180.12	-20.70	1,035.14	2,855.63	11,515.51	11,299.12	216.39	53.217	
20,855.77	6,943.00	6,011.00	6,007.54	230.19	180.12	-20.70	1,035.14	2,855.63	11,571.08	11,354.64	216.44	53.461	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 — **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	62.58	1,110.41	2,140.53	2,411.56				
100.00	100.00	73.00	73.00	0.25	2.19	62.58	1,110.41	2,140.53	2,411.41	2,408.97	2.44	988.886	
200.00	200.00	173.00	173.00	0.61	5.18	62.58	1,110.41	2,140.53	2,411.41	2,405.62	5.79	416.234	
300.00	300.00	273.00	273.00	0.97	8.18	62.58	1,110.41	2,140.53	2,411.41	2,402.26	9.15	263.592	
400.00	400.00	373.00	373.00	1.33	11.18	62.58	1,110.41	2,140.53	2,411.41	2,398.91	12.50	192.864	
500.00	500.00	473.00	473.00	1.68	14.17	62.58	1,110.41	2,140.53	2,411.41	2,395.55	15.86	152.062	
600.00	599.98	573.08	572.98	2.04	17.17	41.89	1,110.41	2,140.53	2,410.11	2,390.89	19.21	125.430	
700.00	699.84	672.94	672.84	2.40	20.16	42.02	1,110.41	2,140.53	2,406.21	2,383.65	22.57	106.631	
800.00	799.45	774.45	774.31	2.77	23.21	42.21	1,112.57	2,140.53	2,400.73	2,374.76	25.97	92.448	
845.27	844.44	823.18	823.03	2.93	24.67	42.35	1,112.40	2,140.53	2,396.88	2,369.29	27.59	86.863	
900.00	898.77	881.99	881.82	3.13	26.43	42.48	1,111.98	2,140.53	2,391.83	2,362.28	29.55	80.931	
1,000.00	998.04	989.33	989.13	3.50	29.64	42.72	1,110.59	2,140.53	2,382.36	2,349.23	33.13	71.904	
1,100.00	1,097.32	1,070.72	1,070.32	3.87	32.08	42.88	1,110.41	2,140.53	2,373.36	2,337.42	35.94	66.042	
1,200.00	1,196.59	1,170.00	1,169.59	4.24	35.06	43.08	1,110.41	2,140.53	2,364.53	2,325.26	39.28	60.198	
1,300.00	1,295.87	1,270.81	1,270.36	4.62	38.08	43.23	1,112.57	2,140.53	2,356.69	2,314.03	42.67	55.233	
1,400.00	1,395.14	1,377.84	1,377.38	5.00	41.29	43.46	1,112.02	2,140.53	2,347.69	2,301.45	46.24	50.767	
1,500.00	1,494.42	1,484.73	1,484.23	5.38	44.49	43.71	1,110.66	2,140.53	2,338.40	2,288.58	49.82	46.941	
1,600.00	1,593.69	1,567.40	1,566.69	5.76	46.97	43.88	1,110.41	2,140.53	2,329.52	2,276.85	52.67	44.231	
1,700.00	1,692.96	1,666.68	1,665.96	6.14	49.94	44.09	1,110.41	2,140.53	2,320.84	2,264.82	56.01	41.433	
1,800.00	1,792.24	1,767.15	1,766.40	6.52	52.95	44.25	1,112.58	2,140.53	2,313.11	2,253.71	59.40	38.943	
1,900.00	1,891.51	1,873.74	1,872.96	6.91	56.15	44.48	1,112.05	2,140.53	2,304.27	2,241.31	62.96	36.598	
2,000.00	1,990.79	1,980.18	1,979.37	7.29	59.34	44.74	1,110.74	2,140.53	2,295.16	2,228.64	66.52	34.502	
2,100.00	2,090.06	2,064.08	2,063.06	7.67	61.85	44.92	1,110.41	2,140.53	2,286.41	2,217.00	69.41	32.938	
2,200.00	2,189.34	2,163.35	2,162.34	8.06	64.82	45.14	1,110.41	2,140.53	2,277.89	2,205.12	72.76	31.305	
2,300.00	2,288.61	2,263.52	2,262.47	8.44	67.83	45.30	1,112.58	2,140.53	2,270.28	2,194.14	76.14	29.817	
2,400.00	2,387.89	2,369.66	2,368.59	8.82	71.01	45.54	1,112.09	2,140.53	2,261.62	2,181.92	79.69	28.379	
2,500.00	2,487.16	2,475.66	2,474.55	9.21	74.18	45.81	1,110.81	2,140.53	2,252.70	2,169.46	83.24	27.062	
2,600.00	2,586.44	2,560.76	2,559.44	9.59	76.73	46.00	1,110.41	2,140.53	2,244.09	2,157.92	86.17	26.042	
2,700.00	2,685.71	2,660.03	2,658.71	9.98	79.71	46.22	1,110.41	2,140.53	2,235.73	2,146.20	89.52	24.974	
2,800.00	2,784.99	2,759.92	2,758.56	10.36	82.70	46.40	1,112.58	2,140.53	2,228.25	2,135.35	92.89	23.988	
2,900.00	2,884.26	2,865.62	2,864.24	10.75	85.87	46.65	1,112.12	2,140.53	2,219.77	2,123.34	96.43	23.019	
3,000.00	2,983.53	2,971.18	2,969.77	11.13	89.03	46.92	1,110.88	2,140.53	2,211.05	2,111.08	99.97	22.117	
3,100.00	3,082.81	3,057.43	3,055.81	11.52	91.61	47.12	1,110.41	2,140.53	2,202.60	2,099.66	102.94	21.398	
3,200.00	3,182.08	3,156.71	3,155.08	11.90	94.59	47.35	1,110.41	2,140.53	2,194.40	2,088.12	106.29	20.646	
3,300.00	3,281.36	3,256.36	3,254.69	12.29	97.58	47.53	1,112.59	2,140.53	2,187.06	2,077.41	109.65	19.945	
3,400.00	3,380.63	3,361.62	3,359.94	12.67	100.73	47.79	1,112.15	2,140.53	2,178.77	2,065.59	113.18	19.250	
3,500.00	3,479.91	3,466.74	3,465.03	13.06	103.88	48.07	1,110.95	2,140.53	2,170.26	2,053.56	116.71	18.596	
3,600.00	3,579.18	3,554.11	3,552.18	13.44	106.50	48.29	1,110.41	2,140.53	2,161.98	2,042.27	119.71	18.060	
3,700.00	3,678.46	3,653.39	3,651.46	13.83	109.47	48.52	1,110.41	2,140.53	2,153.97	2,030.91	123.06	17.503	
3,800.00	3,777.73	3,752.82	3,750.85	14.21	112.45	48.71	1,112.59	2,140.53	2,146.76	2,020.34	126.42	16.981	
3,900.00	3,877.01	3,857.65	3,855.66	14.60	115.59	48.97	1,112.18	2,140.53	2,138.68	2,008.74	129.94	16.460	
4,000.00	3,976.28	3,962.33	3,960.32	14.98	118.73	49.26	1,111.01	2,140.53	2,130.39	1,996.94	133.45	15.964	
4,100.00	4,075.55	4,050.79	4,048.55	15.37	121.38	49.49	1,110.41	2,140.53	2,122.29	1,985.81	136.48	15.550	
4,200.00	4,174.83	4,150.06	4,147.83	15.75	124.35	49.74	1,110.41	2,140.53	2,114.47	1,974.63	139.84	15.121	
4,300.00	4,274.10	4,249.34	4,247.10	16.14	127.33	49.99	1,110.41	2,140.53	2,106.68	1,963.49	143.19	14.712	
4,400.00	4,373.38	4,353.71	4,351.42	16.53	130.46	50.20	1,112.21	2,140.53	2,099.54	1,952.84	146.70	14.312	
4,500.00	4,472.65	4,457.96	4,455.64	16.91	133.58	50.50	1,111.08	2,140.53	2,091.48	1,941.28	150.20	13.925	
4,600.00	4,571.93	4,547.47	4,544.93	17.30	136.26	50.74	1,110.41	2,140.53	2,083.58	1,930.31	153.27	13.594	
4,700.00	4,671.20	4,646.74	4,644.20	17.68	139.24	51.00	1,110.41	2,140.53	2,075.96	1,919.33	156.62	13.255	
4,800.00	4,770.48	4,746.02	4,743.48	18.07	142.21	51.26	1,110.41	2,140.53	2,068.38	1,908.40	159.98	12.929	
4,900.00	4,869.75	4,849.80	4,847.21	18.45	145.32	51.48	1,112.24	2,140.53	2,061.41	1,897.95	163.46	12.611	
5,000.00	4,969.03	4,953.63	4,951.01	18.84	148.43	51.78	1,111.14	2,140.53	2,053.59	1,886.64	166.95	12.300	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,044.14	5,041.30	19.23	151.15	52.04	1,110.41	2,140.53	2,045.90	1,875.84	170.05	12.031	
5,200.00	5,167.58	5,143.42	5,140.58	19.61	154.12	52.31	1,110.41	2,140.53	2,038.49	1,865.08	173.41	11.755	
5,300.00	5,266.85	5,242.69	5,239.85	20.00	157.09	52.57	1,110.41	2,140.53	2,031.13	1,854.36	176.77	11.490	
5,400.00	5,366.12	5,345.92	5,343.03	20.38	160.19	52.80	1,112.27	2,140.53	2,024.35	1,844.11	180.24	11.231	
5,500.00	5,465.40	5,449.33	5,446.41	20.77	163.29	53.12	1,111.20	2,140.53	2,016.78	1,833.06	183.72	10.978	
5,600.00	5,564.67	5,540.82	5,537.67	21.15	166.03	53.39	1,110.41	2,140.53	2,009.31	1,822.46	186.85	10.754	
5,700.00	5,663.95	5,640.10	5,636.95	21.54	169.00	53.66	1,110.41	2,140.53	2,002.13	1,811.93	190.20	10.526	
5,800.00	5,763.22	5,739.37	5,736.22	21.93	171.98	53.94	1,110.41	2,140.53	1,994.99	1,801.43	193.56	10.307	
5,900.00	5,862.50	5,842.08	5,838.88	22.31	175.06	54.18	1,112.29	2,140.53	1,988.41	1,791.39	197.02	10.092	
6,000.00	5,961.77	5,945.07	5,941.84	22.70	178.14	54.50	1,111.26	2,140.53	1,981.10	1,780.61	200.49	9.881	
6,100.00	6,061.05	6,037.50	6,034.05	23.08	180.91	54.78	1,110.41	2,140.53	1,973.88	1,770.23	203.64	9.693	
6,200.00	6,160.32	6,136.77	6,133.32	23.47	183.89	55.07	1,110.41	2,140.53	1,966.93	1,759.93	207.00	9.502	
6,300.00	6,259.60	6,236.05	6,232.60	23.86	186.86	55.35	1,110.41	2,140.53	1,960.04	1,749.68	210.36	9.317	
6,376.00	6,335.04	6,313.63	6,310.13	24.15	189.18	55.52	1,112.45	2,140.53	1,955.32	1,742.35	212.98	9.181	
6,400.00	6,358.85	6,338.24	6,334.74	24.24	189.92	40.80	1,112.32	2,140.53	1,953.22	1,739.41	213.81	9.135	
6,450.00	6,408.16	6,389.22	6,385.70	24.44	191.45	21.60	1,111.91	2,140.53	1,946.00	1,730.48	215.52	9.029	
6,500.00	6,456.87	6,439.52	6,435.99	24.64	192.96	11.53	1,111.33	2,140.53	1,935.02	1,717.80	217.21	8.908	
6,550.00	6,504.65	6,488.85	6,485.30	24.85	194.44	5.55	1,110.59	2,140.53	1,920.32	1,701.45	218.87	8.774	
6,600.00	6,551.23	6,527.99	6,524.23	25.06	195.61	1.52	1,110.41	2,140.53	1,902.14	1,681.92	220.22	8.637	
6,650.00	6,596.31	6,573.07	6,569.31	25.26	196.96	-1.52	1,110.41	2,140.53	1,880.54	1,658.80	221.74	8.481	
6,700.00	6,639.62	6,616.37	6,612.62	25.48	198.26	-4.04	1,110.41	2,140.53	1,855.60	1,632.41	223.19	8.314	
6,750.00	6,680.88	6,657.64	6,653.88	25.69	199.49	-6.32	1,110.41	2,140.53	1,827.47	1,602.90	224.57	8.138	
6,800.00	6,719.85	6,696.60	6,692.85	25.91	200.66	-8.56	1,110.41	2,140.53	1,796.32	1,570.45	225.86	7.953	
6,850.00	6,756.28	6,733.03	6,729.28	26.13	201.75	-10.91	1,110.41	2,140.53	1,762.35	1,535.29	227.07	7.761	
6,900.00	6,789.95	6,767.22	6,763.43	26.37	202.78	-13.63	1,112.58	2,140.53	1,726.32	1,498.13	228.19	7.565	
6,950.00	6,820.65	6,798.86	6,795.06	26.61	203.72	-16.70	1,112.50	2,140.53	1,687.38	1,458.17	229.22	7.362	
7,000.00	6,848.19	6,827.23	6,823.43	26.87	204.57	-20.42	1,112.38	2,140.53	1,646.33	1,416.20	230.13	7.154	
7,050.00	6,872.41	6,852.17	6,848.36	27.13	205.32	-25.09	1,112.22	2,140.53	1,603.42	1,372.50	230.92	6.944	
7,100.00	6,893.15	6,873.53	6,869.71	27.41	205.96	-31.11	1,112.05	2,140.53	1,558.94	1,327.35	231.59	6.731	
7,150.00	6,910.28	6,891.16	6,887.34	27.71	206.49	-38.98	1,111.89	2,140.53	1,513.20	1,281.07	232.13	6.519	
7,200.00	6,923.70	6,904.98	6,901.15	28.02	206.90	-49.22	1,111.75	2,140.53	1,466.50	1,233.96	232.54	6.306	
7,250.00	6,933.33	6,914.89	6,911.06	28.34	207.20	-61.98	1,111.64	2,140.53	1,419.16	1,186.34	232.82	6.096	
7,300.00	6,939.11	6,920.83	6,917.00	28.67	207.38	-76.49	1,111.57	2,140.53	1,371.50	1,138.54	232.97	5.887	
7,349.12	6,941.00	6,922.78	6,918.95	29.00	207.44	-90.67	1,111.54	2,140.53	1,324.69	1,091.70	232.98	5.686	
7,400.00	6,941.01	6,922.79	6,918.96	29.36	207.44	-90.67	1,111.54	2,140.53	1,276.41	1,043.47	232.94	5.480	
7,500.00	6,941.02	6,922.81	6,918.98	30.11	207.44	-90.67	1,111.54	2,140.53	1,182.15	949.28	232.87	5.076	
7,600.00	6,941.04	6,922.83	6,919.00	30.93	207.44	-90.67	1,111.54	2,140.53	1,088.91	856.08	232.83	4.677	
7,700.00	6,941.05	6,922.86	6,919.02	31.80	207.44	-90.68	1,111.54	2,140.53	996.99	764.15	232.84	4.282	
7,800.00	6,941.07	6,922.88	6,919.04	32.73	207.44	-90.68	1,111.54	2,140.53	906.77	673.83	232.94	3.893	
7,900.00	6,941.08	6,922.90	6,919.07	33.71	207.44	-90.68	1,111.54	2,140.53	818.84	585.64	233.20	3.511	
8,000.00	6,941.10	6,922.92	6,919.09	34.73	207.44	-90.68	1,111.54	2,140.53	734.00	500.30	233.70	3.141	
8,100.00	6,941.11	6,922.94	6,919.11	35.79	207.44	-90.69	1,111.54	2,140.53	653.46	418.87	234.59	2.786	
8,200.00	6,941.13	6,922.96	6,919.13	36.90	207.44	-90.69	1,111.54	2,140.53	579.02	342.97	236.05	2.453	
8,300.00	6,941.14	6,922.98	6,919.15	38.03	207.44	-90.69	1,111.54	2,140.53	513.35	275.05	238.30	2.154	
8,400.00	6,941.16	6,923.00	6,919.17	39.20	207.44	-90.70	1,111.54	2,140.53	460.20	218.81	241.38	1.906	
8,500.00	6,941.17	6,923.02	6,919.19	40.40	207.45	-90.70	1,111.54	2,140.53	424.31	179.32	244.99	1.732	
8,600.00	6,941.19	6,923.04	6,919.21	41.63	207.45	-90.70	1,111.54	2,140.53	410.24	161.97	248.26	1.652	
8,608.72	6,941.19	6,923.05	6,919.21	41.74	207.45	-90.70	1,111.54	2,140.53	410.15	161.65	248.50	1.650	CC, ES, SF
8,700.00	6,941.20	6,923.07	6,919.23	42.88	207.45	-90.71	1,111.54	2,140.53	420.18	169.90	250.28	1.679	
8,800.00	6,941.22	6,923.09	6,919.26	44.16	207.45	-90.71	1,111.54	2,140.53	452.56	201.80	250.76	1.805	
8,900.00	6,941.23	6,923.11	6,919.28	45.45	207.45	-90.71	1,111.54	2,140.53	503.06	252.90	250.16	2.011	
9,000.00	6,941.24	6,923.13	6,919.30	46.76	207.45	-90.71	1,111.54	2,140.53	566.85	317.80	249.05	2.276	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 500-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,941.26	6,923.15	6,919.32	48.10	207.45	-90.72	1,111.54	2,140.53	639.98	392.16	247.83	2.582	
9,200.00	6,941.27	6,923.17	6,919.34	49.44	207.45	-90.72	1,111.54	2,140.53	719.61	472.94	246.67	2.917	
9,300.00	6,941.29	6,923.19	6,919.36	50.80	207.45	-90.72	1,111.54	2,140.53	803.80	558.15	245.65	3.272	
9,400.00	6,941.30	6,923.21	6,919.38	52.18	207.45	-90.73	1,111.54	2,140.53	891.26	646.49	244.77	3.641	
9,500.00	6,941.32	6,923.23	6,919.40	53.57	207.45	-90.73	1,111.54	2,140.53	981.13	737.10	244.03	4.021	
9,600.00	6,941.33	6,923.25	6,919.42	54.97	207.45	-90.73	1,111.54	2,140.53	1,072.78	829.39	243.39	4.408	
9,700.00	6,941.35	6,923.28	6,919.44	56.38	207.45	-90.73	1,111.54	2,140.53	1,165.81	922.96	242.85	4.800	
9,800.00	6,941.36	6,923.30	6,919.47	57.80	207.45	-90.74	1,111.54	2,140.53	1,259.91	1,017.52	242.39	5.198	
9,900.00	6,941.38	6,923.32	6,919.49	59.23	207.45	-90.74	1,111.54	2,140.53	1,354.86	1,112.86	242.00	5.599	
10,000.00	6,941.39	6,923.34	6,919.51	60.67	207.45	-90.74	1,111.54	2,140.53	1,450.48	1,208.82	241.66	6.002	
10,100.00	6,941.41	6,923.36	6,919.53	62.11	207.46	-90.75	1,111.54	2,140.53	1,546.66	1,305.29	241.36	6.408	
10,200.00	6,941.42	6,923.38	6,919.55	63.57	207.46	-90.75	1,111.54	2,140.53	1,643.29	1,402.18	241.11	6.816	
10,300.00	6,941.44	6,923.40	6,919.57	65.03	207.46	-90.75	1,111.54	2,140.53	1,740.31	1,499.42	240.88	7.225	
10,400.00	6,941.45	6,923.42	6,919.59	66.50	207.46	-90.76	1,111.54	2,140.53	1,837.64	1,596.95	240.69	7.635	
10,500.00	6,941.47	6,923.44	6,919.61	67.97	207.46	-90.76	1,111.54	2,140.53	1,935.25	1,694.73	240.52	8.046	
10,600.00	6,941.48	6,923.47	6,919.63	69.45	207.46	-90.76	1,111.54	2,140.53	2,033.08	1,792.72	240.36	8.458	
10,700.00	6,941.50	6,923.49	6,919.65	70.94	207.46	-90.76	1,111.54	2,140.53	2,131.12	1,890.89	240.23	8.871	
10,800.00	6,941.51	6,923.51	6,919.68	72.43	207.46	-90.77	1,111.54	2,140.53	2,229.34	1,989.22	240.12	9.284	
10,900.00	6,941.53	6,923.53	6,919.70	73.92	207.46	-90.77	1,111.54	2,140.53	2,327.70	2,087.69	240.01	9.698	
11,000.00	6,941.54	6,923.55	6,919.72	75.42	207.46	-90.77	1,111.53	2,140.53	2,426.20	2,186.28	239.92	10.112	
11,100.00	6,941.56	6,923.57	6,919.74	76.92	207.46	-90.78	1,111.53	2,140.53	2,524.82	2,284.98	239.84	10.527	
11,200.00	6,941.57	6,923.59	6,919.76	78.43	207.46	-90.78	1,111.53	2,140.53	2,623.54	2,383.77	239.77	10.942	
11,300.00	6,941.59	6,923.61	6,919.78	79.94	207.46	-90.78	1,111.53	2,140.53	2,722.36	2,482.65	239.71	11.357	
11,400.00	6,941.60	6,923.63	6,919.80	81.46	207.46	-90.78	1,111.53	2,140.53	2,821.26	2,581.60	239.66	11.772	
11,500.00	6,941.61	6,923.65	6,919.82	82.98	207.46	-90.79	1,111.53	2,140.53	2,920.23	2,680.62	239.61	12.187	
11,600.00	6,941.63	6,923.68	6,919.84	84.50	207.46	-90.79	1,111.53	2,140.53	3,019.27	2,779.70	239.57	12.603	
11,700.00	6,941.64	6,923.70	6,919.87	86.02	207.47	-90.79	1,111.53	2,140.53	3,118.37	2,878.84	239.54	13.018	
11,800.00	6,941.66	6,923.72	6,919.89	87.55	207.47	-90.80	1,111.53	2,140.53	3,217.53	2,978.02	239.51	13.434	
11,900.00	6,941.67	6,923.74	6,919.91	89.08	207.47	-90.80	1,111.53	2,140.53	3,316.74	3,077.25	239.49	13.849	
12,000.00	6,941.69	6,923.76	6,919.93	90.61	207.47	-90.80	1,111.53	2,140.53	3,416.00	3,176.52	239.47	14.265	
12,100.00	6,941.70	6,923.78	6,919.95	92.14	207.47	-90.81	1,111.53	2,140.53	3,515.29	3,275.84	239.46	14.680	
12,200.00	6,941.72	6,923.80	6,919.97	93.68	207.47	-90.81	1,111.53	2,140.53	3,614.63	3,375.18	239.45	15.096	
12,300.00	6,941.73	6,923.82	6,919.99	95.22	207.47	-90.81	1,111.53	2,140.53	3,714.00	3,474.56	239.44	15.511	
12,400.00	6,941.75	6,923.84	6,920.01	96.76	207.47	-90.81	1,111.53	2,140.53	3,813.41	3,573.96	239.44	15.926	
12,500.00	6,941.76	6,923.87	6,920.03	98.30	207.47	-90.82	1,111.53	2,140.53	3,912.84	3,673.40	239.44	16.341	
12,600.00	6,941.78	6,923.89	6,920.06	99.85	207.47	-90.82	1,111.53	2,140.53	4,012.30	3,772.86	239.45	16.757	
12,700.00	6,941.79	6,923.91	6,920.08	101.40	207.47	-90.82	1,111.53	2,140.53	4,111.79	3,872.34	239.45	17.172	
12,800.00	6,941.81	6,923.93	6,920.10	102.95	207.47	-90.83	1,111.53	2,140.53	4,211.30	3,971.84	239.46	17.586	
12,900.00	6,941.82	6,923.95	6,920.12	104.50	207.47	-90.83	1,111.53	2,140.53	4,310.84	4,071.36	239.48	18.001	
13,000.00	6,941.84	6,923.97	6,920.14	106.05	207.47	-90.83	1,111.53	2,140.53	4,410.40	4,170.91	239.49	18.416	
13,100.00	6,941.85	6,923.99	6,920.16	107.60	207.47	-90.83	1,111.53	2,140.53	4,509.97	4,270.46	239.51	18.830	
13,200.00	6,941.87	6,924.01	6,920.18	109.16	207.47	-90.84	1,111.53	2,140.53	4,609.57	4,370.04	239.53	19.244	
13,300.00	6,941.88	6,924.03	6,920.20	110.71	207.48	-90.84	1,111.53	2,140.53	4,709.18	4,469.63	239.55	19.658	
13,400.00	6,941.90	6,924.06	6,920.22	112.27	207.48	-90.84	1,111.53	2,140.53	4,808.81	4,569.23	239.57	20.072	
13,500.00	6,941.91	6,924.08	6,920.24	113.83	207.48	-90.85	1,111.53	2,140.53	4,908.45	4,668.85	239.60	20.486	
13,600.00	6,941.93	6,924.10	6,920.27	115.39	207.48	-90.85	1,111.53	2,140.53	5,008.11	4,768.48	239.63	20.900	
13,700.00	6,941.94	6,924.12	6,920.29	116.95	207.48	-90.85	1,111.53	2,140.53	5,107.78	4,868.12	239.66	21.313	
13,800.00	6,941.96	6,924.14	6,920.31	118.51	207.48	-90.86	1,111.53	2,140.53	5,207.46	4,967.77	239.69	21.726	
13,900.00	6,941.97	6,924.16	6,920.33	120.08	207.48	-90.86	1,111.53	2,140.53	5,307.16	5,067.44	239.72	22.139	
14,000.00	6,941.99	6,924.18	6,920.35	121.64	207.48	-90.86	1,111.53	2,140.53	5,406.86	5,167.11	239.76	22.552	
14,100.00	6,942.00	6,924.20	6,920.37	123.21	207.48	-90.86	1,111.53	2,140.53	5,506.58	5,266.79	239.79	22.964	
14,200.00	6,942.01	6,924.22	6,920.39	124.77	207.48	-90.87	1,111.53	2,140.53	5,606.31	5,366.48	239.83	23.376	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	Rule Assigned: Warning
14,300.00	6,942.03	6,924.25	6,920.41	126.34	207.48	-90.87	1,111.53	2,140.53	5,706.04	5,466.18	239.87	23.788	
14,400.00	6,942.04	6,924.27	6,920.43	127.91	207.48	-90.87	1,111.53	2,140.53	5,805.79	5,565.88	239.91	24.200	
14,500.00	6,942.06	6,924.29	6,920.46	129.48	207.48	-90.88	1,111.53	2,140.53	5,905.54	5,665.59	239.95	24.612	
14,600.00	6,942.07	6,924.31	6,920.48	131.05	207.48	-90.88	1,111.53	2,140.53	6,005.31	5,765.31	239.99	25.023	
14,700.00	6,942.09	6,924.33	6,920.50	132.62	207.48	-90.88	1,111.53	2,140.53	6,105.08	5,865.04	240.04	25.434	
14,800.00	6,942.10	6,924.35	6,920.52	134.19	207.48	-90.88	1,111.53	2,140.53	6,204.85	5,964.77	240.08	25.845	
14,900.00	6,942.12	6,924.37	6,920.54	135.76	207.49	-90.89	1,111.52	2,140.53	6,304.64	6,064.51	240.13	26.255	
15,000.00	6,942.13	6,924.39	6,920.56	137.34	207.49	-90.89	1,111.52	2,140.53	6,404.43	6,164.25	240.18	26.665	
15,100.00	6,942.15	6,924.41	6,920.58	138.91	207.49	-90.89	1,111.52	2,140.53	6,504.23	6,264.00	240.23	27.075	
15,200.00	6,942.16	6,924.44	6,920.60	140.48	207.49	-90.90	1,111.52	2,140.53	6,604.03	6,363.76	240.28	27.485	
15,300.00	6,942.18	6,924.46	6,920.62	142.06	207.49	-90.90	1,111.52	2,140.53	6,703.84	6,463.51	240.33	27.895	
15,400.00	6,942.19	6,924.48	6,920.65	143.64	207.49	-90.90	1,111.52	2,140.53	6,803.66	6,563.28	240.38	28.304	
15,500.00	6,942.21	6,924.50	6,920.67	145.21	207.49	-90.91	1,111.52	2,140.53	6,903.48	6,663.05	240.43	28.713	
15,600.00	6,942.22	6,924.52	6,920.69	146.79	207.49	-90.91	1,111.52	2,140.53	7,003.30	6,762.82	240.49	29.121	
15,700.00	6,942.24	6,924.54	6,920.71	148.37	207.49	-90.91	1,111.52	2,140.53	7,103.14	6,862.59	240.54	29.529	
15,800.00	6,942.25	6,924.56	6,920.73	149.94	207.49	-90.91	1,111.52	2,140.53	7,202.97	6,962.37	240.60	29.938	
15,900.00	6,942.27	6,924.58	6,920.75	151.52	207.49	-90.92	1,111.52	2,140.53	7,302.81	7,062.15	240.66	30.345	
16,000.00	6,942.28	6,924.60	6,920.77	153.10	207.49	-90.92	1,111.52	2,140.53	7,402.66	7,161.94	240.72	30.753	
16,100.00	6,942.30	6,924.63	6,920.79	154.68	207.49	-90.92	1,111.52	2,140.53	7,502.50	7,261.73	240.78	31.160	
16,200.00	6,942.31	6,924.65	6,920.81	156.26	207.49	-90.93	1,111.52	2,140.53	7,602.36	7,361.52	240.84	31.567	
16,300.00	6,942.33	6,924.67	6,920.84	157.84	207.49	-90.93	1,111.52	2,140.53	7,702.21	7,461.32	240.90	31.973	
16,400.00	6,942.34	6,924.69	6,920.86	159.42	207.49	-90.93	1,111.52	2,140.53	7,802.07	7,561.11	240.96	32.379	
16,500.00	6,942.36	6,924.71	6,920.88	161.00	207.50	-90.93	1,111.52	2,140.53	7,901.94	7,660.91	241.02	32.785	
16,600.00	6,942.37	6,924.73	6,920.90	162.59	207.50	-90.94	1,111.52	2,140.53	8,001.80	7,760.72	241.08	33.191	
16,700.00	6,942.38	6,924.75	6,920.92	164.17	207.50	-90.94	1,111.52	2,140.53	8,101.67	7,860.52	241.15	33.596	
16,800.00	6,942.40	6,924.77	6,920.94	165.75	207.50	-90.94	1,111.52	2,140.53	8,201.55	7,960.33	241.21	34.001	
16,900.00	6,942.41	6,924.79	6,920.96	167.33	207.50	-90.95	1,111.52	2,140.53	8,301.42	8,060.14	241.28	34.406	
17,000.00	6,942.43	6,924.82	6,920.98	168.92	207.50	-90.95	1,111.52	2,140.53	8,401.30	8,159.95	241.35	34.810	
17,100.00	6,942.44	6,924.84	6,921.00	170.50	207.50	-90.95	1,111.52	2,140.53	8,501.18	8,259.77	241.41	35.214	
17,200.00	6,942.46	6,924.86	6,921.03	172.09	207.50	-90.96	1,111.52	2,140.53	8,601.07	8,359.59	241.48	35.618	
17,300.00	6,942.47	6,924.88	6,921.05	173.67	207.50	-90.96	1,111.52	2,140.53	8,700.96	8,459.40	241.55	36.021	
17,400.00	6,942.49	6,924.90	6,921.07	175.26	207.50	-90.96	1,111.52	2,140.53	8,800.85	8,559.22	241.62	36.424	
17,500.00	6,942.50	6,924.92	6,921.09	176.84	207.50	-90.96	1,111.52	2,140.53	8,900.74	8,659.05	241.69	36.827	
17,600.00	6,942.52	6,924.94	6,921.11	178.43	207.50	-90.97	1,111.52	2,140.53	9,000.63	8,758.87	241.76	37.229	
17,700.00	6,942.53	6,924.96	6,921.13	180.01	207.50	-90.97	1,111.52	2,140.53	9,100.53	8,858.70	241.84	37.631	
17,800.00	6,942.55	6,924.98	6,921.15	181.60	207.50	-90.97	1,111.52	2,140.53	9,200.43	8,958.52	241.91	38.033	
17,900.00	6,942.56	6,925.01	6,921.17	183.19	207.50	-90.98	1,111.52	2,140.53	9,300.33	9,058.35	241.98	38.434	
18,000.00	6,942.58	6,925.03	6,921.20	184.77	207.51	-90.98	1,111.52	2,140.53	9,400.24	9,158.18	242.06	38.835	
18,100.00	6,942.59	6,925.05	6,921.22	186.36	207.51	-90.98	1,111.52	2,140.53	9,500.14	9,258.01	242.13	39.236	
18,200.00	6,942.61	6,925.07	6,921.24	187.95	207.51	-90.99	1,111.52	2,140.53	9,600.05	9,357.84	242.21	39.636	
18,300.00	6,942.62	6,925.09	6,921.26	189.54	207.51	-90.99	1,111.52	2,140.53	9,699.96	9,457.68	242.28	40.036	
18,400.00	6,942.64	6,925.11	6,921.28	191.12	207.51	-90.99	1,111.52	2,140.53	9,799.87	9,557.51	242.36	40.435	
18,500.00	6,942.65	6,925.13	6,921.30	192.71	207.51	-90.99	1,111.52	2,140.53	9,899.78	9,657.35	242.44	40.835	
18,600.00	6,942.67	6,925.15	6,921.32	194.30	207.51	-91.00	1,111.52	2,140.53	9,999.70	9,757.18	242.51	41.233	
18,700.00	6,942.68	6,925.18	6,921.34	195.89	207.51	-91.00	1,111.51	2,140.53	10,099.62	9,857.02	242.59	41.632	
18,800.00	6,942.70	6,925.20	6,921.36	197.48	207.51	-91.00	1,111.51	2,140.53	10,199.53	9,956.86	242.67	42.030	
18,900.00	6,942.71	6,925.22	6,921.39	199.07	207.51	-91.01	1,111.51	2,140.53	10,299.45	10,056.70	242.75	42.428	
19,000.00	6,942.73	6,925.24	6,921.41	200.66	207.51	-91.01	1,111.51	2,140.53	10,399.38	10,156.54	242.83	42.825	
19,100.00	6,942.74	6,925.26	6,921.43	202.25	207.51	-91.01	1,111.51	2,140.53	10,499.30	10,256.39	242.91	43.222	
19,200.00	6,942.76	6,925.28	6,921.45	203.84	207.51	-91.01	1,111.51	2,140.53	10,599.22	10,356.23	243.00	43.619	
19,300.00	6,942.77	6,925.30	6,921.47	205.43	207.51	-91.02	1,111.51	2,140.53	10,699.15	10,456.07	243.08	44.015	
19,400.00	6,942.78	6,925.32	6,921.49	207.02	207.51	-91.02	1,111.51	2,140.53	10,799.08	10,555.92	243.16	44.411	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,500.00	6,942.80	6,925.34	6,921.51	208.61	207.51	-91.02	1,111.51	2,140.53	10,899.00	10,655.76	243.24	44.807	
19,600.00	6,942.81	6,925.37	6,921.53	210.20	207.52	-91.03	1,111.51	2,140.53	10,998.93	10,755.61	243.33	45.202	
19,700.00	6,942.83	6,925.39	6,921.56	211.79	207.52	-91.03	1,111.51	2,140.53	11,098.87	10,855.45	243.41	45.597	
19,800.00	6,942.84	6,925.41	6,921.58	213.38	207.52	-91.03	1,111.51	2,140.53	11,198.80	10,955.30	243.50	45.992	
19,900.00	6,942.86	6,925.43	6,921.60	214.97	207.52	-91.04	1,111.51	2,140.53	11,298.73	11,055.15	243.58	46.386	
20,000.00	6,942.87	6,925.45	6,921.62	216.56	207.52	-91.04	1,111.51	2,140.53	11,398.67	11,155.00	243.67	46.779	
20,100.00	6,942.89	6,925.47	6,921.64	218.15	207.52	-91.04	1,111.51	2,140.53	11,498.60	11,254.85	243.75	47.173	
20,200.00	6,942.90	6,925.49	6,921.66	219.75	207.52	-91.04	1,111.51	2,140.53	11,598.54	11,354.70	243.84	47.566	
20,300.00	6,942.92	6,925.51	6,921.68	221.34	207.52	-91.05	1,111.51	2,140.53	11,698.48	11,454.55	243.93	47.958	
20,400.00	6,942.93	6,925.54	6,921.70	222.93	207.52	-91.05	1,111.51	2,140.53	11,798.42	11,554.40	244.02	48.351	
20,500.00	6,942.95	6,925.56	6,921.72	224.52	207.52	-91.05	1,111.51	2,140.53	11,898.36	11,654.25	244.11	48.743	
20,600.00	6,942.96	6,925.58	6,921.75	226.12	207.52	-91.06	1,111.51	2,140.53	11,998.30	11,754.10	244.20	49.134	
20,700.00	6,942.98	6,925.60	6,921.77	227.71	207.52	-91.06	1,111.51	2,140.53	12,098.24	11,853.95	244.28	49.525	
20,800.00	6,942.99	6,925.62	6,921.79	229.30	207.52	-91.06	1,111.51	2,140.53	12,198.18	11,953.81	244.38	49.916	
20,855.77	6,943.00	6,925.63	6,921.80	230.19	207.52	-91.06	1,111.51	2,140.53	12,253.92	12,009.49	244.43	50.134	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	81.74	1,555.23	10,717.56	10,829.81				
100.00	100.00	581.10	581.00	0.25	17.41	81.74	1,555.23	10,717.56	10,829.81	10,812.14	17.66	613.123	
200.00	200.00	681.10	681.00	0.61	20.41	81.74	1,555.23	10,717.56	10,829.81	10,808.79	21.02	515.256	
300.00	300.00	784.92	784.78	0.97	23.52	81.73	1,557.36	10,717.56	10,830.11	10,805.63	24.49	442.266	
400.00	400.00	897.18	897.02	1.33	26.88	81.74	1,556.65	10,717.56	10,830.02	10,801.81	28.21	383.907	
500.00	500.00	1,009.48	1,009.27	1.68	30.25	81.74	1,555.05	10,717.56	10,829.82	10,797.89	31.93	339.139	
600.00	599.98	1,081.39	1,080.98	2.04	32.40	61.03	1,555.23	10,717.56	10,828.96	10,794.52	34.45	314.379	
700.00	699.84	1,181.24	1,180.84	2.40	35.40	61.10	1,555.23	10,717.56	10,826.43	10,788.63	37.80	286.447	
800.00	799.45	1,284.61	1,284.16	2.77	38.49	61.20	1,557.36	10,717.56	10,822.51	10,781.26	41.25	262.345	
845.27	844.44	1,335.02	1,334.56	2.93	40.00	61.27	1,557.15	10,717.56	10,820.03	10,777.10	42.93	252.050	
900.00	898.77	1,395.85	1,395.38	3.13	41.83	61.31	1,556.66	10,717.56	10,816.79	10,771.84	44.95	240.639	
1,000.00	998.04	1,506.88	1,506.37	3.50	45.15	61.38	1,555.10	10,717.56	10,810.79	10,762.15	48.64	222.243	
1,100.00	1,097.32	1,579.03	1,578.32	3.87	47.31	61.42	1,555.23	10,717.56	10,804.98	10,753.81	51.18	211.136	
1,200.00	1,196.59	1,678.30	1,677.59	4.24	50.29	61.48	1,555.23	10,717.56	10,799.20	10,744.68	54.52	198.071	
1,300.00	1,295.87	1,780.80	1,780.04	4.62	53.36	61.52	1,557.37	10,717.56	10,793.73	10,735.76	57.97	186.207	
1,400.00	1,395.14	1,891.50	1,890.73	5.00	56.68	61.59	1,556.70	10,717.56	10,787.89	10,726.23	61.66	174.963	
1,500.00	1,494.42	2,002.05	2,001.24	5.38	59.99	61.66	1,555.19	10,717.56	10,781.95	10,716.61	65.35	164.998	
1,600.00	1,593.69	2,075.71	2,074.69	5.76	62.20	61.70	1,555.23	10,717.56	10,776.19	10,708.26	67.93	158.638	
1,700.00	1,692.96	2,174.98	2,173.96	6.14	65.17	61.75	1,555.23	10,717.56	10,770.46	10,699.18	71.28	151.098	
1,800.00	1,792.24	2,276.97	2,275.91	6.52	68.23	61.80	1,557.38	10,717.56	10,765.03	10,690.32	74.71	144.082	
1,900.00	1,891.51	2,387.20	2,386.12	6.91	71.53	61.87	1,556.75	10,717.56	10,759.25	10,680.85	78.40	137.243	
2,000.00	1,990.79	2,497.26	2,496.15	7.29	74.83	61.94	1,555.27	10,717.56	10,753.38	10,671.31	82.07	131.024	
2,100.00	2,090.06	2,572.38	2,571.06	7.67	77.08	61.98	1,555.23	10,717.56	10,747.66	10,662.96	84.70	126.888	
2,200.00	2,189.34	2,671.66	2,670.34	8.06	80.05	62.04	1,555.23	10,717.56	10,741.98	10,653.93	88.06	121.991	
2,300.00	2,288.61	2,773.18	2,771.81	8.44	83.10	62.08	1,557.39	10,717.56	10,736.59	10,645.12	91.48	117.369	
2,400.00	2,387.89	2,882.93	2,881.54	8.82	86.39	62.15	1,556.79	10,717.56	10,730.87	10,635.72	95.14	112.784	
2,500.00	2,487.16	2,992.52	2,991.10	9.21	89.67	62.22	1,555.35	10,717.56	10,725.06	10,626.25	98.81	108.544	
2,600.00	2,586.44	3,069.06	3,067.44	9.59	91.96	62.26	1,555.23	10,717.56	10,719.39	10,617.90	101.48	105.628	
2,700.00	2,685.71	3,168.33	3,166.71	9.98	94.94	62.32	1,555.23	10,717.56	10,713.76	10,608.93	104.84	102.194	
2,800.00	2,784.99	3,269.41	3,267.75	10.36	97.97	62.36	1,557.39	10,717.56	10,708.42	10,600.17	108.25	98.926	
2,900.00	2,884.26	3,378.69	3,377.01	10.75	101.24	62.43	1,556.83	10,717.56	10,702.75	10,590.85	111.90	95.645	
3,000.00	2,983.53	3,487.82	3,486.09	11.13	104.51	62.50	1,555.43	10,717.56	10,697.01	10,581.46	115.55	92.574	
3,100.00	3,082.81	3,565.74	3,563.81	11.52	106.85	62.54	1,555.23	10,717.56	10,691.38	10,573.11	118.27	90.400	
3,200.00	3,182.08	3,665.01	3,663.08	11.90	109.82	62.60	1,555.23	10,717.56	10,685.81	10,564.19	121.62	87.860	
3,300.00	3,281.36	3,765.69	3,763.72	12.29	112.84	62.65	1,557.40	10,717.56	10,680.51	10,555.49	125.02	85.430	
3,400.00	3,380.63	3,874.50	3,872.50	12.67	116.10	62.71	1,556.86	10,717.56	10,674.90	10,546.24	128.66	82.969	
3,500.00	3,479.91	3,983.15	3,981.13	13.06	119.35	62.78	1,555.51	10,717.56	10,669.22	10,536.92	132.30	80.645	
3,600.00	3,579.18	4,062.42	4,060.18	13.44	121.73	62.83	1,555.23	10,717.56	10,663.64	10,528.58	135.06	78.958	
3,700.00	3,678.46	4,161.69	4,159.46	13.83	124.70	62.89	1,555.23	10,717.56	10,658.12	10,519.71	138.41	77.003	
3,800.00	3,777.73	4,261.99	4,259.72	14.21	127.71	62.93	1,557.40	10,717.56	10,652.86	10,511.06	141.80	75.127	
3,900.00	3,877.01	4,370.33	4,368.04	14.60	130.95	63.00	1,556.90	10,717.56	10,647.31	10,501.89	145.43	73.215	
4,000.00	3,976.28	4,478.53	4,476.20	14.98	134.20	63.07	1,555.58	10,717.56	10,641.69	10,492.64	149.05	71.398	
4,100.00	4,075.55	4,559.09	4,556.55	15.37	136.61	63.12	1,555.23	10,717.56	10,636.16	10,484.32	151.85	70.046	
4,200.00	4,174.83	4,658.37	4,655.83	15.75	139.59	63.17	1,555.23	10,717.56	10,630.70	10,475.50	155.20	68.496	
4,300.00	4,274.10	4,758.32	4,755.75	16.14	142.58	63.22	1,557.40	10,717.56	10,625.48	10,466.90	158.58	67.005	
4,400.00	4,373.38	4,866.21	4,863.61	16.53	145.81	63.29	1,556.93	10,717.56	10,619.99	10,457.80	162.19	65.478	
4,500.00	4,472.65	4,973.94	4,971.31	16.91	149.04	63.35	1,555.65	10,717.56	10,614.44	10,448.63	165.80	64.019	
4,600.00	4,571.93	5,055.77	5,052.93	17.30	151.49	63.40	1,555.23	10,717.56	10,608.96	10,440.32	168.64	62.910	
4,700.00	4,671.20	5,155.05	5,152.20	17.68	154.47	63.46	1,555.23	10,717.56	10,603.55	10,431.55	171.99	61.651	
4,800.00	4,770.48	5,254.69	5,251.81	18.07	157.45	63.51	1,557.40	10,717.56	10,598.37	10,423.01	175.36	60.437	
4,900.00	4,869.75	5,362.12	5,359.22	18.45	160.67	63.57	1,556.97	10,717.56	10,592.94	10,413.98	178.96	59.191	
5,000.00	4,969.03	5,469.40	5,466.47	18.84	163.89	63.64	1,555.72	10,717.56	10,587.45	10,404.89	182.56	57.995	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,068.30	5,552.45	5,549.30	19.23	166.38	63.69	1,555.23	10,717.56	10,582.02	10,396.59	185.43	57.067	
5,200.00	5,167.58	5,651.72	5,648.58	19.61	169.35	63.75	1,555.23	10,717.56	10,576.67	10,387.88	188.79	56.024	
5,300.00	5,266.85	5,751.09	5,747.90	20.00	172.33	63.80	1,557.41	10,717.56	10,571.54	10,379.39	192.15	55.018	
5,400.00	5,366.12	5,858.06	5,854.86	20.38	175.53	63.86	1,557.00	10,717.56	10,566.17	10,370.43	195.73	53.982	
5,500.00	5,465.40	5,964.89	5,961.66	20.77	178.74	63.93	1,555.79	10,717.56	10,560.74	10,361.42	199.32	52.985	
5,600.00	5,564.67	6,049.13	6,045.67	21.15	181.26	63.98	1,555.23	10,717.56	10,555.36	10,353.14	202.22	52.196	
5,700.00	5,663.95	6,148.40	6,144.95	21.54	184.23	64.04	1,555.23	10,717.56	10,550.06	10,344.48	205.58	51.318	
5,800.00	5,763.22	6,247.67	6,244.22	21.93	187.21	64.10	1,555.23	10,717.56	10,544.77	10,335.83	208.94	50.468	
5,900.00	5,862.50	6,300.00	6,296.37	22.31	188.78	64.13	1,555.23	10,717.56	10,539.60	10,328.71	210.89	49.976	
6,000.00	5,961.77	6,300.00	6,296.37	22.70	188.78	64.13	1,555.23	10,717.56	10,535.25	10,323.98	211.26	49.868	
6,100.00	6,061.05	6,300.00	6,296.37	23.08	188.78	64.13	1,555.23	10,717.56	10,531.84	10,320.22	211.62	49.768	
6,200.00	6,160.32	6,300.00	6,296.37	23.47	188.78	64.13	1,555.23	10,717.56	10,529.39	10,317.43	211.95	49.677	
6,300.00	6,259.60	6,300.00	6,296.37	23.86	188.78	64.13	1,555.23	10,717.56	10,527.88	10,315.60	212.27	49.596	
6,376.00	6,335.04	6,300.00	6,296.37	24.15	188.78	64.13	1,555.23	10,717.56	10,527.37	10,314.86	212.50	49.540	
6,400.00	6,358.85	6,300.00	6,296.37	24.24	188.78	49.38	1,555.23	10,717.56	10,526.87	10,314.30	212.57	49.521	
6,450.00	6,408.16	6,300.00	6,296.37	24.44	188.78	30.18	1,555.23	10,717.56	10,523.12	10,310.40	212.72	49.470	
6,500.00	6,456.87	6,300.00	6,296.37	24.64	188.78	20.17	1,555.23	10,717.56	10,515.72	10,302.87	212.85	49.404	
6,550.00	6,504.65	6,300.00	6,296.37	24.85	188.78	14.36	1,555.23	10,717.56	10,504.71	10,291.73	212.98	49.322	
6,600.00	6,551.23	6,300.00	6,296.37	25.06	188.78	10.60	1,555.23	10,717.56	10,490.15	10,277.05	213.10	49.225	
6,650.00	6,596.31	6,300.00	6,296.37	25.26	188.78	7.95	1,555.23	10,717.56	10,472.11	10,258.90	213.22	49.115	
6,700.00	6,639.62	6,300.00	6,296.37	25.48	188.78	5.95	1,555.23	10,717.56	10,450.69	10,237.37	213.32	48.991	
6,750.00	6,680.88	6,300.00	6,296.37	25.69	188.78	4.34	1,555.23	10,717.56	10,425.99	10,212.58	213.41	48.854	
6,800.00	6,719.85	6,300.00	6,296.37	25.91	188.78	2.97	1,555.23	10,717.56	10,398.15	10,184.66	213.49	48.705	
6,850.00	6,756.28	6,300.00	6,296.37	26.13	188.78	1.74	1,555.23	10,717.56	10,367.32	10,153.75	213.57	48.544	
6,900.00	6,789.95	6,300.00	6,296.37	26.37	188.78	0.57	1,555.23	10,717.56	10,333.65	10,120.03	213.62	48.373	
6,950.00	6,820.65	6,300.00	6,296.37	26.61	188.78	-0.61	1,555.23	10,717.56	10,297.33	10,083.66	213.67	48.192	
7,000.00	6,848.19	6,300.00	6,296.37	26.87	188.78	-1.88	1,555.23	10,717.56	10,258.56	10,044.85	213.71	48.002	
7,050.00	6,872.41	6,300.00	6,296.37	27.13	188.78	-3.33	1,555.23	10,717.56	10,217.54	10,003.80	213.74	47.804	
7,100.00	6,893.15	6,300.00	6,296.37	27.41	188.78	-5.08	1,555.23	10,717.56	10,174.51	9,960.76	213.76	47.599	
7,150.00	6,910.28	6,300.00	6,296.37	27.71	188.78	-7.34	1,555.23	10,717.56	10,129.71	9,915.94	213.76	47.387	
7,200.00	6,923.70	6,300.00	6,296.37	28.02	188.78	-10.47	1,555.23	10,717.56	10,083.39	9,869.62	213.76	47.171	
7,250.00	6,933.33	6,300.00	6,296.37	28.34	188.78	-15.22	1,555.23	10,717.56	10,035.81	9,822.06	213.76	46.950	
7,300.00	6,939.11	6,300.00	6,296.37	28.67	188.78	-23.23	1,555.23	10,717.56	9,987.27	9,773.52	213.74	46.725	
7,349.12	6,941.00	6,300.00	6,296.37	29.00	188.78	-38.38	1,555.23	10,717.56	9,938.90	9,725.17	213.73	46.503	
7,400.00	6,941.01	6,300.00	6,296.37	29.36	188.78	-38.38	1,555.23	10,717.56	9,888.56	9,674.85	213.71	46.271	
7,500.00	6,941.02	6,300.00	6,296.37	30.11	188.78	-38.38	1,555.23	10,717.56	9,789.63	9,575.96	213.67	45.817	
7,600.00	6,941.04	6,300.00	6,296.37	30.93	188.78	-38.38	1,555.23	10,717.56	9,690.73	9,477.10	213.63	45.362	
7,700.00	6,941.05	6,300.00	6,296.37	31.80	188.78	-38.38	1,555.23	10,717.56	9,591.85	9,378.25	213.59	44.907	
7,800.00	6,941.07	6,300.00	6,296.37	32.73	188.78	-38.38	1,555.23	10,717.56	9,492.99	9,279.43	213.56	44.452	
7,900.00	6,941.08	6,300.00	6,296.37	33.71	188.78	-38.38	1,555.23	10,717.56	9,394.15	9,180.63	213.52	43.997	
8,000.00	6,941.10	6,300.00	6,296.37	34.73	188.78	-38.38	1,555.23	10,717.56	9,295.35	9,081.86	213.49	43.541	
8,100.00	6,941.11	6,300.00	6,296.37	35.79	188.78	-38.38	1,555.23	10,717.56	9,196.56	8,983.11	213.45	43.085	
8,200.00	6,941.13	6,300.00	6,296.37	36.90	188.78	-38.38	1,555.23	10,717.56	9,097.81	8,884.38	213.42	42.629	
8,300.00	6,941.14	6,300.00	6,296.37	38.03	188.78	-38.38	1,555.23	10,717.56	8,999.08	8,785.69	213.39	42.172	
8,400.00	6,941.16	6,300.00	6,296.37	39.20	188.78	-38.38	1,555.23	10,717.56	8,900.37	8,687.01	213.36	41.715	
8,500.00	6,941.17	6,300.00	6,296.37	40.40	188.78	-38.38	1,555.23	10,717.56	8,801.70	8,588.37	213.33	41.258	
8,600.00	6,941.19	6,300.00	6,296.37	41.63	188.78	-38.38	1,555.23	10,717.56	8,703.06	8,489.76	213.31	40.801	
8,700.00	6,941.20	6,300.00	6,296.37	42.88	188.78	-38.38	1,555.23	10,717.56	8,604.45	8,391.17	213.28	40.343	
8,800.00	6,941.22	6,300.00	6,296.37	44.16	188.78	-38.38	1,555.23	10,717.56	8,505.87	8,292.62	213.26	39.885	
8,900.00	6,941.23	6,300.00	6,296.37	45.45	188.78	-38.38	1,555.23	10,717.56	8,407.33	8,194.09	213.24	39.427	
9,000.00	6,941.24	6,300.00	6,296.37	46.76	188.78	-38.38	1,555.23	10,717.56	8,308.82	8,095.60	213.22	38.968	
9,100.00	6,941.26	6,300.00	6,296.37	48.10	188.78	-38.38	1,555.23	10,717.56	8,210.35	7,997.15	213.20	38.510	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	6,300.00	6,296.37	49.44	188.78	-38.38	1,555.23	10,717.56	8,111.91	7,898.73	213.19	38.051	
9,300.00	6,941.29	6,300.00	6,296.37	50.80	188.78	-38.38	1,555.23	10,717.56	8,013.52	7,800.34	213.17	37.591	
9,400.00	6,941.30	6,300.00	6,296.37	52.18	188.78	-38.38	1,555.23	10,717.56	7,915.16	7,701.99	213.16	37.132	
9,500.00	6,941.32	6,300.00	6,296.37	53.57	188.78	-38.38	1,555.23	10,717.56	7,816.84	7,603.69	213.16	36.672	
9,600.00	6,941.33	6,300.00	6,296.37	54.97	188.78	-38.38	1,555.23	10,717.56	7,718.57	7,505.42	213.15	36.212	
9,700.00	6,941.35	6,300.00	6,296.37	56.38	188.78	-38.38	1,555.23	10,717.56	7,620.35	7,407.20	213.15	35.751	
9,800.00	6,941.36	6,300.00	6,296.37	57.80	188.78	-38.38	1,555.23	10,717.56	7,522.17	7,309.02	213.15	35.291	
9,900.00	6,941.38	6,300.00	6,296.37	59.23	188.78	-38.38	1,555.23	10,717.56	7,424.03	7,210.88	213.15	34.830	
10,000.00	6,941.39	6,300.00	6,296.37	60.67	188.78	-38.38	1,555.23	10,717.56	7,325.95	7,112.79	213.16	34.368	
10,100.00	6,941.41	6,300.00	6,296.37	62.11	188.78	-38.38	1,555.23	10,717.56	7,227.93	7,014.75	213.17	33.907	
10,200.00	6,941.42	6,300.00	6,296.37	63.57	188.78	-38.38	1,555.23	10,717.56	7,129.95	6,916.77	213.18	33.445	
10,300.00	6,941.44	6,300.00	6,296.37	65.03	188.78	-38.38	1,555.23	10,717.56	7,032.04	6,818.83	213.20	32.983	
10,400.00	6,941.45	6,300.00	6,296.37	66.50	188.78	-38.38	1,555.23	10,717.56	6,934.18	6,720.95	213.23	32.520	
10,500.00	6,941.47	6,300.00	6,296.37	67.97	188.78	-38.38	1,555.23	10,717.56	6,836.38	6,623.13	213.25	32.058	
10,600.00	6,941.48	6,300.00	6,296.37	69.45	188.78	-38.38	1,555.23	10,717.56	6,738.65	6,525.37	213.28	31.595	
10,700.00	6,941.50	6,300.00	6,296.37	70.94	188.78	-38.38	1,555.23	10,717.56	6,640.99	6,427.67	213.32	31.132	
10,800.00	6,941.51	6,300.00	6,296.37	72.43	188.78	-38.38	1,555.23	10,717.56	6,543.40	6,330.04	213.36	30.668	
10,900.00	6,941.53	6,300.00	6,296.37	73.92	188.78	-38.38	1,555.23	10,717.56	6,445.88	6,232.47	213.41	30.204	
11,000.00	6,941.54	6,300.00	6,296.37	75.42	188.78	-38.38	1,555.23	10,717.56	6,348.44	6,134.98	213.46	29.740	
11,100.00	6,941.56	6,300.00	6,296.37	76.92	188.78	-38.38	1,555.23	10,717.56	6,251.08	6,037.56	213.52	29.276	
11,200.00	6,941.57	6,300.00	6,296.37	78.43	188.78	-38.38	1,555.23	10,717.56	6,153.80	5,940.21	213.59	28.811	
11,300.00	6,941.59	6,300.00	6,296.37	79.94	188.78	-38.38	1,555.23	10,717.56	6,056.62	5,842.95	213.66	28.346	
11,400.00	6,941.60	6,300.00	6,296.37	81.46	188.78	-38.38	1,555.23	10,717.56	5,959.52	5,745.78	213.75	27.881	
11,500.00	6,941.61	6,300.00	6,296.37	82.98	188.78	-38.38	1,555.23	10,717.56	5,862.53	5,648.69	213.84	27.416	
11,600.00	6,941.63	6,300.00	6,296.37	84.50	188.78	-38.38	1,555.23	10,717.56	5,765.63	5,551.70	213.93	26.951	
11,700.00	6,941.64	6,300.00	6,296.37	86.02	188.78	-38.38	1,555.23	10,717.56	5,668.85	5,454.81	214.04	26.485	
11,800.00	6,941.66	6,300.00	6,296.37	87.55	188.78	-38.38	1,555.23	10,717.56	5,572.18	5,358.02	214.16	26.019	
11,900.00	6,941.67	6,300.00	6,296.37	89.08	188.78	-38.38	1,555.23	10,717.56	5,475.62	5,261.34	214.29	25.553	
12,000.00	6,941.69	6,300.00	6,296.37	90.61	188.78	-38.38	1,555.23	10,717.56	5,379.20	5,164.77	214.42	25.087	
12,100.00	6,941.70	6,300.00	6,296.37	92.14	188.78	-38.38	1,555.23	10,717.56	5,282.90	5,068.33	214.57	24.620	
12,200.00	6,941.72	6,300.00	6,296.37	93.68	188.78	-38.38	1,555.23	10,717.56	5,186.75	4,972.01	214.74	24.154	
12,300.00	6,941.73	6,300.00	6,296.37	95.22	188.78	-38.38	1,555.23	10,717.56	5,090.74	4,875.83	214.91	23.688	
12,400.00	6,941.75	6,300.00	6,296.37	96.76	188.78	-38.38	1,555.23	10,717.56	4,994.90	4,779.79	215.10	23.221	
12,500.00	6,941.76	6,300.00	6,296.37	98.30	188.78	-38.38	1,555.23	10,717.56	4,899.21	4,683.91	215.31	22.755	
12,600.00	6,941.78	6,300.00	6,296.37	99.85	188.78	-38.38	1,555.23	10,717.56	4,803.71	4,588.18	215.52	22.288	
12,700.00	6,941.79	6,300.00	6,296.37	101.40	188.78	-38.38	1,555.23	10,717.56	4,708.39	4,492.63	215.76	21.822	
12,800.00	6,941.81	6,300.00	6,296.37	102.95	188.78	-38.38	1,555.23	10,717.56	4,613.26	4,397.25	216.01	21.356	
12,900.00	6,941.82	6,300.00	6,296.37	104.50	188.78	-38.38	1,555.23	10,717.56	4,518.35	4,302.07	216.28	20.891	
13,000.00	6,941.84	6,300.00	6,296.37	106.05	188.78	-38.38	1,555.23	10,717.56	4,423.67	4,207.09	216.58	20.426	
13,100.00	6,941.85	6,300.00	6,296.37	107.60	188.78	-38.38	1,555.23	10,717.56	4,329.22	4,112.33	216.89	19.961	
13,200.00	6,941.87	6,300.00	6,296.37	109.16	188.78	-38.38	1,555.23	10,717.56	4,235.03	4,017.81	217.22	19.497	
13,300.00	6,941.88	6,300.00	6,296.37	110.71	188.78	-38.38	1,555.23	10,717.56	4,141.11	3,923.53	217.57	19.033	
13,400.00	6,941.90	6,300.00	6,296.37	112.27	188.78	-38.38	1,555.23	10,717.56	4,047.48	3,829.52	217.95	18.570	
13,500.00	6,941.91	6,300.00	6,296.37	113.83	188.78	-38.38	1,555.23	10,717.56	3,954.16	3,735.80	218.36	18.109	
13,600.00	6,941.93	6,300.00	6,296.37	115.39	188.78	-38.38	1,555.23	10,717.56	3,861.18	3,642.39	218.79	17.648	
13,700.00	6,941.94	6,300.00	6,296.37	116.95	188.78	-38.38	1,555.23	10,717.56	3,768.55	3,549.31	219.24	17.189	
13,800.00	6,941.96	6,300.00	6,296.37	118.51	188.78	-38.38	1,555.23	10,717.56	3,676.31	3,456.59	219.73	16.731	
13,900.00	6,941.97	6,300.00	6,296.37	120.08	188.78	-38.38	1,555.23	10,717.56	3,584.49	3,364.25	220.24	16.275	
14,000.00	6,941.99	6,300.00	6,296.37	121.64	188.78	-38.38	1,555.23	10,717.56	3,493.12	3,272.33	220.79	15.821	
14,100.00	6,942.00	6,300.00	6,296.37	123.21	188.78	-38.38	1,555.23	10,717.56	3,402.24	3,180.87	221.37	15.369	
14,200.00	6,942.01	6,300.00	6,296.37	124.77	188.78	-38.38	1,555.23	10,717.56	3,311.88	3,089.90	221.98	14.920	
14,300.00	6,942.03	6,300.00	6,296.37	126.34	188.78	-38.38	1,555.23	10,717.56	3,222.08	2,999.46	222.62	14.473	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	6,300.00	6,296.37	127.91	188.78	-38.38	1,555.23	10,717.56	3,132.91	2,909.61	223.30	14.030	
14,500.00	6,942.06	6,300.00	6,296.37	129.48	188.78	-38.38	1,555.23	10,717.56	3,044.41	2,820.40	224.01	13.590	
14,600.00	6,942.07	6,300.00	6,296.37	131.05	188.78	-38.38	1,555.23	10,717.56	2,956.65	2,731.88	224.76	13.155	
14,700.00	6,942.09	6,300.00	6,296.37	132.62	188.78	-38.38	1,555.23	10,717.56	2,869.68	2,644.13	225.55	12.723	
14,800.00	6,942.10	6,300.00	6,296.37	134.19	188.78	-38.38	1,555.23	10,717.56	2,783.59	2,557.23	226.36	12.297	
14,900.00	6,942.12	6,300.00	6,296.37	135.76	188.78	-38.38	1,555.23	10,717.56	2,698.46	2,471.24	227.21	11.876	
15,000.00	6,942.13	6,300.00	6,296.37	137.34	188.78	-38.38	1,555.23	10,717.56	2,614.38	2,386.28	228.10	11.462	
15,100.00	6,942.15	6,300.00	6,296.37	138.91	188.78	-38.38	1,555.23	10,717.56	2,531.46	2,302.45	229.01	11.054	
15,200.00	6,942.16	6,300.00	6,296.37	140.48	188.78	-38.38	1,555.23	10,717.56	2,449.82	2,219.87	229.94	10.654	
15,300.00	6,942.18	6,300.00	6,296.37	142.06	188.78	-38.38	1,555.23	10,717.56	2,369.58	2,138.68	230.90	10.262	
15,400.00	6,942.19	6,300.00	6,296.37	143.64	188.78	-38.38	1,555.23	10,717.56	2,290.90	2,059.03	231.87	9.880	
15,500.00	6,942.21	6,300.00	6,296.37	145.21	188.78	-38.38	1,555.23	10,717.56	2,213.94	1,981.09	232.85	9.508	
15,600.00	6,942.22	6,300.00	6,296.37	146.79	188.78	-38.38	1,555.23	10,717.56	2,138.89	1,905.06	233.82	9.147	
15,700.00	6,942.24	6,300.00	6,296.37	148.37	188.78	-38.38	1,555.23	10,717.56	2,065.95	1,831.16	234.79	8.799	
15,800.00	6,942.25	6,300.00	6,296.37	149.94	188.78	-38.38	1,555.23	10,717.56	1,995.36	1,759.63	235.72	8.465	
15,900.00	6,942.27	6,300.00	6,296.37	151.52	188.78	-38.38	1,555.23	10,717.56	1,927.37	1,690.75	236.62	8.145	
16,000.00	6,942.28	6,300.00	6,296.37	153.10	188.78	-38.38	1,555.23	10,717.56	1,862.27	1,624.81	237.47	7.842	
16,100.00	6,942.30	6,300.00	6,296.37	154.68	188.78	-38.38	1,555.23	10,717.56	1,800.38	1,562.14	238.24	7.557	
16,200.00	6,942.31	6,300.00	6,296.37	156.26	188.78	-38.38	1,555.23	10,717.56	1,742.03	1,503.09	238.94	7.291	
16,300.00	6,942.33	6,300.00	6,296.37	157.84	188.78	-38.38	1,555.23	10,717.56	1,687.60	1,448.05	239.55	7.045	
16,400.00	6,942.34	6,300.00	6,296.37	159.42	188.78	-38.38	1,555.23	10,717.56	1,637.47	1,397.39	240.07	6.821	
16,500.00	6,942.36	6,300.00	6,296.37	161.00	188.78	-38.38	1,555.23	10,717.56	1,592.04	1,351.52	240.53	6.619	
16,600.00	6,942.37	6,300.00	6,296.37	162.59	188.78	-38.38	1,555.23	10,717.56	1,551.74	1,310.81	240.93	6.441	
16,700.00	6,942.38	6,300.00	6,296.37	164.17	188.78	-38.38	1,555.23	10,717.56	1,516.98	1,275.64	241.33	6.286	
16,800.00	6,942.40	6,300.00	6,296.37	165.75	188.78	-38.38	1,555.23	10,717.56	1,488.13	1,246.33	241.79	6.155	
16,900.00	6,942.41	6,300.00	6,296.37	167.33	188.78	-38.38	1,555.23	10,717.56	1,465.55	1,223.16	242.39	6.046	
17,000.00	6,942.43	6,300.00	6,296.37	168.92	188.78	-38.38	1,555.23	10,717.56	1,449.53	1,206.33	243.20	5.960	
17,100.00	6,942.44	6,300.00	6,296.37	170.50	188.78	-38.38	1,555.23	10,717.56	1,440.29	1,196.02	244.27	5.896	
17,183.46	6,942.46	6,300.00	6,296.37	171.82	188.78	-38.38	1,555.23	10,717.56	1,437.87	1,192.46	245.41	5.859	CC
17,200.00	6,942.46	6,300.00	6,296.37	172.09	188.78	-38.38	1,555.23	10,717.56	1,437.97	1,192.31	245.66	5.853	ES
17,300.00	6,942.47	6,300.00	6,296.37	173.67	188.78	-38.38	1,555.23	10,717.56	1,442.59	1,195.24	247.34	5.832	SF
17,400.00	6,942.49	6,300.00	6,296.37	175.26	188.78	-38.38	1,555.23	10,717.56	1,454.09	1,204.81	249.28	5.833	
17,500.00	6,942.50	6,300.00	6,296.37	176.84	188.78	-38.38	1,555.23	10,717.56	1,472.30	1,220.93	251.38	5.857	
17,600.00	6,942.52	6,300.00	6,296.37	178.43	188.78	-38.38	1,555.23	10,717.56	1,496.99	1,243.46	253.53	5.905	
17,700.00	6,942.53	6,300.00	6,296.37	180.01	188.78	-38.38	1,555.23	10,717.56	1,527.84	1,272.19	255.65	5.976	
17,800.00	6,942.55	6,300.00	6,296.37	181.60	188.78	-38.38	1,555.23	10,717.56	1,564.48	1,306.85	257.63	6.073	
17,900.00	6,942.56	6,300.00	6,296.37	183.19	188.78	-38.38	1,555.23	10,717.56	1,606.52	1,347.11	259.41	6.193	
18,000.00	6,942.58	6,300.00	6,296.37	184.77	188.78	-38.38	1,555.23	10,717.56	1,653.55	1,392.59	260.96	6.336	
18,100.00	6,942.59	6,300.00	6,296.37	186.36	188.78	-38.38	1,555.23	10,717.56	1,705.15	1,442.91	262.24	6.502	
18,200.00	6,942.61	6,300.00	6,296.37	187.95	188.78	-38.38	1,555.23	10,717.56	1,760.92	1,497.66	263.25	6.689	
18,300.00	6,942.62	6,300.00	6,296.37	189.54	188.78	-38.38	1,555.23	10,717.56	1,820.48	1,556.46	264.02	6.895	
18,400.00	6,942.64	6,300.00	6,296.37	191.12	188.78	-38.38	1,555.23	10,717.56	1,883.47	1,618.91	264.55	7.119	
18,500.00	6,942.65	6,300.00	6,296.37	192.71	188.78	-38.38	1,555.23	10,717.56	1,949.55	1,684.67	264.88	7.360	
18,600.00	6,942.67	6,300.00	6,296.37	194.30	188.78	-38.38	1,555.23	10,717.56	2,018.43	1,753.40	265.03	7.616	
18,700.00	6,942.68	6,300.00	6,296.37	195.89	188.78	-38.38	1,555.23	10,717.56	2,089.83	1,824.81	265.02	7.886	
18,800.00	6,942.70	6,300.00	6,296.37	197.48	188.78	-38.38	1,555.23	10,717.56	2,163.49	1,898.60	264.88	8.168	
18,900.00	6,942.71	6,300.00	6,296.37	199.07	188.78	-38.38	1,555.23	10,717.56	2,239.19	1,974.55	264.64	8.461	
19,000.00	6,942.73	6,300.00	6,296.37	200.66	188.78	-38.38	1,555.23	10,717.56	2,316.74	2,052.43	264.31	8.765	
19,100.00	6,942.74	6,300.00	6,296.37	202.25	188.78	-38.38	1,555.23	10,717.56	2,395.96	2,132.04	263.91	9.079	
19,200.00	6,942.76	6,300.00	6,296.37	203.84	188.78	-38.38	1,555.23	10,717.56	2,476.67	2,213.22	263.46	9.401	
19,300.00	6,942.77	6,300.00	6,296.37	205.43	188.78	-38.38	1,555.23	10,717.56	2,558.75	2,295.79	262.96	9.730	
19,400.00	6,942.78	6,300.00	6,296.37	207.02	188.78	-38.38	1,555.23	10,717.56	2,642.07	2,379.63	262.44	10.067	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,300.00	6,296.37	208.61	188.78	-38.38	1,555.23	10,717.56	2,726.51	2,464.61	261.89	10.411	
19,600.00	6,942.81	6,300.00	6,296.37	210.20	188.78	-38.38	1,555.23	10,717.56	2,811.96	2,550.63	261.33	10.760	
19,700.00	6,942.83	6,300.00	6,296.37	211.79	188.78	-38.38	1,555.23	10,717.56	2,898.35	2,637.59	260.76	11.115	
19,800.00	6,942.84	6,300.00	6,296.37	213.38	188.78	-38.38	1,555.23	10,717.56	2,985.59	2,725.40	260.19	11.475	
19,900.00	6,942.86	6,300.00	6,296.37	214.97	188.78	-38.38	1,555.23	10,717.56	3,073.61	2,813.98	259.62	11.839	
20,000.00	6,942.87	6,300.00	6,296.37	216.56	188.78	-38.38	1,555.23	10,717.56	3,162.34	2,903.28	259.06	12.207	
20,100.00	6,942.89	6,300.00	6,296.37	218.15	188.78	-38.38	1,555.23	10,717.56	3,251.72	2,993.22	258.50	12.579	
20,200.00	6,942.90	6,300.00	6,296.37	219.75	188.78	-38.38	1,555.23	10,717.56	3,341.70	3,083.75	257.95	12.955	
20,300.00	6,942.92	6,300.00	6,296.37	221.34	188.78	-38.38	1,555.23	10,717.56	3,432.24	3,174.83	257.42	13.333	
20,400.00	6,942.93	6,300.00	6,296.37	222.93	188.78	-38.38	1,555.23	10,717.56	3,523.29	3,266.40	256.89	13.715	
20,500.00	6,942.95	6,300.00	6,296.37	224.52	188.78	-38.38	1,555.23	10,717.56	3,614.82	3,358.44	256.38	14.099	
20,600.00	6,942.96	6,300.00	6,296.37	226.12	188.78	-38.38	1,555.23	10,717.56	3,706.78	3,450.90	255.88	14.486	
20,700.00	6,942.98	6,300.00	6,296.37	227.71	188.78	-38.38	1,555.23	10,717.56	3,799.15	3,543.75	255.40	14.875	
20,800.00	6,942.99	6,300.00	6,296.37	229.30	188.78	-38.38	1,555.23	10,717.56	3,891.89	3,636.96	254.93	15.266	
20,855.77	6,943.00	6,300.00	6,296.37	230.19	188.78	-38.38	1,555.23	10,717.56	3,943.77	3,689.09	254.68	15.485	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	Rule Assigned: Warning
0.00	0.00	0.00	0.00	0.00	0.00	-24.45	836.64	-380.33	920.38				
100.00	100.00	50.00	50.00	0.25	0.99	-24.45	836.64	-380.33	919.03	917.79	1.24	743.539	
200.00	200.00	150.00	150.00	0.61	2.90	-24.45	836.64	-380.33	919.03	915.52	3.51	261.981	
300.00	300.00	250.01	250.00	0.97	4.74	-24.45	836.64	-380.33	919.03	913.32	5.71	161.032	
400.00	400.00	350.72	350.71	1.33	6.60	-24.44	836.72	-380.33	919.10	911.18	7.92	115.982	
500.00	500.00	450.02	450.00	1.68	8.48	-24.45	836.64	-380.33	919.03	908.86	10.17	90.381	
600.00	599.98	550.00	549.98	2.04	10.45	-45.28	836.64	-380.33	917.80	905.31	12.49	73.475	
700.00	699.84	649.85	649.84	2.40	12.41	-45.56	836.64	-380.33	914.12	899.31	14.81	61.710	
800.00	799.45	751.47	751.45	2.77	14.41	-46.03	837.35	-380.33	908.68	891.51	17.17	52.916	
845.27	844.44	797.43	797.40	2.93	15.31	-46.33	837.21	-380.33	905.02	886.78	18.24	49.614	
900.00	898.77	852.92	852.89	3.13	16.40	-46.64	836.97	-380.33	900.26	880.73	19.53	46.095	
1,000.00	998.04	948.10	948.04	3.50	18.25	-47.19	836.64	-380.33	891.70	869.96	21.74	41.011	
1,100.00	1,097.32	1,047.38	1,047.32	3.87	20.14	-47.76	836.64	-380.33	883.54	859.54	24.00	36.814	
1,200.00	1,196.59	1,147.47	1,147.41	4.24	22.04	-48.32	837.29	-380.33	876.05	849.78	26.28	33.341	
1,300.00	1,295.87	1,249.25	1,249.18	4.62	23.98	-48.94	837.01	-380.33	867.84	839.25	28.58	30.360	
1,400.00	1,395.14	1,345.22	1,345.14	5.00	25.78	-49.53	836.64	-380.33	859.61	828.86	30.75	27.952	
1,500.00	1,494.42	1,444.50	1,444.42	5.38	27.55	-50.14	836.64	-380.33	851.82	818.93	32.90	25.894	
1,600.00	1,593.69	1,545.22	1,545.13	5.76	29.34	-50.77	836.91	-380.33	844.37	809.31	35.07	24.079	
1,700.00	1,692.96	1,643.05	1,642.96	6.14	31.09	-51.40	836.64	-380.33	836.55	799.36	37.19	22.492	
1,800.00	1,792.24	1,742.33	1,742.24	6.52	32.92	-52.05	836.64	-380.33	829.07	789.66	39.40	21.041	
1,900.00	1,891.51	1,841.60	1,841.51	6.91	34.76	-52.71	836.64	-380.33	821.69	780.08	41.61	19.746	
2,000.00	1,990.79	1,941.50	1,941.41	7.29	36.60	-53.37	836.83	-380.33	814.60	770.76	43.84	18.583	
2,100.00	2,090.06	2,041.44	2,041.35	7.67	38.45	-54.06	836.69	-380.33	807.33	761.27	46.06	17.528	
2,200.00	2,189.34	2,139.45	2,139.34	8.06	40.38	-54.75	836.64	-380.33	800.25	751.88	48.37	16.544	
2,300.00	2,288.61	2,240.25	2,240.14	8.44	42.41	-55.45	836.99	-380.33	793.64	742.85	50.79	15.627	
2,400.00	2,387.89	2,338.02	2,337.89	8.82	44.40	-56.17	836.64	-380.33	786.55	733.39	53.16	14.797	
2,500.00	2,487.16	2,437.30	2,437.16	9.21	46.47	-56.90	836.64	-380.33	779.89	724.27	55.61	14.024	
2,600.00	2,586.44	2,537.96	2,537.81	9.59	48.58	-57.63	837.34	-380.33	773.92	715.82	58.10	13.321	
2,700.00	2,685.71	2,640.38	2,640.23	9.98	50.72	-58.43	836.85	-380.33	767.14	706.52	60.62	12.655	
2,800.00	2,784.99	2,735.18	2,734.99	10.36	52.62	-59.17	836.64	-380.33	760.69	697.79	62.90	12.093	
2,900.00	2,884.26	2,834.45	2,834.26	10.75	54.57	-59.95	836.64	-380.33	754.56	689.32	65.24	11.566	
3,000.00	2,983.53	2,933.72	2,933.53	11.13	56.52	-60.74	836.64	-380.33	748.58	681.00	67.58	11.077	
3,100.00	3,082.81	3,033.55	3,033.35	11.52	58.49	-61.48	838.06	-380.33	743.83	673.90	69.93	10.637	
3,200.00	3,182.08	3,134.31	3,134.10	11.90	60.47	-62.32	837.83	-380.33	737.96	665.66	72.30	10.208	
3,300.00	3,281.36	3,235.01	3,234.79	12.29	62.45	-63.18	837.33	-380.33	732.05	657.39	74.66	9.805	
3,400.00	3,380.63	3,330.88	3,330.63	12.67	64.34	-64.03	836.64	-380.33	726.15	649.22	76.94	9.438	
3,500.00	3,479.91	3,430.16	3,429.91	13.06	66.29	-64.89	836.64	-380.33	720.94	641.66	79.28	9.094	
3,600.00	3,579.18	3,529.43	3,529.18	13.44	68.25	-65.75	836.64	-380.33	715.89	634.27	81.62	8.771	
3,700.00	3,678.46	3,628.71	3,628.46	13.83	70.20	-66.63	836.64	-380.33	711.01	627.04	83.96	8.468	
3,800.00	3,777.73	3,727.98	3,727.73	14.21	72.16	-67.52	836.64	-380.33	706.29	619.99	86.31	8.184	
3,900.00	3,877.01	3,827.25	3,827.01	14.60	74.11	-68.42	836.64	-380.33	701.76	613.11	88.65	7.916	
4,000.00	3,976.28	3,926.71	3,926.46	14.98	76.07	-69.26	837.83	-380.33	698.19	607.19	91.00	7.673	
4,100.00	4,075.55	4,026.35	4,026.09	15.37	78.03	-70.19	837.75	-380.33	693.94	600.60	93.35	7.434	
4,200.00	4,174.83	4,125.96	4,125.70	15.75	79.99	-71.14	837.59	-380.33	689.83	594.14	95.70	7.209	
4,300.00	4,274.10	4,225.56	4,225.30	16.14	81.95	-72.10	837.35	-380.33	685.87	587.82	98.05	6.995	
4,400.00	4,373.38	4,325.14	4,324.88	16.53	83.92	-73.08	837.04	-380.33	682.05	581.65	100.40	6.794	
4,500.00	4,472.65	4,424.70	4,424.44	16.91	85.88	-74.08	836.65	-380.33	678.39	575.64	102.75	6.603	
4,600.00	4,571.93	4,522.27	4,521.93	17.30	87.80	-75.03	836.64	-380.33	675.15	570.09	105.06	6.426	
4,700.00	4,671.20	4,621.55	4,621.20	17.68	89.75	-76.02	836.64	-380.33	672.13	564.72	107.40	6.258	
4,800.00	4,770.48	4,722.47	4,722.11	18.07	91.74	-76.98	837.28	-380.33	669.66	559.88	109.78	6.100	
4,900.00	4,869.75	4,823.34	4,822.97	18.45	93.73	-78.04	836.62	-380.33	666.68	554.53	112.15	5.944	
5,000.00	4,969.03	4,919.41	4,919.03	18.84	95.55	-79.02	836.64	-380.33	664.27	549.90	114.37	5.808	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,018.68	5,018.30	19.23	97.44	-80.03	836.64	-380.33	662.07	545.42	116.65	5.676	
5,200.00	5,167.58	5,117.96	5,117.58	19.61	99.33	-81.05	836.64	-380.33	660.08	541.15	118.93	5.550	
5,300.00	5,266.85	5,217.23	5,216.85	20.00	101.22	-82.08	836.64	-380.33	658.30	537.10	121.21	5.431	
5,400.00	5,366.12	5,316.51	5,316.12	20.38	103.11	-83.11	836.64	-380.33	656.74	533.26	123.48	5.318	
5,500.00	5,465.40	5,415.83	5,415.45	20.77	105.00	-84.05	837.88	-380.33	655.96	530.20	125.76	5.216	
5,600.00	5,564.67	5,515.32	5,514.94	21.15	106.89	-85.09	837.83	-380.33	654.79	526.75	128.04	5.114	
5,700.00	5,663.95	5,614.80	5,614.41	21.54	108.78	-86.15	837.70	-380.33	653.81	523.49	130.32	5.017	
5,800.00	5,763.22	5,714.26	5,713.87	21.93	110.67	-87.21	837.49	-380.33	653.02	520.42	132.60	4.925	
5,900.00	5,862.50	5,813.70	5,813.31	22.31	112.57	-88.28	837.21	-380.33	652.43	517.56	134.88	4.837	
6,000.00	5,961.77	5,913.13	5,912.73	22.70	114.46	-89.36	836.85	-380.33	652.05	514.89	137.16	4.754	
6,060.00	6,021.34	5,971.79	5,971.34	22.93	115.58	-90.00	836.64	-380.33	651.93	513.42	138.51	4.707	CC
6,100.00	6,061.05	6,011.50	6,011.05	23.08	116.36	-90.42	836.64	-380.33	651.95	512.51	139.44	4.675	
6,200.00	6,160.32	6,110.77	6,110.32	23.47	118.32	-91.47	836.64	-380.33	652.15	510.37	141.78	4.600	
6,300.00	6,259.60	6,210.05	6,209.60	23.86	120.27	-92.52	836.64	-380.33	652.57	508.45	144.12	4.528	
6,376.00	6,335.04	6,285.49	6,285.04	24.15	121.76	-93.31	836.64	-380.33	653.04	507.14	145.90	4.476	ES
6,400.00	6,358.85	6,309.30	6,308.85	24.24	122.22	-108.30	836.64	-380.33	653.64	507.19	146.46	4.463	
6,450.00	6,408.16	6,358.61	6,358.16	24.44	123.20	-127.98	836.64	-380.33	657.74	510.11	147.62	4.455	SF
6,500.00	6,456.87	6,407.32	6,406.87	24.64	124.15	-138.41	836.64	-380.33	665.66	516.88	148.78	4.474	
6,550.00	6,504.65	6,455.10	6,454.65	24.85	125.10	-144.60	836.64	-380.33	677.39	527.48	149.92	4.518	
6,600.00	6,551.23	6,501.68	6,501.23	25.06	126.01	-148.65	836.64	-380.33	692.89	541.86	151.03	4.588	
6,650.00	6,596.31	6,546.76	6,546.31	25.26	126.90	-151.50	836.64	-380.33	712.08	559.98	152.10	4.682	
6,700.00	6,639.62	6,590.07	6,589.62	25.48	127.75	-153.59	836.64	-380.33	734.86	581.72	153.13	4.799	
6,750.00	6,680.88	6,631.33	6,630.88	25.69	128.57	-155.14	836.64	-380.33	761.10	606.98	154.12	4.938	
6,800.00	6,719.85	6,670.30	6,669.85	25.91	129.33	-156.28	836.64	-380.33	790.64	635.59	155.05	5.099	
6,850.00	6,756.28	6,706.73	6,706.28	26.13	130.05	-157.07	836.64	-380.33	823.29	667.38	155.91	5.280	
6,900.00	6,789.95	6,740.40	6,739.95	26.37	130.71	-157.53	836.64	-380.33	858.86	702.15	156.71	5.480	
6,950.00	6,820.65	6,771.10	6,770.65	26.61	131.32	-157.65	836.64	-380.33	897.11	739.66	157.44	5.698	
7,000.00	6,848.19	6,798.64	6,798.19	26.87	131.86	-157.40	836.64	-380.33	937.78	779.69	158.10	5.932	
7,050.00	6,872.41	6,822.86	6,822.41	27.13	132.34	-156.67	836.64	-380.33	980.62	821.96	158.67	6.180	
7,100.00	6,893.15	6,843.60	6,843.15	27.41	132.75	-155.28	836.64	-380.33	1,025.35	866.20	159.16	6.442	
7,150.00	6,910.28	6,860.73	6,860.28	27.71	133.08	-152.87	836.64	-380.33	1,071.68	912.12	159.56	6.716	
7,200.00	6,923.70	6,874.15	6,873.70	28.02	133.35	-148.69	836.64	-380.33	1,119.31	959.43	159.88	7.001	
7,250.00	6,933.33	6,883.78	6,883.33	28.34	133.54	-140.92	836.64	-380.33	1,167.94	1,007.82	160.11	7.294	
7,300.00	6,939.11	6,889.56	6,889.11	28.67	133.65	-124.61	836.64	-380.33	1,217.25	1,056.99	160.26	7.596	
7,349.12	6,941.00	6,891.45	6,890.98	29.00	133.69	-90.08	839.67	-380.33	1,266.36	1,106.04	160.32	7.899	
7,400.00	6,941.01	6,891.46	6,890.99	29.36	133.69	-90.08	839.67	-380.33	1,317.00	1,156.66	160.34	8.214	
7,500.00	6,941.02	6,891.47	6,891.00	30.11	133.69	-90.09	839.67	-380.33	1,416.57	1,256.19	160.37	8.833	
7,600.00	6,941.04	6,891.49	6,891.02	30.93	133.69	-90.09	839.67	-380.33	1,516.19	1,355.79	160.40	9.452	
7,700.00	6,941.05	6,891.50	6,891.03	31.80	133.69	-90.10	839.67	-380.33	1,615.86	1,455.43	160.43	10.072	
7,800.00	6,941.07	6,891.52	6,891.05	32.73	133.69	-90.11	839.67	-380.33	1,715.57	1,555.12	160.46	10.692	
7,900.00	6,941.08	6,891.53	6,891.06	33.71	133.69	-90.11	839.67	-380.33	1,815.31	1,654.83	160.48	11.312	
8,000.00	6,941.10	6,891.55	6,891.08	34.73	133.69	-90.12	839.67	-380.33	1,915.08	1,754.57	160.51	11.931	
8,100.00	6,941.11	6,891.56	6,891.09	35.79	133.69	-90.13	839.67	-380.33	2,014.87	1,854.34	160.54	12.551	
8,200.00	6,941.13	6,891.58	6,891.11	36.90	133.69	-90.13	839.67	-380.33	2,114.69	1,954.12	160.56	13.171	
8,300.00	6,941.14	6,891.59	6,891.12	38.03	133.69	-90.14	839.67	-380.33	2,214.51	2,053.93	160.59	13.790	
8,400.00	6,941.16	6,891.61	6,891.14	39.20	133.69	-90.15	839.67	-380.33	2,314.36	2,153.74	160.61	14.410	
8,500.00	6,941.17	6,891.62	6,891.15	40.40	133.69	-90.15	839.67	-380.33	2,414.21	2,253.57	160.64	15.029	
8,600.00	6,941.19	6,891.64	6,891.17	41.63	133.69	-90.16	839.67	-380.33	2,514.08	2,353.42	160.66	15.648	
8,700.00	6,941.20	6,891.65	6,891.18	42.88	133.69	-90.17	839.67	-380.33	2,613.96	2,453.27	160.69	16.267	
8,800.00	6,941.22	6,891.67	6,891.20	44.16	133.69	-90.17	839.67	-380.33	2,713.84	2,553.13	160.72	16.886	
8,900.00	6,941.23	6,891.68	6,891.21	45.45	133.69	-90.18	839.67	-380.33	2,813.74	2,652.99	160.75	17.504	
9,000.00	6,941.24	6,891.70	6,891.23	46.76	133.69	-90.19	839.67	-380.33	2,913.64	2,752.87	160.77	18.123	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,891.71	6,891.24	48.10	133.69	-90.19	839.67	-380.33	3,013.55	2,852.75	160.80	18.741	
9,200.00	6,941.27	6,891.73	6,891.25	49.44	133.69	-90.20	839.67	-380.33	3,113.46	2,952.63	160.83	19.358	
9,300.00	6,941.29	6,891.74	6,891.27	50.80	133.69	-90.21	839.67	-380.33	3,213.38	3,052.52	160.86	19.976	
9,400.00	6,941.30	6,891.75	6,891.28	52.18	133.69	-90.21	839.67	-380.33	3,313.31	3,152.42	160.89	20.593	
9,500.00	6,941.32	6,891.77	6,891.30	53.57	133.69	-90.22	839.67	-380.33	3,413.24	3,252.31	160.92	21.210	
9,600.00	6,941.33	6,891.78	6,891.31	54.97	133.69	-90.23	839.67	-380.33	3,513.17	3,352.22	160.95	21.827	
9,700.00	6,941.35	6,891.80	6,891.33	56.38	133.69	-90.23	839.67	-380.33	3,613.11	3,452.12	160.99	22.443	
9,800.00	6,941.36	6,891.81	6,891.34	57.80	133.69	-90.24	839.67	-380.33	3,713.05	3,552.03	161.02	23.060	
9,900.00	6,941.38	6,891.83	6,891.36	59.23	133.69	-90.25	839.67	-380.33	3,812.99	3,651.94	161.05	23.675	
10,000.00	6,941.39	6,891.84	6,891.37	60.67	133.70	-90.25	839.67	-380.33	3,912.94	3,751.85	161.09	24.291	
10,100.00	6,941.41	6,891.86	6,891.39	62.11	133.70	-90.26	839.67	-380.33	4,012.89	3,851.76	161.12	24.906	
10,200.00	6,941.42	6,891.87	6,891.40	63.57	133.70	-90.27	839.67	-380.33	4,112.84	3,951.68	161.16	25.520	
10,300.00	6,941.44	6,891.89	6,891.42	65.03	133.70	-90.27	839.67	-380.33	4,212.79	4,051.60	161.19	26.135	
10,400.00	6,941.45	6,891.90	6,891.43	66.50	133.70	-90.28	839.67	-380.33	4,312.75	4,151.51	161.23	26.749	
10,500.00	6,941.47	6,891.92	6,891.45	67.97	133.70	-90.29	839.67	-380.33	4,412.70	4,251.43	161.27	27.362	
10,600.00	6,941.48	6,891.93	6,891.46	69.45	133.70	-90.29	839.67	-380.33	4,512.66	4,351.36	161.31	27.975	
10,700.00	6,941.50	6,891.95	6,891.48	70.94	133.70	-90.30	839.67	-380.33	4,612.62	4,451.28	161.35	28.588	
10,800.00	6,941.51	6,891.96	6,891.49	72.43	133.70	-90.31	839.67	-380.33	4,712.59	4,551.20	161.39	29.200	
10,900.00	6,941.53	6,891.98	6,891.51	73.92	133.70	-90.31	839.67	-380.33	4,812.55	4,651.12	161.43	29.812	
11,000.00	6,941.54	6,891.99	6,891.52	75.42	133.70	-90.32	839.67	-380.33	4,912.52	4,751.05	161.47	30.424	
11,100.00	6,941.56	6,892.01	6,891.54	76.92	133.70	-90.33	839.67	-380.33	5,012.49	4,850.97	161.51	31.035	
11,200.00	6,941.57	6,892.02	6,891.55	78.43	133.70	-90.33	839.67	-380.33	5,112.45	4,950.90	161.55	31.645	
11,300.00	6,941.59	6,892.04	6,891.57	79.94	133.70	-90.34	839.67	-380.33	5,212.42	5,050.83	161.60	32.255	
11,400.00	6,941.60	6,892.05	6,891.58	81.46	133.70	-90.35	839.67	-380.33	5,312.40	5,150.75	161.64	32.865	
11,500.00	6,941.61	6,892.07	6,891.60	82.98	133.70	-90.35	839.67	-380.33	5,412.37	5,250.68	161.69	33.474	
11,600.00	6,941.63	6,892.08	6,891.61	84.50	133.70	-90.36	839.67	-380.33	5,512.34	5,350.61	161.73	34.083	
11,700.00	6,941.64	6,892.10	6,891.63	86.02	133.70	-90.37	839.67	-380.33	5,612.31	5,450.53	161.78	34.691	
11,800.00	6,941.66	6,892.11	6,891.64	87.55	133.70	-90.37	839.67	-380.33	5,712.29	5,550.46	161.83	35.299	
11,900.00	6,941.67	6,892.13	6,891.66	89.08	133.70	-90.38	839.67	-380.33	5,812.26	5,650.39	161.88	35.906	
12,000.00	6,941.69	6,892.14	6,891.67	90.61	133.70	-90.39	839.67	-380.33	5,912.24	5,750.32	161.92	36.512	
12,100.00	6,941.70	6,892.16	6,891.68	92.14	133.70	-90.39	839.67	-380.33	6,012.22	5,850.25	161.97	37.119	
12,200.00	6,941.72	6,892.17	6,891.70	93.68	133.70	-90.40	839.67	-380.33	6,112.20	5,950.17	162.02	37.724	
12,300.00	6,941.73	6,892.18	6,891.71	95.22	133.70	-90.41	839.67	-380.33	6,212.18	6,050.10	162.07	38.329	
12,400.00	6,941.75	6,892.20	6,891.73	96.76	133.70	-90.41	839.67	-380.33	6,312.16	6,150.03	162.13	38.934	
12,500.00	6,941.76	6,892.21	6,891.74	98.30	133.70	-90.42	839.67	-380.33	6,412.14	6,249.96	162.18	39.538	
12,600.00	6,941.78	6,892.23	6,891.76	99.85	133.70	-90.43	839.67	-380.33	6,512.12	6,349.88	162.23	40.141	
12,700.00	6,941.79	6,892.24	6,891.77	101.40	133.70	-90.43	839.67	-380.33	6,612.10	6,449.81	162.29	40.744	
12,800.00	6,941.81	6,892.26	6,891.79	102.95	133.70	-90.44	839.67	-380.33	6,712.08	6,549.74	162.34	41.346	
12,900.00	6,941.82	6,892.27	6,891.80	104.50	133.70	-90.45	839.67	-380.33	6,812.06	6,649.67	162.39	41.948	
13,000.00	6,941.84	6,892.29	6,891.82	106.05	133.70	-90.45	839.67	-380.33	6,912.04	6,749.59	162.45	42.549	
13,100.00	6,941.85	6,892.30	6,891.83	107.60	133.70	-90.46	839.67	-380.33	7,012.03	6,849.52	162.51	43.149	
13,200.00	6,941.87	6,892.32	6,891.85	109.16	133.70	-90.47	839.67	-380.33	7,112.01	6,949.45	162.56	43.749	
13,300.00	6,941.88	6,892.33	6,891.86	110.71	133.70	-90.47	839.67	-380.33	7,212.00	7,049.37	162.62	44.348	
13,400.00	6,941.90	6,892.35	6,891.88	112.27	133.71	-90.48	839.67	-380.33	7,311.98	7,149.30	162.68	44.947	
13,500.00	6,941.91	6,892.36	6,891.89	113.83	133.71	-90.49	839.67	-380.33	7,411.97	7,249.23	162.74	45.545	
13,600.00	6,941.93	6,892.38	6,891.91	115.39	133.71	-90.49	839.67	-380.33	7,511.95	7,349.15	162.80	46.142	
13,700.00	6,941.94	6,892.39	6,891.92	116.95	133.71	-90.50	839.67	-380.33	7,611.94	7,449.08	162.86	46.739	
13,800.00	6,941.96	6,892.41	6,891.94	118.51	133.71	-90.51	839.67	-380.33	7,711.92	7,549.00	162.92	47.335	
13,900.00	6,941.97	6,892.42	6,891.95	120.08	133.71	-90.51	839.67	-380.33	7,811.91	7,648.93	162.98	47.931	
14,000.00	6,941.99	6,892.44	6,891.97	121.64	133.71	-90.52	839.67	-380.33	7,911.90	7,748.85	163.05	48.526	
14,100.00	6,942.00	6,892.45	6,891.98	123.21	133.71	-90.53	839.67	-380.33	8,011.89	7,848.78	163.11	49.120	
14,200.00	6,942.01	6,892.47	6,892.00	124.77	133.71	-90.53	839.67	-380.33	8,111.87	7,948.70	163.17	49.713	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,892.48	6,892.01	126.34	133.71	-90.54	839.67	-380.33	8,211.86	8,048.62	163.24	50.306	
14,400.00	6,942.04	6,892.50	6,892.03	127.91	133.71	-90.55	839.67	-380.33	8,311.85	8,148.55	163.30	50.898	
14,500.00	6,942.06	6,892.51	6,892.04	129.48	133.71	-90.55	839.67	-380.33	8,411.84	8,248.47	163.37	51.490	
14,600.00	6,942.07	6,892.53	6,892.06	131.05	133.71	-90.56	839.67	-380.33	8,511.83	8,348.39	163.44	52.081	
14,700.00	6,942.09	6,892.54	6,892.07	132.62	133.71	-90.57	839.67	-380.33	8,611.82	8,448.31	163.50	52.671	
14,800.00	6,942.10	6,892.56	6,892.09	134.19	133.71	-90.57	839.67	-380.33	8,711.80	8,548.23	163.57	53.260	
14,900.00	6,942.12	6,892.57	6,892.10	135.76	133.71	-90.58	839.67	-380.33	8,811.79	8,648.16	163.64	53.849	
15,000.00	6,942.13	6,892.59	6,892.11	137.34	133.71	-90.59	839.67	-380.33	8,911.78	8,748.08	163.71	54.437	
15,100.00	6,942.15	6,892.60	6,892.13	138.91	133.71	-90.59	839.67	-380.33	9,011.77	8,848.00	163.78	55.024	
15,200.00	6,942.16	6,892.62	6,892.14	140.48	133.71	-90.60	839.67	-380.33	9,111.76	8,947.92	163.85	55.611	
15,300.00	6,942.18	6,892.63	6,892.16	142.06	133.71	-90.61	839.67	-380.33	9,211.75	9,047.84	163.92	56.197	
15,400.00	6,942.19	6,892.64	6,892.17	143.64	133.71	-90.61	839.67	-380.33	9,311.75	9,147.75	163.99	56.782	
15,500.00	6,942.21	6,892.66	6,892.19	145.21	133.71	-90.62	839.67	-380.33	9,411.74	9,247.67	164.06	57.367	
15,600.00	6,942.22	6,892.67	6,892.20	146.79	133.71	-90.63	839.67	-380.33	9,511.73	9,347.59	164.14	57.951	
15,700.00	6,942.24	6,892.69	6,892.22	148.37	133.71	-90.63	839.67	-380.33	9,611.72	9,447.51	164.21	58.534	
15,800.00	6,942.25	6,892.70	6,892.23	149.94	133.71	-90.64	839.67	-380.33	9,711.71	9,547.43	164.28	59.116	
15,900.00	6,942.27	6,892.72	6,892.25	151.52	133.71	-90.65	839.67	-380.33	9,811.70	9,647.34	164.36	59.697	
16,000.00	6,942.28	6,892.73	6,892.26	153.10	133.71	-90.66	839.67	-380.33	9,911.69	9,747.26	164.43	60.278	
16,100.00	6,942.30	6,892.75	6,892.28	154.68	133.71	-90.66	839.67	-380.33	10,011.68	9,847.18	164.51	60.858	
16,200.00	6,942.31	6,892.76	6,892.29	156.26	133.71	-90.67	839.67	-380.33	10,111.68	9,947.09	164.58	61.438	
16,300.00	6,942.33	6,892.78	6,892.31	157.84	133.71	-90.68	839.67	-380.33	10,211.67	10,047.01	164.66	62.016	
16,400.00	6,942.34	6,892.79	6,892.32	159.42	133.71	-90.68	839.67	-380.33	10,311.66	10,146.92	164.74	62.594	
16,500.00	6,942.36	6,892.81	6,892.34	161.00	133.71	-90.69	839.67	-380.33	10,411.65	10,246.84	164.82	63.171	
16,600.00	6,942.37	6,892.82	6,892.35	162.59	133.71	-90.70	839.67	-380.33	10,511.65	10,346.75	164.89	63.748	
16,700.00	6,942.38	6,892.84	6,892.37	164.17	133.71	-90.70	839.67	-380.33	10,611.64	10,446.67	164.97	64.323	
16,800.00	6,942.40	6,892.85	6,892.38	165.75	133.71	-90.71	839.67	-380.33	10,711.63	10,546.58	165.05	64.898	
16,900.00	6,942.41	6,892.87	6,892.40	167.33	133.72	-90.72	839.67	-380.33	10,811.63	10,646.49	165.13	65.472	
17,000.00	6,942.43	6,892.88	6,892.41	168.92	133.72	-90.72	839.67	-380.33	10,911.62	10,746.40	165.21	66.045	
17,100.00	6,942.44	6,892.90	6,892.43	170.50	133.72	-90.73	839.67	-380.33	11,011.61	10,846.32	165.30	66.618	
17,200.00	6,942.46	6,892.91	6,892.44	172.09	133.72	-90.74	839.67	-380.33	11,111.61	10,946.23	165.38	67.189	
17,300.00	6,942.47	6,892.93	6,892.46	173.67	133.72	-90.74	839.67	-380.33	11,211.60	11,046.14	165.46	67.760	
17,400.00	6,942.49	6,892.94	6,892.47	175.26	133.72	-90.75	839.67	-380.33	11,311.59	11,146.05	165.54	68.330	
17,500.00	6,942.50	6,892.96	6,892.49	176.84	133.72	-90.76	839.67	-380.33	11,411.59	11,245.96	165.63	68.900	
17,600.00	6,942.52	6,892.97	6,892.50	178.43	133.72	-90.76	839.67	-380.33	11,511.58	11,345.87	165.71	69.468	
17,700.00	6,942.53	6,892.99	6,892.52	180.01	133.72	-90.77	839.67	-380.33	11,611.57	11,445.78	165.79	70.036	
17,800.00	6,942.55	6,893.00	6,892.53	181.60	133.72	-90.78	839.67	-380.33	11,711.57	11,545.69	165.88	70.603	
17,900.00	6,942.56	6,893.02	6,892.54	183.19	133.72	-90.78	839.67	-380.33	11,811.56	11,645.60	165.96	71.169	
18,000.00	6,942.58	6,893.03	6,892.56	184.77	133.72	-90.79	839.67	-380.33	11,911.56	11,745.51	166.05	71.734	
18,100.00	6,942.59	6,893.05	6,892.57	186.36	133.72	-90.80	839.67	-380.33	12,011.55	11,845.41	166.14	72.299	
18,200.00	6,942.61	6,893.06	6,892.59	187.95	133.72	-90.80	839.67	-380.33	12,111.55	11,945.32	166.22	72.863	
18,300.00	6,942.62	6,893.07	6,892.60	189.54	133.72	-90.81	839.67	-380.33	12,211.54	12,045.23	166.31	73.426	
18,400.00	6,942.64	6,893.09	6,892.62	191.12	133.72	-90.82	839.67	-380.33	12,311.54	12,145.14	166.40	73.988	
18,500.00	6,942.65	6,893.10	6,892.63	192.71	133.72	-90.82	839.67	-380.33	12,411.53	12,245.04	166.49	74.549	
18,600.00	6,942.67	6,893.12	6,892.65	194.30	133.72	-90.83	839.67	-380.33	12,511.52	12,344.95	166.58	75.109	
18,700.00	6,942.68	6,893.13	6,892.66	195.89	133.72	-90.84	839.67	-380.33	12,611.52	12,444.85	166.67	75.669	
18,800.00	6,942.70	6,893.15	6,892.68	197.48	133.72	-90.84	839.67	-380.33	12,711.51	12,544.76	166.76	76.228	
18,900.00	6,942.71	6,893.16	6,892.69	199.07	133.72	-90.85	839.67	-380.33	12,811.51	12,644.66	166.85	76.786	
19,000.00	6,942.73	6,893.18	6,892.71	200.66	133.72	-90.86	839.67	-380.33	12,911.50	12,744.57	166.94	77.343	
19,100.00	6,942.74	6,893.19	6,892.72	202.25	133.72	-90.86	839.67	-380.33	13,011.50	12,844.47	167.03	77.900	
19,200.00	6,942.76	6,893.21	6,892.74	203.84	133.72	-90.87	839.67	-380.33	13,111.50	12,944.37	167.12	78.455	
19,300.00	6,942.77	6,893.22	6,892.75	205.43	133.72	-90.88	839.67	-380.33	13,211.49	13,044.28	167.21	79.010	
19,400.00	6,942.78	6,893.24	6,892.77	207.02	133.72	-90.88	839.67	-380.33	13,311.49	13,144.18	167.31	79.564	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,893.25	6,892.78	208.61	133.72	-90.89	839.67	-380.33	13,411.48	13,244.08	167.40	80.117	
19,600.00	6,942.81	6,893.27	6,892.80	210.20	133.72	-90.90	839.67	-380.33	13,511.48	13,343.98	167.49	80.669	
19,700.00	6,942.83	6,893.28	6,892.81	211.79	133.72	-90.90	839.67	-380.33	13,611.47	13,443.89	167.59	81.221	
19,800.00	6,942.84	6,893.30	6,892.83	213.38	133.72	-90.91	839.67	-380.33	13,711.47	13,543.79	167.68	81.771	
19,900.00	6,942.86	6,893.31	6,892.84	214.97	133.72	-90.92	839.67	-380.33	13,811.46	13,643.69	167.78	82.321	
20,000.00	6,942.87	6,893.33	6,892.86	216.56	133.72	-90.92	839.67	-380.33	13,911.46	13,743.59	167.87	82.870	
20,100.00	6,942.89	6,893.34	6,892.87	218.15	133.72	-90.93	839.67	-380.33	14,011.46	13,843.49	167.97	83.418	
20,200.00	6,942.90	6,893.36	6,892.89	219.75	133.72	-90.94	839.67	-380.33	14,111.45	13,943.39	168.06	83.965	
20,300.00	6,942.92	6,893.37	6,892.90	221.34	133.73	-90.94	839.67	-380.33	14,211.45	14,043.29	168.16	84.512	
20,400.00	6,942.93	6,893.39	6,892.92	222.93	133.73	-90.95	839.67	-380.33	14,311.44	14,143.19	168.26	85.057	
20,500.00	6,942.95	6,893.40	6,892.93	224.52	133.73	-90.96	839.67	-380.33	14,411.44	14,243.09	168.35	85.602	
20,600.00	6,942.96	6,893.42	6,892.95	226.12	133.73	-90.96	839.67	-380.33	14,511.44	14,342.98	168.45	86.146	
20,700.00	6,942.98	6,893.43	6,892.96	227.71	133.73	-90.97	839.67	-380.33	14,611.43	14,442.88	168.55	86.689	
20,800.00	6,942.99	6,893.45	6,892.98	229.30	133.73	-90.98	839.67	-380.33	14,711.43	14,542.78	168.65	87.231	
20,855.77	6,943.00	6,893.45	6,892.98	230.19	133.73	-90.98	839.67	-380.33	14,767.19	14,598.49	168.70	87.533	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	100.49	-1,403.39	7,581.08	7,709.88				
100.00	100.00	395.00	395.00	0.25	11.84	100.49	-1,403.39	7,581.08	7,709.88	7,697.80	12.09	637.868	
200.00	200.00	495.00	495.00	0.61	14.83	100.49	-1,403.39	7,581.08	7,709.88	7,694.44	15.44	499.285	
300.00	300.00	595.10	595.00	0.97	17.83	100.49	-1,403.39	7,581.08	7,709.88	7,691.08	18.80	410.104	
400.00	400.00	695.10	695.00	1.33	20.83	100.49	-1,403.39	7,581.08	7,709.88	7,687.73	22.15	348.002	
454.76	454.76	749.86	749.72	1.52	22.47	100.47	-1,401.21	7,581.08	7,709.49	7,685.50	23.99	321.339	
500.00	500.00	791.08	790.94	1.68	23.70	100.47	-1,401.27	7,581.08	7,709.50	7,684.11	25.39	303.652	
600.00	599.98	882.19	882.03	2.04	26.43	79.75	-1,401.82	7,581.08	7,709.30	7,680.82	28.48	270.723	
700.00	699.84	973.15	972.96	2.40	29.16	79.81	-1,402.95	7,581.08	7,708.60	7,677.04	31.56	244.258	
800.00	799.45	1,094.86	1,094.45	2.77	32.81	79.92	-1,403.39	7,581.08	7,707.11	7,671.54	35.57	216.697	
845.27	844.44	1,139.84	1,139.44	2.93	34.15	79.97	-1,403.39	7,581.08	7,706.21	7,669.14	37.08	207.834	
900.00	898.77	1,194.17	1,193.77	3.13	35.78	80.02	-1,403.39	7,581.08	7,705.06	7,666.16	38.91	198.037	
1,000.00	998.04	1,289.48	1,289.03	3.50	38.64	80.09	-1,401.27	7,581.08	7,702.58	7,660.44	42.13	182.817	
1,100.00	1,097.32	1,379.66	1,379.19	3.87	41.34	80.17	-1,401.80	7,581.08	7,700.61	7,655.41	45.21	170.340	
1,200.00	1,196.59	1,469.73	1,469.23	4.24	44.04	80.26	-1,402.90	7,581.08	7,698.79	7,650.51	48.28	159.457	
1,300.00	1,295.87	1,591.58	1,590.87	4.62	47.69	80.37	-1,403.39	7,581.08	7,696.82	7,644.51	52.31	147.140	
1,400.00	1,395.14	1,690.85	1,690.14	5.00	50.67	80.46	-1,403.39	7,581.08	7,694.80	7,639.14	55.66	138.241	
1,500.00	1,494.42	1,786.33	1,785.58	5.38	53.53	80.53	-1,401.26	7,581.08	7,692.39	7,633.49	58.90	130.595	
1,600.00	1,593.69	1,876.19	1,875.42	5.76	56.22	80.61	-1,401.77	7,581.08	7,690.52	7,628.54	61.98	124.090	
1,700.00	1,692.96	1,965.94	1,965.14	6.14	58.91	80.70	-1,402.84	7,581.08	7,688.79	7,623.74	65.05	118.207	
1,800.00	1,792.24	2,088.25	2,087.24	6.52	62.57	80.81	-1,403.39	7,581.08	7,686.92	7,617.83	69.09	111.257	
1,900.00	1,891.51	2,187.53	2,186.51	6.91	65.55	80.90	-1,403.39	7,581.08	7,684.99	7,612.55	72.45	106.076	
2,000.00	1,990.79	2,283.20	2,282.15	7.29	68.42	80.97	-1,401.25	7,581.08	7,682.66	7,606.96	75.70	101.491	
2,100.00	2,090.06	2,372.74	2,371.67	7.67	71.10	81.05	-1,401.74	7,581.08	7,680.87	7,602.11	78.76	97.519	
2,200.00	2,189.34	2,462.18	2,461.08	8.06	73.78	81.14	-1,402.79	7,581.08	7,679.24	7,597.41	81.83	93.848	
2,300.00	2,288.61	2,584.93	2,583.61	8.44	77.46	81.25	-1,403.39	7,581.08	7,677.48	7,591.59	85.89	89.390	
2,400.00	2,387.89	2,684.21	2,682.89	8.82	80.43	81.34	-1,403.39	7,581.08	7,675.65	7,586.40	89.25	86.006	
2,500.00	2,487.16	2,780.10	2,778.74	9.21	83.30	81.41	-1,401.24	7,581.08	7,673.38	7,580.88	92.50	82.953	
2,600.00	2,586.44	2,869.32	2,867.94	9.59	85.98	81.49	-1,401.71	7,581.08	7,671.69	7,576.13	95.56	80.281	
2,700.00	2,685.71	2,958.45	2,957.04	9.98	88.65	81.58	-1,402.73	7,581.08	7,670.15	7,571.54	98.61	77.779	
2,800.00	2,784.99	3,081.61	3,079.99	10.36	92.34	81.69	-1,403.39	7,581.08	7,668.50	7,565.81	102.69	74.676	
2,900.00	2,884.26	3,180.88	3,179.26	10.75	95.31	81.78	-1,403.39	7,581.08	7,666.76	7,560.71	106.05	72.295	
3,000.00	2,983.53	3,277.01	3,275.35	11.13	98.19	81.85	-1,401.24	7,581.08	7,664.57	7,555.25	109.31	70.115	
3,100.00	3,082.81	3,365.93	3,364.24	11.52	100.86	81.93	-1,401.68	7,581.08	7,662.97	7,550.61	112.36	68.199	
3,200.00	3,182.08	3,454.74	3,453.03	11.90	103.52	82.02	-1,402.68	7,581.08	7,661.53	7,546.12	115.41	66.386	
3,300.00	3,281.36	3,578.29	3,576.36	12.29	107.22	82.13	-1,403.39	7,581.08	7,659.98	7,540.48	119.50	64.103	
3,400.00	3,380.63	3,677.56	3,675.63	12.67	110.20	82.22	-1,403.39	7,581.08	7,658.33	7,535.48	122.85	62.336	
3,500.00	3,479.91	3,773.95	3,771.98	13.06	113.08	82.29	-1,401.23	7,581.08	7,656.22	7,530.09	126.13	60.702	
3,600.00	3,579.18	3,862.55	3,860.57	13.44	115.74	82.37	-1,401.66	7,581.08	7,654.71	7,525.54	129.17	59.262	
3,700.00	3,678.46	3,951.06	3,949.04	13.83	118.39	82.46	-1,402.63	7,581.08	7,653.36	7,521.16	132.20	57.890	
3,800.00	3,777.73	4,074.96	4,072.73	14.21	122.10	82.58	-1,403.39	7,581.08	7,651.92	7,515.62	136.30	56.139	
3,900.00	3,877.01	4,174.24	4,172.01	14.60	125.08	82.66	-1,403.39	7,581.08	7,650.37	7,510.71	139.66	54.777	
4,000.00	3,976.28	4,270.91	4,268.64	14.98	127.98	82.73	-1,401.23	7,581.08	7,648.33	7,505.38	142.95	53.505	
4,100.00	4,075.55	4,359.20	4,356.91	15.37	130.62	82.82	-1,401.63	7,581.08	7,646.91	7,500.94	145.98	52.385	
4,200.00	4,174.83	4,447.40	4,445.08	15.75	133.26	82.90	-1,402.57	7,581.08	7,645.66	7,496.66	149.00	51.312	
4,300.00	4,274.10	4,571.64	4,569.10	16.14	136.99	83.02	-1,403.39	7,581.08	7,644.33	7,491.22	153.11	49.926	
4,400.00	4,373.38	4,670.92	4,668.38	16.53	139.96	83.11	-1,403.39	7,581.08	7,642.87	7,486.40	156.47	48.845	
4,500.00	4,472.65	4,767.89	4,765.31	16.91	142.87	83.18	-1,401.22	7,581.08	7,640.91	7,481.14	159.76	47.826	
4,600.00	4,571.93	4,855.88	4,853.28	17.30	145.50	83.26	-1,401.61	7,581.08	7,639.58	7,476.79	162.79	46.930	
4,700.00	4,671.20	4,943.77	4,941.15	17.68	148.14	83.35	-1,402.53	7,581.08	7,638.42	7,472.62	165.80	46.069	
4,800.00	4,770.48	5,068.32	5,065.48	18.07	151.87	83.46	-1,403.39	7,581.08	7,637.21	7,467.28	169.92	44.945	
4,900.00	4,869.75	5,167.59	5,164.75	18.45	154.84	83.55	-1,403.39	7,581.08	7,635.84	7,462.55	173.28	44.066	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	5,264.89	5,262.01	18.84	157.76	83.62	-1,401.22	7,581.08	7,633.95	7,457.36	176.58	43.231	
5,100.00	5,068.30	5,352.58	5,349.68	19.23	160.39	83.71	-1,401.58	7,581.08	7,632.72	7,453.12	179.60	42.499	
5,200.00	5,167.58	5,440.16	5,437.24	19.61	163.01	83.79	-1,402.48	7,581.08	7,631.65	7,449.05	182.61	41.793	
5,300.00	5,266.85	5,565.00	5,561.85	20.00	166.75	83.91	-1,403.39	7,581.08	7,630.55	7,443.81	186.73	40.863	
5,400.00	5,366.12	5,664.27	5,661.12	20.38	169.73	84.00	-1,403.39	7,581.08	7,629.27	7,439.18	190.10	40.134	
5,500.00	5,465.40	5,761.91	5,758.73	20.77	172.65	84.07	-1,401.22	7,581.08	7,627.46	7,434.05	193.41	39.437	
5,600.00	5,564.67	5,849.30	5,846.09	21.15	175.27	84.15	-1,401.56	7,581.08	7,626.32	7,429.91	196.41	38.828	
5,700.00	5,663.95	5,936.58	5,933.35	21.54	177.89	84.24	-1,402.43	7,581.08	7,625.35	7,425.94	199.41	38.239	
5,800.00	5,763.22	6,061.67	6,058.22	21.93	181.64	84.35	-1,403.39	7,581.08	7,624.36	7,420.81	203.55	37.457	
5,900.00	5,862.50	6,160.95	6,157.50	22.31	184.61	84.44	-1,403.39	7,581.08	7,623.17	7,416.27	206.91	36.843	
6,000.00	5,961.77	6,258.96	6,255.46	22.70	187.55	84.52	-1,401.22	7,581.08	7,621.44	7,411.21	210.23	36.253	
6,100.00	6,061.05	6,346.04	6,342.53	23.08	190.16	84.60	-1,401.54	7,581.08	7,620.39	7,407.16	213.23	35.739	
6,200.00	6,160.32	6,433.02	6,429.49	23.47	192.76	84.68	-1,402.38	7,581.08	7,619.52	7,403.30	216.22	35.240	
6,300.00	6,259.60	6,558.35	6,554.60	23.86	196.52	84.80	-1,403.39	7,581.08	7,618.63	7,398.27	220.36	34.574	
6,376.00	6,335.04	6,633.80	6,630.04	24.15	198.78	84.87	-1,403.39	7,581.08	7,617.81	7,394.89	222.91	34.174	
6,400.00	6,358.85	6,657.60	6,653.85	24.24	199.49	70.17	-1,403.39	7,581.08	7,617.11	7,393.39	223.72	34.047	
6,450.00	6,408.16	6,706.92	6,703.16	24.44	200.97	51.14	-1,403.39	7,581.08	7,612.87	7,387.47	225.39	33.776	
6,500.00	6,456.87	6,754.90	6,751.10	24.64	202.41	41.44	-1,401.21	7,581.08	7,604.29	7,377.25	227.03	33.494	
6,550.00	6,504.65	6,796.69	6,792.88	24.85	203.66	36.08	-1,401.29	7,581.08	7,592.62	7,364.14	228.48	33.230	
6,600.00	6,551.23	6,837.39	6,833.58	25.06	204.88	32.93	-1,401.48	7,581.08	7,577.37	7,347.47	229.90	32.959	
6,650.00	6,596.31	6,876.78	6,872.96	25.26	206.06	31.06	-1,401.78	7,581.08	7,558.63	7,327.35	231.28	32.682	
6,700.00	6,639.62	6,914.59	6,910.76	25.48	207.19	30.04	-1,402.16	7,581.08	7,536.51	7,303.91	232.61	32.400	
6,750.00	6,680.88	6,950.60	6,946.76	25.69	208.27	29.65	-1,402.62	7,581.08	7,511.16	7,277.29	233.88	32.116	
6,800.00	6,719.85	7,018.91	7,014.85	25.91	210.32	29.87	-1,403.39	7,581.08	7,482.72	7,246.61	236.11	31.692	
6,850.00	6,756.28	7,055.34	7,051.28	26.13	211.41	30.50	-1,403.39	7,581.08	7,451.20	7,213.82	237.38	31.390	
6,900.00	6,789.95	7,089.01	7,084.95	26.37	212.42	31.61	-1,403.39	7,581.08	7,416.95	7,178.39	238.56	31.091	
6,950.00	6,820.65	7,119.71	7,115.65	26.61	213.34	33.26	-1,403.39	7,581.08	7,380.19	7,140.54	239.64	30.797	
7,000.00	6,848.19	7,147.25	7,143.19	26.87	214.16	35.55	-1,403.39	7,581.08	7,341.14	7,100.52	240.62	30.509	
7,050.00	6,872.41	7,171.47	7,167.41	27.13	214.89	38.61	-1,403.39	7,581.08	7,300.06	7,058.56	241.50	30.228	
7,100.00	6,893.15	7,192.21	7,188.15	27.41	215.51	42.69	-1,403.39	7,581.08	7,257.19	7,014.93	242.26	29.956	
7,150.00	6,910.28	7,209.34	7,205.28	27.71	216.02	48.09	-1,403.39	7,581.08	7,212.80	6,969.89	242.91	29.694	
7,200.00	6,923.70	7,222.77	7,218.70	28.02	216.43	55.24	-1,403.39	7,581.08	7,167.16	6,923.73	243.43	29.442	
7,250.00	6,933.33	7,232.39	7,228.33	28.34	216.72	64.60	-1,403.39	7,581.08	7,120.56	6,876.72	243.84	29.201	
7,300.00	6,939.11	7,238.17	7,234.11	28.67	216.89	76.40	-1,403.39	7,581.08	7,073.29	6,829.16	244.13	28.974	
7,349.12	6,941.00	7,240.06	7,236.00	29.00	216.94	89.97	-1,403.39	7,581.08	7,026.46	6,782.17	244.29	28.763	
7,400.00	6,941.01	7,240.07	7,236.01	29.36	216.95	89.97	-1,403.39	7,581.08	6,977.88	6,733.48	244.40	28.551	
7,500.00	6,941.02	7,240.08	7,236.02	30.11	216.95	89.97	-1,403.39	7,581.08	6,882.49	6,637.87	244.62	28.135	
7,600.00	6,941.04	7,240.10	7,236.04	30.93	216.95	89.97	-1,403.39	7,581.08	6,787.24	6,542.37	244.86	27.719	
7,700.00	6,941.05	7,240.11	7,236.05	31.80	216.95	89.97	-1,403.39	7,581.08	6,692.12	6,447.00	245.11	27.302	
7,800.00	6,941.07	7,240.13	7,236.07	32.73	216.95	89.97	-1,403.39	7,581.08	6,597.14	6,351.76	245.39	26.885	
7,900.00	6,941.08	7,240.14	7,236.08	33.71	216.95	89.97	-1,403.39	7,581.08	6,502.32	6,256.65	245.67	26.467	
8,000.00	6,941.10	7,240.16	7,236.10	34.73	216.95	89.98	-1,403.39	7,581.08	6,407.65	6,161.67	245.98	26.049	
8,100.00	6,941.11	7,240.17	7,236.11	35.79	216.95	89.98	-1,403.39	7,581.08	6,313.15	6,066.85	246.31	25.631	
8,200.00	6,941.13	7,240.19	7,236.13	36.90	216.95	89.98	-1,403.39	7,581.08	6,218.82	5,972.17	246.65	25.213	
8,300.00	6,941.14	7,240.20	7,236.14	38.03	216.95	89.98	-1,403.39	7,581.08	6,124.68	5,877.66	247.02	24.794	
8,400.00	6,941.16	7,240.22	7,236.16	39.20	216.95	89.98	-1,403.39	7,581.08	6,030.71	5,783.31	247.41	24.376	
8,500.00	6,941.17	7,240.23	7,236.17	40.40	216.95	89.98	-1,403.39	7,581.08	5,936.95	5,689.13	247.82	23.957	
8,600.00	6,941.19	7,240.25	7,236.19	41.63	216.95	89.98	-1,403.39	7,581.08	5,843.39	5,595.14	248.25	23.538	
8,700.00	6,941.20	7,240.26	7,236.20	42.88	216.95	89.98	-1,403.39	7,581.08	5,750.05	5,501.34	248.71	23.119	
8,800.00	6,941.22	7,240.28	7,236.22	44.16	216.95	89.98	-1,403.39	7,581.08	5,656.94	5,407.74	249.20	22.700	
8,900.00	6,941.23	7,240.29	7,236.23	45.45	216.95	89.98	-1,403.39	7,581.08	5,564.07	5,314.36	249.71	22.282	
9,000.00	6,941.24	7,240.31	7,236.24	46.76	216.95	89.98	-1,403.39	7,581.08	5,471.45	5,221.19	250.26	21.863	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	7,240.32	7,236.26	48.10	216.95	89.98	-1,403.39	7,581.08	5,379.09	5,128.26	250.83	21.445	
9,200.00	6,941.27	7,240.34	7,236.27	49.44	216.95	89.98	-1,403.39	7,581.08	5,287.01	5,035.58	251.43	21.028	
9,300.00	6,941.29	7,240.35	7,236.29	50.80	216.95	89.98	-1,403.39	7,581.08	5,195.22	4,943.16	252.07	20.611	
9,400.00	6,941.30	7,240.37	7,236.30	52.18	216.95	89.98	-1,403.39	7,581.08	5,103.74	4,851.01	252.73	20.194	
9,500.00	6,941.32	7,240.38	7,236.32	53.57	216.95	89.98	-1,403.39	7,581.08	5,012.59	4,759.15	253.44	19.778	
9,600.00	6,941.33	7,240.39	7,236.33	54.97	216.95	89.98	-1,403.39	7,581.08	4,921.78	4,667.60	254.18	19.363	
9,700.00	6,941.35	7,240.41	7,236.35	56.38	216.96	89.98	-1,403.39	7,581.08	4,831.34	4,576.37	254.96	18.949	
9,800.00	6,941.36	7,240.42	7,236.36	57.80	216.96	89.98	-1,403.39	7,581.08	4,741.28	4,485.49	255.78	18.536	
9,900.00	6,941.38	7,240.44	7,236.38	59.23	216.96	89.98	-1,403.39	7,581.08	4,651.62	4,394.97	256.65	18.124	
10,000.00	6,941.39	7,240.45	7,236.39	60.67	216.96	89.98	-1,403.39	7,581.08	4,562.39	4,304.83	257.56	17.714	
10,100.00	6,941.41	7,240.47	7,236.41	62.11	216.96	89.98	-1,403.39	7,581.08	4,473.62	4,215.11	258.51	17.305	
10,200.00	6,941.42	7,240.48	7,236.42	63.57	216.96	89.98	-1,403.39	7,581.08	4,385.34	4,125.82	259.52	16.898	
10,300.00	6,941.44	7,240.50	7,236.44	65.03	216.96	89.98	-1,403.39	7,581.08	4,297.56	4,036.99	260.57	16.493	
10,400.00	6,941.45	7,240.51	7,236.45	66.50	216.96	89.99	-1,403.39	7,581.08	4,210.33	3,948.65	261.68	16.090	
10,500.00	6,941.47	7,240.53	7,236.47	67.97	216.96	89.99	-1,403.39	7,581.08	4,123.68	3,860.84	262.84	15.689	
10,600.00	6,941.48	7,240.54	7,236.48	69.45	216.96	89.99	-1,403.39	7,581.08	4,037.65	3,773.59	264.06	15.291	
10,700.00	6,941.50	7,240.56	7,236.50	70.94	216.96	89.99	-1,403.39	7,581.08	3,952.28	3,686.94	265.34	14.895	
10,800.00	6,941.51	7,240.57	7,236.51	72.43	216.96	89.99	-1,403.39	7,581.08	3,867.61	3,600.92	266.69	14.502	
10,900.00	6,941.53	7,240.59	7,236.53	73.92	216.96	89.99	-1,403.39	7,581.08	3,783.68	3,515.59	268.10	14.113	
11,000.00	6,941.54	7,240.60	7,236.54	75.42	216.96	89.99	-1,403.39	7,581.08	3,700.56	3,430.99	269.57	13.728	
11,100.00	6,941.56	7,240.62	7,236.56	76.92	216.96	89.99	-1,403.39	7,581.08	3,618.29	3,347.17	271.12	13.346	
11,200.00	6,941.57	7,240.63	7,236.57	78.43	216.96	89.99	-1,403.39	7,581.08	3,536.93	3,264.19	272.74	12.968	
11,300.00	6,941.59	7,240.65	7,236.59	79.94	216.96	89.99	-1,403.39	7,581.08	3,456.55	3,182.11	274.44	12.595	
11,400.00	6,941.60	7,240.66	7,236.60	81.46	216.96	89.99	-1,403.39	7,581.08	3,377.22	3,101.01	276.21	12.227	
11,500.00	6,941.61	7,240.68	7,236.61	82.98	216.96	89.99	-1,403.39	7,581.08	3,299.01	3,020.95	278.06	11.864	
11,600.00	6,941.63	7,240.69	7,236.63	84.50	216.96	89.99	-1,403.39	7,581.08	3,222.01	2,942.01	280.00	11.507	
11,700.00	6,941.64	7,240.71	7,236.64	86.02	216.96	89.99	-1,403.39	7,581.08	3,146.30	2,864.28	282.02	11.156	
11,800.00	6,941.66	7,240.72	7,236.66	87.55	216.96	89.99	-1,403.39	7,581.08	3,071.98	2,787.85	284.13	10.812	
11,900.00	6,941.67	7,240.74	7,236.67	89.08	216.97	89.99	-1,403.39	7,581.08	2,999.16	2,712.84	286.32	10.475	
12,000.00	6,941.69	7,240.75	7,236.69	90.61	216.97	89.99	-1,403.39	7,581.08	2,927.94	2,639.34	288.60	10.145	
12,100.00	6,941.70	7,240.76	7,236.70	92.14	216.97	89.99	-1,403.39	7,581.08	2,858.44	2,567.48	290.96	9.824	
12,200.00	6,941.72	7,240.78	7,236.72	93.68	216.97	89.99	-1,403.39	7,581.08	2,790.80	2,497.39	293.41	9.512	
12,300.00	6,941.73	7,240.79	7,236.73	95.22	216.97	89.99	-1,403.39	7,581.08	2,725.15	2,429.21	295.94	9.209	
12,400.00	6,941.75	7,240.81	7,236.75	96.76	216.97	89.99	-1,403.39	7,581.08	2,661.63	2,363.10	298.54	8.916	
12,500.00	6,941.76	7,240.82	7,236.76	98.30	216.97	89.99	-1,403.39	7,581.08	2,600.42	2,299.21	301.21	8.633	
12,600.00	6,941.78	7,240.84	7,236.78	99.85	216.97	89.99	-1,403.39	7,581.08	2,541.66	2,237.72	303.94	8.362	
12,700.00	6,941.79	7,240.85	7,236.79	101.40	216.97	89.99	-1,403.39	7,581.08	2,485.54	2,178.81	306.73	8.103	
12,800.00	6,941.81	7,240.87	7,236.81	102.95	216.97	89.99	-1,403.39	7,581.08	2,432.24	2,122.69	309.55	7.857	
12,900.00	6,941.82	7,240.88	7,236.82	104.50	216.97	90.00	-1,403.39	7,581.08	2,381.94	2,069.55	312.39	7.625	
13,000.00	6,941.84	7,240.90	7,236.84	106.05	216.97	90.00	-1,403.39	7,581.08	2,334.85	2,019.61	315.24	7.407	
13,100.00	6,941.85	7,240.91	7,236.85	107.60	216.97	90.00	-1,403.39	7,581.08	2,291.15	1,973.08	318.07	7.203	
13,200.00	6,941.87	7,240.93	7,236.87	109.16	216.97	90.00	-1,403.39	7,581.08	2,251.06	1,930.19	320.87	7.016	
13,300.00	6,941.88	7,240.94	7,236.88	110.71	216.97	90.00	-1,403.39	7,581.08	2,214.75	1,891.16	323.59	6.844	
13,400.00	6,941.90	7,240.96	7,236.90	112.27	216.97	90.00	-1,403.39	7,581.08	2,182.43	1,856.20	326.23	6.690	
13,500.00	6,941.91	7,240.97	7,236.91	113.83	216.97	90.00	-1,403.39	7,581.08	2,154.27	1,825.52	328.74	6.553	
13,600.00	6,941.93	7,240.99	7,236.93	115.39	216.97	90.00	-1,403.39	7,581.08	2,130.43	1,799.32	331.11	6.434	
13,700.00	6,941.94	7,241.00	7,236.94	116.95	216.97	90.00	-1,403.39	7,581.08	2,111.07	1,777.77	333.30	6.334	
13,800.00	6,941.96	7,241.02	7,236.96	118.51	216.97	90.00	-1,403.39	7,581.08	2,096.30	1,761.02	335.28	6.252	
13,900.00	6,941.97	7,241.03	7,236.97	120.08	216.97	90.00	-1,403.39	7,581.08	2,086.23	1,749.19	337.04	6.190	
14,000.00	6,941.99	7,241.05	7,236.99	121.64	216.97	90.00	-1,403.39	7,581.08	2,080.92	1,742.36	338.55	6.147	
14,060.65	6,941.99	7,241.06	7,236.99	122.59	216.97	90.00	-1,403.39	7,581.08	2,080.03	1,740.69	339.34	6.130	CC
14,100.00	6,942.00	7,241.06	7,237.00	123.21	216.97	90.00	-1,403.39	7,581.08	2,080.40	1,740.60	339.80	6.122	ES

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,200.00	6,942.01	7,241.08	7,237.01	124.77	216.98	90.00	-1,403.39	7,581.08	2,084.69	1,743.91	340.78	6.117	SF
14,300.00	6,942.03	7,241.09	7,237.03	126.34	216.98	90.00	-1,403.39	7,581.08	2,093.76	1,752.27	341.49	6.131	
14,400.00	6,942.04	7,241.11	7,237.04	127.91	216.98	90.00	-1,403.39	7,581.08	2,107.53	1,765.61	341.92	6.164	
14,500.00	6,942.06	7,241.12	7,237.06	129.48	216.98	90.00	-1,403.39	7,581.08	2,125.93	1,783.83	342.10	6.214	
14,600.00	6,942.07	7,241.14	7,237.07	131.05	216.98	90.00	-1,403.39	7,581.08	2,148.82	1,806.80	342.02	6.283	
14,700.00	6,942.09	7,241.15	7,237.09	132.62	216.98	90.00	-1,403.39	7,581.08	2,176.07	1,834.37	341.70	6.368	
14,800.00	6,942.10	7,241.16	7,237.10	134.19	216.98	90.00	-1,403.39	7,581.08	2,207.52	1,866.36	341.17	6.470	
14,900.00	6,942.12	7,241.18	7,237.12	135.76	216.98	90.00	-1,403.39	7,581.08	2,243.00	1,902.55	340.44	6.588	
15,000.00	6,942.13	7,241.19	7,237.13	137.34	216.98	90.00	-1,403.39	7,581.08	2,282.30	1,942.76	339.55	6.722	
15,100.00	6,942.15	7,241.21	7,237.15	138.91	216.98	90.00	-1,403.39	7,581.08	2,325.25	1,986.75	338.50	6.869	
15,200.00	6,942.16	7,241.22	7,237.16	140.48	216.98	90.00	-1,403.39	7,581.08	2,371.63	2,034.30	337.33	7.031	
15,300.00	6,942.18	7,241.24	7,237.18	142.06	216.98	90.01	-1,403.39	7,581.08	2,421.26	2,085.21	336.06	7.205	
15,400.00	6,942.19	7,241.25	7,237.19	143.64	216.98	90.01	-1,403.39	7,581.08	2,473.94	2,139.24	334.70	7.392	
15,500.00	6,942.21	7,241.27	7,237.21	145.21	216.98	90.01	-1,403.39	7,581.08	2,529.48	2,196.20	333.28	7.590	
15,600.00	6,942.22	7,241.28	7,237.22	146.79	216.98	90.01	-1,403.39	7,581.08	2,587.69	2,255.88	331.81	7.799	
15,700.00	6,942.24	7,241.30	7,237.24	148.37	216.98	90.01	-1,403.39	7,581.08	2,648.39	2,318.09	330.30	8.018	
15,800.00	6,942.25	7,241.31	7,237.25	149.94	216.98	90.01	-1,403.39	7,581.08	2,711.43	2,382.65	328.78	8.247	
15,900.00	6,942.27	7,241.33	7,237.27	151.52	216.98	90.01	-1,403.39	7,581.08	2,776.64	2,449.39	327.25	8.485	
16,000.00	6,942.28	7,241.34	7,237.28	153.10	216.98	90.01	-1,403.39	7,581.08	2,843.87	2,518.14	325.73	8.731	
16,100.00	6,942.30	7,241.36	7,237.30	154.68	216.98	90.01	-1,403.39	7,581.08	2,912.98	2,588.78	324.21	8.985	
16,200.00	6,942.31	7,241.37	7,237.31	156.26	216.98	90.01	-1,403.39	7,581.08	2,983.85	2,661.14	322.71	9.246	
16,300.00	6,942.33	7,241.39	7,237.33	157.84	216.98	90.01	-1,403.39	7,581.08	3,056.34	2,735.11	321.23	9.515	
16,400.00	6,942.34	7,241.40	7,237.34	159.42	216.99	90.01	-1,403.39	7,581.08	3,130.35	2,810.57	319.77	9.789	
16,500.00	6,942.36	7,241.42	7,237.36	161.00	216.99	90.01	-1,403.39	7,581.08	3,205.77	2,887.42	318.35	10.070	
16,600.00	6,942.37	7,241.43	7,237.37	162.59	216.99	90.01	-1,403.39	7,581.08	3,282.50	2,965.54	316.96	10.356	
16,700.00	6,942.38	7,241.45	7,237.38	164.17	216.99	90.01	-1,403.39	7,581.08	3,360.46	3,044.85	315.61	10.648	
16,800.00	6,942.40	7,241.46	7,237.40	165.75	216.99	90.01	-1,403.39	7,581.08	3,439.56	3,125.27	314.29	10.944	
16,900.00	6,942.41	7,241.48	7,237.41	167.33	216.99	90.01	-1,403.39	7,581.08	3,519.72	3,206.72	313.00	11.245	
17,000.00	6,942.43	7,241.49	7,237.43	168.92	216.99	90.01	-1,403.39	7,581.08	3,600.87	3,289.12	311.76	11.550	
17,100.00	6,942.44	7,241.51	7,237.44	170.50	216.99	90.01	-1,403.39	7,581.08	3,682.96	3,372.41	310.55	11.859	
17,200.00	6,942.46	7,241.52	7,237.46	172.09	216.99	90.01	-1,403.39	7,581.08	3,765.90	3,456.52	309.38	12.172	
17,300.00	6,942.47	7,241.53	7,237.47	173.67	216.99	90.01	-1,403.39	7,581.08	3,849.66	3,541.41	308.25	12.489	
17,400.00	6,942.49	7,241.55	7,237.49	175.26	216.99	90.01	-1,403.39	7,581.08	3,934.18	3,627.03	307.15	12.809	
17,500.00	6,942.50	7,241.56	7,237.50	176.84	216.99	90.01	-1,403.39	7,581.08	4,019.41	3,713.32	306.09	13.131	
17,600.00	6,942.52	7,241.58	7,237.52	178.43	216.99	90.01	-1,403.39	7,581.08	4,105.30	3,800.23	305.07	13.457	
17,700.00	6,942.53	7,241.59	7,237.53	180.01	216.99	90.01	-1,403.39	7,581.08	4,191.82	3,887.75	304.08	13.785	
17,800.00	6,942.55	7,241.61	7,237.55	181.60	216.99	90.02	-1,403.39	7,581.08	4,278.93	3,975.81	303.12	14.116	
17,900.00	6,942.56	7,241.62	7,237.56	183.19	216.99	90.02	-1,403.39	7,581.08	4,366.59	4,064.39	302.20	14.449	
18,000.00	6,942.58	7,241.64	7,237.58	184.77	216.99	90.02	-1,403.39	7,581.08	4,454.77	4,153.47	301.31	14.785	
18,100.00	6,942.59	7,241.65	7,237.59	186.36	216.99	90.02	-1,403.39	7,581.08	4,543.44	4,243.00	300.44	15.122	
18,200.00	6,942.61	7,241.67	7,237.61	187.95	216.99	90.02	-1,403.39	7,581.08	4,632.57	4,332.96	299.61	15.462	
18,300.00	6,942.62	7,241.68	7,237.62	189.54	216.99	90.02	-1,403.39	7,581.08	4,722.14	4,423.33	298.81	15.803	
18,400.00	6,942.64	7,241.70	7,237.64	191.12	216.99	90.02	-1,403.39	7,581.08	4,812.12	4,514.08	298.03	16.146	
18,500.00	6,942.65	7,241.71	7,237.65	192.71	216.99	90.02	-1,403.39	7,581.08	4,902.48	4,605.20	297.28	16.491	
18,600.00	6,942.67	7,241.73	7,237.67	194.30	216.99	90.02	-1,403.39	7,581.08	4,993.22	4,696.66	296.56	16.837	
18,700.00	6,942.68	7,241.74	7,237.68	195.89	217.00	90.02	-1,403.39	7,581.08	5,084.30	4,788.44	295.86	17.185	
18,800.00	6,942.70	7,241.76	7,237.70	197.48	217.00	90.02	-1,403.39	7,581.08	5,175.71	4,880.52	295.19	17.534	
18,900.00	6,942.71	7,241.77	7,237.71	199.07	217.00	90.02	-1,403.39	7,581.08	5,267.43	4,972.89	294.54	17.884	
19,000.00	6,942.73	7,241.79	7,237.73	200.66	217.00	90.02	-1,403.39	7,581.08	5,359.45	5,065.54	293.91	18.235	
19,100.00	6,942.74	7,241.80	7,237.74	202.25	217.00	90.02	-1,403.39	7,581.08	5,451.75	5,158.45	293.30	18.588	
19,200.00	6,942.76	7,241.82	7,237.76	203.84	217.00	90.02	-1,403.39	7,581.08	5,544.31	5,251.60	292.71	18.941	
19,300.00	6,942.77	7,241.83	7,237.77	205.43	217.00	90.02	-1,403.39	7,581.08	5,637.14	5,344.99	292.14	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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,400.00	6,942.78	7,241.85	7,237.78	207.02	217.00	90.02	-1,403.39	7,581.08	5,730.20	5,438.60	291.60	19.651	
19,500.00	6,942.80	7,241.86	7,237.80	208.61	217.00	90.02	-1,403.39	7,581.08	5,823.49	5,532.42	291.07	20.007	
19,600.00	6,942.81	7,241.88	7,237.81	210.20	217.00	90.02	-1,403.39	7,581.08	5,917.00	5,626.45	290.55	20.365	
19,700.00	6,942.83	7,241.89	7,237.83	211.79	217.00	90.02	-1,403.39	7,581.08	6,010.72	5,720.66	290.06	20.722	
19,800.00	6,942.84	7,241.91	7,237.84	213.38	217.00	90.02	-1,403.39	7,581.08	6,104.64	5,815.06	289.58	21.081	
19,900.00	6,942.86	7,241.92	7,237.86	214.97	217.00	90.02	-1,403.39	7,581.08	6,198.75	5,909.63	289.12	21.440	
20,000.00	6,942.87	7,241.93	7,237.87	216.56	217.00	90.02	-1,403.39	7,581.08	6,293.04	6,004.37	288.67	21.800	
20,100.00	6,942.89	7,241.95	7,237.89	218.15	217.00	90.02	-1,403.39	7,581.08	6,387.51	6,099.27	288.24	22.160	
20,200.00	6,942.90	7,241.96	7,237.90	219.75	217.00	90.03	-1,403.39	7,581.08	6,482.14	6,194.32	287.82	22.521	
20,300.00	6,942.92	7,241.98	7,237.92	221.34	217.00	90.03	-1,403.39	7,581.08	6,576.93	6,289.51	287.42	22.883	
20,400.00	6,942.93	7,241.99	7,237.93	222.93	217.00	90.03	-1,403.39	7,581.08	6,671.87	6,384.85	287.03	23.245	
20,500.00	6,942.95	7,242.01	7,237.95	224.52	217.00	90.03	-1,403.39	7,581.08	6,766.96	6,480.31	286.65	23.607	
20,600.00	6,942.96	7,242.02	7,237.96	226.12	217.00	90.03	-1,403.39	7,581.08	6,862.19	6,575.91	286.28	23.970	
20,700.00	6,942.98	7,242.04	7,237.98	227.71	217.00	90.03	-1,403.39	7,581.08	6,957.55	6,671.62	285.93	24.333	
20,800.00	6,942.99	7,242.05	7,237.99	229.30	217.00	90.03	-1,403.39	7,581.08	7,053.04	6,767.45	285.58	24.697	
20,855.77	6,943.00	7,242.06	7,238.00	230.19	217.00	90.03	-1,403.39	7,581.08	7,106.34	6,820.95	285.40	24.900	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	0.00	0.00	0.00	0.00	-70.50	1,180.95	-3,335.34	3,538.45				
100.00	100.00	61.00	61.00	0.25	1.20	-70.50	1,180.95	-3,335.34	3,538.24	3,536.78	1.45	2,435.628	
200.00	200.00	161.00	161.00	0.61	3.41	-70.50	1,180.95	-3,335.34	3,538.24	3,534.22	4.01	881.320	
300.00	300.00	261.00	261.00	0.97	5.91	-70.50	1,180.95	-3,335.34	3,538.24	3,531.36	6.87	514.727	
400.00	400.00	363.14	363.13	1.33	8.46	-70.49	1,181.53	-3,335.34	3,538.43	3,528.65	9.79	361.553	
500.00	500.00	467.33	467.32	1.68	11.07	-70.50	1,181.16	-3,335.34	3,538.31	3,525.56	12.75	277.498	
541.85	541.85	510.93	510.91	1.83	12.16	-91.25	1,180.89	-3,335.34	3,538.24	3,524.24	13.99	252.897	CC
600.00	599.98	561.13	560.98	2.04	13.74	-91.27	1,180.95	-3,335.34	3,538.28	3,522.49	15.78	224.155	
700.00	699.84	669.93	669.75	2.40	17.08	-91.34	1,181.95	-3,335.34	3,538.74	3,519.26	19.48	181.636	
783.08	782.62	772.27	772.05	2.71	20.23	-91.51	1,180.32	-3,335.34	3,538.48	3,515.55	22.92	154.361	
800.00	799.45	760.76	760.45	2.77	19.80	-91.49	1,180.95	-3,335.34	3,538.61	3,516.05	22.56	156.858	
845.27	844.44	805.75	805.44	2.93	20.99	-91.57	1,180.95	-3,335.34	3,538.75	3,514.84	23.91	147.998	
900.00	898.77	860.08	859.77	3.13	22.42	-91.67	1,180.95	-3,335.34	3,538.94	3,513.39	25.55	138.537	
1,000.00	998.04	976.65	976.30	3.50	25.50	-91.89	1,181.23	-3,335.34	3,539.44	3,510.45	28.99	122.089	
1,034.40	1,032.19	1,017.26	1,016.88	3.62	26.57	-91.98	1,180.50	-3,335.34	3,539.38	3,509.19	30.19	117.237	
1,100.00	1,097.32	1,058.73	1,058.32	3.87	27.45	-92.06	1,180.95	-3,335.34	3,539.72	3,508.41	31.31	113.041	
1,200.00	1,196.59	1,158.01	1,157.59	4.24	29.73	-92.25	1,180.95	-3,335.34	3,540.18	3,506.20	33.98	104.194	
1,300.00	1,295.87	1,258.07	1,257.64	4.62	32.04	-92.42	1,182.29	-3,335.34	3,541.10	3,504.44	36.66	96.594	
1,400.00	1,395.14	1,362.42	1,361.98	5.00	34.44	-92.63	1,181.98	-3,335.34	3,541.54	3,502.09	39.44	89.790	
1,500.00	1,494.42	1,466.67	1,466.21	5.38	36.85	-92.85	1,181.19	-3,335.34	3,541.88	3,499.65	42.22	83.883	
1,600.00	1,593.69	1,555.22	1,554.69	5.76	38.82	-93.02	1,180.95	-3,335.34	3,542.41	3,497.83	44.58	79.463	
1,700.00	1,692.96	1,654.50	1,653.96	6.14	41.01	-93.21	1,180.95	-3,335.34	3,543.07	3,495.92	47.15	75.148	
1,800.00	1,792.24	1,754.49	1,753.94	6.52	43.21	-93.39	1,182.30	-3,335.34	3,544.17	3,494.43	49.73	71.264	
1,900.00	1,891.51	1,858.55	1,857.99	6.91	45.50	-93.59	1,181.99	-3,335.34	3,544.82	3,492.41	52.41	67.640	
2,000.00	1,990.79	1,962.51	1,961.94	7.29	47.79	-93.81	1,181.21	-3,335.34	3,545.38	3,490.30	55.08	64.368	
2,100.00	2,090.06	2,051.69	2,051.06	7.67	49.63	-93.98	1,180.95	-3,335.34	3,546.11	3,488.81	57.30	61.886	
2,200.00	2,189.34	2,150.97	2,150.34	8.06	51.62	-94.18	1,180.95	-3,335.34	3,546.97	3,487.30	59.67	59.441	
2,300.00	2,288.61	2,251.45	2,250.81	8.44	53.63	-94.36	1,181.94	-3,335.34	3,548.15	3,486.08	62.07	57.166	
2,400.00	2,387.89	2,354.57	2,353.92	8.82	55.70	-94.56	1,181.61	-3,335.34	3,549.00	3,484.49	64.52	55.009	
2,500.00	2,487.16	2,457.60	2,456.95	9.21	57.76	-94.77	1,180.89	-3,335.34	3,549.79	3,482.83	66.96	53.011	
2,600.00	2,586.44	2,548.12	2,547.44	9.59	59.58	-94.95	1,180.95	-3,335.34	3,550.82	3,481.65	69.17	51.333	
2,700.00	2,685.71	2,647.39	2,646.71	9.98	61.58	-95.14	1,180.95	-3,335.34	3,551.89	3,480.33	71.56	49.637	
2,800.00	2,784.99	2,747.71	2,747.02	10.36	63.61	-95.32	1,181.75	-3,335.34	3,553.20	3,479.24	73.96	48.041	
2,900.00	2,884.26	2,849.42	2,848.73	10.75	65.66	-95.52	1,181.51	-3,335.34	3,554.28	3,477.89	76.40	46.525	
3,000.00	2,983.53	2,951.08	2,950.38	11.13	67.70	-95.72	1,181.00	-3,335.34	3,555.34	3,476.51	78.83	45.102	
3,100.00	3,082.81	3,044.55	3,043.81	11.52	69.51	-95.90	1,180.95	-3,335.34	3,556.55	3,475.52	81.02	43.896	
3,200.00	3,182.08	3,143.83	3,143.08	11.90	71.43	-96.09	1,180.95	-3,335.34	3,557.81	3,474.49	83.32	42.701	
3,300.00	3,281.36	3,243.20	3,242.45	12.29	73.34	-96.27	1,182.17	-3,335.34	3,559.42	3,473.80	85.62	41.573	
3,400.00	3,380.63	3,345.27	3,344.51	12.67	75.31	-96.47	1,182.00	-3,335.34	3,560.72	3,472.75	87.97	40.476	
3,500.00	3,479.91	3,447.27	3,446.51	13.06	77.28	-96.67	1,181.50	-3,335.34	3,561.99	3,471.67	90.32	39.437	
3,600.00	3,579.18	3,540.97	3,540.18	13.44	79.12	-96.86	1,180.95	-3,335.34	3,563.28	3,470.72	92.55	38.500	
3,700.00	3,678.46	3,640.32	3,639.53	13.83	81.23	-97.04	1,181.20	-3,335.34	3,564.80	3,469.75	95.05	37.505	
3,800.00	3,777.73	3,742.74	3,741.95	14.21	83.41	-97.24	1,181.00	-3,335.34	3,566.26	3,468.65	97.61	36.537	
3,900.00	3,877.01	3,838.84	3,838.01	14.60	86.59	-97.43	1,180.95	-3,335.34	3,567.79	3,466.62	101.18	35.263	
4,000.00	3,976.28	3,938.11	3,937.28	14.98	90.07	-97.62	1,180.95	-3,335.34	3,569.38	3,464.34	105.04	33.980	
4,100.00	4,075.55	4,038.80	4,037.95	15.37	93.60	-97.79	1,182.55	-3,335.34	3,571.36	3,462.40	108.96	32.778	
4,200.00	4,174.83	4,142.37	4,141.51	15.75	97.24	-97.99	1,182.08	-3,335.34	3,572.92	3,459.95	112.97	31.626	
4,300.00	4,274.10	4,245.83	4,244.95	16.14	100.86	-98.21	1,181.06	-3,335.34	3,574.41	3,457.43	116.98	30.555	
4,400.00	4,373.38	4,348.60	4,347.10	16.53	105.71	-98.39	1,181.80	-3,335.34	3,576.32	3,454.11	122.21	29.263	
4,500.00	4,472.65	4,446.69	4,444.84	16.91	110.49	-98.58	1,181.73	-3,335.34	3,578.09	3,450.71	127.38	28.090	
4,600.00	4,571.93	4,548.96	4,546.85	17.30	115.37	-98.77	1,181.53	-3,335.34	3,579.87	3,447.23	132.64	26.989	
4,700.00	4,671.20	4,634.49	4,632.20	17.68	119.58	-98.94	1,180.95	-3,335.34	3,581.59	3,444.35	137.24	26.098	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
4,800.00	4,770.48	4,734.13	4,731.48	18.07	124.56	-99.13	1,180.95	-3,335.34	3,583.49	3,440.89	142.61	25.129	
4,900.00	4,869.75	4,833.67	4,830.75	18.45	129.55	-99.32	1,180.95	-3,335.34	3,585.43	3,437.46	147.98	24.230	
5,000.00	4,969.03	4,961.72	4,958.66	18.84	135.90	-99.57	1,180.46	-3,335.34	3,587.43	3,432.73	154.70	23.189	
5,100.00	5,068.30	5,048.45	5,045.07	19.23	140.35	-99.72	1,181.65	-3,335.34	3,589.60	3,430.06	159.54	22.499	
5,200.00	5,167.58	5,132.22	5,128.58	19.61	144.52	-99.89	1,180.95	-3,335.34	3,591.49	3,427.40	164.10	21.886	
5,300.00	5,266.85	5,231.49	5,227.85	20.00	149.41	-100.07	1,180.95	-3,335.34	3,593.59	3,424.22	169.37	21.217	
5,400.00	5,366.12	5,335.91	5,332.08	20.38	154.56	-100.21	1,184.82	-3,335.34	3,596.43	3,421.53	174.90	20.562	
5,500.00	5,465.40	5,447.66	5,443.72	20.77	160.06	-100.45	1,182.91	-3,335.34	3,598.29	3,417.50	180.79	19.903	
5,600.00	5,564.67	5,530.38	5,525.67	21.15	164.10	-100.63	1,180.95	-3,335.34	3,600.12	3,414.90	185.22	19.437	
5,700.00	5,663.95	5,629.66	5,624.95	21.54	168.80	-100.82	1,180.95	-3,335.34	3,602.37	3,412.07	190.30	18.930	
5,800.00	5,763.22	5,728.93	5,724.22	21.93	173.50	-101.01	1,180.95	-3,335.34	3,604.67	3,409.28	195.39	18.449	
5,900.00	5,862.50	5,828.21	5,823.50	22.31	178.20	-101.19	1,180.95	-3,335.34	3,607.00	3,406.53	200.47	17.993	
6,000.00	5,961.77	5,927.48	5,922.77	22.70	182.91	-101.38	1,180.95	-3,335.34	3,609.37	3,403.81	205.56	17.559	ES
6,100.00	6,061.05	5,949.00	5,943.35	23.08	183.92	-101.42	1,180.95	-3,335.34	3,612.63	3,405.73	206.90	17.461	SF
6,200.00	6,160.32	5,949.00	5,943.35	23.47	183.92	-101.42	1,180.95	-3,335.34	3,618.60	3,411.52	207.08	17.475	
6,300.00	6,259.60	5,949.00	5,943.35	23.86	183.92	-101.42	1,180.95	-3,335.34	3,627.32	3,420.21	207.10	17.514	
6,376.00	6,335.04	5,949.00	5,943.35	24.15	183.92	-101.42	1,180.95	-3,335.34	3,635.77	3,428.74	207.02	17.562	
6,400.00	6,358.85	5,949.00	5,943.35	24.24	183.92	-116.11	1,180.95	-3,335.34	3,639.20	3,432.22	206.98	17.582	
6,450.00	6,408.16	5,949.00	5,943.35	24.44	183.92	-135.14	1,180.95	-3,335.34	3,649.68	3,442.80	206.87	17.642	
6,500.00	6,456.87	5,949.00	5,943.35	24.64	183.92	-144.85	1,180.95	-3,335.34	3,664.54	3,457.80	206.74	17.725	
6,550.00	6,504.65	5,949.00	5,943.35	24.85	183.92	-150.25	1,180.95	-3,335.34	3,683.64	3,477.06	206.58	17.831	
6,600.00	6,551.23	5,949.00	5,943.35	25.06	183.92	-153.47	1,180.95	-3,335.34	3,706.81	3,500.40	206.41	17.959	
6,650.00	6,596.31	5,949.00	5,943.35	25.26	183.92	-155.42	1,180.95	-3,335.34	3,733.82	3,527.60	206.22	18.106	
6,700.00	6,639.62	5,949.00	5,943.35	25.48	183.92	-156.54	1,180.95	-3,335.34	3,764.43	3,558.40	206.03	18.271	
6,750.00	6,680.88	5,949.00	5,943.35	25.69	183.92	-157.02	1,180.95	-3,335.34	3,798.36	3,592.52	205.84	18.453	
6,800.00	6,719.85	5,949.00	5,943.35	25.91	183.92	-156.95	1,180.95	-3,335.34	3,835.32	3,629.67	205.65	18.649	
6,850.00	6,756.28	5,949.00	5,943.35	26.13	183.92	-156.33	1,180.95	-3,335.34	3,875.00	3,669.52	205.48	18.858	
6,900.00	6,789.95	5,949.00	5,943.35	26.37	183.92	-155.08	1,180.95	-3,335.34	3,917.07	3,711.75	205.33	19.077	
6,950.00	6,820.65	5,949.00	5,943.35	26.61	183.92	-153.00	1,180.95	-3,335.34	3,961.21	3,756.02	205.20	19.305	
7,000.00	6,848.19	5,949.00	5,943.35	26.87	183.92	-149.70	1,180.95	-3,335.34	4,007.08	3,801.99	205.09	19.538	
7,050.00	6,872.41	5,949.00	5,943.35	27.13	183.92	-144.39	1,180.95	-3,335.34	4,054.34	3,849.32	205.01	19.776	
7,100.00	6,893.15	5,949.00	5,943.35	27.41	183.92	-135.43	1,180.95	-3,335.34	4,102.65	3,897.68	204.97	20.016	
7,150.00	6,910.28	5,949.00	5,943.35	27.71	183.92	-119.40	1,180.95	-3,335.34	4,151.69	3,946.74	204.95	20.257	
7,200.00	6,923.70	5,949.00	5,943.35	28.02	183.92	-92.01	1,180.95	-3,335.34	4,201.14	3,996.17	204.97	20.496	
7,250.00	6,933.33	5,949.00	5,943.35	28.34	183.92	-59.93	1,180.95	-3,335.34	4,250.68	4,045.65	205.03	20.732	
7,300.00	6,939.11	5,949.00	5,943.35	28.67	183.92	-37.74	1,180.95	-3,335.34	4,300.00	4,094.89	205.12	20.964	
7,349.12	6,941.00	5,949.00	5,943.35	29.00	183.92	-25.39	1,180.95	-3,335.34	4,347.97	4,142.73	205.24	21.185	
7,400.00	6,941.01	5,949.00	5,943.35	29.36	183.92	-25.39	1,180.95	-3,335.34	4,397.33	4,191.95	205.38	21.411	
7,500.00	6,941.02	5,949.00	5,943.35	30.11	183.92	-25.39	1,180.95	-3,335.34	4,494.45	4,288.80	205.65	21.855	
7,600.00	6,941.04	5,949.00	5,943.35	30.93	183.92	-25.39	1,180.95	-3,335.34	4,591.68	4,385.78	205.90	22.300	
7,700.00	6,941.05	5,949.00	5,943.35	31.80	183.92	-25.39	1,180.95	-3,335.34	4,689.04	4,482.89	206.15	22.746	
7,800.00	6,941.07	5,949.00	5,943.35	32.73	183.92	-25.39	1,180.95	-3,335.34	4,786.50	4,580.12	206.38	23.193	
7,900.00	6,941.08	5,949.00	5,943.35	33.71	183.92	-25.39	1,180.95	-3,335.34	4,884.07	4,677.47	206.60	23.640	
8,000.00	6,941.10	5,949.00	5,943.35	34.73	183.92	-25.39	1,180.95	-3,335.34	4,981.73	4,774.92	206.81	24.088	
8,100.00	6,941.11	5,949.00	5,943.35	35.79	183.92	-25.39	1,180.95	-3,335.34	5,079.48	4,872.46	207.02	24.537	
8,200.00	6,941.13	5,949.00	5,943.35	36.90	183.92	-25.39	1,180.95	-3,335.34	5,177.32	4,970.11	207.21	24.986	
8,300.00	6,941.14	5,949.00	5,943.35	38.03	183.92	-25.39	1,180.95	-3,335.34	5,275.24	5,067.84	207.40	25.435	
8,400.00	6,941.16	5,949.00	5,943.35	39.20	183.92	-25.39	1,180.95	-3,335.34	5,373.24	5,165.66	207.58	25.885	
8,500.00	6,941.17	5,949.00	5,943.35	40.40	183.92	-25.39	1,180.95	-3,335.34	5,471.30	5,263.55	207.75	26.336	
8,600.00	6,941.19	5,949.00	5,943.35	41.63	183.92	-25.39	1,180.95	-3,335.34	5,569.44	5,361.52	207.92	26.786	
8,700.00	6,941.20	5,949.00	5,943.35	42.88	183.92	-25.39	1,180.95	-3,335.34	5,667.64	5,459.56	208.08	27.238	
8,800.00	6,941.22	5,949.00	5,943.35	44.16	183.92	-25.39	1,180.95	-3,335.34	5,765.91	5,557.67	208.24	27.689	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
8,900.00	6,941.23	5,949.00	5,943.35	45.45	183.92	-25.39	1,180.95	-3,335.34	5,864.23	5,655.84	208.39	28.141	
9,000.00	6,941.24	5,949.00	5,943.35	46.76	183.92	-25.39	1,180.95	-3,335.34	5,962.61	5,754.07	208.54	28.593	
9,100.00	6,941.26	5,949.00	5,943.35	48.10	183.92	-25.39	1,180.95	-3,335.34	6,061.04	5,852.36	208.68	29.045	
9,200.00	6,941.27	5,949.00	5,943.35	49.44	183.92	-25.39	1,180.95	-3,335.34	6,159.53	5,950.71	208.82	29.497	
9,300.00	6,941.29	5,949.00	5,943.35	50.80	183.92	-25.39	1,180.95	-3,335.34	6,258.06	6,049.10	208.95	29.949	
9,400.00	6,941.30	5,949.00	5,943.35	52.18	183.92	-25.39	1,180.95	-3,335.34	6,356.63	6,147.55	209.09	30.402	
9,500.00	6,941.32	5,949.00	5,943.35	53.57	183.92	-25.39	1,180.95	-3,335.34	6,455.25	6,246.04	209.21	30.855	
9,600.00	6,941.33	5,949.00	5,943.35	54.97	183.92	-25.39	1,180.95	-3,335.34	6,553.92	6,344.58	209.34	31.308	
9,700.00	6,941.35	5,949.00	5,943.35	56.38	183.92	-25.39	1,180.95	-3,335.34	6,652.62	6,443.16	209.46	31.761	
9,800.00	6,941.36	5,949.00	5,943.35	57.80	183.92	-25.39	1,180.95	-3,335.34	6,751.36	6,541.78	209.58	32.214	
9,900.00	6,941.38	5,949.00	5,943.35	59.23	183.92	-25.39	1,180.95	-3,335.34	6,850.13	6,640.44	209.70	32.667	
10,000.00	6,941.39	5,949.00	5,943.35	60.67	183.92	-25.39	1,180.95	-3,335.34	6,948.95	6,739.13	209.81	33.120	
10,100.00	6,941.41	5,949.00	5,943.35	62.11	183.92	-25.39	1,180.95	-3,335.34	7,047.79	6,837.87	209.92	33.573	
10,200.00	6,941.42	5,949.00	5,943.35	63.57	183.92	-25.39	1,180.95	-3,335.34	7,146.67	6,936.63	210.04	34.026	
10,300.00	6,941.44	5,949.00	5,943.35	65.03	183.92	-25.39	1,180.95	-3,335.34	7,245.58	7,035.43	210.14	34.479	
10,400.00	6,941.45	5,949.00	5,943.35	66.50	183.92	-25.39	1,180.95	-3,335.34	7,344.52	7,134.26	210.25	34.932	
10,500.00	6,941.47	5,949.00	5,943.35	67.97	183.92	-25.39	1,180.95	-3,335.34	7,443.48	7,233.13	210.36	35.385	
10,600.00	6,941.48	5,949.00	5,943.35	69.45	183.92	-25.39	1,180.95	-3,335.34	7,542.47	7,332.02	210.46	35.838	
10,700.00	6,941.50	5,949.00	5,943.35	70.94	183.92	-25.39	1,180.95	-3,335.34	7,641.49	7,430.93	210.56	36.291	
10,800.00	6,941.51	5,949.00	5,943.35	72.43	183.92	-25.39	1,180.95	-3,335.34	7,740.54	7,529.88	210.66	36.744	
10,900.00	6,941.53	5,949.00	5,943.35	73.92	183.92	-25.39	1,180.95	-3,335.34	7,839.61	7,628.85	210.76	37.197	
11,000.00	6,941.54	5,949.00	5,943.35	75.42	183.92	-25.39	1,180.95	-3,335.34	7,938.70	7,727.84	210.86	37.649	
11,100.00	6,941.56	5,949.00	5,943.35	76.92	183.92	-25.39	1,180.95	-3,335.34	8,037.82	7,826.86	210.96	38.102	
11,200.00	6,941.57	5,949.00	5,943.35	78.43	183.92	-25.39	1,180.95	-3,335.34	8,136.95	7,925.90	211.05	38.554	
11,300.00	6,941.59	5,949.00	5,943.35	79.94	183.92	-25.39	1,180.95	-3,335.34	8,236.11	8,024.96	211.15	39.006	
11,400.00	6,941.60	5,949.00	5,943.35	81.46	183.92	-25.39	1,180.95	-3,335.34	8,335.29	8,124.05	211.24	39.459	
11,500.00	6,941.61	5,949.00	5,943.35	82.98	183.92	-25.39	1,180.95	-3,335.34	8,434.48	8,223.15	211.34	39.910	
11,600.00	6,941.63	5,949.00	5,943.35	84.50	183.92	-25.39	1,180.95	-3,335.34	8,533.70	8,322.27	211.43	40.362	
11,700.00	6,941.64	5,949.00	5,943.35	86.02	183.92	-25.39	1,180.95	-3,335.34	8,632.93	8,421.41	211.52	40.814	
11,800.00	6,941.66	5,949.00	5,943.35	87.55	183.92	-25.39	1,180.95	-3,335.34	8,732.19	8,520.57	211.61	41.265	
11,900.00	6,941.67	5,949.00	5,943.35	89.08	183.92	-25.39	1,180.95	-3,335.34	8,831.45	8,619.75	211.70	41.716	
12,000.00	6,941.69	5,949.00	5,943.35	90.61	183.92	-25.39	1,180.95	-3,335.34	8,930.74	8,718.95	211.79	42.168	
12,100.00	6,941.70	5,949.00	5,943.35	92.14	183.92	-25.39	1,180.95	-3,335.34	9,030.04	8,818.16	211.88	42.618	
12,200.00	6,941.72	5,949.00	5,943.35	93.68	183.92	-25.39	1,180.95	-3,335.34	9,129.35	8,917.38	211.97	43.069	
12,300.00	6,941.73	5,949.00	5,943.35	95.22	183.92	-25.39	1,180.95	-3,335.34	9,228.69	9,016.63	212.06	43.519	
12,400.00	6,941.75	5,949.00	5,943.35	96.76	183.92	-25.39	1,180.95	-3,335.34	9,328.03	9,115.88	212.15	43.970	
12,500.00	6,941.76	5,949.00	5,943.35	98.30	183.92	-25.39	1,180.95	-3,335.34	9,427.39	9,215.15	212.24	44.419	
12,600.00	6,941.78	5,949.00	5,943.35	99.85	183.92	-25.39	1,180.95	-3,335.34	9,526.76	9,314.44	212.32	44.869	
12,700.00	6,941.79	5,949.00	5,943.35	101.40	183.92	-25.39	1,180.95	-3,335.34	9,626.15	9,413.73	212.41	45.319	
12,800.00	6,941.81	5,949.00	5,943.35	102.95	183.92	-25.39	1,180.95	-3,335.34	9,725.54	9,513.05	212.50	45.768	
12,900.00	6,941.82	5,949.00	5,943.35	104.50	183.92	-25.39	1,180.95	-3,335.34	9,824.95	9,612.37	212.58	46.217	
13,000.00	6,941.84	5,949.00	5,943.35	106.05	183.92	-25.39	1,180.95	-3,335.34	9,924.37	9,711.70	212.67	46.665	
13,100.00	6,941.85	5,949.00	5,943.35	107.60	183.92	-25.39	1,180.95	-3,335.34	10,023.81	9,811.05	212.76	47.114	
13,200.00	6,941.87	5,949.00	5,943.35	109.16	183.92	-25.39	1,180.95	-3,335.34	10,123.25	9,910.41	212.84	47.562	
13,300.00	6,941.88	5,949.00	5,943.35	110.71	183.92	-25.39	1,180.95	-3,335.34	10,222.71	10,009.78	212.93	48.010	
13,400.00	6,941.90	5,949.00	5,943.35	112.27	183.92	-25.39	1,180.95	-3,335.34	10,322.17	10,109.16	213.02	48.457	
13,500.00	6,941.91	5,949.00	5,943.35	113.83	183.92	-25.39	1,180.95	-3,335.34	10,421.65	10,208.55	213.10	48.904	
13,600.00	6,941.93	5,949.00	5,943.35	115.39	183.92	-25.39	1,180.95	-3,335.34	10,521.14	10,307.95	213.19	49.351	
13,700.00	6,941.94	5,949.00	5,943.35	116.95	183.92	-25.39	1,180.95	-3,335.34	10,620.63	10,407.36	213.27	49.798	
13,800.00	6,941.96	5,949.00	5,943.35	118.51	183.92	-25.39	1,180.95	-3,335.34	10,720.14	10,506.77	213.36	50.244	
13,900.00	6,941.97	5,949.00	5,943.35	120.08	183.92	-25.39	1,180.95	-3,335.34	10,819.65	10,606.20	213.45	50.690	
14,000.00	6,941.99	5,949.00	5,943.35	121.64	183.92	-25.39	1,180.95	-3,335.34	10,919.17	10,705.64	213.53	51.136	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,100.00	6,942.00	5,949.00	5,943.35	123.21	183.92	-25.39	1,180.95	-3,335.34	11,018.70	10,805.09	213.62	51.581	
14,200.00	6,942.01	5,949.00	5,943.35	124.77	183.92	-25.39	1,180.95	-3,335.34	11,118.24	10,904.54	213.71	52.026	
14,300.00	6,942.03	5,949.00	5,943.35	126.34	183.92	-25.39	1,180.95	-3,335.34	11,217.79	11,004.00	213.79	52.471	
14,400.00	6,942.04	5,949.00	5,943.35	127.91	183.92	-25.39	1,180.95	-3,335.34	11,317.35	11,103.47	213.88	52.915	
14,500.00	6,942.06	5,949.00	5,943.35	129.48	183.92	-25.39	1,180.95	-3,335.34	11,416.91	11,202.95	213.96	53.359	
14,600.00	6,942.07	5,949.00	5,943.35	131.05	183.92	-25.39	1,180.95	-3,335.34	11,516.48	11,302.43	214.05	53.803	
14,700.00	6,942.09	5,949.00	5,943.35	132.62	183.92	-25.39	1,180.95	-3,335.34	11,616.06	11,401.93	214.14	54.246	
14,800.00	6,942.10	5,949.00	5,943.35	134.19	183.92	-25.39	1,180.95	-3,335.34	11,715.65	11,501.43	214.22	54.689	
14,900.00	6,942.12	5,949.00	5,943.35	135.76	183.92	-25.39	1,180.95	-3,335.34	11,815.24	11,600.93	214.31	55.131	
15,000.00	6,942.13	5,949.00	5,943.35	137.34	183.92	-25.39	1,180.95	-3,335.34	11,914.84	11,700.44	214.40	55.574	
15,100.00	6,942.15	5,949.00	5,943.35	138.91	183.92	-25.39	1,180.95	-3,335.34	12,014.45	11,799.96	214.48	56.016	
15,200.00	6,942.16	5,949.00	5,943.35	140.48	183.92	-25.39	1,180.95	-3,335.34	12,114.06	11,899.49	214.57	56.457	
15,300.00	6,942.18	5,949.00	5,943.35	142.06	183.92	-25.39	1,180.95	-3,335.34	12,213.68	11,999.02	214.66	56.898	
15,400.00	6,942.19	5,949.00	5,943.35	143.64	183.92	-25.39	1,180.95	-3,335.34	12,313.31	12,098.56	214.75	57.339	
15,500.00	6,942.21	5,949.00	5,943.35	145.21	183.92	-25.39	1,180.95	-3,335.34	12,412.94	12,198.10	214.83	57.779	
15,600.00	6,942.22	5,949.00	5,943.35	146.79	183.92	-25.39	1,180.95	-3,335.34	12,512.57	12,297.65	214.92	58.219	
15,700.00	6,942.24	5,949.00	5,943.35	148.37	183.92	-25.39	1,180.95	-3,335.34	12,612.22	12,397.21	215.01	58.659	
15,800.00	6,942.25	5,949.00	5,943.35	149.94	183.92	-25.39	1,180.95	-3,335.34	12,711.87	12,496.77	215.10	59.098	
15,900.00	6,942.27	5,949.00	5,943.35	151.52	183.92	-25.39	1,180.95	-3,335.34	12,811.52	12,596.33	215.19	59.536	
16,000.00	6,942.28	5,949.00	5,943.35	153.10	183.92	-25.39	1,180.95	-3,335.34	12,911.18	12,695.90	215.28	59.975	
16,100.00	6,942.30	5,949.00	5,943.35	154.68	183.92	-25.39	1,180.95	-3,335.34	13,010.85	12,795.48	215.37	60.413	
16,200.00	6,942.31	5,949.00	5,943.35	156.26	183.92	-25.39	1,180.95	-3,335.34	13,110.51	12,895.06	215.45	60.850	
16,300.00	6,942.33	5,949.00	5,943.35	157.84	183.92	-25.39	1,180.95	-3,335.34	13,210.19	12,994.65	215.54	61.288	
16,400.00	6,942.34	5,949.00	5,943.35	159.42	183.92	-25.39	1,180.95	-3,335.34	13,309.87	13,094.24	215.63	61.724	
16,500.00	6,942.36	5,949.00	5,943.35	161.00	183.92	-25.39	1,180.95	-3,335.34	13,409.55	13,193.83	215.72	62.161	
16,600.00	6,942.37	5,949.00	5,943.35	162.59	183.92	-25.39	1,180.95	-3,335.34	13,509.24	13,293.43	215.81	62.597	
16,700.00	6,942.38	5,949.00	5,943.35	164.17	183.92	-25.39	1,180.95	-3,335.34	13,608.94	13,393.03	215.91	63.032	
16,800.00	6,942.40	5,949.00	5,943.35	165.75	183.92	-25.39	1,180.95	-3,335.34	13,708.64	13,492.64	216.00	63.467	
16,900.00	6,942.41	5,949.00	5,943.35	167.33	183.92	-25.39	1,180.95	-3,335.34	13,808.34	13,592.25	216.09	63.902	
17,000.00	6,942.43	5,949.00	5,943.35	168.92	183.92	-25.39	1,180.95	-3,335.34	13,908.04	13,691.87	216.18	64.336	
17,100.00	6,942.44	5,949.00	5,943.35	170.50	183.92	-25.39	1,180.95	-3,335.34	14,007.76	13,791.49	216.27	64.770	
17,200.00	6,942.46	5,949.00	5,943.35	172.09	183.92	-25.39	1,180.95	-3,335.34	14,107.47	13,891.11	216.36	65.203	
17,300.00	6,942.47	5,949.00	5,943.35	173.67	183.92	-25.39	1,180.95	-3,335.34	14,207.19	13,990.74	216.45	65.636	
17,400.00	6,942.49	5,949.00	5,943.35	175.26	183.92	-25.39	1,180.95	-3,335.34	14,306.91	14,090.37	216.55	66.069	
17,500.00	6,942.50	5,949.00	5,943.35	176.84	183.92	-25.39	1,180.95	-3,335.34	14,406.64	14,190.00	216.64	66.501	
17,600.00	6,942.52	5,949.00	5,943.35	178.43	183.92	-25.39	1,180.95	-3,335.34	14,506.37	14,289.64	216.73	66.932	
17,700.00	6,942.53	5,949.00	5,943.35	180.01	183.92	-25.39	1,180.95	-3,335.34	14,606.10	14,389.28	216.83	67.364	
17,800.00	6,942.55	5,949.00	5,943.35	181.60	183.92	-25.39	1,180.95	-3,335.34	14,705.84	14,488.92	216.92	67.794	
17,900.00	6,942.56	5,949.00	5,943.35	183.19	183.92	-25.39	1,180.95	-3,335.34	14,805.58	14,588.57	217.01	68.225	
18,000.00	6,942.58	5,949.00	5,943.35	184.77	183.92	-25.39	1,180.95	-3,335.34	14,905.33	14,688.22	217.11	68.654	
18,100.00	6,942.59	5,949.00	5,943.35	186.36	183.92	-25.39	1,180.95	-3,335.34	15,005.08	14,787.88	217.20	69.084	
18,200.00	6,942.61	5,949.00	5,943.35	187.95	183.92	-25.39	1,180.95	-3,335.34	15,104.83	14,887.53	217.30	69.513	
18,300.00	6,942.62	5,949.00	5,943.35	189.54	183.92	-25.39	1,180.95	-3,335.34	15,204.58	14,987.19	217.39	69.941	
18,400.00	6,942.64	5,949.00	5,943.35	191.12	183.92	-25.39	1,180.95	-3,335.34	15,304.34	15,086.86	217.49	70.369	
18,500.00	6,942.65	5,949.00	5,943.35	192.71	183.92	-25.39	1,180.95	-3,335.34	15,404.10	15,186.52	217.58	70.797	
18,600.00	6,942.67	5,949.00	5,943.35	194.30	183.92	-25.39	1,180.95	-3,335.34	15,503.87	15,286.19	217.68	71.224	
18,700.00	6,942.68	5,949.00	5,943.35	195.89	183.92	-25.39	1,180.95	-3,335.34	15,603.63	15,385.86	217.77	71.651	
18,800.00	6,942.70	5,949.00	5,943.35	197.48	183.92	-25.39	1,180.95	-3,335.34	15,703.40	15,485.54	217.87	72.077	
18,900.00	6,942.71	5,949.00	5,943.35	199.07	183.92	-25.39	1,180.95	-3,335.34	15,803.18	15,585.21	217.97	72.503	
19,000.00	6,942.73	5,949.00	5,943.35	200.66	183.92	-25.39	1,180.95	-3,335.34	15,902.95	15,684.89	218.06	72.928	
19,100.00	6,942.74	5,949.00	5,943.35	202.25	183.92	-25.39	1,180.95	-3,335.34	16,002.73	15,784.57	218.16	73.353	
19,200.00	6,942.76	5,949.00	5,943.35	203.84	183.92	-25.39	1,180.95	-3,335.34	16,102.51	15,884.26	218.26	73.777	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,300.00	6,942.77	5,949.00	5,943.35	205.43	183.92	-25.39	1,180.95	-3,335.34	16,202.30	15,983.94	218.36	74.201	
19,400.00	6,942.78	5,949.00	5,943.35	207.02	183.92	-25.39	1,180.95	-3,335.34	16,302.09	16,083.63	218.45	74.625	
19,500.00	6,942.80	5,949.00	5,943.35	208.61	183.92	-25.39	1,180.95	-3,335.34	16,401.87	16,183.32	218.55	75.048	
19,600.00	6,942.81	5,949.00	5,943.35	210.20	183.92	-25.39	1,180.95	-3,335.34	16,501.67	16,283.02	218.65	75.470	
19,700.00	6,942.83	5,949.00	5,943.35	211.79	183.92	-25.39	1,180.95	-3,335.34	16,601.46	16,382.71	218.75	75.892	
19,800.00	6,942.84	5,949.00	5,943.35	213.38	183.92	-25.39	1,180.95	-3,335.34	16,701.26	16,482.41	218.85	76.314	
19,900.00	6,942.86	5,949.00	5,943.35	214.97	183.92	-25.39	1,180.95	-3,335.34	16,801.06	16,582.11	218.95	76.735	
20,000.00	6,942.87	5,949.00	5,943.35	216.56	183.92	-25.39	1,180.95	-3,335.34	16,900.86	16,681.81	219.05	77.156	
20,100.00	6,942.89	5,949.00	5,943.35	218.15	183.92	-25.39	1,180.95	-3,335.34	17,000.66	16,781.51	219.15	77.576	
20,200.00	6,942.90	5,949.00	5,943.35	219.75	183.92	-25.39	1,180.95	-3,335.34	17,100.47	16,881.22	219.25	77.996	
20,300.00	6,942.92	5,949.00	5,943.35	221.34	183.92	-25.39	1,180.95	-3,335.34	17,200.28	16,980.93	219.35	78.415	
20,400.00	6,942.93	5,949.00	5,943.35	222.93	183.92	-25.39	1,180.95	-3,335.34	17,300.09	17,080.64	219.45	78.833	
20,500.00	6,942.95	5,949.00	5,943.35	224.52	183.92	-25.39	1,180.95	-3,335.34	17,399.90	17,180.35	219.55	79.252	
20,600.00	6,942.96	5,949.00	5,943.35	226.12	183.92	-25.39	1,180.95	-3,335.34	17,499.72	17,280.06	219.65	79.669	
20,700.00	6,942.98	5,949.00	5,943.35	227.71	183.92	-25.39	1,180.95	-3,335.34	17,599.54	17,379.78	219.76	80.087	
20,800.00	6,942.99	5,949.00	5,943.35	229.30	183.92	-25.39	1,180.95	-3,335.34	17,699.35	17,479.50	219.86	80.503	
20,855.77	6,943.00	5,949.00	5,943.35	230.19	183.92	-25.39	1,180.95	-3,335.34	17,755.02	17,535.11	219.92	80.736	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	0.00	0.00	0.00	0.00	-80.54	800.30	-4,802.38	4,868.78				
100.00	100.00	59.00	59.00	0.25	1.05	-80.54	800.30	-4,802.38	4,868.61	4,867.31	1.30	3,755.534	
200.00	200.00	159.00	159.00	0.61	2.82	-80.54	800.30	-4,802.38	4,868.61	4,865.18	3.43	1,420.883	
300.00	300.00	259.00	259.00	0.97	4.59	-80.54	800.30	-4,802.38	4,868.61	4,863.05	5.56	876.188	
400.00	400.00	359.00	359.00	1.33	6.36	-80.54	800.30	-4,802.38	4,868.61	4,860.92	7.69	633.377 CC	
500.00	500.00	460.43	460.43	1.68	8.16	-80.54	800.35	-4,802.38	4,868.62	4,858.78	9.84	494.667	
504.50	504.50	465.00	464.99	1.70	8.24	-101.28	800.34	-4,802.38	4,868.62	4,858.68	9.94	489.839	
600.00	599.98	558.98	558.98	2.04	9.95	-101.29	800.30	-4,802.38	4,868.95	4,856.96	11.99	405.977	
700.00	699.84	659.26	659.25	2.40	11.79	-101.33	800.45	-4,802.38	4,870.00	4,855.82	14.19	343.231	
800.00	799.45	760.07	760.07	2.77	13.64	-101.40	800.32	-4,802.38	4,871.71	4,855.31	16.40	297.109 ES	
845.27	844.44	803.45	803.44	2.93	14.45	-101.43	800.30	-4,802.38	4,872.72	4,855.34	17.38	280.433	
900.00	898.77	857.78	857.77	3.13	15.48	-101.51	800.30	-4,802.38	4,874.03	4,855.43	18.60	262.030	
1,000.00	998.04	957.06	957.04	3.50	17.35	-101.65	800.30	-4,802.38	4,876.46	4,855.62	20.84	233.958	
1,100.00	1,097.32	1,057.15	1,057.13	3.87	19.24	-101.78	801.09	-4,802.38	4,879.05	4,855.94	23.10	211.176	
1,200.00	1,196.59	1,158.41	1,158.38	4.24	21.15	-101.92	800.85	-4,802.38	4,881.49	4,856.10	25.39	192.267	
1,300.00	1,295.87	1,259.60	1,259.57	4.62	23.06	-102.07	800.33	-4,802.38	4,883.93	4,856.26	27.67	176.476	
1,400.00	1,395.14	1,354.19	1,354.14	5.00	24.85	-102.20	800.30	-4,802.38	4,886.47	4,856.62	29.85	163.723	
1,500.00	1,494.42	1,453.46	1,453.42	5.38	26.73	-102.33	800.30	-4,802.38	4,889.04	4,856.93	32.11	152.270	
1,600.00	1,593.69	1,553.24	1,553.19	5.76	28.63	-102.46	800.83	-4,802.38	4,891.72	4,857.34	34.38	142.285	
1,700.00	1,692.96	1,653.72	1,653.67	6.14	30.53	-102.60	800.67	-4,802.38	4,894.32	4,857.65	36.67	133.485	
1,800.00	1,792.24	1,754.17	1,754.11	6.52	32.44	-102.75	800.33	-4,802.38	4,896.93	4,857.98	38.95	125.718	
1,900.00	1,891.51	1,850.59	1,850.51	6.91	34.48	-102.88	800.30	-4,802.38	4,899.61	4,858.24	41.37	118.426	
2,000.00	1,990.79	1,949.86	1,949.79	7.29	36.59	-103.01	800.30	-4,802.38	4,902.32	4,858.45	43.87	111.750	
2,100.00	2,090.06	2,049.81	2,049.73	7.67	38.72	-103.14	801.10	-4,802.38	4,905.17	4,858.79	46.38	105.763	
2,200.00	2,189.34	2,150.74	2,150.66	8.06	40.87	-103.28	800.86	-4,802.38	4,907.90	4,858.99	48.91	100.344	
2,300.00	2,288.61	2,251.62	2,251.53	8.44	43.02	-103.43	800.36	-4,802.38	4,910.64	4,859.19	51.44	95.460	
2,400.00	2,387.89	2,347.06	2,346.89	8.82	45.08	-103.56	800.30	-4,802.38	4,913.45	4,859.56	53.89	91.180	
2,500.00	2,487.16	2,446.34	2,446.16	9.21	47.23	-103.69	800.30	-4,802.38	4,916.30	4,859.88	56.42	87.138	
2,600.00	2,586.44	2,546.91	2,546.72	9.59	49.41	-103.81	801.87	-4,802.38	4,919.37	4,860.39	58.98	83.406	
2,700.00	2,685.71	2,649.34	2,649.13	9.98	51.63	-103.96	801.36	-4,802.38	4,922.21	4,860.63	61.58	79.930	
2,800.00	2,784.99	2,751.65	2,751.42	10.36	53.84	-104.11	800.30	-4,802.38	4,925.03	4,860.85	64.18	76.737	
2,900.00	2,884.26	2,843.53	2,843.26	10.75	55.72	-104.23	800.30	-4,802.38	4,927.99	4,861.55	66.44	74.176	
3,000.00	2,983.53	2,942.81	2,942.53	11.13	57.74	-104.37	800.30	-4,802.38	4,930.98	4,862.13	68.84	71.626	
3,100.00	3,082.81	3,042.71	3,042.43	11.52	59.78	-104.49	801.09	-4,802.38	4,934.08	4,862.81	71.26	69.236	
3,200.00	3,182.08	3,143.36	3,143.08	11.90	61.83	-104.63	800.83	-4,802.38	4,937.09	4,863.39	73.70	66.989	
3,300.00	3,281.36	3,243.95	3,243.66	12.29	63.88	-104.77	800.31	-4,802.38	4,940.11	4,863.98	76.14	64.886	
3,400.00	3,380.63	3,339.96	3,339.63	12.67	65.78	-104.90	800.30	-4,802.38	4,943.21	4,864.80	78.41	63.043	
3,500.00	3,479.91	3,439.24	3,438.91	13.06	67.73	-105.04	800.30	-4,802.38	4,946.34	4,865.59	80.75	61.256	
3,600.00	3,579.18	3,538.54	3,538.20	13.44	69.69	-105.16	801.58	-4,802.38	4,949.61	4,866.52	83.09	59.570	
3,700.00	3,678.46	3,639.22	3,638.87	13.83	71.67	-105.29	801.42	-4,802.38	4,952.78	4,867.32	85.45	57.958	
3,800.00	3,777.73	3,739.83	3,739.48	14.21	73.65	-105.43	800.96	-4,802.38	4,955.94	4,868.12	87.82	56.433	
3,900.00	3,877.01	3,836.39	3,836.01	14.60	75.56	-105.57	800.30	-4,802.38	4,959.12	4,869.01	90.10	55.037	
4,000.00	3,976.28	3,935.66	3,935.28	14.98	77.51	-105.70	800.30	-4,802.38	4,962.38	4,869.94	92.44	53.680	
4,100.00	4,075.55	4,034.94	4,034.55	15.37	79.47	-105.84	800.30	-4,802.38	4,965.67	4,870.89	94.78	52.390	
4,200.00	4,174.83	4,134.75	4,134.36	15.75	81.43	-105.96	800.77	-4,802.38	4,969.02	4,871.89	97.13	51.158	
4,300.00	4,274.10	4,234.74	4,234.35	16.14	83.40	-106.10	800.55	-4,802.38	4,972.35	4,872.86	99.48	49.981	
4,400.00	4,373.38	4,332.80	4,332.38	16.53	85.36	-106.23	800.30	-4,802.38	4,975.70	4,873.87	101.82	48.866	
4,500.00	4,472.65	4,432.08	4,431.65	16.91	87.39	-106.36	800.30	-4,802.38	4,979.09	4,874.86	104.23	47.769	
4,600.00	4,571.93	4,531.35	4,530.93	17.30	89.41	-106.50	800.30	-4,802.38	4,982.52	4,875.88	106.64	46.722	
4,700.00	4,671.20	4,631.68	4,631.24	17.68	91.46	-106.62	801.26	-4,802.38	4,986.04	4,876.96	109.07	45.713	
4,800.00	4,770.48	4,732.13	4,731.69	18.07	93.51	-106.76	800.78	-4,802.38	4,989.48	4,877.97	111.51	44.747	
4,900.00	4,869.75	4,829.23	4,828.75	18.45	95.44	-106.89	800.30	-4,802.38	4,992.95	4,879.13	113.82	43.867	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	4,928.51	4,928.03	18.84	97.33	-107.02	800.30	-4,802.38	4,996.48	4,880.39	116.09	43.040	
5,100.00	5,068.30	5,027.78	5,027.30	19.23	99.21	-107.15	800.30	-4,802.38	5,000.03	4,881.68	118.36	42.245	
5,200.00	5,167.58	5,127.71	5,127.22	19.61	101.11	-107.28	801.03	-4,802.38	5,003.66	4,883.02	120.64	41.477	
5,300.00	5,266.85	5,227.70	5,227.21	20.00	103.01	-107.41	800.68	-4,802.38	5,007.25	4,884.33	122.92	40.736	
5,400.00	5,366.12	5,325.64	5,325.12	20.38	104.92	-107.54	800.30	-4,802.38	5,010.86	4,885.65	125.21	40.021	
5,500.00	5,465.40	5,424.91	5,424.40	20.77	106.94	-107.67	800.30	-4,802.38	5,014.52	4,886.91	127.62	39.294	
5,600.00	5,564.67	5,524.19	5,523.67	21.15	108.97	-107.80	800.30	-4,802.38	5,018.21	4,888.18	130.02	38.594	
5,700.00	5,663.95	5,623.81	5,623.30	21.54	111.00	-107.93	800.78	-4,802.38	5,021.94	4,889.50	132.44	37.919	
5,800.00	5,763.22	5,723.47	5,722.95	21.93	113.03	-108.06	800.55	-4,802.38	5,025.67	4,890.82	134.86	37.267	
5,900.00	5,862.50	5,822.07	5,821.50	22.31	115.17	-108.19	800.30	-4,802.38	5,029.43	4,892.05	137.38	36.610	
6,000.00	5,961.77	5,921.35	5,920.77	22.70	117.56	-108.32	800.30	-4,802.38	5,033.22	4,893.07	140.15	35.914	
6,100.00	6,061.05	6,000.00	5,999.35	23.08	119.45	-108.42	800.30	-4,802.38	5,037.08	4,894.66	142.42	35.369	
6,200.00	6,160.32	6,000.00	5,999.35	23.47	119.45	-108.42	800.30	-4,802.38	5,042.31	4,899.56	142.75	35.323	
6,300.00	6,259.60	6,000.00	5,999.35	23.86	119.45	-108.42	800.30	-4,802.38	5,049.51	4,906.48	143.03	35.304 SF	
6,376.00	6,335.04	6,000.00	5,999.35	24.15	119.45	-108.42	800.30	-4,802.38	5,056.30	4,913.09	143.21	35.308	
6,400.00	6,358.85	6,000.00	5,999.35	24.24	119.45	-123.16	800.30	-4,802.38	5,059.13	4,915.87	143.26	35.315	
6,450.00	6,408.16	6,000.00	5,999.35	24.44	119.45	-142.31	800.30	-4,802.38	5,068.25	4,924.90	143.35	35.355	
6,500.00	6,456.87	6,000.00	5,999.35	24.64	119.45	-152.20	800.30	-4,802.38	5,081.66	4,938.22	143.44	35.428	
6,550.00	6,504.65	6,000.00	5,999.35	24.85	119.45	-157.85	800.30	-4,802.38	5,099.24	4,955.73	143.51	35.533	
6,600.00	6,551.23	6,000.00	5,999.35	25.06	119.45	-161.40	800.30	-4,802.38	5,120.84	4,977.27	143.57	35.668	
6,650.00	6,596.31	6,000.00	5,999.35	25.26	119.45	-163.76	800.30	-4,802.38	5,146.28	5,002.66	143.62	35.833	
6,700.00	6,639.62	6,000.00	5,999.35	25.48	119.45	-165.41	800.30	-4,802.38	5,175.35	5,031.69	143.65	36.026	
6,750.00	6,680.88	6,000.00	5,999.35	25.69	119.45	-166.56	800.30	-4,802.38	5,207.80	5,064.12	143.68	36.245	
6,800.00	6,719.85	6,000.00	5,999.35	25.91	119.45	-167.36	800.30	-4,802.38	5,243.38	5,099.68	143.70	36.488	
6,850.00	6,756.28	6,000.00	5,999.35	26.13	119.45	-167.88	800.30	-4,802.38	5,281.82	5,138.10	143.71	36.752	
6,900.00	6,789.95	6,000.00	5,999.35	26.37	119.45	-168.15	800.30	-4,802.38	5,322.80	5,179.08	143.72	37.035	
6,950.00	6,820.65	6,000.00	5,999.35	26.61	119.45	-168.16	800.30	-4,802.38	5,366.02	5,222.30	143.73	37.335	
7,000.00	6,848.19	6,000.00	5,999.35	26.87	119.45	-167.87	800.30	-4,802.38	5,411.17	5,267.45	143.73	37.649	
7,050.00	6,872.41	6,000.00	5,999.35	27.13	119.45	-167.14	800.30	-4,802.38	5,457.93	5,314.20	143.73	37.974	
7,100.00	6,893.15	6,000.00	5,999.35	27.41	119.45	-165.62	800.30	-4,802.38	5,505.96	5,362.23	143.73	38.308	
7,150.00	6,910.28	6,000.00	5,999.35	27.71	119.45	-162.30	800.30	-4,802.38	5,554.95	5,411.21	143.73	38.647	
7,200.00	6,923.70	6,000.00	5,999.35	28.02	119.45	-152.38	800.30	-4,802.38	5,604.56	5,460.82	143.74	38.990	
7,250.00	6,933.33	6,000.00	5,999.35	28.34	119.45	-82.65	800.30	-4,802.38	5,654.49	5,510.73	143.76	39.334	
7,300.00	6,939.11	6,000.00	5,999.35	28.67	119.45	-14.11	800.30	-4,802.38	5,704.41	5,560.64	143.78	39.675	
7,349.12	6,941.00	6,000.00	5,999.35	29.00	119.45	-4.28	800.30	-4,802.38	5,753.17	5,609.36	143.81	40.006	
7,400.00	6,941.01	6,000.00	5,999.35	29.36	119.45	-4.28	800.30	-4,802.38	5,803.42	5,659.58	143.84	40.346	
7,500.00	6,941.02	6,000.00	5,999.35	30.11	119.45	-4.28	800.30	-4,802.38	5,902.23	5,758.32	143.91	41.013	
7,600.00	6,941.04	6,000.00	5,999.35	30.93	119.45	-4.28	800.30	-4,802.38	6,001.07	5,857.09	143.98	41.681	
7,700.00	6,941.05	6,000.00	5,999.35	31.80	119.45	-4.28	800.30	-4,802.38	6,099.95	5,955.91	144.04	42.348	
7,800.00	6,941.07	6,000.00	5,999.35	32.73	119.45	-4.28	800.30	-4,802.38	6,198.87	6,054.76	144.11	43.016	
7,900.00	6,941.08	6,000.00	5,999.35	33.71	119.45	-4.28	800.30	-4,802.38	6,297.82	6,153.65	144.17	43.683	
8,000.00	6,941.10	6,000.00	5,999.35	34.73	119.45	-4.28	800.30	-4,802.38	6,396.81	6,252.57	144.23	44.350	
8,100.00	6,941.11	6,000.00	5,999.35	35.79	119.45	-4.28	800.30	-4,802.38	6,495.82	6,351.53	144.30	45.018	
8,200.00	6,941.13	6,000.00	5,999.35	36.90	119.45	-4.28	800.30	-4,802.38	6,594.87	6,450.51	144.36	45.685	
8,300.00	6,941.14	6,000.00	5,999.35	38.03	119.45	-4.28	800.30	-4,802.38	6,693.94	6,549.52	144.42	46.352	
8,400.00	6,941.16	6,000.00	5,999.35	39.20	119.45	-4.28	800.30	-4,802.38	6,793.04	6,648.57	144.48	47.019	
8,500.00	6,941.17	6,000.00	5,999.35	40.40	119.45	-4.28	800.30	-4,802.38	6,892.17	6,747.63	144.53	47.685	
8,600.00	6,941.19	6,000.00	5,999.35	41.63	119.45	-4.28	800.30	-4,802.38	6,991.32	6,846.73	144.59	48.352	
8,700.00	6,941.20	6,000.00	5,999.35	42.88	119.45	-4.28	800.30	-4,802.38	7,090.50	6,945.84	144.65	49.018	
8,800.00	6,941.22	6,000.00	5,999.35	44.16	119.45	-4.28	800.30	-4,802.38	7,189.69	7,044.99	144.71	49.684	
8,900.00	6,941.23	6,000.00	5,999.35	45.45	119.45	-4.28	800.30	-4,802.38	7,288.91	7,144.15	144.77	50.350	
9,000.00	6,941.24	6,000.00	5,999.35	46.76	119.45	-4.28	800.30	-4,802.38	7,388.15	7,243.33	144.82	51.015	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,000.00	5,999.35	48.10	119.45	-4.28	800.30	-4,802.38	7,487.42	7,342.54	144.88	51.681	
9,200.00	6,941.27	6,000.00	5,999.35	49.44	119.45	-4.28	800.30	-4,802.38	7,586.70	7,441.76	144.94	52.345	
9,300.00	6,941.29	6,000.00	5,999.35	50.80	119.45	-4.28	800.30	-4,802.38	7,686.00	7,541.00	144.99	53.010	
9,400.00	6,941.30	6,000.00	5,999.35	52.18	119.45	-4.28	800.30	-4,802.38	7,785.31	7,640.27	145.05	53.674	
9,500.00	6,941.32	6,000.00	5,999.35	53.57	119.45	-4.28	800.30	-4,802.38	7,884.65	7,739.54	145.10	54.338	
9,600.00	6,941.33	6,000.00	5,999.35	54.97	119.45	-4.28	800.30	-4,802.38	7,984.00	7,838.84	145.16	55.001	
9,700.00	6,941.35	6,000.00	5,999.35	56.38	119.45	-4.28	800.30	-4,802.38	8,083.37	7,938.15	145.22	55.664	
9,800.00	6,941.36	6,000.00	5,999.35	57.80	119.45	-4.28	800.30	-4,802.38	8,182.75	8,037.48	145.27	56.327	
9,900.00	6,941.38	6,000.00	5,999.35	59.23	119.45	-4.28	800.30	-4,802.38	8,282.15	8,136.82	145.33	56.989	
10,000.00	6,941.39	6,000.00	5,999.35	60.67	119.45	-4.28	800.30	-4,802.38	8,381.56	8,236.17	145.39	57.650	
10,100.00	6,941.41	6,000.00	5,999.35	62.11	119.45	-4.28	800.30	-4,802.38	8,480.98	8,335.54	145.44	58.312	
10,200.00	6,941.42	6,000.00	5,999.35	63.57	119.45	-4.28	800.30	-4,802.38	8,580.42	8,434.92	145.50	58.972	
10,300.00	6,941.44	6,000.00	5,999.35	65.03	119.45	-4.28	800.30	-4,802.38	8,679.88	8,534.32	145.56	59.632	
10,400.00	6,941.45	6,000.00	5,999.35	66.50	119.45	-4.28	800.30	-4,802.38	8,779.34	8,633.73	145.61	60.292	
10,500.00	6,941.47	6,000.00	5,999.35	67.97	119.45	-4.28	800.30	-4,802.38	8,878.82	8,733.15	145.67	60.951	
10,600.00	6,941.48	6,000.00	5,999.35	69.45	119.45	-4.28	800.30	-4,802.38	8,978.30	8,832.58	145.73	61.610	
10,700.00	6,941.50	6,000.00	5,999.35	70.94	119.45	-4.28	800.30	-4,802.38	9,077.80	8,932.02	145.79	62.268	
10,800.00	6,941.51	6,000.00	5,999.35	72.43	119.45	-4.28	800.30	-4,802.38	9,177.31	9,031.47	145.84	62.925	
10,900.00	6,941.53	6,000.00	5,999.35	73.92	119.45	-4.28	800.30	-4,802.38	9,276.83	9,130.93	145.90	63.582	
11,000.00	6,941.54	6,000.00	5,999.35	75.42	119.45	-4.28	800.30	-4,802.38	9,376.37	9,230.40	145.96	64.238	
11,100.00	6,941.56	6,000.00	5,999.35	76.92	119.45	-4.28	800.30	-4,802.38	9,475.91	9,329.88	146.02	64.894	
11,200.00	6,941.57	6,000.00	5,999.35	78.43	119.45	-4.28	800.30	-4,802.38	9,575.46	9,429.38	146.08	65.549	
11,300.00	6,941.59	6,000.00	5,999.35	79.94	119.45	-4.28	800.30	-4,802.38	9,675.02	9,528.87	146.14	66.203	
11,400.00	6,941.60	6,000.00	5,999.35	81.46	119.45	-4.28	800.30	-4,802.38	9,774.58	9,628.38	146.20	66.857	
11,500.00	6,941.61	6,000.00	5,999.35	82.98	119.45	-4.28	800.30	-4,802.38	9,874.16	9,727.90	146.26	67.510	
11,600.00	6,941.63	6,000.00	5,999.35	84.50	119.45	-4.28	800.30	-4,802.38	9,973.75	9,827.42	146.32	68.163	
11,700.00	6,941.64	6,000.00	5,999.35	86.02	119.45	-4.28	800.30	-4,802.38	10,073.34	9,926.96	146.38	68.814	
11,800.00	6,941.66	6,000.00	5,999.35	87.55	119.45	-4.28	800.30	-4,802.38	10,172.94	10,026.50	146.45	69.465	
11,900.00	6,941.67	6,000.00	5,999.35	89.08	119.45	-4.28	800.30	-4,802.38	10,272.55	10,126.04	146.51	70.116	
12,000.00	6,941.69	6,000.00	5,999.35	90.61	119.45	-4.28	800.30	-4,802.38	10,372.17	10,225.60	146.57	70.765	
12,100.00	6,941.70	6,000.00	5,999.35	92.14	119.45	-4.28	800.30	-4,802.38	10,471.79	10,325.16	146.63	71.414	
12,200.00	6,941.72	6,000.00	5,999.35	93.68	119.45	-4.28	800.30	-4,802.38	10,571.43	10,424.73	146.70	72.063	
12,300.00	6,941.73	6,000.00	5,999.35	95.22	119.45	-4.28	800.30	-4,802.38	10,671.06	10,524.30	146.76	72.710	
12,400.00	6,941.75	6,000.00	5,999.35	96.76	119.45	-4.28	800.30	-4,802.38	10,770.71	10,623.88	146.83	73.357	
12,500.00	6,941.76	6,000.00	5,999.35	98.30	119.45	-4.28	800.30	-4,802.38	10,870.36	10,723.47	146.89	74.003	
12,600.00	6,941.78	6,000.00	5,999.35	99.85	119.45	-4.28	800.30	-4,802.38	10,970.02	10,823.06	146.96	74.648	
12,700.00	6,941.79	6,000.00	5,999.35	101.40	119.45	-4.28	800.30	-4,802.38	11,069.68	10,922.66	147.02	75.293	
12,800.00	6,941.81	6,000.00	5,999.35	102.95	119.45	-4.28	800.30	-4,802.38	11,169.35	11,022.27	147.09	75.936	
12,900.00	6,941.82	6,000.00	5,999.35	104.50	119.45	-4.28	800.30	-4,802.38	11,269.03	11,121.88	147.16	76.579	
13,000.00	6,941.84	6,000.00	5,999.35	106.05	119.45	-4.28	800.30	-4,802.38	11,368.71	11,221.49	147.22	77.221	
13,100.00	6,941.85	6,000.00	5,999.35	107.60	119.45	-4.28	800.30	-4,802.38	11,468.40	11,321.11	147.29	77.863	
13,200.00	6,941.87	6,000.00	5,999.35	109.16	119.45	-4.28	800.30	-4,802.38	11,568.09	11,420.73	147.36	78.503	
13,300.00	6,941.88	6,000.00	5,999.35	110.71	119.45	-4.28	800.30	-4,802.38	11,667.79	11,520.36	147.43	79.143	
13,400.00	6,941.90	6,000.00	5,999.35	112.27	119.45	-4.28	800.30	-4,802.38	11,767.49	11,620.00	147.50	79.782	
13,500.00	6,941.91	6,000.00	5,999.35	113.83	119.45	-4.28	800.30	-4,802.38	11,867.20	11,719.64	147.57	80.420	
13,600.00	6,941.93	6,000.00	5,999.35	115.39	119.45	-4.28	800.30	-4,802.38	11,966.91	11,819.28	147.64	81.057	
13,700.00	6,941.94	6,000.00	5,999.35	116.95	119.45	-4.28	800.30	-4,802.38	12,066.63	11,918.93	147.71	81.693	
13,800.00	6,941.96	6,000.00	5,999.35	118.51	119.45	-4.28	800.30	-4,802.38	12,166.35	12,018.58	147.78	82.329	
13,900.00	6,941.97	6,000.00	5,999.35	120.08	119.45	-4.28	800.30	-4,802.38	12,266.08	12,118.23	147.85	82.964	
14,000.00	6,941.99	6,000.00	5,999.35	121.64	119.45	-4.28	800.30	-4,802.38	12,365.81	12,217.89	147.92	83.597	
14,100.00	6,942.00	6,000.00	5,999.35	123.21	119.45	-4.28	800.30	-4,802.38	12,465.55	12,317.55	147.99	84.230	
14,200.00	6,942.01	6,000.00	5,999.35	124.77	119.45	-4.28	800.30	-4,802.38	12,565.29	12,417.22	148.07	84.862	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,000.00	5,999.35	126.34	119.45	-4.28	800.30	-4,802.38	12,665.03	12,516.89	148.14	85.494	
14,400.00	6,942.04	6,000.00	5,999.35	127.91	119.45	-4.28	800.30	-4,802.38	12,764.78	12,616.56	148.21	86.124	
14,500.00	6,942.06	6,000.00	5,999.35	129.48	119.45	-4.28	800.30	-4,802.38	12,864.53	12,716.24	148.29	86.753	
14,600.00	6,942.07	6,000.00	5,999.35	131.05	119.45	-4.28	800.30	-4,802.38	12,964.29	12,815.92	148.36	87.382	
14,700.00	6,942.09	6,000.00	5,999.35	132.62	119.45	-4.28	800.30	-4,802.38	13,064.05	12,915.61	148.44	88.009	
14,800.00	6,942.10	6,000.00	5,999.35	134.19	119.45	-4.28	800.30	-4,802.38	13,163.81	13,015.29	148.52	88.636	
14,900.00	6,942.12	6,000.00	5,999.35	135.76	119.45	-4.28	800.30	-4,802.38	13,263.58	13,114.98	148.59	89.262	
15,000.00	6,942.13	6,000.00	5,999.35	137.34	119.45	-4.28	800.30	-4,802.38	13,363.35	13,214.68	148.67	89.887	
15,100.00	6,942.15	6,000.00	5,999.35	138.91	119.45	-4.28	800.30	-4,802.38	13,463.12	13,314.37	148.75	90.511	
15,200.00	6,942.16	6,000.00	5,999.35	140.48	119.45	-4.28	800.30	-4,802.38	13,562.90	13,414.07	148.82	91.134	
15,300.00	6,942.18	6,000.00	5,999.35	142.06	119.45	-4.28	800.30	-4,802.38	13,662.68	13,513.77	148.90	91.756	
15,400.00	6,942.19	6,000.00	5,999.35	143.64	119.45	-4.28	800.30	-4,802.38	13,762.46	13,613.48	148.98	92.377	
15,500.00	6,942.21	6,000.00	5,999.35	145.21	119.45	-4.28	800.30	-4,802.38	13,862.25	13,713.18	149.06	92.997	
15,600.00	6,942.22	6,000.00	5,999.35	146.79	119.45	-4.28	800.30	-4,802.38	13,962.03	13,812.89	149.14	93.616	
15,700.00	6,942.24	6,000.00	5,999.35	148.37	119.45	-4.28	800.30	-4,802.38	14,061.83	13,912.61	149.22	94.234	
15,800.00	6,942.25	6,000.00	5,999.35	149.94	119.45	-4.28	800.30	-4,802.38	14,161.62	14,012.32	149.30	94.852	
15,900.00	6,942.27	6,000.00	5,999.35	151.52	119.45	-4.28	800.30	-4,802.38	14,261.42	14,112.04	149.38	95.468	
16,000.00	6,942.28	6,000.00	5,999.35	153.10	119.45	-4.28	800.30	-4,802.38	14,361.22	14,211.76	149.47	96.084	
16,100.00	6,942.30	6,000.00	5,999.35	154.68	119.45	-4.28	800.30	-4,802.38	14,461.03	14,311.48	149.55	96.698	
16,200.00	6,942.31	6,000.00	5,999.35	156.26	119.45	-4.28	800.30	-4,802.38	14,560.83	14,411.20	149.63	97.312	
16,300.00	6,942.33	6,000.00	5,999.35	157.84	119.45	-4.28	800.30	-4,802.38	14,660.64	14,510.93	149.71	97.924	
16,400.00	6,942.34	6,000.00	5,999.35	159.42	119.45	-4.28	800.30	-4,802.38	14,760.45	14,610.66	149.80	98.536	
16,500.00	6,942.36	6,000.00	5,999.35	161.00	119.45	-4.28	800.30	-4,802.38	14,860.27	14,710.39	149.88	99.146	
16,600.00	6,942.37	6,000.00	5,999.35	162.59	119.45	-4.28	800.30	-4,802.38	14,960.08	14,810.12	149.97	99.756	
16,700.00	6,942.38	6,000.00	5,999.35	164.17	119.45	-4.28	800.30	-4,802.38	15,059.90	14,909.85	150.05	100.364	
16,800.00	6,942.40	6,000.00	5,999.35	165.75	119.45	-4.28	800.30	-4,802.38	15,159.72	15,009.59	150.14	100.972	
16,900.00	6,942.41	6,000.00	5,999.35	167.33	119.45	-4.28	800.30	-4,802.38	15,259.55	15,109.32	150.22	101.579	
17,000.00	6,942.43	6,000.00	5,999.35	168.92	119.45	-4.28	800.30	-4,802.38	15,359.37	15,209.06	150.31	102.184	
17,100.00	6,942.44	6,000.00	5,999.35	170.50	119.45	-4.28	800.30	-4,802.38	15,459.20	15,308.81	150.40	102.789	
17,200.00	6,942.46	6,000.00	5,999.35	172.09	119.45	-4.28	800.30	-4,802.38	15,559.03	15,408.55	150.49	103.393	
17,300.00	6,942.47	6,000.00	5,999.35	173.67	119.45	-4.28	800.30	-4,802.38	15,658.87	15,508.29	150.57	103.995	
17,400.00	6,942.49	6,000.00	5,999.35	175.26	119.45	-4.28	800.30	-4,802.38	15,758.70	15,608.04	150.66	104.597	
17,500.00	6,942.50	6,000.00	5,999.35	176.84	119.45	-4.28	800.30	-4,802.38	15,858.54	15,707.79	150.75	105.198	
17,600.00	6,942.52	6,000.00	5,999.35	178.43	119.45	-4.28	800.30	-4,802.38	15,958.38	15,807.54	150.84	105.797	
17,700.00	6,942.53	6,000.00	5,999.35	180.01	119.45	-4.28	800.30	-4,802.38	16,058.22	15,907.29	150.93	106.396	
17,800.00	6,942.55	6,000.00	5,999.35	181.60	119.45	-4.28	800.30	-4,802.38	16,158.06	16,007.04	151.02	106.993	
17,900.00	6,942.56	6,000.00	5,999.35	183.19	119.45	-4.28	800.30	-4,802.38	16,257.91	16,106.80	151.11	107.590	
18,000.00	6,942.58	6,000.00	5,999.35	184.77	119.45	-4.28	800.30	-4,802.38	16,357.75	16,206.55	151.20	108.186	
18,100.00	6,942.59	6,000.00	5,999.35	186.36	119.45	-4.28	800.30	-4,802.38	16,457.60	16,306.31	151.29	108.780	
18,200.00	6,942.61	6,000.00	5,999.35	187.95	119.45	-4.28	800.30	-4,802.38	16,557.45	16,406.07	151.38	109.374	
18,300.00	6,942.62	6,000.00	5,999.35	189.54	119.45	-4.28	800.30	-4,802.38	16,657.30	16,505.83	151.48	109.966	
18,400.00	6,942.64	6,000.00	5,999.35	191.12	119.45	-4.28	800.30	-4,802.38	16,757.16	16,605.59	151.57	110.558	
18,500.00	6,942.65	6,000.00	5,999.35	192.71	119.45	-4.28	800.30	-4,802.38	16,857.01	16,705.35	151.66	111.148	
18,600.00	6,942.67	6,000.00	5,999.35	194.30	119.45	-4.28	800.30	-4,802.38	16,956.87	16,805.12	151.76	111.738	
18,700.00	6,942.68	6,000.00	5,999.35	195.89	119.45	-4.28	800.30	-4,802.38	17,056.73	16,904.88	151.85	112.326	
18,800.00	6,942.70	6,000.00	5,999.35	197.48	119.45	-4.28	800.30	-4,802.38	17,156.59	17,004.65	151.94	112.914	
18,900.00	6,942.71	6,000.00	5,999.35	199.07	119.45	-4.28	800.30	-4,802.38	17,256.45	17,104.42	152.04	113.500	
19,000.00	6,942.73	6,000.00	5,999.35	200.66	119.45	-4.28	800.30	-4,802.38	17,356.32	17,204.18	152.13	114.086	
19,100.00	6,942.74	6,000.00	5,999.35	202.25	119.45	-4.28	800.30	-4,802.38	17,456.18	17,303.95	152.23	114.670	
19,200.00	6,942.76	6,000.00	5,999.35	203.84	119.45	-4.28	800.30	-4,802.38	17,556.05	17,403.73	152.33	115.253	
19,300.00	6,942.77	6,000.00	5,999.35	205.43	119.45	-4.28	800.30	-4,802.38	17,655.92	17,503.50	152.42	115.836	
19,400.00	6,942.78	6,000.00	5,999.35	207.02	119.45	-4.28	800.30	-4,802.38	17,755.79	17,603.27	152.52	116.417	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,000.00	5,999.35	208.61	119.45	-4.28	800.30	-4,802.38	17,855.66	17,703.04	152.62	116.997	
19,600.00	6,942.81	6,000.00	5,999.35	210.20	119.45	-4.28	800.30	-4,802.38	17,955.53	17,802.82	152.71	117.576	
19,700.00	6,942.83	6,000.00	5,999.35	211.79	119.45	-4.28	800.30	-4,802.38	18,055.41	17,902.60	152.81	118.154	
19,800.00	6,942.84	6,000.00	5,999.35	213.38	119.45	-4.28	800.30	-4,802.38	18,155.28	18,002.37	152.91	118.732	
19,900.00	6,942.86	6,000.00	5,999.35	214.97	119.45	-4.28	800.30	-4,802.38	18,255.16	18,102.15	153.01	119.308	
20,000.00	6,942.87	6,000.00	5,999.35	216.56	119.45	-4.28	800.30	-4,802.38	18,355.04	18,201.93	153.11	119.883	
20,100.00	6,942.89	6,000.00	5,999.35	218.15	119.45	-4.28	800.30	-4,802.38	18,454.92	18,301.71	153.21	120.457	
20,200.00	6,942.90	6,000.00	5,999.35	219.75	119.45	-4.28	800.30	-4,802.38	18,554.80	18,401.49	153.31	121.030	
20,300.00	6,942.92	6,000.00	5,999.35	221.34	119.45	-4.28	800.30	-4,802.38	18,654.68	18,501.28	153.41	121.602	
20,400.00	6,942.93	6,000.00	5,999.35	222.93	119.45	-4.28	800.30	-4,802.38	18,754.57	18,601.06	153.51	122.173	
20,500.00	6,942.95	6,000.00	5,999.35	224.52	119.45	-4.28	800.30	-4,802.38	18,854.45	18,700.84	153.61	122.743	
20,600.00	6,942.96	6,000.00	5,999.35	226.12	119.45	-4.28	800.30	-4,802.38	18,954.34	18,800.63	153.71	123.312	
20,700.00	6,942.98	6,000.00	5,999.35	227.71	119.45	-4.28	800.30	-4,802.38	19,054.22	18,900.41	153.81	123.879	
20,800.00	6,942.99	6,000.00	5,999.35	229.30	119.45	-4.28	800.30	-4,802.38	19,154.11	19,000.20	153.91	124.446	
20,855.77	6,943.00	6,000.00	5,999.35	230.19	119.45	-4.28	800.30	-4,802.38	19,209.82	19,055.85	153.97	124.762	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 — **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	96.00	96.00	0.00	2.04	-79.01	1,292.88	-6,654.86	6,779.28				
100.00	100.00	196.00	196.00	0.25	4.17	-79.01	1,292.88	-6,654.86	6,779.28	6,774.86	4.42	1,532.883	
200.00	200.00	296.00	296.00	0.61	6.30	-79.01	1,292.88	-6,654.86	6,779.28	6,772.38	6.91	981.179	
300.00	300.00	396.00	396.00	0.97	8.43	-79.01	1,292.88	-6,654.86	6,779.28	6,769.89	9.40	721.501	
400.00	400.00	496.00	496.00	1.33	10.56	-79.01	1,292.88	-6,654.86	6,779.28	6,767.40	11.88	570.510	
500.00	500.00	596.03	596.00	1.68	12.69	-79.01	1,292.88	-6,654.86	6,779.28	6,764.91	14.37	471.760	CC
600.00	599.98	696.01	695.98	2.04	14.81	-99.75	1,292.88	-6,654.86	6,779.58	6,762.72	16.86	402.218	
700.00	699.84	797.72	797.68	2.40	16.98	-99.77	1,293.89	-6,654.86	6,780.66	6,761.28	19.38	349.926	
800.00	799.45	902.23	902.18	2.77	19.20	-99.82	1,293.54	-6,654.86	6,782.09	6,760.12	21.96	308.816	
845.27	844.44	949.39	949.35	2.93	20.21	-99.85	1,293.25	-6,654.86	6,782.91	6,759.78	23.13	293.251	
900.00	898.77	1,006.34	1,006.29	3.13	21.42	-99.91	1,292.80	-6,654.86	6,783.96	6,759.42	24.54	276.419	
1,000.00	998.04	1,094.14	1,094.04	3.50	23.46	-100.00	1,292.88	-6,654.86	6,786.06	6,759.11	26.95	251.759	
1,100.00	1,097.32	1,193.42	1,193.32	3.87	25.75	-100.10	1,292.88	-6,654.86	6,788.17	6,758.56	29.62	229.192	
1,200.00	1,196.59	1,294.78	1,294.67	4.24	28.09	-100.19	1,293.93	-6,654.86	6,790.50	6,758.17	32.33	210.026	
1,300.00	1,295.87	1,398.49	1,398.38	4.62	30.48	-100.30	1,293.56	-6,654.86	6,792.59	6,757.49	35.10	193.515	
1,400.00	1,395.14	1,502.12	1,502.00	5.00	32.87	-100.41	1,292.82	-6,654.86	6,794.64	6,756.77	37.87	179.419	
1,500.00	1,494.42	1,590.63	1,590.42	5.38	35.10	-100.50	1,292.88	-6,654.86	6,796.83	6,756.36	40.48	167.920	
1,600.00	1,593.69	1,689.91	1,689.69	5.76	37.59	-100.59	1,292.88	-6,654.86	6,799.05	6,755.71	43.34	156.872	
1,700.00	1,692.96	1,792.04	1,791.80	6.14	40.14	-100.68	1,294.46	-6,654.86	6,801.56	6,755.28	46.28	146.971	
1,800.00	1,792.24	1,897.79	1,897.54	6.52	42.79	-100.79	1,293.91	-6,654.86	6,803.72	6,754.42	49.31	137.989	
1,900.00	1,891.51	2,003.43	2,003.15	6.91	45.43	-100.91	1,292.78	-6,654.86	6,805.82	6,753.49	52.33	130.051	
2,000.00	1,990.79	2,087.18	2,086.79	7.29	47.63	-100.99	1,292.88	-6,654.86	6,808.12	6,753.21	54.91	123.985	
2,100.00	2,090.06	2,186.45	2,186.06	7.67	50.23	-101.09	1,292.88	-6,654.86	6,810.43	6,752.55	57.89	117.649	
2,200.00	2,189.34	2,288.64	2,288.22	8.06	52.90	-101.18	1,294.42	-6,654.86	6,813.03	6,752.09	60.94	111.797	
2,300.00	2,288.61	2,394.21	2,393.78	8.44	55.66	-101.29	1,293.85	-6,654.86	6,815.30	6,751.21	64.08	106.351	
2,400.00	2,387.89	2,499.65	2,499.20	8.82	58.41	-101.40	1,292.68	-6,654.86	6,817.50	6,750.27	67.22	101.417	
2,500.00	2,487.16	2,583.75	2,583.16	9.21	60.42	-101.48	1,292.88	-6,654.86	6,819.91	6,750.30	69.61	97.974	
2,600.00	2,586.44	2,683.02	2,682.44	9.59	62.82	-101.58	1,292.88	-6,654.86	6,822.33	6,749.94	72.39	94.241	
2,700.00	2,685.71	2,785.01	2,784.38	9.98	65.28	-101.67	1,294.79	-6,654.86	6,825.07	6,749.83	75.24	90.710	
2,800.00	2,784.99	2,890.94	2,890.30	10.36	67.84	-101.77	1,294.19	-6,654.86	6,827.44	6,749.26	78.18	87.324	
2,900.00	2,884.26	2,996.74	2,996.07	10.75	70.40	-101.89	1,292.93	-6,654.86	6,829.74	6,748.61	81.13	84.187	
3,000.00	2,983.53	3,080.27	3,079.53	11.13	72.18	-101.97	1,292.88	-6,654.86	6,832.22	6,748.93	83.29	82.033	
3,100.00	3,082.81	3,179.55	3,178.81	11.52	74.28	-102.07	1,292.88	-6,654.86	6,834.74	6,748.97	85.77	79.688	
3,200.00	3,182.08	3,278.82	3,278.08	11.90	76.38	-102.17	1,292.88	-6,654.86	6,837.28	6,749.03	88.25	77.474	
3,300.00	3,281.36	3,378.38	3,377.63	12.29	78.48	-102.25	1,294.48	-6,654.86	6,840.07	6,749.33	90.74	75.380	
3,400.00	3,380.63	3,480.06	3,479.30	12.67	80.63	-102.35	1,294.32	-6,654.86	6,842.63	6,749.36	93.28	73.359	
3,500.00	3,479.91	3,581.68	3,580.92	13.06	82.78	-102.46	1,293.93	-6,654.86	6,845.18	6,749.37	95.81	71.446	
3,600.00	3,579.18	3,683.26	3,682.48	13.44	84.93	-102.56	1,293.28	-6,654.86	6,847.71	6,749.37	98.34	69.633	
3,700.00	3,678.46	3,775.31	3,774.46	13.83	87.05	-102.66	1,292.88	-6,654.86	6,850.29	6,749.45	100.84	67.931	
3,800.00	3,777.73	3,874.58	3,873.73	14.21	89.55	-102.75	1,292.88	-6,654.86	6,852.95	6,749.23	103.73	66.068	
3,900.00	3,877.01	3,973.86	3,973.01	14.60	92.05	-102.85	1,292.88	-6,654.86	6,855.64	6,749.02	106.61	64.305	
4,000.00	3,976.28	4,073.13	4,072.28	14.98	94.55	-102.95	1,292.88	-6,654.86	6,858.34	6,748.84	109.50	62.636	
4,100.00	4,075.55	4,172.41	4,171.55	15.37	97.05	-103.05	1,292.88	-6,654.86	6,861.06	6,748.68	112.38	61.052	
4,200.00	4,174.83	4,271.68	4,270.83	15.75	99.55	-103.14	1,292.88	-6,654.86	6,863.80	6,748.54	115.26	59.548	
4,300.00	4,274.10	4,370.96	4,370.10	16.14	102.05	-103.24	1,292.88	-6,654.86	6,866.57	6,748.42	118.15	58.118	
4,400.00	4,373.38	4,470.23	4,469.38	16.53	104.55	-103.34	1,292.88	-6,654.86	6,869.35	6,748.32	121.03	56.756	
4,500.00	4,472.65	4,569.50	4,568.65	16.91	107.05	-103.43	1,292.88	-6,654.86	6,872.15	6,748.23	123.92	55.457	
4,600.00	4,571.93	4,668.78	4,667.93	17.30	109.55	-103.53	1,292.88	-6,654.86	6,874.97	6,748.17	126.80	54.218	
4,700.00	4,671.20	4,768.23	4,767.34	17.68	112.06	-103.59	1,297.29	-6,654.86	6,878.35	6,748.66	129.69	53.036	
4,800.00	4,770.48	4,868.23	4,867.34	18.07	114.58	-103.69	1,297.23	-6,654.86	6,881.20	6,748.61	132.59	51.896	
4,900.00	4,869.75	4,968.22	4,967.32	18.45	117.10	-103.79	1,297.08	-6,654.86	6,884.06	6,748.56	135.50	50.806	
5,000.00	4,969.03	5,068.18	5,067.28	18.84	119.61	-103.89	1,296.84	-6,654.86	6,886.93	6,748.53	138.40	49.761	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,168.14	5,167.23	19.23	122.13	-103.99	1,296.52	-6,654.86	6,889.80	6,748.50	141.30	48.760	
5,200.00	5,167.58	5,268.07	5,267.15	19.61	124.65	-104.09	1,296.11	-6,654.86	6,892.69	6,748.49	144.20	47.799	
5,300.00	5,266.85	5,367.98	5,367.06	20.00	127.17	-104.19	1,295.62	-6,654.86	6,895.59	6,748.49	147.10	46.876	
5,400.00	5,366.12	5,467.88	5,466.95	20.38	129.68	-104.29	1,295.04	-6,654.86	6,898.51	6,748.50	150.00	45.989	
5,500.00	5,465.40	5,567.76	5,566.82	20.77	132.20	-104.39	1,294.37	-6,654.86	6,901.43	6,748.53	152.90	45.136	
5,600.00	5,564.67	5,667.62	5,666.68	21.15	134.71	-104.49	1,293.62	-6,654.86	6,904.37	6,748.57	155.80	44.315	
5,700.00	5,663.95	5,761.52	5,759.95	21.54	137.10	-104.59	1,292.88	-6,654.86	6,907.32	6,748.75	158.57	43.560	
5,800.00	5,763.22	5,860.79	5,859.22	21.93	140.03	-104.69	1,292.88	-6,654.86	6,910.38	6,748.50	161.89	42.687	
5,900.00	5,862.50	5,960.07	5,958.50	22.31	142.96	-104.78	1,292.88	-6,654.86	6,913.46	6,748.26	165.20	41.848	
6,000.00	5,961.77	6,059.34	6,057.77	22.70	145.90	-104.88	1,292.88	-6,654.86	6,916.56	6,748.04	168.52	41.043	
6,100.00	6,061.05	6,158.62	6,157.05	23.08	148.83	-104.97	1,292.88	-6,654.86	6,919.68	6,747.84	171.83	40.269	
6,200.00	6,160.32	6,257.89	6,256.32	23.47	151.76	-105.07	1,292.88	-6,654.86	6,922.82	6,747.66	175.15	39.525	
6,300.00	6,259.60	6,357.17	6,355.60	23.86	154.69	-105.16	1,292.88	-6,654.86	6,925.97	6,747.51	178.47	38.808	
6,376.00	6,335.04	6,432.61	6,431.04	24.15	156.92	-105.24	1,292.88	-6,654.86	6,928.38	6,747.40	180.99	38.281 ES	
6,400.00	6,358.85	6,456.42	6,454.85	24.24	157.63	-119.99	1,292.88	-6,654.86	6,929.60	6,747.82	181.78	38.120	
6,450.00	6,408.16	6,505.73	6,504.16	24.44	159.08	-139.17	1,292.88	-6,654.86	6,935.01	6,751.58	183.43	37.807	
6,500.00	6,456.87	6,554.44	6,552.87	24.64	160.52	-149.09	1,292.88	-6,654.86	6,944.30	6,759.24	185.06	37.524	
6,550.00	6,504.65	6,602.22	6,600.65	24.85	161.93	-154.75	1,292.88	-6,654.86	6,957.41	6,770.74	186.67	37.272	
6,600.00	6,551.23	6,648.80	6,647.23	25.06	163.31	-158.28	1,292.88	-6,654.86	6,974.25	6,786.02	188.23	37.052	
6,650.00	6,596.31	6,693.88	6,692.31	25.26	164.64	-160.63	1,292.88	-6,654.86	6,994.73	6,804.98	189.75	36.864	
6,700.00	6,639.62	6,737.19	6,735.62	25.48	165.92	-162.23	1,292.88	-6,654.86	7,018.70	6,827.50	191.20	36.709	
6,750.00	6,680.88	6,778.45	6,776.88	25.69	167.14	-163.33	1,292.88	-6,654.86	7,046.04	6,853.46	192.59	36.586	
6,800.00	6,719.85	6,817.42	6,815.85	25.91	168.29	-164.05	1,292.88	-6,654.86	7,076.57	6,882.68	193.90	36.497	
6,850.00	6,756.28	6,853.85	6,852.28	26.13	169.37	-164.47	1,292.88	-6,654.86	7,110.10	6,914.98	195.12	36.440	
6,900.00	6,789.95	6,887.52	6,885.95	26.37	170.36	-164.62	1,292.88	-6,654.86	7,146.43	6,950.18	196.25	36.415 SF	
6,950.00	6,820.65	6,918.22	6,916.65	26.61	171.27	-164.51	1,292.88	-6,654.86	7,185.32	6,988.04	197.28	36.422	
7,000.00	6,848.19	6,945.76	6,944.19	26.87	172.08	-164.09	1,292.88	-6,654.86	7,226.55	7,028.34	198.21	36.460	
7,050.00	6,872.41	6,969.98	6,968.41	27.13	172.80	-163.30	1,292.88	-6,654.86	7,269.85	7,070.83	199.02	36.528	
7,100.00	6,893.15	6,990.72	6,989.15	27.41	173.41	-161.98	1,292.88	-6,654.86	7,314.96	7,115.24	199.72	36.627	
7,150.00	6,910.28	7,007.85	7,006.28	27.71	173.92	-159.83	1,292.88	-6,654.86	7,361.59	7,161.30	200.29	36.754	
7,200.00	6,923.70	7,021.27	7,019.70	28.02	174.31	-156.15	1,292.88	-6,654.86	7,409.47	7,208.72	200.75	36.909	
7,250.00	6,933.33	7,030.90	7,029.33	28.34	174.60	-149.16	1,292.88	-6,654.86	7,458.29	7,257.21	201.08	37.091	
7,300.00	6,939.11	7,036.68	7,035.11	28.67	174.77	-132.95	1,292.88	-6,654.86	7,507.76	7,306.47	201.29	37.299	
7,349.12	6,941.00	7,038.57	7,037.00	29.00	174.82	-90.12	1,292.88	-6,654.86	7,556.68	7,355.31	201.37	37.527	
7,400.00	6,941.01	7,038.58	7,037.01	29.36	174.82	-90.12	1,292.88	-6,654.86	7,607.43	7,406.04	201.39	37.775	
7,500.00	6,941.02	7,038.59	7,037.02	30.11	174.82	-90.12	1,292.88	-6,654.86	7,707.17	7,505.73	201.43	38.262	
7,600.00	6,941.04	7,038.61	7,037.04	30.93	174.82	-90.12	1,292.88	-6,654.86	7,806.91	7,605.44	201.48	38.749	
7,700.00	6,941.05	7,038.62	7,037.05	31.80	174.83	-90.12	1,292.88	-6,654.86	7,906.67	7,705.15	201.52	39.235	
7,800.00	6,941.07	7,038.64	7,037.07	32.73	174.83	-90.12	1,292.88	-6,654.86	8,006.43	7,804.86	201.56	39.721	
7,900.00	6,941.08	7,038.65	7,037.08	33.71	174.83	-90.12	1,292.88	-6,654.86	8,106.19	7,904.58	201.61	40.207	
8,000.00	6,941.10	7,038.67	7,037.10	34.73	174.83	-90.13	1,292.88	-6,654.86	8,205.96	8,004.31	201.65	40.693	
8,100.00	6,941.11	7,038.68	7,037.11	35.79	174.83	-90.13	1,292.88	-6,654.86	8,305.74	8,104.04	201.70	41.179	
8,200.00	6,941.13	7,038.70	7,037.13	36.90	174.83	-90.13	1,292.88	-6,654.86	8,405.52	8,203.78	201.75	41.664	
8,300.00	6,941.14	7,038.71	7,037.14	38.03	174.83	-90.13	1,292.88	-6,654.86	8,505.31	8,303.52	201.79	42.149	
8,400.00	6,941.16	7,038.73	7,037.16	39.20	174.83	-90.13	1,292.88	-6,654.86	8,605.10	8,403.26	201.84	42.634	
8,500.00	6,941.17	7,038.74	7,037.17	40.40	174.83	-90.13	1,292.88	-6,654.86	8,704.90	8,503.01	201.88	43.118	
8,600.00	6,941.19	7,038.76	7,037.19	41.63	174.83	-90.14	1,292.88	-6,654.86	8,804.70	8,602.77	201.93	43.602	
8,700.00	6,941.20	7,038.77	7,037.20	42.88	174.83	-90.14	1,292.88	-6,654.86	8,904.50	8,702.52	201.98	44.086	
8,800.00	6,941.22	7,038.79	7,037.22	44.16	174.83	-90.14	1,292.88	-6,654.86	9,004.31	8,802.29	202.03	44.570	
8,900.00	6,941.23	7,038.80	7,037.23	45.45	174.83	-90.14	1,292.88	-6,654.86	9,104.13	8,902.05	202.08	45.053	
9,000.00	6,941.24	7,038.82	7,037.24	46.76	174.83	-90.14	1,292.88	-6,654.86	9,203.95	9,001.82	202.13	45.536	
9,100.00	6,941.26	7,038.83	7,037.26	48.10	174.83	-90.14	1,292.88	-6,654.86	9,303.77	9,101.60	202.17	46.019	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	Rule Assigned: Warning
9,200.00	6,941.27	7,038.84	7,037.27	49.44	174.83	-90.14	1,292.88	-6,654.86	9,403.60	9,201.37	202.22	46.501	
9,300.00	6,941.29	7,038.86	7,037.29	50.80	174.83	-90.15	1,292.88	-6,654.86	9,503.43	9,301.15	202.27	46.983	
9,400.00	6,941.30	7,038.87	7,037.30	52.18	174.83	-90.15	1,292.88	-6,654.86	9,603.26	9,400.93	202.33	47.465	
9,500.00	6,941.32	7,038.89	7,037.32	53.57	174.83	-90.15	1,292.88	-6,654.86	9,703.10	9,500.72	202.38	47.946	
9,600.00	6,941.33	7,038.90	7,037.33	54.97	174.83	-90.15	1,292.88	-6,654.86	9,802.94	9,600.51	202.43	48.427	
9,700.00	6,941.35	7,038.92	7,037.35	56.38	174.83	-90.15	1,292.88	-6,654.86	9,902.78	9,700.30	202.48	48.908	
9,800.00	6,941.36	7,038.93	7,037.36	57.80	174.83	-90.15	1,292.88	-6,654.86	10,002.63	9,800.09	202.53	49.388	
9,900.00	6,941.38	7,038.95	7,037.38	59.23	174.83	-90.16	1,292.88	-6,654.86	10,102.47	9,899.89	202.58	49.868	
10,000.00	6,941.39	7,038.96	7,037.39	60.67	174.84	-90.16	1,292.88	-6,654.86	10,202.33	9,999.69	202.64	50.348	
10,100.00	6,941.41	7,038.98	7,037.41	62.11	174.84	-90.16	1,292.88	-6,654.86	10,302.18	10,099.49	202.69	50.827	
10,200.00	6,941.42	7,038.99	7,037.42	63.57	174.84	-90.16	1,292.88	-6,654.86	10,402.04	10,199.29	202.75	51.306	
10,300.00	6,941.44	7,039.01	7,037.44	65.03	174.84	-90.16	1,292.88	-6,654.86	10,501.90	10,299.10	202.80	51.784	
10,400.00	6,941.45	7,039.02	7,037.45	66.50	174.84	-90.16	1,292.88	-6,654.86	10,601.76	10,398.91	202.86	52.263	
10,500.00	6,941.47	7,039.04	7,037.47	67.97	174.84	-90.16	1,292.88	-6,654.86	10,701.63	10,498.72	202.91	52.741	
10,600.00	6,941.48	7,039.05	7,037.48	69.45	174.84	-90.17	1,292.88	-6,654.86	10,801.50	10,598.53	202.97	53.218	
10,700.00	6,941.50	7,039.07	7,037.50	70.94	174.84	-90.17	1,292.88	-6,654.86	10,901.37	10,698.35	203.02	53.695	
10,800.00	6,941.51	7,039.08	7,037.51	72.43	174.84	-90.17	1,292.88	-6,654.86	11,001.24	10,798.16	203.08	54.172	
10,900.00	6,941.53	7,039.10	7,037.53	73.92	174.84	-90.17	1,292.88	-6,654.86	11,101.12	10,897.98	203.14	54.648	
11,000.00	6,941.54	7,039.11	7,037.54	75.42	174.84	-90.17	1,292.88	-6,654.86	11,201.00	10,997.80	203.20	55.124	
11,100.00	6,941.56	7,039.13	7,037.56	76.92	174.84	-90.17	1,292.88	-6,654.86	11,300.88	11,097.62	203.25	55.600	
11,200.00	6,941.57	7,039.14	7,037.57	78.43	174.84	-90.18	1,292.88	-6,654.86	11,400.76	11,197.45	203.31	56.075	
11,300.00	6,941.59	7,039.16	7,037.59	79.94	174.84	-90.18	1,292.88	-6,654.86	11,500.64	11,297.27	203.37	56.550	
11,400.00	6,941.60	7,039.17	7,037.60	81.46	174.84	-90.18	1,292.88	-6,654.86	11,600.53	11,397.10	203.43	57.024	
11,500.00	6,941.61	7,039.19	7,037.61	82.98	174.84	-90.18	1,292.88	-6,654.86	11,700.42	11,496.92	203.49	57.498	
11,600.00	6,941.63	7,039.20	7,037.63	84.50	174.84	-90.18	1,292.88	-6,654.86	11,800.31	11,596.75	203.55	57.972	
11,700.00	6,941.64	7,039.22	7,037.64	86.02	174.84	-90.18	1,292.88	-6,654.86	11,900.20	11,696.58	203.61	58.445	
11,800.00	6,941.66	7,039.23	7,037.66	87.55	174.84	-90.18	1,292.88	-6,654.86	12,000.09	11,796.42	203.67	58.918	
11,900.00	6,941.67	7,039.24	7,037.67	89.08	174.84	-90.19	1,292.88	-6,654.86	12,099.99	11,896.25	203.74	59.390	
12,000.00	6,941.69	7,039.26	7,037.69	90.61	174.84	-90.19	1,292.88	-6,654.86	12,199.88	11,996.08	203.80	59.862	
12,100.00	6,941.70	7,039.27	7,037.70	92.14	174.84	-90.19	1,292.88	-6,654.86	12,299.78	12,095.92	203.86	60.334	
12,200.00	6,941.72	7,039.29	7,037.72	93.68	174.84	-90.19	1,292.88	-6,654.86	12,399.68	12,195.76	203.93	60.805	
12,300.00	6,941.73	7,039.30	7,037.73	95.22	174.85	-90.19	1,292.88	-6,654.86	12,499.58	12,295.59	203.99	61.275	
12,400.00	6,941.75	7,039.32	7,037.75	96.76	174.85	-90.19	1,292.88	-6,654.86	12,599.49	12,395.43	204.05	61.746	
12,500.00	6,941.76	7,039.33	7,037.76	98.30	174.85	-90.20	1,292.88	-6,654.86	12,699.39	12,495.27	204.12	62.216	
12,600.00	6,941.78	7,039.35	7,037.78	99.85	174.85	-90.20	1,292.88	-6,654.86	12,799.30	12,595.11	204.18	62.685	
12,700.00	6,941.79	7,039.36	7,037.79	101.40	174.85	-90.20	1,292.88	-6,654.86	12,899.21	12,694.96	204.25	63.154	
12,800.00	6,941.81	7,039.38	7,037.81	102.95	174.85	-90.20	1,292.88	-6,654.86	12,999.12	12,794.80	204.32	63.622	
12,900.00	6,941.82	7,039.39	7,037.82	104.50	174.85	-90.20	1,292.88	-6,654.86	13,099.03	12,894.64	204.38	64.090	
13,000.00	6,941.84	7,039.41	7,037.84	106.05	174.85	-90.20	1,292.88	-6,654.86	13,198.94	12,994.49	204.45	64.558	
13,100.00	6,941.85	7,039.42	7,037.85	107.60	174.85	-90.20	1,292.88	-6,654.86	13,298.85	13,094.33	204.52	65.025	
13,200.00	6,941.87	7,039.44	7,037.87	109.16	174.85	-90.21	1,292.88	-6,654.86	13,398.77	13,194.18	204.59	65.492	
13,300.00	6,941.88	7,039.45	7,037.88	110.71	174.85	-90.21	1,292.88	-6,654.86	13,498.68	13,294.03	204.66	65.958	
13,400.00	6,941.90	7,039.47	7,037.90	112.27	174.85	-90.21	1,292.88	-6,654.86	13,598.60	13,393.87	204.73	66.423	
13,500.00	6,941.91	7,039.48	7,037.91	113.83	174.85	-90.21	1,292.88	-6,654.86	13,698.52	13,493.72	204.80	66.889	
13,600.00	6,941.93	7,039.50	7,037.93	115.39	174.85	-90.21	1,292.88	-6,654.86	13,798.44	13,593.57	204.87	67.353	
13,700.00	6,941.94	7,039.51	7,037.94	116.95	174.85	-90.21	1,292.88	-6,654.86	13,898.36	13,693.42	204.94	67.818	
13,800.00	6,941.96	7,039.53	7,037.96	118.51	174.85	-90.22	1,292.88	-6,654.86	13,998.28	13,793.27	205.01	68.282	
13,900.00	6,941.97	7,039.54	7,037.97	120.08	174.85	-90.22	1,292.88	-6,654.86	14,098.20	13,893.12	205.08	68.745	
14,000.00	6,941.99	7,039.56	7,037.99	121.64	174.85	-90.22	1,292.88	-6,654.86	14,198.13	13,992.97	205.15	69.208	
14,100.00	6,942.00	7,039.57	7,038.00	123.21	174.85	-90.22	1,292.88	-6,654.86	14,298.05	14,092.83	205.22	69.670	
14,200.00	6,942.01	7,039.59	7,038.01	124.77	174.85	-90.22	1,292.88	-6,654.86	14,397.98	14,192.68	205.30	70.132	
14,300.00	6,942.03	7,039.60	7,038.03	126.34	174.85	-90.22	1,292.88	-6,654.86	14,497.90	14,292.53	205.37	70.594	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	7,039.61	7,038.04	127.91	174.85	-90.22	1,292.88	-6,654.86	14,597.83	14,392.39	205.45	71.055	
14,500.00	6,942.06	7,039.63	7,038.06	129.48	174.85	-90.23	1,292.88	-6,654.86	14,697.76	14,492.24	205.52	71.515	
14,600.00	6,942.07	7,039.64	7,038.07	131.05	174.86	-90.23	1,292.88	-6,654.86	14,797.69	14,592.10	205.60	71.975	
14,700.00	6,942.09	7,039.66	7,038.09	132.62	174.86	-90.23	1,292.88	-6,654.86	14,897.62	14,691.95	205.67	72.434	
14,800.00	6,942.10	7,039.67	7,038.10	134.19	174.86	-90.23	1,292.88	-6,654.86	14,997.56	14,791.81	205.75	72.893	
14,900.00	6,942.12	7,039.69	7,038.12	135.76	174.86	-90.23	1,292.88	-6,654.86	15,097.49	14,891.67	205.82	73.352	
15,000.00	6,942.13	7,039.70	7,038.13	137.34	174.86	-90.23	1,292.88	-6,654.86	15,197.42	14,991.52	205.90	73.810	
15,100.00	6,942.15	7,039.72	7,038.15	138.91	174.86	-90.24	1,292.88	-6,654.86	15,297.36	15,091.38	205.98	74.267	
15,200.00	6,942.16	7,039.73	7,038.16	140.48	174.86	-90.24	1,292.88	-6,654.86	15,397.29	15,191.24	206.05	74.724	
15,300.00	6,942.18	7,039.75	7,038.18	142.06	174.86	-90.24	1,292.88	-6,654.86	15,497.23	15,291.09	206.13	75.181	
15,400.00	6,942.19	7,039.76	7,038.19	143.64	174.86	-90.24	1,292.88	-6,654.86	15,597.17	15,390.95	206.21	75.637	
15,500.00	6,942.21	7,039.78	7,038.21	145.21	174.86	-90.24	1,292.88	-6,654.86	15,697.10	15,490.81	206.29	76.092	
15,600.00	6,942.22	7,039.79	7,038.22	146.79	174.86	-90.24	1,292.88	-6,654.86	15,797.04	15,590.67	206.37	76.547	
15,700.00	6,942.24	7,039.81	7,038.24	148.37	174.86	-90.24	1,292.88	-6,654.86	15,896.98	15,690.53	206.45	77.001	
15,800.00	6,942.25	7,039.82	7,038.25	149.94	174.86	-90.25	1,292.88	-6,654.86	15,996.92	15,790.39	206.53	77.455	
15,900.00	6,942.27	7,039.84	7,038.27	151.52	174.86	-90.25	1,292.88	-6,654.86	16,096.86	15,890.25	206.61	77.909	
16,000.00	6,942.28	7,039.85	7,038.28	153.10	174.86	-90.25	1,292.88	-6,654.86	16,196.80	15,990.11	206.69	78.361	
16,100.00	6,942.30	7,039.87	7,038.30	154.68	174.86	-90.25	1,292.88	-6,654.86	16,296.75	16,089.97	206.78	78.814	
16,200.00	6,942.31	7,039.88	7,038.31	156.26	174.86	-90.25	1,292.88	-6,654.86	16,396.69	16,189.83	206.86	79.266	
16,300.00	6,942.33	7,039.90	7,038.33	157.84	174.86	-90.25	1,292.88	-6,654.86	16,496.63	16,289.69	206.94	79.717	
16,400.00	6,942.34	7,039.91	7,038.34	159.42	174.86	-90.26	1,292.88	-6,654.86	16,596.58	16,389.55	207.02	80.168	
16,500.00	6,942.36	7,039.93	7,038.36	161.00	174.86	-90.26	1,292.88	-6,654.86	16,696.52	16,489.42	207.11	80.618	
16,600.00	6,942.37	7,039.94	7,038.37	162.59	174.86	-90.26	1,292.88	-6,654.86	16,796.47	16,589.28	207.19	81.067	
16,700.00	6,942.38	7,039.96	7,038.38	164.17	174.86	-90.26	1,292.88	-6,654.86	16,896.41	16,689.14	207.28	81.517	
16,800.00	6,942.40	7,039.97	7,038.40	165.75	174.86	-90.26	1,292.88	-6,654.86	16,996.36	16,789.00	207.36	81.965	
16,900.00	6,942.41	7,039.99	7,038.41	167.33	174.87	-90.26	1,292.88	-6,654.86	17,096.31	16,888.86	207.45	82.413	
17,000.00	6,942.43	7,040.00	7,038.43	168.92	174.87	-90.26	1,292.88	-6,654.86	17,196.26	16,988.73	207.53	82.861	
17,100.00	6,942.44	7,040.01	7,038.44	170.50	174.87	-90.27	1,292.88	-6,654.86	17,296.21	17,088.59	207.62	83.308	
17,200.00	6,942.46	7,040.03	7,038.46	172.09	174.87	-90.27	1,292.88	-6,654.86	17,396.16	17,188.45	207.70	83.754	
17,300.00	6,942.47	7,040.04	7,038.47	173.67	174.87	-90.27	1,292.88	-6,654.86	17,496.11	17,288.31	207.79	84.200	
17,400.00	6,942.49	7,040.06	7,038.49	175.26	174.87	-90.27	1,292.88	-6,654.86	17,596.06	17,388.18	207.88	84.646	
17,500.00	6,942.50	7,040.07	7,038.50	176.84	174.87	-90.27	1,292.88	-6,654.86	17,696.01	17,488.04	207.97	85.091	
17,600.00	6,942.52	7,040.09	7,038.52	178.43	174.87	-90.27	1,292.88	-6,654.86	17,795.96	17,587.90	208.06	85.535	
17,700.00	6,942.53	7,040.10	7,038.53	180.01	174.87	-90.28	1,292.88	-6,654.86	17,895.91	17,687.77	208.14	85.979	
17,800.00	6,942.55	7,040.12	7,038.55	181.60	174.87	-90.28	1,292.88	-6,654.86	17,995.86	17,787.63	208.23	86.422	
17,900.00	6,942.56	7,040.13	7,038.56	183.19	174.87	-90.28	1,292.88	-6,654.86	18,095.82	17,887.50	208.32	86.865	
18,000.00	6,942.58	7,040.15	7,038.58	184.77	174.87	-90.28	1,292.88	-6,654.86	18,195.77	17,987.36	208.41	87.307	
18,100.00	6,942.59	7,040.16	7,038.59	186.36	174.87	-90.28	1,292.88	-6,654.86	18,295.73	18,087.22	208.50	87.748	
18,200.00	6,942.61	7,040.18	7,038.61	187.95	174.87	-90.28	1,292.88	-6,654.86	18,395.68	18,187.09	208.59	88.189	
18,300.00	6,942.62	7,040.19	7,038.62	189.54	174.87	-90.28	1,292.88	-6,654.86	18,495.64	18,286.95	208.68	88.630	
18,400.00	6,942.64	7,040.21	7,038.64	191.12	174.87	-90.29	1,292.88	-6,654.86	18,595.59	18,386.82	208.78	89.070	
18,500.00	6,942.65	7,040.22	7,038.65	192.71	174.87	-90.29	1,292.88	-6,654.86	18,695.55	18,486.68	208.87	89.509	
18,600.00	6,942.67	7,040.24	7,038.67	194.30	174.87	-90.29	1,292.88	-6,654.86	18,795.51	18,586.55	208.96	89.948	
18,700.00	6,942.68	7,040.25	7,038.68	195.89	174.87	-90.29	1,292.88	-6,654.86	18,895.46	18,686.41	209.05	90.386	
18,800.00	6,942.70	7,040.27	7,038.70	197.48	174.87	-90.29	1,292.88	-6,654.86	18,995.42	18,786.27	209.15	90.824	
18,900.00	6,942.71	7,040.28	7,038.71	199.07	174.87	-90.29	1,292.88	-6,654.86	19,095.38	18,886.14	209.24	91.261	
19,000.00	6,942.73	7,040.30	7,038.73	200.66	174.87	-90.30	1,292.88	-6,654.86	19,195.34	18,986.00	209.33	91.698	
19,100.00	6,942.74	7,040.31	7,038.74	202.25	174.88	-90.30	1,292.88	-6,654.86	19,295.30	19,085.87	209.43	92.134	
19,200.00	6,942.76	7,040.33	7,038.76	203.84	174.88	-90.30	1,292.88	-6,654.86	19,395.25	19,185.73	209.52	92.569	
19,300.00	6,942.77	7,040.34	7,038.77	205.43	174.88	-90.30	1,292.88	-6,654.86	19,495.21	19,285.60	209.62	93.004	
19,400.00	6,942.78	7,040.36	7,038.78	207.02	174.88	-90.30	1,292.88	-6,654.86	19,595.17	19,385.46	209.71	93.439	
19,500.00	6,942.80	7,040.37	7,038.80	208.61	174.88	-90.30	1,292.88	-6,654.86	19,695.14	19,485.33	209.81	93.872	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,600.00	6,942.81	7,040.38	7,038.81	210.20	174.88	-90.30	1,292.88	-6,654.86	19,795.10	19,585.19	209.90	94.306	
19,700.00	6,942.83	7,040.40	7,038.83	211.79	174.88	-90.31	1,292.88	-6,654.86	19,895.06	19,685.06	210.00	94.738	
19,800.00	6,942.84	7,040.41	7,038.84	213.38	174.88	-90.31	1,292.88	-6,654.86	19,995.02	19,784.92	210.10	95.171	
19,900.00	6,942.86	7,040.43	7,038.86	214.97	174.88	-90.31	1,292.88	-6,654.86	20,094.98	19,884.79	210.19	95.602	
20,000.00	6,942.87	7,040.44	7,038.87	216.56	174.88	-90.31	1,292.88	-6,654.86	20,194.94	19,984.65	210.29	96.033	
20,100.00	6,942.89	7,040.46	7,038.89	218.15	174.88	-90.31	1,292.88	-6,654.86	20,294.91	20,084.52	210.39	96.464	
20,200.00	6,942.90	7,040.47	7,038.90	219.75	174.88	-90.31	1,292.88	-6,654.86	20,394.87	20,184.38	210.49	96.894	
20,300.00	6,942.92	7,040.49	7,038.92	221.34	174.88	-90.32	1,292.88	-6,654.86	20,494.83	20,284.25	210.59	97.323	
20,400.00	6,942.93	7,040.50	7,038.93	222.93	174.88	-90.32	1,292.88	-6,654.86	20,594.80	20,384.11	210.68	97.752	
20,500.00	6,942.95	7,040.52	7,038.95	224.52	174.88	-90.32	1,292.88	-6,654.86	20,694.76	20,483.98	210.78	98.180	
20,600.00	6,942.96	7,040.53	7,038.96	226.12	174.88	-90.32	1,292.88	-6,654.86	20,794.73	20,583.84	210.88	98.608	
20,700.00	6,942.98	7,040.55	7,038.98	227.71	174.88	-90.32	1,292.88	-6,654.86	20,894.69	20,683.71	210.98	99.035	
20,800.00	6,942.99	7,040.56	7,038.99	229.30	174.88	-90.32	1,292.88	-6,654.86	20,994.66	20,783.57	211.08	99.461	
20,855.77	6,943.00	7,040.57	7,039.00	230.19	174.88	-90.32	1,292.88	-6,654.86	21,050.41	20,839.27	211.14	99.699	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	-80.33	811.92	-4,765.62	4,834.35				
100.00	100.00	85.12	85.12	0.25	0.10	-80.33	812.15	-4,765.50	4,834.22	4,833.87	0.35	N/A	
200.00	200.00	1,446.00	1,387.85	0.61	6.24	-77.28	1,025.15	-4,540.66	4,810.10	4,803.87	6.24	770.920	
300.00	300.00	1,494.73	1,432.23	0.97	6.61	-77.07	1,038.77	-4,525.87	4,785.33	4,778.50	6.83	700.529	
400.00	400.00	1,608.03	1,535.73	1.33	7.48	-76.60	1,070.22	-4,492.17	4,761.30	4,753.40	7.90	602.812	
500.00	500.00	1,728.30	1,645.09	1.68	8.40	-76.08	1,104.00	-4,455.26	4,736.55	4,727.52	9.03	524.623	
600.00	599.98	1,777.69	1,690.12	2.04	8.78	-97.11	1,117.73	-4,440.31	4,712.63	4,702.93	9.70	485.745	
700.00	699.84	1,871.43	1,775.72	2.40	9.49	-97.23	1,143.80	-4,412.38	4,689.78	4,679.11	10.67	439.588	
800.00	799.45	2,013.00	1,904.36	2.77	10.61	-97.23	1,183.55	-4,368.63	4,666.29	4,654.30	11.99	389.310	
845.27	844.44	2,046.37	1,934.62	2.93	10.88	-97.33	1,193.15	-4,358.33	4,655.99	4,643.60	12.38	375.947	
900.00	898.77	2,089.70	1,973.85	3.13	11.22	-97.20	1,205.75	-4,344.94	4,643.66	4,630.77	12.89	360.289	
1,000.00	998.04	2,163.50	2,041.06	3.50	11.79	-96.98	1,226.54	-4,322.65	4,621.69	4,607.93	13.76	335.805	
1,100.00	1,097.32	2,264.00	2,132.66	3.87	12.57	-96.68	1,254.51	-4,292.20	4,599.70	4,584.89	14.82	310.438	
1,200.00	1,196.59	2,454.00	2,305.71	4.24	14.04	-96.12	1,306.63	-4,233.61	4,577.54	4,561.08	16.45	278.198	
1,300.00	1,295.87	2,517.00	2,363.18	4.62	14.53	-95.94	1,323.18	-4,213.79	4,554.33	4,537.06	17.27	263.712	
1,400.00	1,395.14	2,581.00	2,421.54	5.00	15.02	-95.75	1,340.48	-4,194.04	4,531.93	4,513.82	18.10	250.337	
1,500.00	1,494.42	2,644.00	2,478.77	5.38	15.53	-95.55	1,358.40	-4,174.73	4,510.17	4,491.22	18.95	237.969	
1,600.00	1,593.69	2,675.00	2,507.02	5.76	15.77	-95.46	1,367.27	-4,165.57	4,489.57	4,469.98	19.58	229.278	
1,700.00	1,692.96	2,707.00	2,536.45	6.14	16.00	-95.36	1,376.18	-4,156.68	4,470.50	4,450.29	20.21	221.249	
1,800.00	1,792.24	2,738.00	2,565.17	6.52	16.22	-95.27	1,384.65	-4,148.67	4,453.02	4,432.20	20.82	213.913	
1,900.00	1,891.51	2,738.00	2,565.17	6.91	16.22	-95.27	1,384.65	-4,148.67	4,437.19	4,415.95	21.23	208.984	
2,000.00	1,990.79	2,800.00	2,623.28	7.29	16.62	-95.11	1,400.83	-4,134.37	4,422.77	4,400.76	22.01	200.938	
2,100.00	2,090.06	2,952.28	2,768.46	7.67	17.48	-94.82	1,433.44	-4,102.11	4,409.46	4,386.27	23.19	190.165	
2,200.00	2,189.34	2,988.00	2,802.59	8.06	17.68	-94.75	1,440.54	-4,094.31	4,395.00	4,371.22	23.78	184.834	
2,300.00	2,288.61	3,046.55	2,858.98	8.44	17.98	-94.67	1,451.15	-4,082.69	4,381.83	4,357.38	24.45	179.214	
2,400.00	2,387.89	3,124.84	2,934.71	8.82	18.36	-94.57	1,464.29	-4,067.84	4,369.20	4,344.01	25.19	173.441	
2,500.00	2,487.16	3,189.85	2,997.76	9.21	18.66	-94.49	1,474.97	-4,056.13	4,357.38	4,331.52	25.87	168.452	
2,600.00	2,586.44	3,254.42	3,060.75	9.59	18.94	-94.43	1,484.25	-4,045.35	4,346.31	4,319.80	26.51	163.930	
2,700.00	2,685.71	3,301.00	3,106.36	9.98	19.13	-94.40	1,490.37	-4,038.17	4,336.22	4,309.14	27.08	160.132	
2,800.00	2,784.99	3,355.76	3,160.12	10.36	19.33	-94.37	1,497.39	-4,030.48	4,327.28	4,299.62	27.66	156.428	
2,900.00	2,884.26	3,426.00	3,229.25	10.75	19.59	-94.34	1,505.97	-4,021.46	4,319.29	4,291.01	28.29	152.703	
3,000.00	2,983.53	3,473.89	3,276.59	11.13	19.73	-94.33	1,510.73	-4,016.05	4,312.19	4,283.38	28.81	149.678	
3,100.00	3,082.81	3,519.00	3,321.36	11.52	19.85	-94.34	1,514.38	-4,011.88	4,306.41	4,277.11	29.31	146.947	
3,200.00	3,182.08	3,550.00	3,352.18	11.90	19.93	-94.35	1,516.72	-4,009.52	4,302.04	4,272.28	29.76	144.581	
3,300.00	3,281.36	3,589.65	3,391.65	12.29	20.02	-94.37	1,519.58	-4,007.12	4,299.13	4,268.92	30.21	142.296	
3,400.00	3,380.63	3,644.00	3,445.86	12.67	20.11	-94.41	1,522.58	-4,004.78	4,297.46	4,266.78	30.68	140.073	
3,500.00	3,479.91	3,702.44	3,504.28	13.06	20.18	-94.49	1,523.34	-4,003.59	4,296.79	4,265.69	31.11	138.136	
3,532.97	3,512.64	3,727.61	3,529.45	13.18	20.20	-94.53	1,523.18	-4,003.36	4,296.76	4,265.52	31.24	137.525	CC
3,600.00	3,579.18	3,769.00	3,570.84	13.44	20.23	-94.60	1,522.84	-4,003.22	4,297.00	4,265.49	31.51	136.358	ES
3,700.00	3,678.46	3,833.21	3,635.04	13.83	20.27	-94.71	1,522.74	-4,003.50	4,298.25	4,266.33	31.92	134.663	
3,800.00	3,777.73	3,931.44	3,733.28	14.21	20.36	-94.87	1,522.64	-4,004.00	4,299.72	4,267.33	32.39	132.745	
3,900.00	3,877.01	4,029.60	3,831.44	14.60	20.46	-95.03	1,522.54	-4,004.53	4,301.26	4,268.39	32.87	130.873	
4,000.00	3,976.28	4,127.76	3,929.59	14.98	20.56	-95.19	1,522.44	-4,005.08	4,302.86	4,269.51	33.34	129.054	
4,100.00	4,075.55	4,225.91	4,027.75	15.37	20.65	-95.35	1,522.32	-4,005.66	4,304.51	4,270.69	33.82	127.287	
4,200.00	4,174.83	4,324.06	4,125.89	15.75	20.75	-95.51	1,522.21	-4,006.27	4,306.23	4,271.93	34.29	125.569	
4,300.00	4,274.10	4,422.21	4,224.04	16.14	20.85	-95.67	1,522.09	-4,006.91	4,308.00	4,273.23	34.77	123.898	
4,400.00	4,373.38	4,520.35	4,322.17	16.53	20.95	-95.83	1,521.96	-4,007.57	4,309.84	4,274.59	35.25	122.272	
4,500.00	4,472.65	4,618.49	4,420.31	16.91	21.05	-95.99	1,521.83	-4,008.26	4,311.73	4,276.01	35.73	120.690	
4,600.00	4,571.93	4,716.62	4,518.44	17.30	21.14	-96.15	1,521.69	-4,008.97	4,313.69	4,277.48	36.20	119.150	
4,700.00	4,671.20	4,814.75	4,616.57	17.68	21.24	-96.31	1,521.55	-4,009.71	4,315.70	4,279.02	36.68	117.651	
4,800.00	4,770.48	4,912.87	4,714.69	18.07	21.34	-96.47	1,521.40	-4,010.48	4,317.78	4,280.62	37.16	116.190	
4,900.00	4,869.75	5,011.00	4,812.81	18.45	21.44	-96.63	1,521.25	-4,011.28	4,319.91	4,282.27	37.64	114.767	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 327-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,969.03	5,109.11	4,910.92	18.84	21.54	-96.79	1,521.09	-4,012.10	4,322.11	4,283.99	38.12	113.380	
5,100.00	5,068.30	5,207.23	5,009.03	19.23	21.64	-96.95	1,520.92	-4,012.95	4,324.36	4,285.76	38.60	112.029	
5,200.00	5,167.58	5,305.34	5,107.14	19.61	21.74	-97.11	1,520.76	-4,013.83	4,326.68	4,287.60	39.08	110.710	
5,300.00	5,266.85	5,403.44	5,205.24	20.00	21.84	-97.27	1,520.58	-4,014.74	4,329.06	4,289.49	39.56	109.425	
5,400.00	5,366.12	5,501.55	5,303.34	20.38	21.94	-97.43	1,520.40	-4,015.67	4,331.49	4,291.45	40.04	108.171	
5,500.00	5,465.40	5,599.64	5,401.43	20.77	22.04	-97.59	1,520.22	-4,016.63	4,333.99	4,293.46	40.52	106.947	
5,600.00	5,564.67	5,697.74	5,499.52	21.15	22.14	-97.75	1,520.03	-4,017.61	4,336.55	4,295.54	41.01	105.752	
5,700.00	5,663.95	5,795.83	5,597.60	21.54	22.25	-97.91	1,519.84	-4,018.62	4,339.16	4,297.68	41.49	104.586	
5,800.00	5,763.22	5,893.91	5,695.68	21.93	22.35	-98.07	1,519.64	-4,019.66	4,341.84	4,299.87	41.97	103.447	
5,900.00	5,862.50	5,991.99	5,793.76	22.31	22.45	-98.22	1,519.43	-4,020.73	4,344.58	4,302.13	42.45	102.335	
6,000.00	5,961.77	6,090.07	5,891.83	22.70	22.55	-98.38	1,519.22	-4,021.82	4,347.38	4,304.44	42.94	101.248	
6,100.00	6,061.05	6,188.14	5,989.89	23.08	22.65	-98.54	1,519.01	-4,022.94	4,350.24	4,306.82	43.42	100.186	
6,200.00	6,160.32	6,286.21	6,087.96	23.47	22.76	-98.70	1,518.79	-4,024.09	4,353.16	4,309.26	43.91	99.149	
6,300.00	6,259.60	6,384.28	6,186.01	23.86	22.86	-98.86	1,518.56	-4,025.26	4,356.14	4,311.75	44.39	98.134	
6,376.00	6,335.04	6,458.80	6,260.53	24.15	22.94	-98.98	1,518.39	-4,026.17	4,358.45	4,313.69	44.76	97.378	
6,400.00	6,358.85	6,482.31	6,284.04	24.24	22.96	-113.75	1,518.33	-4,026.46	4,359.63	4,314.75	44.87	97.152	
6,450.00	6,408.16	6,530.97	6,332.70	24.44	23.01	-132.92	1,518.21	-4,027.07	4,364.94	4,319.82	45.12	96.745	
6,500.00	6,456.87	6,578.98	6,380.70	24.64	23.07	-142.79	1,518.10	-4,027.67	4,374.07	4,328.71	45.36	96.427	
6,550.00	6,504.65	6,626.03	6,427.75	24.85	23.12	-148.37	1,517.98	-4,028.27	4,386.97	4,341.37	45.60	96.202	
6,600.00	6,551.23	6,671.84	6,473.55	25.06	23.16	-151.79	1,517.87	-4,028.86	4,403.58	4,357.74	45.84	96.069	
6,650.00	6,596.31	6,716.11	6,517.82	25.26	23.21	-153.97	1,517.76	-4,029.43	4,423.78	4,377.71	46.07	96.030 SF	
6,700.00	6,639.62	6,758.58	6,560.28	25.48	23.26	-155.37	1,517.65	-4,029.99	4,447.45	4,401.16	46.29	96.083	
6,750.00	6,680.88	6,798.98	6,600.68	25.69	23.30	-156.20	1,517.55	-4,030.52	4,474.45	4,427.95	46.50	96.227	
6,800.00	6,719.85	6,837.07	6,638.76	25.91	23.34	-156.59	1,517.45	-4,031.03	4,504.62	4,457.92	46.70	96.461	
6,850.00	6,756.28	6,872.60	6,674.29	26.13	23.38	-156.59	1,517.36	-4,031.51	4,537.76	4,490.87	46.89	96.783	
6,900.00	6,789.95	6,905.36	6,707.05	26.37	23.41	-156.21	1,517.28	-4,031.95	4,573.68	4,526.62	47.06	97.189	
6,950.00	6,820.65	6,935.15	6,736.84	26.61	23.44	-155.41	1,517.20	-4,032.36	4,612.15	4,564.93	47.22	97.676	
7,000.00	6,848.19	6,961.79	6,763.47	26.87	23.47	-154.10	1,517.13	-4,032.72	4,652.94	4,605.58	47.36	98.241	
7,050.00	6,872.41	6,985.10	6,786.79	27.13	23.50	-152.15	1,517.07	-4,033.04	4,695.79	4,648.30	47.49	98.878	
7,100.00	6,893.15	7,004.96	6,806.64	27.41	23.52	-149.27	1,517.01	-4,033.32	4,740.44	4,692.84	47.60	99.584	
7,150.00	6,910.28	7,021.23	6,822.91	27.71	23.53	-144.99	1,516.97	-4,033.54	4,786.60	4,738.90	47.70	100.352	
7,200.00	6,923.70	7,033.81	6,835.49	28.02	23.55	-138.39	1,516.94	-4,033.72	4,834.00	4,786.22	47.78	101.177	
7,250.00	6,933.33	7,042.64	6,844.32	28.34	23.56	-127.76	1,516.91	-4,033.84	4,882.33	4,834.49	47.84	102.051	
7,300.00	6,939.11	7,047.66	6,849.33	28.67	23.56	-110.32	1,516.90	-4,033.91	4,931.30	4,883.41	47.89	102.967	
7,349.12	6,941.00	7,048.84	6,850.52	29.00	23.56	-85.23	1,516.90	-4,033.93	4,979.74	4,931.81	47.93	103.899	
7,400.00	6,941.01	7,048.15	6,849.83	29.36	23.56	-85.18	1,516.90	-4,033.92	5,029.98	4,982.02	47.96	104.879	
7,500.00	6,941.02	7,046.79	6,848.47	30.11	23.56	-85.08	1,516.90	-4,033.90	5,128.76	5,080.74	48.02	106.803	
7,600.00	6,941.04	7,045.43	6,847.10	30.93	23.56	-84.98	1,516.91	-4,033.88	5,227.59	5,179.51	48.08	108.723	
7,700.00	6,941.05	7,044.07	6,845.74	31.80	23.56	-84.88	1,516.91	-4,033.86	5,326.46	5,278.32	48.14	110.639	
7,800.00	6,941.07	7,042.71	6,844.38	32.73	23.56	-84.78	1,516.91	-4,033.84	5,425.38	5,377.17	48.20	112.551	
7,900.00	6,941.08	7,041.35	6,843.03	33.71	23.56	-84.69	1,516.92	-4,033.82	5,524.33	5,476.06	48.26	114.459	
8,000.00	6,941.10	7,039.99	6,841.67	34.73	23.55	-84.59	1,516.92	-4,033.80	5,623.32	5,574.99	48.33	116.364	
8,100.00	6,941.11	7,038.63	6,840.31	35.79	23.55	-84.49	1,516.92	-4,033.79	5,722.34	5,673.95	48.39	118.264	
8,200.00	6,941.13	7,037.27	6,838.95	36.90	23.55	-84.39	1,516.93	-4,033.77	5,821.39	5,772.95	48.45	120.160	
8,300.00	6,941.14	7,035.92	6,837.60	38.03	23.55	-84.29	1,516.93	-4,033.75	5,920.48	5,871.97	48.51	122.053	
8,400.00	6,941.16	7,034.56	6,836.24	39.20	23.55	-84.20	1,516.93	-4,033.73	6,019.60	5,971.03	48.57	123.942	
8,500.00	6,941.17	7,033.21	6,834.89	40.40	23.55	-84.10	1,516.94	-4,033.71	6,118.75	6,070.12	48.63	125.826	
8,600.00	6,941.19	7,031.85	6,833.53	41.63	23.55	-84.00	1,516.94	-4,033.69	6,217.92	6,169.23	48.69	127.707	
8,700.00	6,941.20	7,030.50	6,832.18	42.88	23.54	-83.90	1,516.95	-4,033.67	6,317.12	6,268.37	48.75	129.584	
8,800.00	6,941.22	7,029.15	6,830.83	44.16	23.54	-83.81	1,516.95	-4,033.65	6,416.34	6,367.53	48.81	131.457	
8,900.00	6,941.23	7,027.80	6,829.48	45.45	23.54	-83.71	1,516.95	-4,033.64	6,515.59	6,466.72	48.87	133.326	
9,000.00	6,941.24	7,026.45	6,828.12	46.76	23.54	-83.61	1,516.96	-4,033.62	6,614.86	6,565.93	48.93	135.191	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	7,025.10	6,826.77	48.10	23.54	-83.52	1,516.96	-4,033.60	6,714.15	6,665.16	48.99	137.052	
9,200.00	6,941.27	7,023.75	6,825.43	49.44	23.54	-83.42	1,516.96	-4,033.58	6,813.46	6,764.41	49.05	138.909	
9,300.00	6,941.29	7,022.40	6,824.08	50.80	23.54	-83.32	1,516.97	-4,033.56	6,912.79	6,863.68	49.11	140.762	
9,400.00	6,941.30	7,021.05	6,822.73	52.18	23.53	-83.23	1,516.97	-4,033.54	7,012.14	6,962.97	49.17	142.611	
9,500.00	6,941.32	7,019.70	6,821.38	53.57	23.53	-83.13	1,516.97	-4,033.52	7,111.51	7,062.28	49.23	144.455	
9,600.00	6,941.33	7,018.36	6,820.04	54.97	23.53	-83.03	1,516.98	-4,033.50	7,210.89	7,161.60	49.29	146.296	
9,700.00	6,941.35	7,017.01	6,818.69	56.38	23.53	-82.94	1,516.98	-4,033.49	7,310.29	7,260.94	49.35	148.132	
9,800.00	6,941.36	7,015.66	6,817.34	57.80	23.53	-82.84	1,516.98	-4,033.47	7,409.71	7,360.30	49.41	149.964	
9,900.00	6,941.38	7,014.32	6,816.00	59.23	23.53	-82.74	1,516.99	-4,033.45	7,509.14	7,459.67	49.47	151.791	
10,000.00	6,941.39	7,012.98	6,814.66	60.67	23.53	-82.65	1,516.99	-4,033.43	7,608.59	7,559.06	49.53	153.615	
10,100.00	6,941.41	7,011.63	6,813.31	62.11	23.52	-82.55	1,517.00	-4,033.41	7,708.05	7,658.46	49.59	155.434	
10,200.00	6,941.42	7,010.29	6,811.97	63.57	23.52	-82.46	1,517.00	-4,033.39	7,807.52	7,757.87	49.65	157.248	
10,300.00	6,941.44	7,008.95	6,810.63	65.03	23.52	-82.36	1,517.00	-4,033.37	7,907.01	7,857.30	49.71	159.058	
10,400.00	6,941.45	7,007.61	6,809.29	66.50	23.52	-82.26	1,517.01	-4,033.35	8,006.51	7,956.74	49.77	160.863	
10,500.00	6,941.47	7,006.27	6,807.95	67.97	23.52	-82.17	1,517.01	-4,033.34	8,106.02	8,056.19	49.83	162.664	
10,600.00	6,941.48	7,004.93	6,806.61	69.45	23.52	-82.07	1,517.01	-4,033.32	8,205.55	8,155.65	49.89	164.460	
10,700.00	6,941.50	7,003.59	6,805.27	70.94	23.52	-81.98	1,517.02	-4,033.30	8,305.08	8,255.13	49.95	166.252	
10,800.00	6,941.51	7,002.25	6,803.94	72.43	23.51	-81.88	1,517.02	-4,033.28	8,404.63	8,354.61	50.02	168.039	
10,900.00	6,941.53	7,000.92	6,802.60	73.92	23.51	-81.79	1,517.02	-4,033.26	8,504.18	8,454.11	50.08	169.821	
11,000.00	6,941.54	6,999.58	6,801.26	75.42	23.51	-81.69	1,517.03	-4,033.24	8,603.75	8,553.61	50.14	171.598	
11,100.00	6,941.56	6,998.25	6,799.93	76.92	23.51	-81.60	1,517.03	-4,033.23	8,703.33	8,653.13	50.20	173.371	
11,200.00	6,941.57	6,996.91	6,798.59	78.43	23.51	-81.50	1,517.03	-4,033.21	8,802.91	8,752.65	50.26	175.139	
11,300.00	6,941.59	6,995.58	6,797.26	79.94	23.51	-81.41	1,517.04	-4,033.19	8,902.51	8,852.18	50.32	176.901	
11,400.00	6,941.60	6,994.24	6,795.93	81.46	23.51	-81.31	1,517.04	-4,033.17	9,002.11	8,951.72	50.39	178.659	
11,500.00	6,941.61	6,992.91	6,794.59	82.98	23.50	-81.22	1,517.05	-4,033.15	9,101.72	9,051.27	50.45	180.412	
11,600.00	6,941.63	6,991.58	6,793.26	84.50	23.50	-81.12	1,517.05	-4,033.13	9,201.34	9,150.83	50.51	182.160	
11,700.00	6,941.64	6,990.25	6,791.93	86.02	23.50	-81.03	1,517.05	-4,033.11	9,300.97	9,250.39	50.58	183.903	
11,800.00	6,941.66	6,988.92	6,790.60	87.55	23.50	-80.93	1,517.06	-4,033.10	9,400.60	9,349.97	50.64	185.641	
11,900.00	6,941.67	6,987.59	6,789.27	89.08	23.50	-80.84	1,517.06	-4,033.08	9,500.25	9,449.55	50.70	187.373	
12,000.00	6,941.69	6,986.26	6,787.94	90.61	23.50	-80.74	1,517.06	-4,033.06	9,599.90	9,549.13	50.77	189.101	
12,100.00	6,941.70	6,984.93	6,786.61	92.14	23.50	-80.65	1,517.07	-4,033.04	9,699.56	9,648.73	50.83	190.823	
12,200.00	6,941.72	6,983.60	6,785.29	93.68	23.49	-80.56	1,517.07	-4,033.02	9,799.22	9,748.33	50.89	192.540	
12,300.00	6,941.73	6,982.28	6,783.96	95.22	23.49	-80.46	1,517.07	-4,033.00	9,898.89	9,847.93	50.96	194.251	
12,400.00	6,941.75	6,980.95	6,782.63	96.76	23.49	-80.37	1,517.08	-4,032.99	9,998.57	9,947.54	51.02	195.958	
12,500.00	6,941.76	6,979.63	6,781.31	98.30	23.49	-80.28	1,517.08	-4,032.97	10,098.25	10,047.16	51.09	197.659	
12,600.00	6,941.78	6,978.30	6,779.99	99.85	23.49	-80.18	1,517.08	-4,032.95	10,197.94	10,146.79	51.15	199.354	
12,700.00	6,941.79	6,976.98	6,778.66	101.40	23.49	-80.09	1,517.09	-4,032.93	10,297.64	10,246.42	51.22	201.044	
12,800.00	6,941.81	6,975.65	6,777.34	102.95	23.49	-80.00	1,517.09	-4,032.91	10,397.34	10,346.05	51.29	202.729	
12,900.00	6,941.82	6,974.33	6,776.02	104.50	23.48	-79.90	1,517.09	-4,032.90	10,497.04	10,445.69	51.35	204.408	
13,000.00	6,941.84	6,973.01	6,774.69	106.05	23.48	-79.81	1,517.10	-4,032.88	10,596.76	10,545.34	51.42	206.082	
13,100.00	6,941.85	6,971.69	6,773.37	107.60	23.48	-79.72	1,517.10	-4,032.86	10,696.47	10,644.99	51.49	207.750	
13,200.00	6,941.87	6,970.37	6,772.05	109.16	23.48	-79.62	1,517.11	-4,032.84	10,796.19	10,744.64	51.55	209.413	
13,300.00	6,941.88	6,969.05	6,770.73	110.71	23.48	-79.53	1,517.11	-4,032.82	10,895.92	10,844.30	51.62	211.070	
13,400.00	6,941.90	6,967.73	6,769.42	112.27	23.48	-79.44	1,517.11	-4,032.80	10,995.65	10,943.96	51.69	212.722	
13,500.00	6,941.91	6,966.41	6,768.10	113.83	23.48	-79.35	1,517.12	-4,032.79	11,095.39	11,043.63	51.76	214.367	
13,600.00	6,941.93	6,965.09	6,766.78	115.39	23.47	-79.25	1,517.12	-4,032.77	11,195.13	11,143.30	51.83	216.008	
13,700.00	6,941.94	6,963.78	6,765.46	116.95	23.47	-79.16	1,517.12	-4,032.75	11,294.88	11,242.98	51.90	217.642	
13,800.00	6,941.96	6,962.46	6,764.15	118.51	23.47	-79.07	1,517.13	-4,032.73	11,394.63	11,342.66	51.97	219.271	
13,900.00	6,941.97	6,961.15	6,762.83	120.08	23.47	-78.98	1,517.13	-4,032.71	11,494.38	11,442.34	52.04	220.894	
14,000.00	6,941.99	6,959.83	6,761.52	121.64	23.47	-78.88	1,517.13	-4,032.70	11,594.14	11,542.03	52.11	222.511	
14,100.00	6,942.00	6,958.52	6,760.20	123.21	23.47	-78.79	1,517.14	-4,032.68	11,693.90	11,641.72	52.18	224.122	
14,200.00	6,942.01	6,957.21	6,758.89	124.77	23.47	-78.70	1,517.14	-4,032.66	11,793.67	11,741.42	52.25	225.728	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,955.89	6,757.58	126.34	23.47	-78.61	1,517.14	-4,032.64	11,893.44	11,841.12	52.32	227.327	
14,400.00	6,942.04	6,954.58	6,756.27	127.91	23.46	-78.52	1,517.15	-4,032.62	11,993.21	11,940.82	52.39	228.921	
14,500.00	6,942.06	6,953.27	6,754.96	129.48	23.46	-78.43	1,517.15	-4,032.61	12,092.99	12,040.52	52.46	230.509	
14,600.00	6,942.07	6,951.96	6,753.65	131.05	23.46	-78.33	1,517.15	-4,032.59	12,192.77	12,140.23	52.53	232.092	
14,700.00	6,942.09	6,950.65	6,752.34	132.62	23.46	-78.24	1,517.16	-4,032.57	12,292.55	12,239.94	52.61	233.668	
14,800.00	6,942.10	6,949.34	6,751.03	134.19	23.46	-78.15	1,517.16	-4,032.55	12,392.34	12,339.66	52.68	235.238	
14,900.00	6,942.12	6,948.03	6,749.72	135.76	23.46	-78.06	1,517.16	-4,032.53	12,492.13	12,439.38	52.75	236.802	
15,000.00	6,942.13	6,946.73	6,748.41	137.34	23.46	-77.97	1,517.17	-4,032.52	12,591.92	12,539.10	52.83	238.361	
15,100.00	6,942.15	6,945.42	6,747.11	138.91	23.45	-77.88	1,517.17	-4,032.50	12,691.72	12,638.82	52.90	239.913	
15,200.00	6,942.16	6,944.11	6,745.80	140.48	23.45	-77.79	1,517.17	-4,032.48	12,791.52	12,738.54	52.98	241.460	
15,300.00	6,942.18	6,942.81	6,744.50	142.06	23.45	-77.70	1,517.18	-4,032.46	12,891.32	12,838.27	53.05	243.000	
15,400.00	6,942.19	6,941.50	6,743.19	143.64	23.45	-77.61	1,517.18	-4,032.44	12,991.13	12,938.00	53.13	244.535	
15,500.00	6,942.21	6,940.20	6,741.89	145.21	23.45	-77.52	1,517.18	-4,032.43	13,090.94	13,037.73	53.20	246.063	
15,600.00	6,942.22	6,938.90	6,740.58	146.79	23.45	-77.43	1,517.19	-4,032.41	13,190.75	13,137.47	53.28	247.586	
15,700.00	6,942.24	6,937.59	6,739.28	148.37	23.45	-77.34	1,517.19	-4,032.39	13,290.56	13,237.21	53.35	249.102	
15,800.00	6,942.25	6,936.29	6,737.98	149.94	23.44	-77.25	1,517.19	-4,032.37	13,390.38	13,336.95	53.43	250.613	
15,900.00	6,942.27	6,934.99	6,736.68	151.52	23.44	-77.16	1,517.20	-4,032.36	13,490.20	13,436.69	53.51	252.117	
16,000.00	6,942.28	6,933.69	6,735.38	153.10	23.44	-77.07	1,517.20	-4,032.34	13,590.02	13,536.43	53.59	253.615	
16,100.00	6,942.30	6,932.39	6,734.08	154.68	23.44	-76.98	1,517.21	-4,032.32	13,689.84	13,636.18	53.66	255.107	
16,200.00	6,942.31	6,931.09	6,732.78	156.26	23.44	-76.89	1,517.21	-4,032.30	13,789.67	13,735.93	53.74	256.594	
16,300.00	6,942.33	6,929.79	6,731.48	157.84	23.44	-76.80	1,517.21	-4,032.29	13,889.50	13,835.68	53.82	258.074	
16,400.00	6,942.34	6,928.50	6,730.19	159.42	23.44	-76.71	1,517.22	-4,032.27	13,989.33	13,935.43	53.90	259.548	
16,500.00	6,942.36	6,927.20	6,728.89	161.00	23.43	-76.62	1,517.22	-4,032.25	14,089.16	14,035.19	53.98	261.016	
16,600.00	6,942.37	6,925.90	6,727.59	162.59	23.43	-76.53	1,517.22	-4,032.23	14,189.00	14,134.94	54.06	262.477	
16,700.00	6,942.38	6,924.61	6,726.30	164.17	23.43	-76.44	1,517.23	-4,032.21	14,288.84	14,234.70	54.14	263.933	
16,800.00	6,942.40	6,923.31	6,725.00	165.75	23.43	-76.35	1,517.23	-4,032.20	14,388.68	14,334.46	54.22	265.383	
16,900.00	6,942.41	6,922.02	6,723.71	167.33	23.43	-76.26	1,517.23	-4,032.18	14,488.52	14,434.22	54.30	266.826	
17,000.00	6,942.43	6,920.73	6,722.42	168.92	23.43	-76.17	1,517.24	-4,032.16	14,588.36	14,533.98	54.38	268.264	
17,100.00	6,942.44	6,919.43	6,721.12	170.50	23.43	-76.09	1,517.24	-4,032.14	14,688.21	14,633.75	54.46	269.695	
17,200.00	6,942.46	6,918.14	6,719.83	172.09	23.42	-76.00	1,517.24	-4,032.13	14,788.06	14,733.52	54.54	271.120	
17,300.00	6,942.47	6,916.85	6,718.54	173.67	23.42	-75.91	1,517.25	-4,032.11	14,887.91	14,833.28	54.63	272.540	
17,400.00	6,942.49	6,915.56	6,717.25	175.26	23.42	-75.82	1,517.25	-4,032.09	14,987.76	14,933.05	54.71	273.953	
17,500.00	6,942.50	6,914.27	6,715.96	176.84	23.42	-75.73	1,517.25	-4,032.07	15,087.62	15,032.82	54.79	275.360	
17,600.00	6,942.52	6,912.98	6,714.67	178.43	23.42	-75.64	1,517.26	-4,032.06	15,187.47	15,132.60	54.88	276.761	
17,700.00	6,942.53	6,911.69	6,713.38	180.01	23.42	-75.56	1,517.26	-4,032.04	15,287.33	15,232.37	54.96	278.155	
17,800.00	6,942.55	6,910.40	6,712.09	181.60	23.42	-75.47	1,517.26	-4,032.02	15,387.19	15,332.14	55.04	279.544	
17,900.00	6,942.56	6,909.12	6,710.81	183.19	23.42	-75.38	1,517.27	-4,032.00	15,487.05	15,431.92	55.13	280.927	
18,000.00	6,942.58	6,907.83	6,709.52	184.77	23.41	-75.29	1,517.27	-4,031.99	15,586.91	15,531.70	55.21	282.303	
18,100.00	6,942.59	6,906.54	6,708.24	186.36	23.41	-75.21	1,517.27	-4,031.97	15,686.78	15,631.48	55.30	283.674	
18,200.00	6,942.61	6,905.26	6,706.95	187.95	23.41	-75.12	1,517.28	-4,031.95	15,786.64	15,731.26	55.38	285.038	
18,300.00	6,942.62	6,903.97	6,705.67	189.54	23.41	-75.03	1,517.28	-4,031.93	15,886.51	15,831.04	55.47	286.397	
18,400.00	6,942.64	6,902.69	6,704.38	191.12	23.41	-74.95	1,517.28	-4,031.92	15,986.38	15,930.82	55.56	287.749	
18,500.00	6,942.65	6,901.41	6,703.10	192.71	23.41	-74.86	1,517.29	-4,031.90	16,086.25	16,030.60	55.64	289.096	
18,600.00	6,942.67	6,900.13	6,701.82	194.30	23.41	-74.77	1,517.29	-4,031.88	16,186.12	16,130.39	55.73	290.436	
18,700.00	6,942.68	6,898.84	6,700.54	195.89	23.40	-74.68	1,517.29	-4,031.86	16,285.99	16,230.18	55.82	291.770	
18,800.00	6,942.70	6,897.56	6,699.26	197.48	23.40	-74.60	1,517.30	-4,031.85	16,385.87	16,329.96	55.91	293.099	
18,900.00	6,942.71	6,896.28	6,697.98	199.07	23.40	-74.51	1,517.30	-4,031.83	16,485.74	16,429.75	55.99	294.421	
19,000.00	6,942.73	6,895.00	6,696.70	200.66	23.40	-74.43	1,517.30	-4,031.81	16,585.62	16,529.54	56.08	295.737	
19,100.00	6,942.74	6,893.72	6,695.42	202.25	23.40	-74.34	1,517.31	-4,031.79	16,685.50	16,629.33	56.17	297.047	
19,200.00	6,942.76	6,892.45	6,694.14	203.84	23.40	-74.25	1,517.31	-4,031.78	16,785.38	16,729.12	56.26	298.352	
19,300.00	6,942.77	6,891.17	6,692.86	205.43	23.40	-74.17	1,517.31	-4,031.76	16,885.26	16,828.91	56.35	299.650	
19,400.00	6,942.78	6,889.89	6,691.59	207.02	23.39	-74.08	1,517.32	-4,031.74	16,985.15	16,928.71	56.44	300.943	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,888.62	6,690.31	208.61	23.39	-74.00	1,517.32	-4,031.73	17,085.03	17,028.50	56.53	302.229	
19,600.00	6,942.81	6,887.34	6,689.03	210.20	23.39	-73.91	1,517.32	-4,031.71	17,184.92	17,128.30	56.62	303.510	
19,700.00	6,942.83	6,886.07	6,687.76	211.79	23.39	-73.82	1,517.33	-4,031.69	17,284.80	17,228.09	56.71	304.784	
19,800.00	6,942.84	6,884.79	6,686.49	213.38	23.39	-73.74	1,517.33	-4,031.67	17,384.69	17,327.89	56.80	306.053	
19,900.00	6,942.86	6,883.52	6,685.21	214.97	23.39	-73.65	1,517.33	-4,031.66	17,484.58	17,427.69	56.89	307.316	
20,000.00	6,942.87	6,882.25	6,683.94	216.56	23.39	-73.57	1,517.34	-4,031.64	17,584.47	17,527.48	56.99	308.573	
20,100.00	6,942.89	6,880.97	6,682.67	218.15	23.39	-73.48	1,517.34	-4,031.62	17,684.36	17,627.28	57.08	309.824	
20,200.00	6,942.90	6,879.70	6,681.40	219.75	23.38	-73.40	1,517.34	-4,031.61	17,784.25	17,727.08	57.17	311.069	
20,300.00	6,942.92	6,878.43	6,680.13	221.34	23.38	-73.31	1,517.35	-4,031.59	17,884.15	17,826.88	57.26	312.309	
20,400.00	6,942.93	6,877.16	6,678.86	222.93	23.38	-73.23	1,517.35	-4,031.57	17,984.04	17,926.69	57.36	313.542	
20,500.00	6,942.95	6,875.89	6,677.59	224.52	23.38	-73.15	1,517.35	-4,031.55	18,083.94	18,026.49	57.45	314.770	
20,600.00	6,942.96	6,874.62	6,676.32	226.12	23.38	-73.06	1,517.36	-4,031.54	18,183.84	18,126.29	57.55	315.992	
20,700.00	6,942.98	6,873.36	6,675.05	227.71	23.38	-72.98	1,517.36	-4,031.52	18,283.73	18,226.09	57.64	317.208	
20,800.00	6,942.99	6,872.09	6,673.78	229.30	23.38	-72.89	1,517.36	-4,031.50	18,383.63	18,325.90	57.73	318.419	
20,855.77	6,943.00	6,871.38	6,673.08	230.19	23.38	-72.85	1,517.36	-4,031.49	18,439.34	18,381.56	57.79	319.092	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	156.00	156.00	0.00	4.67	-141.06	-1,745.94	-1,411.01	2,244.83				
100.00	100.00	256.00	256.00	0.25	7.67	-141.06	-1,745.94	-1,411.01	2,244.83	2,236.91	7.92	283.369	
200.00	200.00	356.00	356.00	0.61	10.67	-141.06	-1,745.94	-1,411.01	2,244.83	2,233.56	11.28	199.066	
300.00	300.00	456.00	456.00	0.97	13.66	-141.06	-1,745.94	-1,411.01	2,244.83	2,230.20	14.63	153.422	
400.00	400.00	556.10	556.00	1.33	16.66	-141.06	-1,745.94	-1,411.01	2,244.83	2,226.84	17.99	124.785	
500.00	500.00	656.10	656.00	1.68	19.66	-141.06	-1,745.94	-1,411.01	2,244.83	2,223.49	21.34	105.171	
596.83	596.81	752.58	752.44	2.03	22.55	-161.76	-1,743.76	-1,411.01	2,244.69	2,220.11	24.58	91.312	CC, ES
600.00	599.98	755.41	755.27	2.04	22.64	-161.76	-1,743.76	-1,411.01	2,244.80	2,220.12	24.68	90.961	
700.00	699.84	844.44	844.28	2.40	25.30	-161.77	-1,744.07	-1,411.01	2,250.04	2,222.33	27.71	81.209	
800.00	799.45	933.19	933.01	2.77	27.96	-161.79	-1,744.93	-1,411.01	2,259.07	2,228.35	30.73	73.519	
845.27	844.44	1,000.84	1,000.44	2.93	29.99	-161.83	-1,745.94	-1,411.01	2,264.58	2,231.66	32.92	68.788	
900.00	898.77	1,055.17	1,054.77	3.13	31.62	-161.89	-1,745.94	-1,411.01	2,270.84	2,236.09	34.75	65.355	
1,000.00	998.04	1,154.45	1,154.04	3.50	34.59	-161.98	-1,745.94	-1,411.01	2,282.28	2,244.20	38.08	59.935	
1,100.00	1,097.32	1,253.29	1,252.85	3.87	37.55	-162.04	-1,743.76	-1,411.01	2,292.02	2,250.62	41.40	55.361	
1,200.00	1,196.59	1,341.51	1,341.05	4.24	40.20	-162.13	-1,744.05	-1,411.01	2,303.72	2,259.32	44.41	51.879	
1,300.00	1,295.87	1,429.64	1,429.16	4.62	42.84	-162.22	-1,744.89	-1,411.01	2,315.92	2,268.51	47.41	48.852	
1,400.00	1,395.14	1,551.85	1,551.14	5.00	46.50	-162.35	-1,745.94	-1,411.01	2,328.09	2,276.66	51.44	45.262	
1,500.00	1,494.42	1,651.13	1,650.42	5.38	49.48	-162.44	-1,745.94	-1,411.01	2,339.56	2,284.78	54.77	42.713	
1,600.00	1,593.69	1,750.34	1,749.59	5.76	52.45	-162.49	-1,743.76	-1,411.01	2,349.32	2,291.20	58.11	40.428	
1,700.00	1,692.96	1,838.25	1,837.49	6.14	55.08	-162.57	-1,744.03	-1,411.01	2,361.03	2,299.93	61.11	38.637	
1,800.00	1,792.24	1,926.07	1,925.29	6.52	57.71	-162.66	-1,744.85	-1,411.01	2,373.24	2,309.14	64.10	37.024	
1,900.00	1,891.51	2,048.53	2,047.51	6.91	61.38	-162.78	-1,745.94	-1,411.01	2,385.48	2,317.34	68.14	35.008	
2,000.00	1,990.79	2,147.80	2,146.79	7.29	64.36	-162.87	-1,745.94	-1,411.01	2,396.98	2,325.50	71.48	33.533	
2,100.00	2,090.06	2,247.08	2,246.06	7.67	67.33	-162.95	-1,745.94	-1,411.01	2,408.48	2,333.65	74.82	32.189	
2,200.00	2,189.34	2,335.01	2,333.95	8.06	69.97	-163.00	-1,744.01	-1,411.01	2,418.48	2,340.66	77.82	31.078	
2,300.00	2,288.61	2,422.53	2,421.44	8.44	72.59	-163.08	-1,744.80	-1,411.01	2,430.70	2,349.89	80.80	30.082	
2,400.00	2,387.89	2,545.21	2,543.89	8.82	76.27	-163.20	-1,745.94	-1,411.01	2,443.00	2,358.15	84.85	28.791	
2,500.00	2,487.16	2,644.48	2,643.16	9.21	79.24	-163.28	-1,745.94	-1,411.01	2,454.52	2,366.33	88.19	27.831	
2,600.00	2,586.44	2,743.76	2,742.44	9.59	82.22	-163.36	-1,745.94	-1,411.01	2,466.05	2,374.51	91.53	26.941	
2,700.00	2,685.71	2,831.80	2,830.43	9.98	84.85	-163.41	-1,744.00	-1,411.01	2,476.05	2,381.52	94.54	26.192	
2,800.00	2,784.99	2,919.01	2,917.62	10.36	87.47	-163.49	-1,744.76	-1,411.01	2,488.28	2,390.77	97.51	25.519	
2,900.00	2,884.26	3,041.88	3,040.26	10.75	91.15	-163.60	-1,745.94	-1,411.01	2,500.65	2,399.08	101.57	24.621	
3,000.00	2,983.53	3,141.16	3,139.53	11.13	94.12	-163.68	-1,745.94	-1,411.01	2,512.19	2,407.28	104.91	23.947	
3,100.00	3,082.81	3,240.43	3,238.81	11.52	97.10	-163.75	-1,745.94	-1,411.01	2,523.74	2,415.49	108.25	23.314	
3,200.00	3,182.08	3,328.60	3,326.93	11.90	99.74	-163.79	-1,743.98	-1,411.01	2,533.74	2,422.49	111.25	22.775	
3,300.00	3,281.36	3,415.52	3,413.82	12.29	102.34	-163.87	-1,744.72	-1,411.01	2,545.98	2,431.76	114.22	22.291	
3,400.00	3,380.63	3,538.56	3,536.63	12.67	106.03	-163.98	-1,745.94	-1,411.01	2,558.41	2,440.12	118.28	21.630	
3,500.00	3,479.91	3,637.84	3,635.91	13.06	109.01	-164.05	-1,745.94	-1,411.01	2,569.97	2,448.35	121.62	21.130	
3,600.00	3,579.18	3,737.11	3,735.18	13.44	111.98	-164.13	-1,745.94	-1,411.01	2,581.54	2,456.58	124.97	20.658	
3,700.00	3,678.46	3,825.43	3,823.45	13.83	114.63	-164.16	-1,743.96	-1,411.01	2,591.54	2,463.57	127.97	20.251	
3,800.00	3,777.73	3,912.05	3,910.05	14.21	117.22	-164.24	-1,744.68	-1,411.01	2,603.78	2,472.86	130.93	19.888	
3,900.00	3,877.01	4,035.24	4,033.01	14.60	120.91	-164.34	-1,745.94	-1,411.01	2,616.27	2,481.27	135.00	19.380	
4,000.00	3,976.28	4,134.51	4,132.28	14.98	123.89	-164.41	-1,745.94	-1,411.01	2,627.86	2,489.52	138.34	18.996	
4,100.00	4,075.55	4,233.79	4,231.55	15.37	126.86	-164.48	-1,745.94	-1,411.01	2,639.45	2,497.76	141.68	18.629	
4,200.00	4,174.83	4,322.28	4,320.00	15.75	129.52	-164.52	-1,743.94	-1,411.01	2,649.45	2,504.75	144.69	18.311	
4,300.00	4,274.10	4,408.61	4,406.30	16.14	132.10	-164.59	-1,744.64	-1,411.01	2,661.69	2,514.05	147.64	18.029	
4,400.00	4,373.38	4,531.92	4,529.38	16.53	135.80	-164.69	-1,745.94	-1,411.01	2,674.24	2,522.52	151.71	17.627	
4,500.00	4,472.65	4,631.19	4,628.65	16.91	138.77	-164.76	-1,745.94	-1,411.01	2,685.84	2,530.78	155.06	17.322	
4,600.00	4,571.93	4,730.47	4,727.93	17.30	141.75	-164.82	-1,745.94	-1,411.01	2,697.45	2,539.05	158.40	17.030	
4,700.00	4,671.20	4,819.15	4,816.56	17.68	144.40	-164.86	-1,743.93	-1,411.01	2,707.45	2,546.03	161.42	16.773	
4,800.00	4,770.48	4,905.19	4,902.58	18.07	146.98	-164.92	-1,744.60	-1,411.01	2,719.69	2,555.34	164.35	16.548	
4,900.00	4,869.75	5,028.59	5,025.75	18.45	150.68	-165.02	-1,745.94	-1,411.01	2,732.29	2,563.86	168.43	16.222	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	4,969.03	5,127.87	5,125.03	18.84	153.65	-165.09	-1,745.94	-1,411.01	2,743.91	2,572.14	171.77	15.974	
5,100.00	5,068.30	5,227.14	5,224.30	19.23	156.63	-165.15	-1,745.94	-1,411.01	2,755.54	2,580.42	175.11	15.736	
5,200.00	5,167.58	5,316.04	5,313.15	19.61	159.29	-165.18	-1,743.91	-1,411.01	2,765.54	2,587.40	178.14	15.525	
5,300.00	5,266.85	5,401.79	5,398.88	20.00	161.86	-165.25	-1,744.57	-1,411.01	2,777.78	2,596.72	181.06	15.342	
5,400.00	5,366.12	5,525.27	5,522.12	20.38	165.56	-165.34	-1,745.94	-1,411.01	2,790.44	2,605.29	185.15	15.071	
5,500.00	5,465.40	5,624.55	5,621.40	20.77	168.54	-165.40	-1,745.94	-1,411.01	2,802.07	2,613.58	188.49	14.866	
5,600.00	5,564.67	5,723.82	5,720.67	21.15	171.51	-165.46	-1,745.94	-1,411.01	2,813.72	2,621.88	191.83	14.668	
5,700.00	5,663.95	5,812.96	5,809.76	21.54	174.18	-165.50	-1,743.90	-1,411.01	2,823.71	2,628.85	194.86	14.491	
5,800.00	5,763.22	5,898.41	5,895.20	21.93	176.74	-165.56	-1,744.53	-1,411.01	2,835.96	2,638.18	197.78	14.339	
5,900.00	5,862.50	6,021.95	6,018.50	22.31	180.44	-165.65	-1,745.94	-1,411.01	2,848.66	2,646.80	201.87	14.112	
6,000.00	5,961.77	6,121.22	6,117.77	22.70	183.42	-165.71	-1,745.94	-1,411.01	2,860.32	2,655.11	205.21	13.939	
6,100.00	6,061.05	6,220.50	6,217.05	23.08	186.39	-165.77	-1,745.94	-1,411.01	2,871.97	2,663.42	208.55	13.771	
6,200.00	6,160.32	6,319.77	6,316.32	23.47	189.37	-165.82	-1,745.94	-1,411.01	2,883.63	2,671.74	211.89	13.609	SF
6,300.00	6,259.60	6,341.00	6,337.34	23.86	190.01	-165.84	-1,745.94	-1,411.01	2,896.36	2,683.59	212.77	13.613	
6,376.00	6,335.04	6,341.00	6,337.34	24.15	190.01	-165.84	-1,745.94	-1,411.01	2,908.23	2,695.45	212.78	13.668	
6,400.00	6,358.85	6,341.00	6,337.34	24.24	190.01	179.09	-1,745.94	-1,411.01	2,912.63	2,699.88	212.75	13.690	
6,450.00	6,408.16	6,341.00	6,337.34	24.44	190.01	159.04	-1,745.94	-1,411.01	2,924.00	2,711.34	212.66	13.749	
6,500.00	6,456.87	6,341.00	6,337.34	24.64	190.01	147.98	-1,745.94	-1,411.01	2,938.25	2,725.73	212.52	13.826	
6,550.00	6,504.65	6,341.00	6,337.34	24.85	190.01	140.87	-1,745.94	-1,411.01	2,955.25	2,742.92	212.33	13.918	
6,600.00	6,551.23	6,341.00	6,337.34	25.06	190.01	135.59	-1,745.94	-1,411.01	2,974.85	2,762.75	212.10	14.025	
6,650.00	6,596.31	6,341.00	6,337.34	25.26	190.01	131.17	-1,745.94	-1,411.01	2,996.89	2,785.04	211.85	14.146	
6,700.00	6,639.62	6,341.00	6,337.34	25.48	190.01	127.15	-1,745.94	-1,411.01	3,021.16	2,809.59	211.57	14.280	
6,750.00	6,680.88	6,341.00	6,337.34	25.69	190.01	123.28	-1,745.94	-1,411.01	3,047.48	2,836.19	211.28	14.424	
6,800.00	6,719.85	6,341.00	6,337.34	25.91	190.01	119.41	-1,745.94	-1,411.01	3,075.62	2,864.62	211.00	14.577	
6,850.00	6,756.28	6,341.00	6,337.34	26.13	190.01	115.44	-1,745.94	-1,411.01	3,105.37	2,894.65	210.72	14.737	
6,900.00	6,789.95	6,341.00	6,337.34	26.37	190.01	111.35	-1,745.94	-1,411.01	3,136.50	2,926.05	210.46	14.903	
6,950.00	6,820.65	6,341.00	6,337.34	26.61	190.01	107.12	-1,745.94	-1,411.01	3,168.79	2,958.57	210.22	15.074	
7,000.00	6,848.19	6,341.00	6,337.34	26.87	190.01	102.75	-1,745.94	-1,411.01	3,201.99	2,991.98	210.02	15.246	
7,050.00	6,872.41	6,341.00	6,337.34	27.13	190.01	98.28	-1,745.94	-1,411.01	3,235.89	3,026.03	209.86	15.419	
7,100.00	6,893.15	6,341.00	6,337.34	27.41	190.01	93.77	-1,745.94	-1,411.01	3,270.25	3,060.51	209.74	15.592	
7,150.00	6,910.28	6,341.00	6,337.34	27.71	190.01	89.28	-1,745.94	-1,411.01	3,304.85	3,095.18	209.67	15.762	
7,200.00	6,923.70	6,341.00	6,337.34	28.02	190.01	84.88	-1,745.94	-1,411.01	3,339.48	3,129.83	209.65	15.929	
7,250.00	6,933.33	6,341.00	6,337.34	28.34	190.01	80.63	-1,745.94	-1,411.01	3,373.91	3,164.24	209.68	16.091	
7,300.00	6,939.11	6,341.00	6,337.34	28.67	190.01	76.59	-1,745.94	-1,411.01	3,407.96	3,198.20	209.76	16.247	
7,349.12	6,941.00	6,341.00	6,337.34	29.00	190.01	72.87	-1,745.94	-1,411.01	3,440.84	3,230.95	209.89	16.394	
7,400.00	6,941.01	6,341.00	6,337.34	29.36	190.01	72.87	-1,745.94	-1,411.01	3,474.75	3,264.70	210.05	16.543	
7,500.00	6,941.02	6,341.00	6,337.34	30.11	190.01	72.87	-1,745.94	-1,411.01	3,542.58	3,332.19	210.38	16.839	
7,600.00	6,941.04	6,341.00	6,337.34	30.93	190.01	72.87	-1,745.94	-1,411.01	3,611.90	3,401.17	210.73	17.140	
7,700.00	6,941.05	6,341.00	6,337.34	31.80	190.01	72.87	-1,745.94	-1,411.01	3,682.64	3,471.55	211.09	17.446	
7,800.00	6,941.07	6,341.00	6,337.34	32.73	190.01	72.87	-1,745.94	-1,411.01	3,754.70	3,543.24	211.46	17.756	
7,900.00	6,941.08	6,341.00	6,337.34	33.71	190.01	72.87	-1,745.94	-1,411.01	3,828.02	3,616.19	211.83	18.071	
8,000.00	6,941.10	6,341.00	6,337.34	34.73	190.01	72.87	-1,745.94	-1,411.01	3,902.53	3,690.33	212.21	18.390	
8,100.00	6,941.11	6,341.00	6,337.34	35.79	190.01	72.87	-1,745.94	-1,411.01	3,978.16	3,765.57	212.58	18.713	
8,200.00	6,941.13	6,341.00	6,337.34	36.90	190.01	72.87	-1,745.94	-1,411.01	4,054.84	3,841.88	212.96	19.040	
8,300.00	6,941.14	6,341.00	6,337.34	38.03	190.01	72.87	-1,745.94	-1,411.01	4,132.52	3,919.18	213.33	19.371	
8,400.00	6,941.16	6,341.00	6,337.34	39.20	190.01	72.87	-1,745.94	-1,411.01	4,211.14	3,997.43	213.70	19.706	
8,500.00	6,941.17	6,341.00	6,337.34	40.40	190.01	72.87	-1,745.94	-1,411.01	4,290.65	4,076.58	214.07	20.043	
8,600.00	6,941.19	6,341.00	6,337.34	41.63	190.01	72.87	-1,745.94	-1,411.01	4,371.00	4,156.57	214.43	20.384	
8,700.00	6,941.20	6,341.00	6,337.34	42.88	190.01	72.87	-1,745.94	-1,411.01	4,452.15	4,237.36	214.78	20.728	
8,800.00	6,941.22	6,341.00	6,337.34	44.16	190.01	72.87	-1,745.94	-1,411.01	4,534.05	4,318.92	215.13	21.076	
8,900.00	6,941.23	6,341.00	6,337.34	45.45	190.01	72.87	-1,745.94	-1,411.01	4,616.66	4,401.19	215.47	21.426	
9,000.00	6,941.24	6,341.00	6,337.34	46.76	190.01	72.87	-1,745.94	-1,411.01	4,699.95	4,484.14	215.81	21.778	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,341.00	6,337.34	48.10	190.01	72.87	-1,745.94	-1,411.01	4,783.88	4,567.75	216.14	22.134	
9,200.00	6,941.27	6,341.00	6,337.34	49.44	190.01	72.87	-1,745.94	-1,411.01	4,868.42	4,651.96	216.46	22.491	
9,300.00	6,941.29	6,341.00	6,337.34	50.80	190.01	72.87	-1,745.94	-1,411.01	4,953.53	4,736.76	216.77	22.851	
9,400.00	6,941.30	6,341.00	6,337.34	52.18	190.01	72.87	-1,745.94	-1,411.01	5,039.20	4,822.12	217.08	23.214	
9,500.00	6,941.32	6,341.00	6,337.34	53.57	190.01	72.87	-1,745.94	-1,411.01	5,125.38	4,908.00	217.38	23.578	
9,600.00	6,941.33	6,341.00	6,337.34	54.97	190.01	72.87	-1,745.94	-1,411.01	5,212.05	4,994.38	217.67	23.945	
9,700.00	6,941.35	6,341.00	6,337.34	56.38	190.01	72.87	-1,745.94	-1,411.01	5,299.19	5,081.24	217.95	24.313	
9,800.00	6,941.36	6,341.00	6,337.34	57.80	190.01	72.87	-1,745.94	-1,411.01	5,386.78	5,168.55	218.23	24.684	
9,900.00	6,941.38	6,341.00	6,337.34	59.23	190.01	72.87	-1,745.94	-1,411.01	5,474.80	5,256.29	218.50	25.056	
10,000.00	6,941.39	6,341.00	6,337.34	60.67	190.01	72.87	-1,745.94	-1,411.01	5,563.22	5,344.45	218.77	25.430	
10,100.00	6,941.41	6,341.00	6,337.34	62.11	190.01	72.87	-1,745.94	-1,411.01	5,652.02	5,433.00	219.03	25.805	
10,200.00	6,941.42	6,341.00	6,337.34	63.57	190.01	72.87	-1,745.94	-1,411.01	5,741.20	5,521.92	219.28	26.182	
10,300.00	6,941.44	6,341.00	6,337.34	65.03	190.01	72.87	-1,745.94	-1,411.01	5,830.72	5,611.20	219.52	26.561	
10,400.00	6,941.45	6,341.00	6,337.34	66.50	190.01	72.87	-1,745.94	-1,411.01	5,920.58	5,700.82	219.77	26.940	
10,500.00	6,941.47	6,341.00	6,337.34	67.97	190.01	72.87	-1,745.94	-1,411.01	6,010.76	5,790.76	220.00	27.322	
10,600.00	6,941.48	6,341.00	6,337.34	69.45	190.01	72.87	-1,745.94	-1,411.01	6,101.25	5,881.02	220.23	27.704	
10,700.00	6,941.50	6,341.00	6,337.34	70.94	190.01	72.87	-1,745.94	-1,411.01	6,192.03	5,971.58	220.45	28.088	
10,800.00	6,941.51	6,341.00	6,337.34	72.43	190.01	72.87	-1,745.94	-1,411.01	6,283.09	6,062.42	220.67	28.472	
10,900.00	6,941.53	6,341.00	6,337.34	73.92	190.01	72.87	-1,745.94	-1,411.01	6,374.42	6,153.53	220.89	28.858	
11,000.00	6,941.54	6,341.00	6,337.34	75.42	190.01	72.87	-1,745.94	-1,411.01	6,466.00	6,244.91	221.10	29.245	
11,100.00	6,941.56	6,341.00	6,337.34	76.92	190.01	72.87	-1,745.94	-1,411.01	6,557.83	6,336.53	221.30	29.633	
11,200.00	6,941.57	6,341.00	6,337.34	78.43	190.01	72.87	-1,745.94	-1,411.01	6,649.90	6,428.40	221.50	30.022	
11,300.00	6,941.59	6,341.00	6,337.34	79.94	190.01	72.87	-1,745.94	-1,411.01	6,742.19	6,520.49	221.70	30.412	
11,400.00	6,941.60	6,341.00	6,337.34	81.46	190.01	72.87	-1,745.94	-1,411.01	6,834.70	6,612.81	221.89	30.802	
11,500.00	6,941.61	6,341.00	6,337.34	82.98	190.01	72.87	-1,745.94	-1,411.01	6,927.42	6,705.34	222.08	31.193	
11,600.00	6,941.63	6,341.00	6,337.34	84.50	190.01	72.87	-1,745.94	-1,411.01	7,020.33	6,798.07	222.26	31.586	
11,700.00	6,941.64	6,341.00	6,337.34	86.02	190.01	72.87	-1,745.94	-1,411.01	7,113.44	6,891.00	222.45	31.978	
11,800.00	6,941.66	6,341.00	6,337.34	87.55	190.01	72.87	-1,745.94	-1,411.01	7,206.74	6,984.11	222.62	32.372	
11,900.00	6,941.67	6,341.00	6,337.34	89.08	190.01	72.87	-1,745.94	-1,411.01	7,300.21	7,077.41	222.80	32.766	
12,000.00	6,941.69	6,341.00	6,337.34	90.61	190.01	72.87	-1,745.94	-1,411.01	7,393.85	7,170.88	222.97	33.161	
12,100.00	6,941.70	6,341.00	6,337.34	92.14	190.01	72.87	-1,745.94	-1,411.01	7,487.66	7,264.52	223.14	33.556	
12,200.00	6,941.72	6,341.00	6,337.34	93.68	190.01	72.87	-1,745.94	-1,411.01	7,581.62	7,358.32	223.30	33.952	
12,300.00	6,941.73	6,341.00	6,337.34	95.22	190.01	72.87	-1,745.94	-1,411.01	7,675.74	7,452.27	223.46	34.349	
12,400.00	6,941.75	6,341.00	6,337.34	96.76	190.01	72.87	-1,745.94	-1,411.01	7,770.00	7,546.38	223.62	34.746	
12,500.00	6,941.76	6,341.00	6,337.34	98.30	190.01	72.87	-1,745.94	-1,411.01	7,864.41	7,640.63	223.78	35.143	
12,600.00	6,941.78	6,341.00	6,337.34	99.85	190.01	72.87	-1,745.94	-1,411.01	7,958.95	7,735.01	223.94	35.541	
12,700.00	6,941.79	6,341.00	6,337.34	101.40	190.01	72.87	-1,745.94	-1,411.01	8,053.62	7,829.54	224.09	35.939	
12,800.00	6,941.81	6,341.00	6,337.34	102.95	190.01	72.87	-1,745.94	-1,411.01	8,148.43	7,924.19	224.24	36.338	
12,900.00	6,941.82	6,341.00	6,337.34	104.50	190.01	72.87	-1,745.94	-1,411.01	8,243.35	8,018.96	224.39	36.737	
13,000.00	6,941.84	6,341.00	6,337.34	106.05	190.01	72.87	-1,745.94	-1,411.01	8,338.39	8,113.86	224.53	37.137	
13,100.00	6,941.85	6,341.00	6,337.34	107.60	190.01	72.87	-1,745.94	-1,411.01	8,433.55	8,208.88	224.68	37.536	
13,200.00	6,941.87	6,341.00	6,337.34	109.16	190.01	72.87	-1,745.94	-1,411.01	8,528.82	8,304.00	224.82	37.937	
13,300.00	6,941.88	6,341.00	6,337.34	110.71	190.01	72.87	-1,745.94	-1,411.01	8,624.20	8,399.24	224.96	38.337	
13,400.00	6,941.90	6,341.00	6,337.34	112.27	190.01	72.87	-1,745.94	-1,411.01	8,719.68	8,494.58	225.10	38.738	
13,500.00	6,941.91	6,341.00	6,337.34	113.83	190.01	72.87	-1,745.94	-1,411.01	8,815.25	8,590.02	225.23	39.139	
13,600.00	6,941.93	6,341.00	6,337.34	115.39	190.01	72.87	-1,745.94	-1,411.01	8,910.93	8,685.56	225.37	39.540	
13,700.00	6,941.94	6,341.00	6,337.34	116.95	190.01	72.87	-1,745.94	-1,411.01	9,006.70	8,781.20	225.50	39.941	
13,800.00	6,941.96	6,341.00	6,337.34	118.51	190.01	72.87	-1,745.94	-1,411.01	9,102.56	8,876.93	225.63	40.343	
13,900.00	6,941.97	6,341.00	6,337.34	120.08	190.01	72.87	-1,745.94	-1,411.01	9,198.51	8,972.75	225.76	40.744	
14,000.00	6,941.99	6,341.00	6,337.34	121.64	190.01	72.87	-1,745.94	-1,411.01	9,294.55	9,068.66	225.89	41.146	
14,100.00	6,942.00	6,341.00	6,337.34	123.21	190.01	72.87	-1,745.94	-1,411.01	9,390.67	9,164.65	226.02	41.548	
14,200.00	6,942.01	6,341.00	6,337.34	124.77	190.01	72.87	-1,745.94	-1,411.01	9,486.86	9,260.72	226.14	41.951	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,341.00	6,337.34	126.34	190.01	72.87	-1,745.94	-1,411.01	9,583.14	9,356.87	226.27	42.353	
14,400.00	6,942.04	6,341.00	6,337.34	127.91	190.01	72.87	-1,745.94	-1,411.01	9,679.49	9,453.10	226.39	42.756	
14,500.00	6,942.06	6,341.00	6,337.34	129.48	190.01	72.87	-1,745.94	-1,411.01	9,775.92	9,549.40	226.51	43.158	
14,600.00	6,942.07	6,341.00	6,337.34	131.05	190.01	72.87	-1,745.94	-1,411.01	9,872.41	9,645.78	226.64	43.561	
14,700.00	6,942.09	6,341.00	6,337.34	132.62	190.01	72.87	-1,745.94	-1,411.01	9,968.98	9,742.22	226.76	43.963	
14,800.00	6,942.10	6,341.00	6,337.34	134.19	190.01	72.87	-1,745.94	-1,411.01	10,065.61	9,838.73	226.88	44.366	
14,900.00	6,942.12	6,341.00	6,337.34	135.76	190.01	72.87	-1,745.94	-1,411.01	10,162.31	9,935.31	226.99	44.769	
15,000.00	6,942.13	6,341.00	6,337.34	137.34	190.01	72.87	-1,745.94	-1,411.01	10,259.07	10,031.95	227.11	45.172	
15,100.00	6,942.15	6,341.00	6,337.34	138.91	190.01	72.87	-1,745.94	-1,411.01	10,355.89	10,128.66	227.23	45.575	
15,200.00	6,942.16	6,341.00	6,337.34	140.48	190.01	72.87	-1,745.94	-1,411.01	10,452.77	10,225.43	227.34	45.978	
15,300.00	6,942.18	6,341.00	6,337.34	142.06	190.01	72.87	-1,745.94	-1,411.01	10,549.71	10,322.25	227.46	46.381	
15,400.00	6,942.19	6,341.00	6,337.34	143.64	190.01	72.87	-1,745.94	-1,411.01	10,646.71	10,419.13	227.57	46.784	
15,500.00	6,942.21	6,341.00	6,337.34	145.21	190.01	72.87	-1,745.94	-1,411.01	10,743.76	10,516.07	227.69	47.187	
15,600.00	6,942.22	6,341.00	6,337.34	146.79	190.01	72.87	-1,745.94	-1,411.01	10,840.86	10,613.06	227.80	47.590	
15,700.00	6,942.24	6,341.00	6,337.34	148.37	190.01	72.87	-1,745.94	-1,411.01	10,938.02	10,710.11	227.91	47.993	
15,800.00	6,942.25	6,341.00	6,337.34	149.94	190.01	72.87	-1,745.94	-1,411.01	11,035.23	10,807.21	228.02	48.395	
15,900.00	6,942.27	6,341.00	6,337.34	151.52	190.01	72.87	-1,745.94	-1,411.01	11,132.49	10,904.35	228.13	48.798	
16,000.00	6,942.28	6,341.00	6,337.34	153.10	190.01	72.87	-1,745.94	-1,411.01	11,229.79	11,001.55	228.24	49.201	
16,100.00	6,942.30	6,341.00	6,337.34	154.68	190.01	72.87	-1,745.94	-1,411.01	11,327.15	11,098.79	228.35	49.604	
16,200.00	6,942.31	6,341.00	6,337.34	156.26	190.01	72.87	-1,745.94	-1,411.01	11,424.54	11,196.08	228.46	50.006	
16,300.00	6,942.33	6,341.00	6,337.34	157.84	190.01	72.87	-1,745.94	-1,411.01	11,521.99	11,293.42	228.57	50.409	
16,400.00	6,942.34	6,341.00	6,337.34	159.42	190.01	72.87	-1,745.94	-1,411.01	11,619.47	11,390.80	228.68	50.811	
16,500.00	6,942.36	6,341.00	6,337.34	161.00	190.01	72.87	-1,745.94	-1,411.01	11,717.00	11,488.22	228.79	51.214	
16,600.00	6,942.37	6,341.00	6,337.34	162.59	190.01	72.87	-1,745.94	-1,411.01	11,814.57	11,585.68	228.89	51.616	
16,700.00	6,942.38	6,341.00	6,337.34	164.17	190.01	72.87	-1,745.94	-1,411.01	11,912.18	11,683.18	229.00	52.018	
16,800.00	6,942.40	6,341.00	6,337.34	165.75	190.01	72.87	-1,745.94	-1,411.01	12,009.83	11,780.73	229.11	52.420	
16,900.00	6,942.41	6,341.00	6,337.34	167.33	190.01	72.87	-1,745.94	-1,411.01	12,107.52	11,878.31	229.21	52.822	
17,000.00	6,942.43	6,341.00	6,337.34	168.92	190.01	72.87	-1,745.94	-1,411.01	12,205.25	11,975.93	229.32	53.224	
17,100.00	6,942.44	6,341.00	6,337.34	170.50	190.01	72.87	-1,745.94	-1,411.01	12,303.01	12,073.59	229.42	53.626	
17,200.00	6,942.46	6,341.00	6,337.34	172.09	190.01	72.87	-1,745.94	-1,411.01	12,400.81	12,171.28	229.53	54.027	
17,300.00	6,942.47	6,341.00	6,337.34	173.67	190.01	72.87	-1,745.94	-1,411.01	12,498.64	12,269.01	229.63	54.429	
17,400.00	6,942.49	6,341.00	6,337.34	175.26	190.01	72.87	-1,745.94	-1,411.01	12,596.51	12,366.77	229.74	54.830	
17,500.00	6,942.50	6,341.00	6,337.34	176.84	190.01	72.87	-1,745.94	-1,411.01	12,694.41	12,464.57	229.84	55.231	
17,600.00	6,942.52	6,341.00	6,337.34	178.43	190.01	72.87	-1,745.94	-1,411.01	12,792.34	12,562.39	229.94	55.632	
17,700.00	6,942.53	6,341.00	6,337.34	180.01	190.01	72.87	-1,745.94	-1,411.01	12,890.30	12,660.26	230.05	56.033	
17,800.00	6,942.55	6,341.00	6,337.34	181.60	190.01	72.87	-1,745.94	-1,411.01	12,988.30	12,758.15	230.15	56.434	
17,900.00	6,942.56	6,341.00	6,337.34	183.19	190.01	72.87	-1,745.94	-1,411.01	13,086.32	12,856.07	230.25	56.834	
18,000.00	6,942.58	6,341.00	6,337.34	184.77	190.01	72.87	-1,745.94	-1,411.01	13,184.38	12,954.02	230.36	57.234	
18,100.00	6,942.59	6,341.00	6,337.34	186.36	190.01	72.87	-1,745.94	-1,411.01	13,282.46	13,052.00	230.46	57.635	
18,200.00	6,942.61	6,341.00	6,337.34	187.95	190.01	72.87	-1,745.94	-1,411.01	13,380.58	13,150.01	230.56	58.034	
18,300.00	6,942.62	6,341.00	6,337.34	189.54	190.01	72.87	-1,745.94	-1,411.01	13,478.72	13,248.05	230.67	58.434	
18,400.00	6,942.64	6,341.00	6,337.34	191.12	190.01	72.87	-1,745.94	-1,411.01	13,576.88	13,346.12	230.77	58.834	
18,500.00	6,942.65	6,341.00	6,337.34	192.71	190.01	72.87	-1,745.94	-1,411.01	13,675.08	13,444.21	230.87	59.233	
18,600.00	6,942.67	6,341.00	6,337.34	194.30	190.01	72.87	-1,745.94	-1,411.01	13,773.30	13,542.33	230.97	59.632	
18,700.00	6,942.68	6,341.00	6,337.34	195.89	190.01	72.87	-1,745.94	-1,411.01	13,871.54	13,640.47	231.07	60.031	
18,800.00	6,942.70	6,341.00	6,337.34	197.48	190.01	72.87	-1,745.94	-1,411.01	13,969.81	13,738.64	231.17	60.430	
18,900.00	6,942.71	6,341.00	6,337.34	199.07	190.01	72.87	-1,745.94	-1,411.01	14,068.11	13,836.83	231.28	60.828	
19,000.00	6,942.73	6,341.00	6,337.34	200.66	190.01	72.87	-1,745.94	-1,411.01	14,166.43	13,935.05	231.38	61.226	
19,100.00	6,942.74	6,341.00	6,337.34	202.25	190.01	72.87	-1,745.94	-1,411.01	14,264.77	14,033.29	231.48	61.624	
19,200.00	6,942.76	6,341.00	6,337.34	203.84	190.01	72.87	-1,745.94	-1,411.01	14,363.13	14,131.55	231.58	62.022	
19,300.00	6,942.77	6,341.00	6,337.34	205.43	190.01	72.87	-1,745.94	-1,411.01	14,461.52	14,229.84	231.68	62.420	
19,400.00	6,942.78	6,341.00	6,337.34	207.02	190.01	72.87	-1,745.94	-1,411.01	14,559.93	14,328.15	231.78	62.817	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,341.00	6,337.34	208.61	190.01	72.87	-1,745.94	-1,411.01	14,658.36	14,426.48	231.88	63.214	
19,600.00	6,942.81	6,341.00	6,337.34	210.20	190.01	72.87	-1,745.94	-1,411.01	14,756.81	14,524.83	231.98	63.611	
19,700.00	6,942.83	6,341.00	6,337.34	211.79	190.01	72.87	-1,745.94	-1,411.01	14,855.29	14,623.20	232.09	64.008	
19,800.00	6,942.84	6,341.00	6,337.34	213.38	190.01	72.87	-1,745.94	-1,411.01	14,953.78	14,721.59	232.19	64.404	
19,900.00	6,942.86	6,341.00	6,337.34	214.97	190.01	72.87	-1,745.94	-1,411.01	15,052.29	14,820.00	232.29	64.800	
20,000.00	6,942.87	6,341.00	6,337.34	216.56	190.01	72.87	-1,745.94	-1,411.01	15,150.82	14,918.44	232.39	65.196	
20,100.00	6,942.89	6,341.00	6,337.34	218.15	190.01	72.87	-1,745.94	-1,411.01	15,249.38	15,016.89	232.49	65.592	
20,200.00	6,942.90	6,341.00	6,337.34	219.75	190.01	72.87	-1,745.94	-1,411.01	15,347.95	15,115.36	232.59	65.987	
20,300.00	6,942.92	6,341.00	6,337.34	221.34	190.01	72.87	-1,745.94	-1,411.01	15,446.53	15,213.84	232.69	66.382	
20,400.00	6,942.93	6,341.00	6,337.34	222.93	190.01	72.87	-1,745.94	-1,411.01	15,545.14	15,312.35	232.79	66.777	
20,500.00	6,942.95	6,341.00	6,337.34	224.52	190.01	72.87	-1,745.94	-1,411.01	15,643.77	15,410.87	232.89	67.171	
20,600.00	6,942.96	6,341.00	6,337.34	226.12	190.01	72.87	-1,745.94	-1,411.01	15,742.41	15,509.41	233.00	67.565	
20,700.00	6,942.98	6,341.00	6,337.34	227.71	190.01	72.87	-1,745.94	-1,411.01	15,841.07	15,607.97	233.10	67.959	
20,800.00	6,942.99	6,341.00	6,337.34	229.30	190.01	72.87	-1,745.94	-1,411.01	15,939.74	15,706.54	233.20	68.353	
20,855.77	6,943.00	6,341.00	6,337.34	230.19	190.01	72.87	-1,745.94	-1,411.01	15,994.78	15,761.52	233.25	68.572	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	28.77	28.77	0.00	0.02	166.22	-1,646.68	403.76	1,695.45				
100.00	100.00	128.73	128.73	0.25	0.11	166.22	-1,646.53	403.96	1,695.36	1,695.04	0.32	5,343.270	
125.90	125.90	153.90	153.90	0.34	0.14	166.21	-1,646.50	404.06	1,695.35	1,694.93	0.43	3,976.543	CC
200.00	200.00	225.95	225.95	0.61	0.23	166.20	-1,646.43	404.52	1,695.40	1,694.66	0.74	2,295.509	
300.00	300.00	325.47	325.46	0.97	0.36	166.16	-1,646.32	405.53	1,695.53	1,694.37	1.16	1,457.779	
400.00	400.00	423.20	423.19	1.33	0.48	166.12	-1,646.22	406.81	1,695.75	1,694.16	1.59	1,067.114	
500.00	500.00	524.43	524.40	1.68	0.62	166.07	-1,646.13	408.21	1,696.00	1,693.98	2.02	840.031	ES
600.00	599.98	623.90	623.87	2.04	0.74	145.30	-1,646.03	409.57	1,697.66	1,695.21	2.45	693.443	
700.00	699.84	722.87	722.83	2.40	0.87	145.30	-1,645.94	411.03	1,702.23	1,699.35	2.88	591.170	
800.00	799.45	821.48	821.42	2.77	1.00	145.33	-1,645.88	412.59	1,709.73	1,706.42	3.31	516.073	
845.27	844.44	863.99	863.93	2.93	1.06	145.35	-1,645.90	413.28	1,714.11	1,710.60	3.51	488.205	
900.00	898.77	917.58	917.51	3.13	1.13	145.45	-1,646.02	414.12	1,719.86	1,716.11	3.75	458.745	
1,000.00	998.04	1,015.53	1,015.45	3.50	1.25	145.62	-1,646.30	415.67	1,730.44	1,726.25	4.19	413.337	
1,100.00	1,097.32	1,114.60	1,114.51	3.87	1.38	145.80	-1,646.57	417.17	1,741.01	1,736.38	4.63	376.235	
1,200.00	1,196.59	1,213.23	1,213.12	4.24	1.50	145.98	-1,646.91	418.48	1,751.62	1,746.55	5.07	345.351	
1,300.00	1,295.87	1,314.91	1,314.79	4.62	1.63	146.16	-1,647.25	419.67	1,762.21	1,756.68	5.52	319.162	
1,400.00	1,395.14	1,421.25	1,421.13	5.00	1.77	146.36	-1,647.31	420.77	1,772.51	1,766.55	5.97	296.976	
1,500.00	1,494.42	1,522.31	1,522.19	5.38	1.90	146.55	-1,647.16	421.67	1,782.61	1,776.20	6.40	278.341	
1,600.00	1,593.69	1,624.12	1,624.00	5.76	2.03	146.74	-1,646.93	422.44	1,792.61	1,785.77	6.84	262.174	
1,700.00	1,692.96	1,727.98	1,727.85	6.14	2.11	146.95	-1,646.66	422.61	1,802.49	1,795.22	7.26	248.166	
1,800.00	1,792.24	1,827.24	1,827.11	6.52	2.08	147.17	-1,646.35	422.11	1,812.18	1,804.50	7.69	235.735	
1,900.00	1,891.51	1,932.61	1,932.48	6.91	2.08	147.40	-1,645.82	421.71	1,821.75	1,813.63	8.12	224.280	
2,000.00	1,990.79	2,038.17	2,038.04	7.29	2.12	147.62	-1,644.87	421.44	1,830.98	1,822.41	8.57	213.691	
2,100.00	2,090.06	2,140.92	2,140.77	7.67	2.17	147.82	-1,643.74	421.14	1,840.03	1,831.01	9.02	203.962	
2,200.00	2,189.34	2,238.86	2,238.71	8.06	2.22	148.02	-1,642.63	420.79	1,849.07	1,839.59	9.48	195.103	
2,300.00	2,288.61	2,333.05	2,332.90	8.44	2.26	148.22	-1,641.82	420.30	1,858.35	1,848.41	9.93	187.077	
2,400.00	2,387.89	2,433.16	2,433.00	8.82	2.30	148.43	-1,641.03	419.71	1,867.72	1,857.32	10.40	179.594	
2,500.00	2,487.16	2,536.08	2,535.91	9.21	2.34	148.65	-1,640.15	418.91	1,877.01	1,866.14	10.87	172.655	
2,600.00	2,586.44	2,636.74	2,636.57	9.59	2.37	148.87	-1,639.27	417.60	1,886.23	1,874.89	11.34	166.379	
2,700.00	2,685.71	2,730.77	2,730.58	9.98	2.39	149.09	-1,638.53	416.08	1,895.50	1,883.71	11.79	160.761	
2,800.00	2,784.99	2,831.44	2,831.24	10.36	2.42	149.32	-1,637.89	414.56	1,904.96	1,892.71	12.25	155.491	
2,900.00	2,884.26	2,925.58	2,925.36	10.75	2.45	149.53	-1,637.27	413.28	1,914.46	1,901.76	12.71	150.685	
3,000.00	2,983.53	3,014.50	3,014.28	11.13	2.48	149.72	-1,637.15	412.31	1,924.53	1,911.39	13.14	146.459	
3,100.00	3,082.81	3,096.09	3,095.86	11.52	2.48	149.88	-1,637.46	411.77	1,935.22	1,921.67	13.54	142.882	
3,200.00	3,182.08	3,195.52	3,195.29	11.90	2.49	150.07	-1,638.33	411.47	1,946.46	1,932.52	13.94	139.595	
3,300.00	3,281.36	3,294.16	3,293.93	12.29	2.51	150.26	-1,639.27	411.15	1,957.79	1,943.44	14.35	136.455	
3,400.00	3,380.63	3,394.71	3,394.47	12.67	2.53	150.46	-1,640.10	410.58	1,968.99	1,954.23	14.76	133.376	
3,500.00	3,479.91	3,496.65	3,496.40	13.06	2.55	150.66	-1,640.82	409.93	1,980.08	1,964.89	15.19	130.395	
3,600.00	3,579.18	3,613.87	3,613.63	13.44	2.61	150.87	-1,640.87	409.41	1,990.54	1,974.89	15.65	127.199	
3,700.00	3,678.46	3,710.46	3,710.21	13.83	2.69	151.04	-1,640.67	409.24	2,000.83	1,984.73	16.10	124.242	
3,800.00	3,777.73	3,800.86	3,800.61	14.21	2.74	151.19	-1,640.65	409.13	2,011.35	1,994.82	16.53	121.650	
3,900.00	3,877.01	3,881.10	3,880.85	14.60	2.77	151.33	-1,641.28	408.95	2,022.65	2,005.72	16.93	119.480	
4,000.00	3,976.28	3,965.41	3,965.15	14.98	2.80	151.48	-1,642.73	408.62	2,034.85	2,017.52	17.33	117.428	
4,100.00	4,075.55	4,068.88	4,068.60	15.37	2.85	151.67	-1,644.68	408.12	2,047.25	2,029.49	17.75	115.319	
4,200.00	4,174.83	4,163.91	4,163.61	15.75	2.90	151.85	-1,646.53	407.57	2,059.70	2,041.53	18.17	113.344	
4,300.00	4,274.10	4,252.64	4,252.31	16.14	2.95	152.02	-1,648.56	406.69	2,072.46	2,053.88	18.59	111.500	
4,400.00	4,373.38	4,349.17	4,348.80	16.53	3.01	152.21	-1,651.12	405.40	2,085.56	2,066.55	19.01	109.683	
4,500.00	4,472.65	4,457.06	4,456.64	16.91	3.08	152.43	-1,653.83	404.02	2,098.56	2,079.10	19.46	107.840	
4,600.00	4,571.93	4,572.05	4,571.61	17.30	3.16	152.64	-1,655.81	402.88	2,110.82	2,090.90	19.92	105.973	
4,700.00	4,671.20	4,674.42	4,673.96	17.68	3.23	152.82	-1,657.20	401.97	2,122.77	2,102.41	20.36	104.248	
4,800.00	4,770.48	4,772.53	4,772.06	18.07	3.31	152.99	-1,658.46	401.19	2,134.68	2,113.87	20.80	102.613	
4,900.00	4,869.75	4,873.29	4,872.82	18.45	3.39	153.16	-1,659.67	400.67	2,146.55	2,125.30	21.25	101.011	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	4,969.03	4,974.19	4,973.71	18.84	3.47	153.32	-1,660.80	400.27	2,158.36	2,136.66	21.70	99.459	
5,100.00	5,068.30	5,070.95	5,070.46	19.23	3.56	153.47	-1,661.94	399.93	2,170.26	2,148.12	22.15	97.990	
5,200.00	5,167.58	5,173.66	5,173.17	19.61	3.65	153.62	-1,663.08	399.75	2,182.12	2,159.51	22.61	96.523	
5,300.00	5,266.85	5,274.35	5,273.85	20.00	3.74	153.77	-1,664.06	399.66	2,193.87	2,170.80	23.07	95.112	
5,400.00	5,366.12	5,369.70	5,369.19	20.38	3.82	153.90	-1,665.05	399.77	2,205.71	2,182.19	23.52	93.784	
5,500.00	5,465.40	5,473.45	5,472.94	20.77	3.92	154.04	-1,666.06	399.91	2,217.51	2,193.52	23.99	92.442	
5,600.00	5,564.67	5,566.73	5,566.21	21.15	4.01	154.17	-1,667.17	399.87	2,229.51	2,205.07	24.44	91.220	
5,700.00	5,663.95	5,656.13	5,655.61	21.54	4.10	154.31	-1,668.61	399.49	2,241.90	2,217.01	24.89	90.083	
5,800.00	5,763.22	5,755.31	5,754.76	21.93	4.20	154.47	-1,670.38	398.52	2,254.44	2,229.09	25.35	88.940	
5,900.00	5,862.50	5,853.54	5,852.97	22.31	4.30	154.63	-1,672.08	397.49	2,266.94	2,241.13	25.81	87.839	
6,000.00	5,961.77	5,952.54	5,951.95	22.70	4.40	154.79	-1,673.81	396.26	2,279.48	2,253.21	26.27	86.774	
6,100.00	6,061.05	6,051.54	6,050.93	23.08	4.50	154.95	-1,675.55	395.04	2,292.03	2,265.30	26.73	85.747	
6,200.00	6,160.32	6,125.00	6,124.37	23.47	4.57	155.07	-1,676.84	394.13	2,304.74	2,277.59	27.15	84.905	
6,300.00	6,259.60	6,125.00	6,124.37	23.86	4.57	155.07	-1,676.84	394.13	2,320.53	2,293.11	27.42	84.631	
6,376.00	6,335.04	6,125.00	6,124.37	24.15	4.57	155.07	-1,676.84	394.13	2,335.32	2,307.70	27.62	84.555	
6,400.00	6,358.85	6,125.00	6,124.37	24.24	4.57	139.86	-1,676.84	394.13	2,340.45	2,312.77	27.68	84.551	
6,450.00	6,408.16	6,125.00	6,124.37	24.44	4.57	119.65	-1,676.84	394.13	2,351.63	2,323.82	27.81	84.557	
6,500.00	6,456.87	6,125.00	6,124.37	24.64	4.57	108.63	-1,676.84	394.13	2,363.41	2,335.47	27.94	84.583	
6,550.00	6,504.65	6,125.00	6,124.37	24.85	4.57	101.79	-1,676.84	394.13	2,375.71	2,347.63	28.07	84.624	
6,600.00	6,551.23	6,125.00	6,124.37	25.06	4.57	96.99	-1,676.84	394.13	2,388.44	2,360.24	28.21	84.680	
6,650.00	6,596.31	6,125.00	6,124.37	25.26	4.57	93.32	-1,676.84	394.13	2,401.53	2,373.19	28.34	84.747	
6,700.00	6,639.62	6,125.00	6,124.37	25.48	4.57	90.33	-1,676.84	394.13	2,414.89	2,386.42	28.47	84.821	
6,750.00	6,680.88	6,125.00	6,124.37	25.69	4.57	87.77	-1,676.84	394.13	2,428.42	2,399.82	28.60	84.900	
6,800.00	6,719.85	6,125.00	6,124.37	25.91	4.57	85.52	-1,676.84	394.13	2,442.05	2,413.31	28.74	84.977	
6,850.00	6,756.28	6,125.00	6,124.37	26.13	4.57	83.50	-1,676.84	394.13	2,455.69	2,426.82	28.87	85.048	
6,900.00	6,789.95	6,125.00	6,124.37	26.37	4.57	81.65	-1,676.84	394.13	2,469.26	2,440.25	29.01	85.108	
6,950.00	6,820.65	6,125.00	6,124.37	26.61	4.57	79.96	-1,676.84	394.13	2,482.67	2,453.51	29.16	85.150	
7,000.00	6,848.19	6,125.00	6,124.37	26.87	4.57	78.39	-1,676.84	394.13	2,495.84	2,466.54	29.30	85.170	
7,050.00	6,872.41	6,125.00	6,124.37	27.13	4.57	76.94	-1,676.84	394.13	2,508.71	2,479.25	29.46	85.162	
7,100.00	6,893.15	6,125.00	6,124.37	27.41	4.57	75.60	-1,676.84	394.13	2,521.19	2,491.57	29.62	85.123	
7,150.00	6,910.28	6,125.00	6,124.37	27.71	4.57	74.37	-1,676.84	394.13	2,533.21	2,503.42	29.79	85.049	
7,200.00	6,923.70	6,125.00	6,124.37	28.02	4.57	73.24	-1,676.84	394.13	2,544.70	2,514.74	29.96	84.938	
7,250.00	6,933.33	6,125.00	6,124.37	28.34	4.57	72.22	-1,676.84	394.13	2,555.61	2,525.47	30.14	84.788	
7,300.00	6,939.11	6,125.00	6,124.37	28.67	4.57	71.31	-1,676.84	394.13	2,565.88	2,535.55	30.33	84.600	
7,349.12	6,941.00	6,125.00	6,124.37	29.00	4.57	70.51	-1,676.84	394.13	2,575.28	2,544.76	30.52	84.380	
7,400.00	6,941.01	6,125.00	6,124.37	29.36	4.57	70.51	-1,676.84	394.13	2,585.13	2,554.41	30.73	84.136	
7,500.00	6,941.02	6,125.00	6,124.37	30.11	4.57	70.51	-1,676.84	394.13	2,607.28	2,576.13	31.16	83.680	
7,600.00	6,941.04	6,125.00	6,124.37	30.93	4.57	70.51	-1,676.84	394.13	2,633.05	2,601.43	31.62	83.283	
7,700.00	6,941.05	6,125.00	6,124.37	31.80	4.57	70.51	-1,676.84	394.13	2,662.32	2,630.23	32.09	82.958	
7,800.00	6,941.07	6,125.00	6,124.37	32.73	4.57	70.51	-1,676.84	394.13	2,694.99	2,662.41	32.58	82.714	
7,900.00	6,941.08	6,125.00	6,124.37	33.71	4.57	70.51	-1,676.84	394.13	2,730.94	2,697.86	33.08	82.561	
8,000.00	6,941.10	6,125.00	6,124.37	34.73	4.57	70.51	-1,676.84	394.13	2,770.02	2,736.45	33.58	82.502 SF	
8,100.00	6,941.11	6,125.00	6,124.37	35.79	4.57	70.51	-1,676.84	394.13	2,812.13	2,778.06	34.07	82.542	
8,200.00	6,941.13	6,125.00	6,124.37	36.90	4.57	70.51	-1,676.84	394.13	2,857.11	2,822.55	34.56	82.680	
8,300.00	6,941.14	6,125.00	6,124.37	38.03	4.57	70.51	-1,676.84	394.13	2,904.84	2,869.81	35.03	82.917	
8,400.00	6,941.16	6,125.00	6,124.37	39.20	4.57	70.51	-1,676.84	394.13	2,955.18	2,919.69	35.50	83.250	
8,500.00	6,941.17	6,125.00	6,124.37	40.40	4.57	70.51	-1,676.84	394.13	3,008.01	2,972.06	35.95	83.677	
8,600.00	6,941.19	6,125.00	6,124.37	41.63	4.57	70.51	-1,676.84	394.13	3,063.19	3,026.81	36.38	84.194	
8,700.00	6,941.20	6,125.00	6,124.37	42.88	4.57	70.51	-1,676.84	394.13	3,120.60	3,083.80	36.80	84.798	
8,800.00	6,941.22	6,125.00	6,124.37	44.16	4.57	70.51	-1,676.84	394.13	3,180.12	3,142.92	37.20	85.484	
8,900.00	6,941.23	6,125.00	6,124.37	45.45	4.57	70.51	-1,676.84	394.13	3,241.64	3,204.05	37.58	86.248	
9,000.00	6,941.24	6,125.00	6,124.37	46.76	4.57	70.51	-1,676.84	394.13	3,305.03	3,267.08	37.95	87.086	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,125.00	6,124.37	48.10	4.57	70.51	-1,676.84	394.13	3,370.20	3,331.90	38.30	87.994	
9,200.00	6,941.27	6,125.00	6,124.37	49.44	4.57	70.51	-1,676.84	394.13	3,437.04	3,398.41	38.63	88.967	
9,300.00	6,941.29	6,125.00	6,124.37	50.80	4.57	70.51	-1,676.84	394.13	3,505.47	3,466.52	38.95	90.001	
9,400.00	6,941.30	6,125.00	6,124.37	52.18	4.57	70.51	-1,676.84	394.13	3,575.38	3,536.13	39.25	91.093	
9,500.00	6,941.32	6,125.00	6,124.37	53.57	4.57	70.51	-1,676.84	394.13	3,646.69	3,607.15	39.54	92.238	
9,600.00	6,941.33	6,125.00	6,124.37	54.97	4.57	70.51	-1,676.84	394.13	3,719.32	3,679.52	39.81	93.434	
9,700.00	6,941.35	6,125.00	6,124.37	56.38	4.57	70.51	-1,676.84	394.13	3,793.20	3,753.14	40.06	94.677	
9,800.00	6,941.36	6,125.00	6,124.37	57.80	4.57	70.51	-1,676.84	394.13	3,868.26	3,827.95	40.31	95.964	
9,900.00	6,941.38	6,125.00	6,124.37	59.23	4.57	70.51	-1,676.84	394.13	3,944.42	3,903.87	40.54	97.292	
10,000.00	6,941.39	6,125.00	6,124.37	60.67	4.57	70.51	-1,676.84	394.13	4,021.62	3,980.86	40.76	98.658	
10,100.00	6,941.41	6,125.00	6,124.37	62.11	4.57	70.51	-1,676.84	394.13	4,099.81	4,058.84	40.97	100.060	
10,200.00	6,941.42	6,125.00	6,124.37	63.57	4.57	70.51	-1,676.84	394.13	4,178.93	4,137.76	41.17	101.495	
10,300.00	6,941.44	6,125.00	6,124.37	65.03	4.57	70.51	-1,676.84	394.13	4,258.93	4,217.57	41.36	102.961	
10,400.00	6,941.45	6,125.00	6,124.37	66.50	4.57	70.51	-1,676.84	394.13	4,339.76	4,298.21	41.55	104.456	
10,500.00	6,941.47	6,125.00	6,124.37	67.97	4.57	70.51	-1,676.84	394.13	4,421.37	4,379.65	41.72	105.978	
10,600.00	6,941.48	6,125.00	6,124.37	69.45	4.57	70.51	-1,676.84	394.13	4,503.73	4,461.84	41.89	107.526	
10,700.00	6,941.50	6,125.00	6,124.37	70.94	4.57	70.51	-1,676.84	394.13	4,586.78	4,544.74	42.04	109.096	
10,800.00	6,941.51	6,125.00	6,124.37	72.43	4.57	70.51	-1,676.84	394.13	4,670.50	4,628.31	42.19	110.689	
10,900.00	6,941.53	6,125.00	6,124.37	73.92	4.57	70.51	-1,676.84	394.13	4,754.85	4,712.51	42.34	112.302	
11,000.00	6,941.54	6,125.00	6,124.37	75.42	4.57	70.51	-1,676.84	394.13	4,839.80	4,797.32	42.48	113.934	
11,100.00	6,941.56	6,125.00	6,124.37	76.92	4.57	70.51	-1,676.84	394.13	4,925.31	4,882.70	42.61	115.583	
11,200.00	6,941.57	6,125.00	6,124.37	78.43	4.57	70.51	-1,676.84	394.13	5,011.36	4,968.61	42.74	117.249	
11,300.00	6,941.59	6,125.00	6,124.37	79.94	4.57	70.51	-1,676.84	394.13	5,097.91	5,055.05	42.86	118.931	
11,400.00	6,941.60	6,125.00	6,124.37	81.46	4.57	70.51	-1,676.84	394.13	5,184.95	5,141.97	42.98	120.626	
11,500.00	6,941.61	6,125.00	6,124.37	82.98	4.57	70.51	-1,676.84	394.13	5,272.45	5,229.35	43.10	122.335	
11,600.00	6,941.63	6,125.00	6,124.37	84.50	4.57	70.51	-1,676.84	394.13	5,360.39	5,317.18	43.21	124.056	
11,700.00	6,941.64	6,125.00	6,124.37	86.02	4.57	70.51	-1,676.84	394.13	5,448.74	5,405.42	43.32	125.788	
11,800.00	6,941.66	6,125.00	6,124.37	87.55	4.57	70.51	-1,676.84	394.13	5,537.49	5,494.07	43.42	127.530	
11,900.00	6,941.67	6,125.00	6,124.37	89.08	4.57	70.51	-1,676.84	394.13	5,626.62	5,583.10	43.52	129.283	
12,000.00	6,941.69	6,125.00	6,124.37	90.61	4.57	70.51	-1,676.84	394.13	5,716.10	5,672.48	43.62	131.044	
12,100.00	6,941.70	6,125.00	6,124.37	92.14	4.57	70.51	-1,676.84	394.13	5,805.93	5,762.22	43.71	132.813	
12,200.00	6,941.72	6,125.00	6,124.37	93.68	4.57	70.51	-1,676.84	394.13	5,896.09	5,852.28	43.81	134.590	
12,300.00	6,941.73	6,125.00	6,124.37	95.22	4.57	70.51	-1,676.84	394.13	5,986.56	5,942.66	43.90	136.374	
12,400.00	6,941.75	6,125.00	6,124.37	96.76	4.57	70.51	-1,676.84	394.13	6,077.33	6,033.34	43.99	138.165	
12,500.00	6,941.76	6,125.00	6,124.37	98.30	4.57	70.51	-1,676.84	394.13	6,168.38	6,124.31	44.07	139.961	
12,600.00	6,941.78	6,125.00	6,124.37	99.85	4.57	70.51	-1,676.84	394.13	6,259.71	6,215.55	44.16	141.762	
12,700.00	6,941.79	6,125.00	6,124.37	101.40	4.57	70.51	-1,676.84	394.13	6,351.30	6,307.06	44.24	143.568	
12,800.00	6,941.81	6,125.00	6,124.37	102.95	4.57	70.51	-1,676.84	394.13	6,443.14	6,398.82	44.32	145.378	
12,900.00	6,941.82	6,125.00	6,124.37	104.50	4.57	70.51	-1,676.84	394.13	6,535.22	6,490.82	44.40	147.192	
13,000.00	6,941.84	6,125.00	6,124.37	106.05	4.57	70.51	-1,676.84	394.13	6,627.52	6,583.05	44.48	149.009	
13,100.00	6,941.85	6,125.00	6,124.37	107.60	4.57	70.51	-1,676.84	394.13	6,720.05	6,675.50	44.55	150.830	
13,200.00	6,941.87	6,125.00	6,124.37	109.16	4.57	70.51	-1,676.84	394.13	6,812.79	6,768.16	44.63	152.652	
13,300.00	6,941.88	6,125.00	6,124.37	110.71	4.57	70.51	-1,676.84	394.13	6,905.73	6,861.03	44.70	154.477	
13,400.00	6,941.90	6,125.00	6,124.37	112.27	4.57	70.51	-1,676.84	394.13	6,998.87	6,954.09	44.78	156.304	
13,500.00	6,941.91	6,125.00	6,124.37	113.83	4.57	70.51	-1,676.84	394.13	7,092.19	7,047.34	44.85	158.133	
13,600.00	6,941.93	6,125.00	6,124.37	115.39	4.57	70.51	-1,676.84	394.13	7,185.69	7,140.77	44.92	159.962	
13,700.00	6,941.94	6,125.00	6,124.37	116.95	4.57	70.51	-1,676.84	394.13	7,279.37	7,234.38	44.99	161.792	
13,800.00	6,941.96	6,125.00	6,124.37	118.51	4.57	70.51	-1,676.84	394.13	7,373.21	7,328.15	45.06	163.623	
13,900.00	6,941.97	6,125.00	6,124.37	120.08	4.57	70.51	-1,676.84	394.13	7,467.21	7,422.08	45.13	165.454	
14,000.00	6,941.99	6,125.00	6,124.37	121.64	4.57	70.51	-1,676.84	394.13	7,561.37	7,516.17	45.20	167.285	
14,100.00	6,942.00	6,125.00	6,124.37	123.21	4.57	70.51	-1,676.84	394.13	7,655.67	7,610.40	45.27	169.116	
14,200.00	6,942.01	6,125.00	6,124.37	124.77	4.57	70.51	-1,676.84	394.13	7,750.12	7,704.78	45.34	170.946	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,125.00	6,124.37	126.34	4.57	70.51	-1,676.84	394.13	7,844.70	7,799.30	45.40	172.776	
14,400.00	6,942.04	6,125.00	6,124.37	127.91	4.57	70.51	-1,676.84	394.13	7,939.42	7,893.95	45.47	174.605	
14,500.00	6,942.06	6,125.00	6,124.37	129.48	4.57	70.51	-1,676.84	394.13	8,034.26	7,988.72	45.54	176.432	
14,600.00	6,942.07	6,125.00	6,124.37	131.05	4.57	70.51	-1,676.84	394.13	8,129.23	8,083.63	45.60	178.258	
14,700.00	6,942.09	6,125.00	6,124.37	132.62	4.57	70.51	-1,676.84	394.13	8,224.32	8,178.65	45.67	180.083	
14,800.00	6,942.10	6,125.00	6,124.37	134.19	4.57	70.51	-1,676.84	394.13	8,319.52	8,273.79	45.74	181.905	
14,900.00	6,942.12	6,125.00	6,124.37	135.76	4.57	70.51	-1,676.84	394.13	8,414.83	8,369.03	45.80	183.726	
15,000.00	6,942.13	6,125.00	6,124.37	137.34	4.57	70.51	-1,676.84	394.13	8,510.26	8,464.39	45.87	185.544	
15,100.00	6,942.15	6,125.00	6,124.37	138.91	4.57	70.51	-1,676.84	394.13	8,605.78	8,559.85	45.93	187.361	
15,200.00	6,942.16	6,125.00	6,124.37	140.48	4.57	70.51	-1,676.84	394.13	8,701.41	8,655.41	46.00	189.174	
15,300.00	6,942.18	6,125.00	6,124.37	142.06	4.57	70.51	-1,676.84	394.13	8,797.13	8,751.07	46.06	190.985	
15,400.00	6,942.19	6,125.00	6,124.37	143.64	4.57	70.51	-1,676.84	394.13	8,892.95	8,846.82	46.13	192.794	
15,500.00	6,942.21	6,125.00	6,124.37	145.21	4.57	70.51	-1,676.84	394.13	8,988.86	8,942.67	46.19	194.599	
15,600.00	6,942.22	6,125.00	6,124.37	146.79	4.57	70.51	-1,676.84	394.13	9,084.86	9,038.60	46.26	196.401	
15,700.00	6,942.24	6,125.00	6,124.37	148.37	4.57	70.51	-1,676.84	394.13	9,180.94	9,134.62	46.32	198.200	
15,800.00	6,942.25	6,125.00	6,124.37	149.94	4.57	70.51	-1,676.84	394.13	9,277.10	9,230.72	46.39	199.996	
15,900.00	6,942.27	6,125.00	6,124.37	151.52	4.57	70.51	-1,676.84	394.13	9,373.35	9,326.90	46.45	201.788	
16,000.00	6,942.28	6,125.00	6,124.37	153.10	4.57	70.51	-1,676.84	394.13	9,469.67	9,423.15	46.52	203.577	
16,100.00	6,942.30	6,125.00	6,124.37	154.68	4.57	70.51	-1,676.84	394.13	9,566.07	9,519.49	46.58	205.362	
16,200.00	6,942.31	6,125.00	6,124.37	156.26	4.57	70.51	-1,676.84	394.13	9,662.54	9,615.90	46.65	207.143	
16,300.00	6,942.33	6,125.00	6,124.37	157.84	4.57	70.51	-1,676.84	394.13	9,759.08	9,712.37	46.71	208.921	
16,400.00	6,942.34	6,125.00	6,124.37	159.42	4.57	70.51	-1,676.84	394.13	9,855.70	9,808.92	46.78	210.694	
16,500.00	6,942.36	6,125.00	6,124.37	161.00	4.57	70.51	-1,676.84	394.13	9,952.38	9,905.53	46.84	212.463	
16,600.00	6,942.37	6,125.00	6,124.37	162.59	4.57	70.51	-1,676.84	394.13	10,049.12	10,002.21	46.91	214.228	
16,700.00	6,942.38	6,125.00	6,124.37	164.17	4.57	70.51	-1,676.84	394.13	10,145.93	10,098.95	46.97	215.988	
16,800.00	6,942.40	6,125.00	6,124.37	165.75	4.57	70.51	-1,676.84	394.13	10,242.79	10,195.75	47.04	217.744	
16,900.00	6,942.41	6,125.00	6,124.37	167.33	4.57	70.51	-1,676.84	394.13	10,339.72	10,292.62	47.11	219.496	
17,000.00	6,942.43	6,125.00	6,124.37	168.92	4.57	70.51	-1,676.84	394.13	10,436.71	10,389.54	47.17	221.243	
17,100.00	6,942.44	6,125.00	6,124.37	170.50	4.57	70.51	-1,676.84	394.13	10,533.75	10,486.51	47.24	222.986	
17,200.00	6,942.46	6,125.00	6,124.37	172.09	4.57	70.51	-1,676.84	394.13	10,630.85	10,583.54	47.31	224.724	
17,300.00	6,942.47	6,125.00	6,124.37	173.67	4.57	70.51	-1,676.84	394.13	10,728.00	10,680.62	47.37	226.456	
17,400.00	6,942.49	6,125.00	6,124.37	175.26	4.57	70.51	-1,676.84	394.13	10,825.20	10,777.76	47.44	228.185	
17,500.00	6,942.50	6,125.00	6,124.37	176.84	4.57	70.51	-1,676.84	394.13	10,922.45	10,874.95	47.51	229.908	
17,600.00	6,942.52	6,125.00	6,124.37	178.43	4.57	70.51	-1,676.84	394.13	11,019.76	10,972.18	47.58	231.626	
17,700.00	6,942.53	6,125.00	6,124.37	180.01	4.57	70.51	-1,676.84	394.13	11,117.11	11,069.46	47.64	233.339	
17,800.00	6,942.55	6,125.00	6,124.37	181.60	4.57	70.51	-1,676.84	394.13	11,214.50	11,166.79	47.71	235.047	
17,900.00	6,942.56	6,125.00	6,124.37	183.19	4.57	70.51	-1,676.84	394.13	11,311.94	11,264.16	47.78	236.749	
18,000.00	6,942.58	6,125.00	6,124.37	184.77	4.57	70.51	-1,676.84	394.13	11,409.43	11,361.58	47.85	238.447	
18,100.00	6,942.59	6,125.00	6,124.37	186.36	4.57	70.51	-1,676.84	394.13	11,506.96	11,459.04	47.92	240.139	
18,200.00	6,942.61	6,125.00	6,124.37	187.95	4.57	70.51	-1,676.84	394.13	11,604.53	11,556.54	47.99	241.826	
18,300.00	6,942.62	6,125.00	6,124.37	189.54	4.57	70.51	-1,676.84	394.13	11,702.14	11,654.09	48.06	243.507	
18,400.00	6,942.64	6,125.00	6,124.37	191.12	4.57	70.51	-1,676.84	394.13	11,799.80	11,751.67	48.13	245.183	
18,500.00	6,942.65	6,125.00	6,124.37	192.71	4.57	70.51	-1,676.84	394.13	11,897.49	11,849.29	48.20	246.854	
18,600.00	6,942.67	6,125.00	6,124.37	194.30	4.57	70.51	-1,676.84	394.13	11,995.22	11,946.95	48.27	248.519	
18,700.00	6,942.68	6,125.00	6,124.37	195.89	4.57	70.51	-1,676.84	394.13	12,092.98	12,044.65	48.34	250.178	
18,800.00	6,942.70	6,125.00	6,124.37	197.48	4.57	70.51	-1,676.84	394.13	12,190.79	12,142.38	48.41	251.832	
18,900.00	6,942.71	6,125.00	6,124.37	199.07	4.57	70.51	-1,676.84	394.13	12,288.62	12,240.14	48.48	253.480	
19,000.00	6,942.73	6,125.00	6,124.37	200.66	4.57	70.51	-1,676.84	394.13	12,386.50	12,337.95	48.55	255.122	
19,100.00	6,942.74	6,125.00	6,124.37	202.25	4.57	70.51	-1,676.84	394.13	12,484.40	12,435.78	48.62	256.758	
19,200.00	6,942.76	6,125.00	6,124.37	203.84	4.57	70.51	-1,676.84	394.13	12,582.34	12,533.65	48.70	258.389	
19,300.00	6,942.77	6,125.00	6,124.37	205.43	4.57	70.51	-1,676.84	394.13	12,680.31	12,631.55	48.77	260.014	
19,400.00	6,942.78	6,125.00	6,124.37	207.02	4.57	70.51	-1,676.84	394.13	12,778.32	12,729.48	48.84	261.633	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,125.00	6,124.37	208.61	4.57	70.51	-1,676.84	394.13	12,876.35	12,827.44	48.91	263.246	
19,600.00	6,942.81	6,125.00	6,124.37	210.20	4.57	70.51	-1,676.84	394.13	12,974.41	12,925.43	48.99	264.854	
19,700.00	6,942.83	6,125.00	6,124.37	211.79	4.57	70.51	-1,676.84	394.13	13,072.51	13,023.45	49.06	266.455	
19,800.00	6,942.84	6,125.00	6,124.37	213.38	4.57	70.51	-1,676.84	394.13	13,170.63	13,121.49	49.13	268.051	
19,900.00	6,942.86	6,125.00	6,124.37	214.97	4.57	70.51	-1,676.84	394.13	13,268.78	13,219.57	49.21	269.640	
20,000.00	6,942.87	6,125.00	6,124.37	216.56	4.57	70.51	-1,676.84	394.13	13,366.96	13,317.67	49.28	271.224	
20,100.00	6,942.89	6,125.00	6,124.37	218.15	4.57	70.51	-1,676.84	394.13	13,465.16	13,415.80	49.36	272.801	
20,200.00	6,942.90	6,125.00	6,124.37	219.75	4.57	70.51	-1,676.84	394.13	13,563.39	13,513.96	49.43	274.372	
20,300.00	6,942.92	6,125.00	6,124.37	221.34	4.57	70.51	-1,676.84	394.13	13,661.65	13,612.14	49.51	275.938	
20,400.00	6,942.93	6,125.00	6,124.37	222.93	4.57	70.51	-1,676.84	394.13	13,759.93	13,710.34	49.59	277.497	
20,500.00	6,942.95	6,125.00	6,124.37	224.52	4.57	70.51	-1,676.84	394.13	13,858.23	13,808.57	49.66	279.050	
20,600.00	6,942.96	6,125.00	6,124.37	226.12	4.57	70.51	-1,676.84	394.13	13,956.56	13,906.82	49.74	280.597	
20,700.00	6,942.98	6,125.00	6,124.37	227.71	4.57	70.51	-1,676.84	394.13	14,054.92	14,005.10	49.82	282.138	
20,800.00	6,942.99	6,125.00	6,124.37	229.30	4.57	70.51	-1,676.84	394.13	14,153.29	14,103.40	49.89	283.673	
20,855.77	6,943.00	6,125.00	6,124.37	230.19	4.57	70.51	-1,676.84	394.13	14,208.16	14,158.23	49.94	284.526	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	46.68	46.68	0.00	0.02	164.97	-1,600.81	429.74	1,657.49				
100.00	100.00	143.41	143.41	0.25	0.11	164.98	-1,600.84	429.57	1,657.47	1,657.16	0.31	5,282.627	
200.00	200.00	237.84	237.84	0.61	0.13	164.95	-1,600.87	430.32	1,657.72	1,656.98	0.74	2,245.130	
300.00	300.00	1,034.73	1,011.31	0.97	1.05	163.42	-1,449.51	431.48	1,652.24	1,649.99	2.25	735.787	
400.00	400.00	1,157.69	1,122.59	1.33	1.27	162.92	-1,397.28	429.23	1,610.72	1,608.03	2.68	600.790	
500.00	500.00	1,256.32	1,211.30	1.68	1.48	162.45	-1,354.17	428.37	1,568.41	1,565.32	3.09	507.100	
600.00	599.98	1,337.30	1,284.15	2.04	1.65	141.87	-1,318.82	428.14	1,527.62	1,524.14	3.48	438.884	
700.00	699.84	1,432.05	1,369.29	2.40	1.86	141.95	-1,277.25	429.00	1,489.53	1,485.63	3.91	381.442	
800.00	799.45	1,527.37	1,454.75	2.77	2.08	142.04	-1,235.03	430.31	1,453.76	1,449.41	4.35	334.143	
845.27	844.44	1,567.21	1,490.56	2.93	2.17	142.12	-1,217.58	430.51	1,438.55	1,434.00	4.55	316.249	
900.00	898.77	1,621.51	1,539.41	3.13	2.30	141.98	-1,193.88	430.51	1,420.50	1,415.69	4.81	295.296	
1,000.00	998.04	1,727.51	1,634.50	3.50	2.55	141.69	-1,147.03	430.51	1,386.97	1,381.67	5.31	261.299	
1,100.00	1,097.32	1,818.83	1,716.08	3.87	2.77	141.40	-1,106.00	430.85	1,352.86	1,347.07	5.79	233.473	
1,200.00	1,196.59	1,888.60	1,778.67	4.24	2.94	141.16	-1,075.19	431.39	1,319.75	1,313.48	6.27	210.635	
1,300.00	1,295.87	1,982.26	1,863.50	4.62	3.16	140.89	-1,035.50	431.51	1,288.15	1,281.39	6.76	190.475	
1,400.00	1,395.14	2,081.00	1,952.71	5.00	3.40	140.57	-993.17	431.67	1,256.12	1,248.85	7.27	172.831	
1,500.00	1,494.42	2,161.68	2,025.72	5.38	3.59	140.28	-958.84	432.31	1,224.61	1,216.85	7.76	157.714	
1,600.00	1,593.69	2,260.19	2,114.96	5.76	3.83	139.90	-917.12	433.43	1,193.46	1,185.19	8.28	144.189	
1,700.00	1,692.96	2,374.04	2,217.68	6.14	4.11	139.46	-868.04	433.81	1,161.36	1,152.57	8.80	132.031	
1,800.00	1,792.24	2,479.02	2,311.83	6.52	4.38	139.02	-821.60	433.75	1,128.07	1,118.76	9.31	121.141	
1,900.00	1,891.51	2,550.82	2,376.42	6.91	4.56	138.71	-790.26	433.79	1,095.41	1,085.58	9.83	111.479	
2,000.00	1,990.79	2,649.51	2,465.56	7.29	4.81	138.26	-747.90	434.12	1,063.65	1,053.30	10.35	102.805	
2,100.00	2,090.06	2,752.78	2,558.51	7.67	5.08	137.75	-702.90	434.33	1,031.26	1,020.39	10.87	94.887	
2,200.00	2,189.34	2,851.32	2,646.84	8.06	5.34	137.21	-659.23	434.46	998.18	986.78	11.39	87.602	
2,300.00	2,288.61	2,943.64	2,729.79	8.44	5.58	136.73	-618.72	433.89	965.33	953.41	11.92	80.959	
2,400.00	2,387.89	3,021.87	2,800.45	8.82	5.79	136.40	-585.21	432.00	932.96	920.50	12.46	74.871	
2,500.00	2,487.16	3,088.07	2,861.07	9.21	5.95	136.17	-558.66	430.13	903.10	890.09	13.01	69.424	
2,600.00	2,586.44	3,160.90	2,928.55	9.59	6.12	135.93	-531.32	428.60	875.99	862.44	13.55	64.640	
2,700.00	2,685.71	3,226.89	2,990.44	9.98	6.27	135.70	-508.43	428.07	852.08	837.98	14.10	60.428	
2,800.00	2,784.99	3,288.28	3,048.79	10.36	6.39	135.49	-489.37	428.42	832.12	817.48	14.65	56.816	
2,900.00	2,884.26	3,348.73	3,107.16	10.75	6.49	135.35	-473.67	429.08	816.94	801.77	15.17	53.844	
3,000.00	2,983.53	3,433.56	3,189.65	11.13	6.63	135.22	-453.96	430.18	804.64	788.95	15.69	51.298	
3,100.00	3,082.81	3,518.12	3,272.19	11.52	6.76	135.10	-435.61	431.46	793.90	777.71	16.19	49.023	
3,200.00	3,182.08	3,596.91	3,349.60	11.90	6.86	135.14	-420.99	431.66	785.54	768.86	16.69	47.077	
3,300.00	3,281.36	3,681.43	3,432.99	12.29	6.97	135.22	-407.20	432.00	779.34	762.17	17.17	45.388	
3,400.00	3,380.63	3,748.13	3,499.13	12.67	7.03	135.37	-398.62	432.25	776.31	758.68	17.63	44.045	
3,414.00	3,394.53	3,756.77	3,507.73	12.73	7.04	135.40	-397.79	432.19	776.25	758.56	17.69	43.892	CC, ES
3,500.00	3,479.91	3,813.80	3,564.61	13.06	7.08	135.72	-393.98	431.07	777.72	759.68	18.04	43.110	
3,600.00	3,579.18	3,904.34	3,655.05	13.44	7.11	136.36	-390.79	428.41	782.01	763.54	18.47	42.350	
3,700.00	3,678.46	3,993.39	3,744.05	13.83	7.13	136.98	-388.62	426.23	787.59	768.70	18.89	41.702	
3,800.00	3,777.73	4,080.27	3,830.91	14.21	7.15	137.57	-387.58	424.69	794.69	775.40	19.29	41.187	
3,900.00	3,877.01	4,171.33	3,921.96	14.60	7.18	138.18	-387.77	423.59	803.38	783.71	19.67	40.835	
4,000.00	3,976.28	4,263.21	4,013.83	14.98	7.20	138.79	-388.76	422.68	813.07	793.05	20.02	40.614	
4,100.00	4,075.55	4,359.33	4,109.94	15.37	7.23	139.41	-390.30	421.80	823.38	803.02	20.36	40.443	
4,200.00	4,174.83	4,454.46	4,205.04	15.75	7.25	140.02	-392.18	421.04	834.19	813.49	20.69	40.312	
4,300.00	4,274.10	4,552.87	4,303.42	16.14	7.28	140.64	-394.48	420.26	845.42	824.39	21.03	40.200	
4,400.00	4,373.38	4,653.11	4,403.64	16.53	7.31	141.25	-396.74	419.48	856.69	835.32	21.37	40.084	
4,500.00	4,472.65	4,755.97	4,506.48	16.91	7.34	141.84	-398.63	418.95	867.72	846.00	21.72	39.952	
4,600.00	4,571.93	4,855.08	4,605.57	17.30	7.37	142.37	-400.21	418.72	878.69	856.63	22.06	39.828	
4,700.00	4,671.20	4,954.53	4,705.01	17.68	7.40	142.88	-401.68	418.53	889.63	867.22	22.41	39.701	
4,800.00	4,770.48	5,056.06	4,806.53	18.07	7.43	143.39	-403.09	418.29	900.54	877.78	22.76	39.566	
4,900.00	4,869.75	5,155.01	4,905.47	18.45	7.47	143.88	-404.27	417.99	911.31	888.19	23.11	39.425	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	5,253.57	5,004.03	18.84	7.50	144.35	-405.51	417.68	922.21	898.74	23.47	39.291	
5,100.00	5,068.30	5,352.55	5,103.00	19.23	7.53	144.82	-406.78	417.32	933.18	909.35	23.83	39.158	
5,200.00	5,167.58	5,451.68	5,202.12	19.61	7.57	145.29	-408.11	416.90	944.26	920.06	24.20	39.027	
5,300.00	5,266.85	5,550.98	5,301.41	20.00	7.60	145.75	-409.47	416.25	955.37	930.80	24.56	38.893	
5,400.00	5,366.12	5,645.78	5,396.20	20.38	7.64	146.20	-410.90	415.57	966.67	941.73	24.93	38.774	
5,500.00	5,465.40	5,740.94	5,491.33	20.77	7.67	146.64	-412.79	414.89	978.48	953.18	25.30	38.680	
5,600.00	5,564.67	5,836.85	5,587.22	21.15	7.70	147.05	-415.01	414.50	990.74	965.08	25.67	38.603	
5,700.00	5,663.95	5,935.46	5,685.79	21.54	7.74	147.47	-417.41	414.20	1,003.19	977.15	26.04	38.526	
5,800.00	5,763.22	6,040.61	5,790.91	21.93	7.78	147.91	-419.94	413.84	1,015.66	989.24	26.42	38.437	
5,900.00	5,862.50	6,144.66	5,894.95	22.31	7.82	148.31	-421.59	413.57	1,027.39	1,000.58	26.81	38.318	
6,000.00	5,961.77	6,243.92	5,994.20	22.70	7.85	148.68	-422.93	413.45	1,038.96	1,011.76	27.20	38.198	
6,100.00	6,061.05	6,343.19	6,093.47	23.08	7.89	149.04	-424.27	413.29	1,050.57	1,022.98	27.59	38.078	
6,200.00	6,160.32	6,442.79	6,193.06	23.47	7.93	149.40	-425.66	413.15	1,062.26	1,034.28	27.98	37.960	
6,300.00	6,259.60	6,546.19	6,296.45	23.86	7.96	149.74	-426.77	413.35	1,073.74	1,045.35	28.39	37.826	
6,376.00	6,335.04	6,625.32	6,375.58	24.15	7.99	149.99	-427.38	413.57	1,082.26	1,053.57	28.70	37.716	
6,400.00	6,358.85	6,652.64	6,402.89	24.24	8.00	135.13	-427.45	413.66	1,084.77	1,055.97	28.80	37.670	
6,450.00	6,408.16	6,699.52	6,449.77	24.44	8.01	115.86	-427.54	413.80	1,089.48	1,060.48	29.00	37.570	
6,500.00	6,456.87	6,751.20	6,501.46	24.64	8.03	106.13	-427.68	414.00	1,093.62	1,064.42	29.21	37.445	
6,550.00	6,504.65	6,801.11	6,551.36	24.85	8.04	100.84	-427.64	414.21	1,097.09	1,067.68	29.42	37.295	
6,600.00	6,551.23	6,846.77	6,597.02	25.06	8.06	97.78	-427.60	414.45	1,100.16	1,070.54	29.62	37.138	
6,650.00	6,596.31	6,892.40	6,642.65	25.26	8.07	96.07	-427.61	414.69	1,103.03	1,073.20	29.83	36.974	
6,700.00	6,639.62	6,939.62	6,689.87	25.48	8.09	95.26	-427.46	414.95	1,105.69	1,075.64	30.05	36.796	
6,750.00	6,680.88	6,982.63	6,732.88	25.69	8.11	94.94	-427.23	415.14	1,108.41	1,078.14	30.27	36.621	
6,800.00	6,719.85	7,018.83	6,769.08	25.91	8.12	94.81	-427.07	415.30	1,111.53	1,081.05	30.48	36.465	
6,850.00	6,756.28	7,060.27	6,810.52	26.13	8.14	95.14	-426.91	415.47	1,115.29	1,084.58	30.71	36.316	
6,900.00	6,789.95	7,092.85	6,843.09	26.37	8.15	95.34	-426.68	415.60	1,119.76	1,088.82	30.94	36.195	
6,950.00	6,820.65	7,123.08	6,873.32	26.61	8.16	95.54	-426.50	415.79	1,125.32	1,094.15	31.17	36.106	
7,000.00	6,848.19	7,150.33	6,900.57	26.87	8.17	95.68	-426.37	415.97	1,132.16	1,100.76	31.40	36.056	
7,050.00	6,872.41	7,175.08	6,925.33	27.13	8.18	95.70	-426.23	416.05	1,140.42	1,108.78	31.64	36.046 SF	
7,100.00	6,893.15	7,196.14	6,946.39	27.41	8.19	95.52	-426.10	416.08	1,150.24	1,118.37	31.87	36.086	
7,150.00	6,910.28	7,214.51	6,964.75	27.71	8.20	95.13	-425.98	416.12	1,161.70	1,129.59	32.11	36.179	
7,200.00	6,923.70	7,227.09	6,977.34	28.02	8.20	94.37	-425.90	416.14	1,174.87	1,142.53	32.34	36.334	
7,250.00	6,933.33	7,236.15	6,986.39	28.34	8.21	93.32	-425.85	416.16	1,189.73	1,157.18	32.55	36.551	
7,300.00	6,939.11	7,241.99	6,992.24	28.67	8.21	91.99	-425.82	416.17	1,206.23	1,173.47	32.75	36.828	
7,349.12	6,941.00	7,244.07	6,994.31	29.00	8.21	90.37	-425.80	416.17	1,223.91	1,190.97	32.94	37.160	
7,400.00	6,941.01	7,244.15	6,994.39	29.36	8.21	90.38	-425.80	416.17	1,243.83	1,210.72	33.11	37.561	
7,500.00	6,941.02	7,244.29	6,994.54	30.11	8.21	90.38	-425.80	416.17	1,287.96	1,254.50	33.46	38.494	
7,600.00	6,941.04	7,244.44	6,994.68	30.93	8.21	90.39	-425.80	416.17	1,338.12	1,304.34	33.78	39.611	
7,700.00	6,941.05	7,244.58	6,994.82	31.80	8.21	90.40	-425.80	416.17	1,393.66	1,359.59	34.08	40.898	
7,800.00	6,941.07	7,244.72	6,994.96	32.73	8.21	90.41	-425.80	416.17	1,453.97	1,419.63	34.34	42.339	
7,900.00	6,941.08	7,244.86	6,995.10	33.71	8.21	90.41	-425.80	416.17	1,518.47	1,483.89	34.58	43.915	
8,000.00	6,941.10	7,244.99	6,995.23	34.73	8.21	90.42	-425.80	416.17	1,586.66	1,551.87	34.79	45.612	
8,100.00	6,941.11	7,245.13	6,995.37	35.79	8.21	90.43	-425.80	416.17	1,658.07	1,623.10	34.97	47.416	
8,200.00	6,941.13	7,245.26	6,995.50	36.90	8.21	90.43	-425.80	416.17	1,732.32	1,697.19	35.13	49.312	
8,300.00	6,941.14	7,245.39	6,995.63	38.03	8.21	90.44	-425.80	416.17	1,809.05	1,773.78	35.27	51.290	
8,400.00	6,941.16	7,245.52	6,995.76	39.20	8.21	90.45	-425.79	416.18	1,887.96	1,852.56	35.40	53.339	
8,500.00	6,941.17	7,245.64	6,995.89	40.40	8.21	90.45	-425.79	416.18	1,968.78	1,933.28	35.51	55.451	
8,600.00	6,941.19	7,245.77	6,996.01	41.63	8.21	90.46	-425.79	416.18	2,051.30	2,015.70	35.60	57.617	
8,700.00	6,941.20	7,245.89	6,996.14	42.88	8.21	90.46	-425.79	416.18	2,135.31	2,099.62	35.69	59.830	
8,800.00	6,941.22	7,246.02	6,996.26	44.16	8.21	90.47	-425.79	416.18	2,220.65	2,184.88	35.77	62.085	
8,900.00	6,941.23	7,246.14	6,996.38	45.45	8.21	90.48	-425.79	416.18	2,307.17	2,271.33	35.84	64.377	
9,000.00	6,941.24	7,246.26	6,996.50	46.76	8.21	90.48	-425.79	416.18	2,394.73	2,358.83	35.90	66.700	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 95-Standard Keeper 104 **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
9,100.00	6,941.26	7,246.38	6,996.62	48.10	8.21	90.49	-425.79	416.18	2,483.24	2,447.27	35.96	69.051	
9,200.00	6,941.27	7,246.49	6,996.73	49.44	8.21	90.49	-425.79	416.18	2,572.58	2,536.57	36.02	71.426	
9,300.00	6,941.29	7,246.61	6,996.85	50.80	8.21	90.50	-425.79	416.18	2,662.69	2,626.62	36.07	73.822	
9,400.00	6,941.30	7,246.72	6,996.96	52.18	8.21	90.51	-425.79	416.18	2,753.48	2,717.36	36.12	76.236	
9,500.00	6,941.32	7,246.83	6,997.08	53.57	8.21	90.51	-425.79	416.18	2,844.88	2,808.72	36.16	78.667	
9,600.00	6,941.33	7,246.94	6,997.19	54.97	8.21	90.52	-425.79	416.18	2,936.85	2,900.64	36.21	81.111	
9,700.00	6,941.35	7,247.05	6,997.30	56.38	8.21	90.52	-425.79	416.18	3,029.33	2,993.08	36.25	83.567	
9,800.00	6,941.36	7,247.16	6,997.40	57.80	8.21	90.53	-425.78	416.18	3,122.27	3,085.97	36.29	86.033	
9,900.00	6,941.38	7,247.27	6,997.51	59.23	8.21	90.53	-425.78	416.18	3,215.63	3,179.30	36.33	88.508	
10,000.00	6,941.39	7,247.37	6,997.62	60.67	8.21	90.54	-425.78	416.18	3,309.38	3,273.01	36.37	90.990	
10,100.00	6,941.41	7,247.48	6,997.72	62.11	8.21	90.54	-425.78	416.18	3,403.49	3,367.08	36.41	93.477	
10,200.00	6,941.42	7,247.58	6,997.82	63.57	8.21	90.55	-425.78	416.18	3,497.92	3,461.47	36.45	95.970	
10,300.00	6,941.44	7,247.68	6,997.92	65.03	8.21	90.55	-425.78	416.18	3,592.65	3,556.17	36.49	98.466	
10,400.00	6,941.45	7,247.78	6,998.03	66.50	8.21	90.56	-425.78	416.18	3,687.67	3,651.14	36.52	100.964	
10,500.00	6,941.47	7,247.88	6,998.13	67.97	8.21	90.56	-425.78	416.18	3,782.94	3,746.38	36.56	103.465	
10,600.00	6,941.48	7,247.98	6,998.22	69.45	8.21	90.57	-425.78	416.18	3,878.45	3,841.85	36.60	105.966	
10,700.00	6,941.50	7,248.08	6,998.32	70.94	8.21	90.57	-425.78	416.18	3,974.18	3,937.54	36.64	108.468	
10,800.00	6,941.51	7,248.17	6,998.42	72.43	8.21	90.58	-425.78	416.18	4,070.11	4,033.43	36.68	110.969	
10,900.00	6,941.53	7,248.27	6,998.51	73.92	8.21	90.58	-425.78	416.18	4,166.24	4,129.52	36.72	113.469	
11,000.00	6,941.54	7,248.36	6,998.61	75.42	8.21	90.59	-425.78	416.18	4,262.54	4,225.78	36.76	115.968	
11,100.00	6,941.56	7,248.46	6,998.70	76.92	8.21	90.59	-425.78	416.18	4,359.01	4,322.21	36.80	118.464	
11,200.00	6,941.57	7,248.55	6,998.79	78.43	8.21	90.60	-425.78	416.18	4,455.64	4,418.80	36.84	120.958	
11,300.00	6,941.59	7,248.64	6,998.88	79.94	8.21	90.60	-425.78	416.18	4,552.41	4,515.53	36.88	123.448	
11,400.00	6,941.60	7,248.73	6,998.97	81.46	8.21	90.61	-425.78	416.18	4,649.32	4,612.40	36.92	125.935	
11,500.00	6,941.61	7,248.82	6,999.06	82.98	8.21	90.61	-425.77	416.18	4,746.35	4,709.39	36.96	128.418	
11,600.00	6,941.63	7,248.91	6,999.15	84.50	8.21	90.62	-425.77	416.18	4,843.51	4,806.51	37.00	130.897	
11,700.00	6,941.64	7,248.99	6,999.24	86.02	8.21	90.62	-425.77	416.18	4,940.78	4,903.74	37.05	133.370	
11,800.00	6,941.66	7,249.08	6,999.32	87.55	8.21	90.63	-425.77	416.18	5,038.16	5,001.07	37.09	135.839	
11,900.00	6,941.67	7,249.16	6,999.41	89.08	8.21	90.63	-425.77	416.18	5,135.64	5,098.50	37.13	138.302	
12,000.00	6,941.69	7,249.25	6,999.49	90.61	8.21	90.63	-425.77	416.18	5,233.21	5,196.03	37.18	140.759	
12,100.00	6,941.70	7,249.33	6,999.57	92.14	8.21	90.64	-425.77	416.18	5,330.87	5,293.65	37.22	143.210	
12,200.00	6,941.72	7,249.41	6,999.66	93.68	8.21	90.64	-425.77	416.18	5,428.62	5,391.35	37.27	145.655	
12,300.00	6,941.73	7,249.49	6,999.74	95.22	8.21	90.65	-425.77	416.18	5,526.45	5,489.13	37.32	148.094	
12,400.00	6,941.75	7,249.58	6,999.82	96.76	8.21	90.65	-425.77	416.18	5,624.36	5,586.99	37.36	150.525	
12,500.00	6,941.76	7,249.66	6,999.90	98.30	8.21	90.65	-425.77	416.18	5,722.34	5,684.92	37.41	152.950	
12,600.00	6,941.78	7,249.73	6,999.98	99.85	8.21	90.66	-425.77	416.18	5,820.38	5,782.92	37.46	155.367	
12,700.00	6,941.79	7,249.81	7,000.06	101.40	8.21	90.66	-425.77	416.18	5,918.49	5,880.98	37.51	157.777	
12,800.00	6,941.81	7,249.89	7,000.13	102.95	8.21	90.67	-425.77	416.18	6,016.67	5,979.11	37.56	160.179	
12,900.00	6,941.82	7,249.97	7,000.21	104.50	8.21	90.67	-425.77	416.18	6,114.90	6,077.29	37.61	162.573	
13,000.00	6,941.84	7,250.04	7,000.29	106.05	8.21	90.67	-425.77	416.18	6,213.19	6,175.53	37.67	164.959	
13,100.00	6,941.85	7,250.12	7,000.36	107.60	8.21	90.68	-425.77	416.18	6,311.53	6,273.82	37.72	167.337	
13,200.00	6,941.87	7,250.19	7,000.44	109.16	8.21	90.68	-425.77	416.18	6,409.93	6,372.16	37.77	169.706	
13,300.00	6,941.88	7,250.27	7,000.51	110.71	8.21	90.69	-425.77	416.18	6,508.37	6,470.55	37.82	172.067	
13,400.00	6,941.90	7,250.34	7,000.58	112.27	8.21	90.69	-425.76	416.18	6,606.86	6,568.98	37.88	174.420	
13,500.00	6,941.91	7,250.41	7,000.65	113.83	8.21	90.69	-425.76	416.18	6,705.40	6,667.46	37.93	176.763	
13,600.00	6,941.93	7,250.48	7,000.73	115.39	8.21	90.70	-425.76	416.18	6,803.98	6,765.99	37.99	179.097	
13,700.00	6,941.94	7,250.55	7,000.80	116.95	8.21	90.70	-425.76	416.18	6,902.59	6,864.55	38.05	181.423	
13,800.00	6,941.96	7,250.62	7,000.87	118.51	8.21	90.70	-425.76	416.18	7,001.25	6,963.15	38.10	183.739	
13,900.00	6,941.97	7,250.69	7,000.94	120.08	8.21	90.71	-425.76	416.18	7,099.95	7,061.79	38.16	186.046	
14,000.00	6,941.99	7,250.76	7,001.00	121.64	8.21	90.71	-425.76	416.18	7,198.68	7,160.46	38.22	188.343	
14,100.00	6,942.00	7,250.83	7,001.07	123.21	8.21	90.71	-425.76	416.18	7,297.45	7,259.17	38.28	190.631	
14,200.00	6,942.01	7,250.90	7,001.14	124.77	8.21	90.72	-425.76	416.18	7,396.24	7,357.90	38.34	192.909	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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	6,942.03	7,250.96	7,001.21	126.34	8.21	90.72	-425.76	416.18	7,495.08	7,456.67	38.40	195.177	
14,400.00	6,942.04	7,251.03	7,001.27	127.91	8.21	90.72	-425.76	416.18	7,593.94	7,555.47	38.46	197.436	
14,500.00	6,942.06	7,251.10	7,001.34	129.48	8.21	90.73	-425.76	416.18	7,692.83	7,654.30	38.52	199.684	
14,600.00	6,942.07	7,251.16	7,001.40	131.05	8.21	90.73	-425.76	416.18	7,791.75	7,753.16	38.59	201.923	
14,700.00	6,942.09	7,251.23	7,001.47	132.62	8.21	90.73	-425.76	416.18	7,890.69	7,852.04	38.65	204.151	
14,800.00	6,942.10	7,251.29	7,001.53	134.19	8.21	90.74	-425.76	416.18	7,989.67	7,950.95	38.72	206.370	
14,900.00	6,942.12	7,251.35	7,001.60	135.76	8.21	90.74	-425.76	416.18	8,088.67	8,049.89	38.78	208.578	
15,000.00	6,942.13	7,251.41	7,001.66	137.34	8.21	90.74	-425.76	416.18	8,187.69	8,148.84	38.85	210.776	
15,100.00	6,942.15	7,251.48	7,001.72	138.91	8.21	90.75	-425.76	416.18	8,286.73	8,247.82	38.91	212.963	
15,200.00	6,942.16	7,251.54	7,001.78	140.48	8.21	90.75	-425.76	416.18	8,385.80	8,346.82	38.98	215.140	
15,300.00	6,942.18	7,251.60	7,001.84	142.06	8.21	90.75	-425.76	416.18	8,484.89	8,445.85	39.05	217.307	
15,400.00	6,942.19	7,251.66	7,001.90	143.64	8.21	90.76	-425.76	416.18	8,584.00	8,544.89	39.11	219.463	
15,500.00	6,942.21	7,251.72	7,001.96	145.21	8.21	90.76	-425.76	416.18	8,683.14	8,643.95	39.18	221.609	
15,600.00	6,942.22	7,251.78	7,002.02	146.79	8.21	90.76	-425.76	416.18	8,782.29	8,743.04	39.25	223.744	
15,700.00	6,942.24	7,251.84	7,002.08	148.37	8.21	90.76	-425.76	416.18	8,881.46	8,842.14	39.32	225.868	
15,800.00	6,942.25	7,251.90	7,002.14	149.94	8.21	90.77	-425.75	416.18	8,980.65	8,941.26	39.39	227.982	
15,900.00	6,942.27	7,251.95	7,002.20	151.52	8.21	90.77	-425.75	416.18	9,079.85	9,040.39	39.46	230.085	
16,000.00	6,942.28	7,252.01	7,002.25	153.10	8.21	90.77	-425.75	416.18	9,179.08	9,139.54	39.53	232.178	
16,100.00	6,942.30	7,252.07	7,002.31	154.68	8.21	90.78	-425.75	416.18	9,278.32	9,238.71	39.61	234.259	
16,200.00	6,942.31	7,252.12	7,002.37	156.26	8.21	90.78	-425.75	416.18	9,377.58	9,337.90	39.68	236.330	
16,300.00	6,942.33	7,252.18	7,002.42	157.84	8.21	90.78	-425.75	416.18	9,476.85	9,437.09	39.75	238.390	
16,400.00	6,942.34	7,252.23	7,002.48	159.42	8.21	90.78	-425.75	416.18	9,576.14	9,536.31	39.83	240.439	
16,500.00	6,942.36	7,252.29	7,002.53	161.00	8.21	90.79	-425.75	416.18	9,675.44	9,635.54	39.90	242.478	
16,600.00	6,942.37	7,252.34	7,002.59	162.59	8.21	90.79	-425.75	416.18	9,774.75	9,734.78	39.98	244.505	
16,700.00	6,942.38	7,252.40	7,002.64	164.17	8.21	90.79	-425.75	416.18	9,874.08	9,834.03	40.05	246.522	
16,800.00	6,942.40	7,252.45	7,002.69	165.75	8.21	90.80	-425.75	416.18	9,973.43	9,933.30	40.13	248.528	
16,900.00	6,942.41	7,252.50	7,002.75	167.33	8.21	90.80	-425.75	416.18	10,072.79	10,032.58	40.21	250.522	
17,000.00	6,942.43	7,252.56	7,002.80	168.92	8.21	90.80	-425.75	416.18	10,172.15	10,131.87	40.28	252.506	
17,100.00	6,942.44	7,252.61	7,002.85	170.50	8.21	90.80	-425.75	416.18	10,271.54	10,231.17	40.36	254.480	
17,200.00	6,942.46	7,252.66	7,002.90	172.09	8.21	90.81	-425.75	416.18	10,370.93	10,330.49	40.44	256.442	
17,300.00	6,942.47	7,252.71	7,002.95	173.67	8.21	90.81	-425.75	416.18	10,470.33	10,429.81	40.52	258.393	
17,400.00	6,942.49	7,252.76	7,003.01	175.26	8.21	90.81	-425.75	416.18	10,569.75	10,529.15	40.60	260.334	
17,500.00	6,942.50	7,252.81	7,003.06	176.84	8.21	90.81	-425.75	416.18	10,669.18	10,628.50	40.68	262.263	
17,600.00	6,942.52	7,252.86	7,003.11	178.43	8.21	90.82	-425.75	416.18	10,768.62	10,727.85	40.76	264.182	
17,700.00	6,942.53	7,252.91	7,003.15	180.01	8.21	90.82	-425.75	416.18	10,868.06	10,827.22	40.84	266.090	
17,800.00	6,942.55	7,252.96	7,003.20	181.60	8.21	90.82	-425.75	416.18	10,967.52	10,926.60	40.93	267.987	
17,900.00	6,942.56	7,253.01	7,003.25	183.19	8.21	90.82	-425.75	416.18	11,066.99	11,025.98	41.01	269.873	
18,000.00	6,942.58	7,253.06	7,003.30	184.77	8.21	90.83	-425.75	416.18	11,166.47	11,125.37	41.09	271.748	
18,100.00	6,942.59	7,253.11	7,003.35	186.36	8.21	90.83	-425.75	416.18	11,265.95	11,224.78	41.17	273.612	
18,200.00	6,942.61	7,253.15	7,003.40	187.95	8.21	90.83	-425.75	416.18	11,365.45	11,324.19	41.26	275.466	
18,300.00	6,942.62	7,253.20	7,003.44	189.54	8.21	90.83	-425.75	416.18	11,464.95	11,423.61	41.34	277.309	
18,400.00	6,942.64	7,253.25	7,003.49	191.12	8.21	90.84	-425.75	416.18	11,564.47	11,523.04	41.43	279.141	
18,500.00	6,942.65	7,253.29	7,003.54	192.71	8.21	90.84	-425.75	416.18	11,663.99	11,622.47	41.51	280.963	
18,600.00	6,942.67	7,253.34	7,003.58	194.30	8.21	90.84	-425.75	416.18	11,763.52	11,721.92	41.60	282.773	
18,700.00	6,942.68	7,253.39	7,003.63	195.89	8.21	90.84	-425.74	416.18	11,863.05	11,821.37	41.69	284.573	
18,800.00	6,942.70	7,253.43	7,003.67	197.48	8.21	90.85	-425.74	416.18	11,962.60	11,920.82	41.77	286.362	
18,900.00	6,942.71	7,253.48	7,003.72	199.07	8.21	90.85	-425.74	416.18	12,062.15	12,020.29	41.86	288.141	
19,000.00	6,942.73	7,253.52	7,003.76	200.66	8.21	90.85	-425.74	416.18	12,161.71	12,119.76	41.95	289.909	
19,100.00	6,942.74	7,253.57	7,003.81	202.25	8.21	90.85	-425.74	416.18	12,261.28	12,219.24	42.04	291.667	
19,200.00	6,942.76	7,253.61	7,003.85	203.84	8.21	90.85	-425.74	416.18	12,360.85	12,318.72	42.13	293.413	
19,300.00	6,942.77	7,253.65	7,003.90	205.43	8.21	90.86	-425.74	416.18	12,460.43	12,418.22	42.22	295.150	
19,400.00	6,942.78	7,253.70	7,003.94	207.02	8.21	90.86	-425.74	416.18	12,560.02	12,517.71	42.31	296.876	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 **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
19,500.00	6,942.80	7,253.74	7,003.98	208.61	8.21	90.86	-425.74	416.18	12,659.61	12,617.22	42.40	298.591	
19,600.00	6,942.81	7,253.78	7,004.02	210.20	8.21	90.86	-425.74	416.18	12,759.21	12,716.73	42.49	300.296	
19,700.00	6,942.83	7,253.82	7,004.07	211.79	8.21	90.86	-425.74	416.18	12,858.82	12,816.24	42.58	301.990	
19,800.00	6,942.84	7,253.87	7,004.11	213.38	8.21	90.87	-425.74	416.18	12,958.43	12,915.76	42.67	303.675	
19,900.00	6,942.86	7,253.91	7,004.15	214.97	8.21	90.87	-425.74	416.18	13,058.05	13,015.29	42.76	305.348	
20,000.00	6,942.87	7,253.95	7,004.19	216.56	8.21	90.87	-425.74	416.18	13,157.68	13,114.82	42.86	307.012	
20,100.00	6,942.89	7,253.99	7,004.23	218.15	8.21	90.87	-425.74	416.18	13,257.31	13,214.36	42.95	308.665	
20,200.00	6,942.90	7,254.03	7,004.27	219.75	8.21	90.88	-425.74	416.18	13,356.94	13,313.90	43.04	310.308	
20,300.00	6,942.92	7,254.07	7,004.31	221.34	8.21	90.88	-425.74	416.18	13,456.58	13,413.44	43.14	311.941	
20,400.00	6,942.93	7,254.11	7,004.35	222.93	8.21	90.88	-425.74	416.18	13,556.23	13,513.00	43.23	313.564	
20,500.00	6,942.95	7,254.15	7,004.39	224.52	8.21	90.88	-425.74	416.18	13,655.88	13,612.55	43.33	315.177	
20,600.00	6,942.96	7,254.19	7,004.43	226.12	8.21	90.88	-425.74	416.18	13,755.54	13,712.11	43.42	316.780	
20,700.00	6,942.98	7,254.23	7,004.47	227.71	8.21	90.89	-425.74	416.18	13,855.20	13,811.68	43.52	318.372	
20,800.00	6,942.99	7,254.27	7,004.51	229.30	8.21	90.89	-425.74	416.18	13,954.86	13,911.25	43.62	319.955	
20,855.77	6,943.00	7,254.29	7,004.53	230.19	8.21	90.89	-425.74	416.18	14,010.45	13,966.78	43.67	320.833	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 95-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
0.00	0.00	0.00	0.00	0.00	0.00	-12.59	818.79	-182.91	841.12				
100.00	100.00	38.23	38.23	0.25	0.70	-12.59	818.84	-182.88	839.02	838.07	0.95	885.268	
200.00	200.00	135.59	135.59	0.61	2.47	-12.56	819.35	-182.54	839.45	836.37	3.08	272.401	
300.00	300.00	237.21	237.20	0.97	4.32	-12.52	819.97	-182.04	839.94	834.65	5.28	158.962	
400.00	400.00	343.37	343.36	1.33	5.77	-12.47	820.10	-181.39	839.92	832.83	7.09	118.427	
500.00	500.00	442.97	442.96	1.68	6.86	-12.43	819.85	-180.74	839.54	831.00	8.55	98.242	
600.00	599.98	543.51	543.50	2.04	8.23	-33.22	819.62	-180.10	837.72	827.44	10.28	81.507	
700.00	699.84	642.98	642.97	2.40	9.74	-33.42	819.36	-179.41	832.94	820.79	12.14	68.589	
800.00	799.45	742.88	742.86	2.77	11.37	-33.80	819.13	-178.70	825.29	811.15	14.14	58.363	
845.27	844.44	787.74	787.72	2.93	12.10	-34.03	819.01	-178.40	820.87	805.84	15.04	54.591	
900.00	898.77	843.09	843.07	3.13	12.96	-34.27	818.83	-178.07	815.17	799.08	16.09	50.667	
1,000.00	998.04	943.71	943.68	3.50	14.36	-34.73	818.31	-177.51	804.61	786.75	17.85	45.065	
1,100.00	1,097.32	1,043.44	1,043.41	3.87	15.94	-35.18	817.76	-176.80	794.02	774.23	19.80	40.107	
1,200.00	1,196.59	1,143.85	1,143.81	4.24	17.65	-35.64	817.14	-175.94	783.39	761.51	21.87	35.813	
1,300.00	1,295.87	1,242.35	1,242.31	4.62	19.45	-36.10	816.52	-174.90	772.75	748.70	24.04	32.141	
1,400.00	1,395.14	1,343.20	1,343.15	5.00	21.31	-36.57	815.86	-173.85	762.13	735.86	26.27	29.010	
1,500.00	1,494.42	1,443.54	1,443.48	5.38	23.27	-37.04	815.16	-172.56	751.46	722.87	28.60	26.277	
1,600.00	1,593.69	1,543.89	1,543.81	5.76	25.36	-37.50	814.24	-170.87	740.52	709.46	31.06	23.843	
1,700.00	1,692.96	1,639.37	1,639.27	6.14	27.37	-37.94	813.63	-169.23	729.89	696.44	33.44	21.824	
1,800.00	1,792.24	1,736.88	1,736.78	6.52	29.32	-38.43	813.26	-167.91	719.65	683.88	35.76	20.122	
1,900.00	1,891.51	1,833.19	1,833.09	6.91	31.04	-38.97	813.06	-167.27	709.83	671.97	37.86	18.751	
2,000.00	1,990.79	1,931.24	1,931.14	7.29	32.63	-39.54	813.08	-166.84	700.38	660.56	39.82	17.589	
2,100.00	2,090.06	2,030.66	2,030.55	7.67	34.18	-40.16	813.11	-166.59	691.06	649.31	41.75	16.552	
2,200.00	2,189.34	2,129.21	2,129.11	8.06	35.53	-40.79	813.11	-166.45	681.85	638.38	43.47	15.686	
2,300.00	2,288.61	2,225.40	2,225.29	8.44	34.34	-41.45	813.26	-166.74	673.01	630.35	42.66	15.777	
2,400.00	2,387.89	2,324.14	2,324.03	8.82	33.03	-42.18	813.58	-167.45	664.57	622.84	41.73	15.926	
2,500.00	2,487.16	2,423.58	2,423.47	9.21	31.77	-42.93	813.89	-168.10	656.22	615.38	40.84	16.067	
2,600.00	2,586.44	2,523.20	2,523.08	9.59	30.60	-43.69	814.27	-168.77	648.06	608.00	40.06	16.178	
2,700.00	2,685.71	2,622.76	2,622.64	9.98	29.85	-44.45	814.73	-169.11	639.94	600.26	39.68	16.127	
2,800.00	2,784.99	2,721.59	2,721.47	10.36	29.89	-45.19	815.31	-169.14	631.93	591.83	40.10	15.759	
2,900.00	2,884.26	2,821.45	2,821.33	10.75	30.58	-45.93	815.89	-168.94	623.92	582.75	41.18	15.152	
3,000.00	2,983.53	2,918.58	2,918.45	11.13	30.79	-46.69	816.60	-169.02	616.29	574.53	41.76	14.757	
3,100.00	3,082.81	3,017.65	3,017.52	11.52	30.66	-47.51	817.35	-169.40	608.92	566.91	42.01	14.493	
3,200.00	3,182.08	3,119.46	3,119.33	11.90	31.42	-48.33	818.17	-169.32	601.51	558.36	43.16	13.938	
3,300.00	3,281.36	3,219.51	3,219.38	12.29	32.88	-49.13	818.81	-168.80	593.88	548.87	45.00	13.196	
3,400.00	3,380.63	3,318.94	3,318.81	12.67	34.49	-49.93	819.42	-168.16	586.27	539.27	47.00	12.474	
3,500.00	3,479.91	3,418.20	3,418.05	13.06	36.12	-50.75	820.05	-167.52	578.80	529.80	49.00	11.811	
3,600.00	3,579.18	3,517.36	3,517.21	13.44	37.73	-51.60	820.69	-166.92	571.48	520.48	51.00	11.205	
3,700.00	3,678.46	3,619.70	3,619.55	13.83	39.44	-52.50	821.15	-166.25	564.10	511.00	53.10	10.623	
3,800.00	3,777.73	3,716.60	3,716.45	14.21	40.98	-53.39	821.47	-165.79	556.84	501.82	55.02	10.121	
3,900.00	3,877.01	3,816.61	3,816.45	14.60	41.46	-54.39	821.54	-165.68	549.73	493.84	55.89	9.836	
4,000.00	3,976.28	3,916.42	3,916.26	14.98	40.31	-55.47	821.32	-166.05	542.81	487.68	55.13	9.846	
4,100.00	4,075.55	4,015.56	4,015.40	15.37	39.27	-56.61	820.86	-166.81	536.12	481.64	54.48	9.841	
4,200.00	4,174.83	4,113.52	4,113.35	15.75	38.23	-57.76	820.54	-167.53	529.74	475.91	53.84	9.840	
4,300.00	4,274.10	4,214.36	4,214.20	16.14	37.29	-58.98	820.20	-168.36	523.64	470.36	53.28	9.828	
4,400.00	4,373.38	4,312.68	4,312.51	16.53	36.48	-60.21	819.70	-169.16	517.63	464.76	52.87	9.791	
4,500.00	4,472.65	4,411.42	4,411.25	16.91	35.64	-61.45	819.41	-169.89	511.99	459.57	52.42	9.767	
4,600.00	4,571.93	4,511.10	4,510.92	17.30	34.88	-62.72	819.08	-170.58	506.53	454.48	52.06	9.731	
4,700.00	4,671.20	4,612.39	4,612.21	17.68	34.40	-64.08	818.37	-171.31	501.08	449.12	51.97	9.643	
4,800.00	4,770.48	4,712.43	4,712.24	18.07	34.09	-65.43	817.64	-171.78	495.73	443.68	52.05	9.524	
4,900.00	4,869.75	4,812.16	4,811.97	18.45	34.03	-66.81	816.78	-172.22	490.53	438.15	52.39	9.364	
5,000.00	4,969.03	4,909.25	4,909.06	18.84	33.95	-68.16	816.12	-172.60	485.71	433.02	52.70	9.217	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,008.85	5,008.65	19.23	33.97	-69.61	815.30	-173.29	481.32	428.20	53.11	9.062	
5,200.00	5,167.58	5,108.12	5,107.92	19.61	34.06	-71.08	814.51	-173.91	477.21	423.61	53.60	8.904	
5,300.00	5,266.85	5,206.52	5,206.31	20.00	34.25	-72.56	813.72	-174.61	473.48	419.29	54.19	8.737	
5,400.00	5,366.12	5,305.22	5,305.00	20.38	34.48	-74.07	813.02	-175.45	470.24	415.43	54.81	8.579	
5,500.00	5,465.40	5,403.93	5,403.70	20.77	35.03	-75.63	812.09	-176.34	467.26	411.50	55.76	8.380	
5,600.00	5,564.67	5,503.59	5,503.35	21.15	35.74	-77.24	811.07	-177.55	464.84	407.98	56.87	8.174	
5,700.00	5,663.95	5,604.13	5,603.88	21.54	36.62	-78.88	809.97	-178.55	462.58	404.45	58.13	7.957	
5,800.00	5,763.22	5,703.43	5,703.17	21.93	37.60	-80.52	808.76	-179.29	460.43	400.91	59.51	7.737	
5,900.00	5,862.50	5,804.04	5,803.77	22.31	38.63	-82.16	807.65	-179.79	458.49	397.57	60.93	7.525	
6,000.00	5,961.77	5,903.15	5,902.87	22.70	39.87	-83.80	806.39	-180.16	456.75	394.19	62.56	7.301	
6,100.00	6,061.05	6,002.26	6,001.97	23.08	41.11	-85.45	805.13	-180.54	455.39	391.20	64.20	7.094	
6,130.82	6,091.64	6,028.00	6,027.71	23.20	41.44	-85.88	804.80	-180.63	455.08	390.44	64.64	7.040	CC, ES, SF
6,200.00	6,160.32	6,028.00	6,027.71	23.47	41.44	-85.88	804.80	-180.63	460.31	396.04	64.27	7.162	
6,300.00	6,259.60	6,028.00	6,027.71	23.86	41.44	-85.88	804.80	-180.63	485.51	423.57	61.94	7.839	
6,376.00	6,335.04	6,028.00	6,027.71	24.15	41.44	-85.88	804.80	-180.63	516.93	457.67	59.26	8.724	
6,400.00	6,358.85	6,028.00	6,027.71	24.24	41.44	-100.10	804.80	-180.63	529.08	470.74	58.34	9.068	
6,450.00	6,408.16	6,028.00	6,027.71	24.44	41.44	-117.81	804.80	-180.63	558.97	502.47	56.50	9.893	
6,500.00	6,456.87	6,028.00	6,027.71	24.64	41.44	-125.69	804.80	-180.63	594.08	539.24	54.84	10.832	
6,550.00	6,504.65	6,028.00	6,027.71	24.85	41.44	-128.54	804.80	-180.63	633.36	579.92	53.44	11.852	
6,600.00	6,551.23	6,028.00	6,027.71	25.06	41.44	-128.16	804.80	-180.63	675.85	623.54	52.31	12.919	
6,650.00	6,596.31	6,028.00	6,027.71	25.26	41.44	-124.92	804.80	-180.63	720.76	669.29	51.47	14.004	
6,700.00	6,639.62	6,028.00	6,027.71	25.48	41.44	-118.39	804.80	-180.63	767.40	716.52	50.88	15.083	
6,750.00	6,680.88	6,028.00	6,027.71	25.69	41.44	-107.56	804.80	-180.63	815.21	764.70	50.51	16.138	
6,800.00	6,719.85	6,028.00	6,027.71	25.91	41.44	-91.56	804.80	-180.63	863.74	813.39	50.35	17.154	
6,850.00	6,756.28	6,028.00	6,027.71	26.13	41.44	-71.86	804.80	-180.63	912.58	862.23	50.36	18.123	
6,900.00	6,789.95	6,028.00	6,027.71	26.37	41.44	-53.12	804.80	-180.63	961.43	910.92	50.51	19.036	
6,950.00	6,820.65	6,028.00	6,027.71	26.61	41.44	-38.80	804.80	-180.63	1,009.99	959.21	50.78	19.890	
7,000.00	6,848.19	6,028.00	6,027.71	26.87	41.44	-28.88	804.80	-180.63	1,058.02	1,006.87	51.16	20.683	
7,050.00	6,872.41	6,028.00	6,027.71	27.13	41.44	-22.07	804.80	-180.63	1,105.32	1,053.71	51.62	21.414	
7,100.00	6,893.15	6,028.00	6,027.71	27.41	41.44	-17.28	804.80	-180.63	1,151.71	1,099.56	52.15	22.083	
7,150.00	6,910.28	6,028.00	6,027.71	27.71	41.44	-13.80	804.80	-180.63	1,197.02	1,144.27	52.75	22.693	
7,200.00	6,923.70	6,028.00	6,027.71	28.02	41.44	-11.18	804.80	-180.63	1,241.10	1,187.71	53.39	23.244	
7,250.00	6,933.33	6,028.00	6,027.71	28.34	41.44	-9.15	804.80	-180.63	1,283.83	1,229.74	54.08	23.739	
7,300.00	6,939.11	6,028.00	6,027.71	28.67	41.44	-7.52	804.80	-180.63	1,325.07	1,270.27	54.80	24.179	
7,349.12	6,941.00	6,028.00	6,027.71	29.00	41.44	-6.21	804.80	-180.63	1,364.05	1,308.52	55.54	24.562	
7,400.00	6,941.01	6,028.00	6,027.71	29.36	41.44	-6.21	804.80	-180.63	1,403.97	1,347.69	56.28	24.946	
7,500.00	6,941.02	6,028.00	6,027.71	30.11	41.44	-6.21	804.80	-180.63	1,484.37	1,426.77	57.60	25.772	
7,600.00	6,941.04	6,028.00	6,027.71	30.93	41.44	-6.21	804.80	-180.63	1,567.03	1,508.30	58.73	26.682	
7,700.00	6,941.05	6,028.00	6,027.71	31.80	41.44	-6.21	804.80	-180.63	1,651.61	1,591.90	59.71	27.660	
7,800.00	6,941.07	6,028.00	6,027.71	32.73	41.44	-6.21	804.80	-180.63	1,737.83	1,677.27	60.56	28.696	
7,900.00	6,941.08	6,028.00	6,027.71	33.71	41.44	-6.21	804.80	-180.63	1,825.45	1,764.15	61.30	29.779	
8,000.00	6,941.10	6,028.00	6,027.71	34.73	41.44	-6.21	804.80	-180.63	1,914.29	1,852.34	61.95	30.901	
8,100.00	6,941.11	6,028.00	6,027.71	35.79	41.44	-6.21	804.80	-180.63	2,004.18	1,941.66	62.52	32.057	
8,200.00	6,941.13	6,028.00	6,027.71	36.90	41.44	-6.21	804.80	-180.63	2,094.99	2,031.97	63.02	33.241	
8,300.00	6,941.14	6,028.00	6,027.71	38.03	41.44	-6.21	804.80	-180.63	2,186.60	2,123.13	63.47	34.449	
8,400.00	6,941.16	6,028.00	6,027.71	39.20	41.44	-6.21	804.80	-180.63	2,278.91	2,215.04	63.87	35.678	
8,500.00	6,941.17	6,028.00	6,027.71	40.40	41.44	-6.21	804.80	-180.63	2,371.85	2,307.62	64.23	36.925	
8,600.00	6,941.19	6,028.00	6,027.71	41.63	41.44	-6.21	804.80	-180.63	2,465.34	2,400.78	64.56	38.188	
8,700.00	6,941.20	6,028.00	6,027.71	42.88	41.44	-6.21	804.80	-180.63	2,559.32	2,494.47	64.85	39.464	
8,800.00	6,941.22	6,028.00	6,027.71	44.16	41.44	-6.21	804.80	-180.63	2,653.75	2,588.63	65.12	40.752	
8,900.00	6,941.23	6,028.00	6,027.71	45.45	41.44	-6.21	804.80	-180.63	2,748.56	2,683.20	65.36	42.050	
9,000.00	6,941.24	6,028.00	6,027.71	46.76	41.44	-6.21	804.80	-180.63	2,843.74	2,778.15	65.59	43.357	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	6,028.00	6,027.71	48.10	41.44	-6.21	804.80	-180.63	2,939.23	2,873.43	65.80	44.672	
9,200.00	6,941.27	6,028.00	6,027.71	49.44	41.44	-6.21	804.80	-180.63	3,035.01	2,969.03	65.99	45.994	
9,300.00	6,941.29	6,028.00	6,027.71	50.80	41.44	-6.21	804.80	-180.63	3,131.06	3,064.89	66.17	47.322	
9,400.00	6,941.30	6,028.00	6,027.71	52.18	41.44	-6.21	804.80	-180.63	3,227.35	3,161.02	66.33	48.655	
9,500.00	6,941.32	6,028.00	6,027.71	53.57	41.44	-6.21	804.80	-180.63	3,323.85	3,257.37	66.49	49.992	
9,600.00	6,941.33	6,028.00	6,027.71	54.97	41.44	-6.21	804.80	-180.63	3,420.56	3,353.93	66.63	51.334	
9,700.00	6,941.35	6,028.00	6,027.71	56.38	41.44	-6.21	804.80	-180.63	3,517.45	3,450.68	66.77	52.679	
9,800.00	6,941.36	6,028.00	6,027.71	57.80	41.44	-6.21	804.80	-180.63	3,614.51	3,547.61	66.90	54.027	
9,900.00	6,941.38	6,028.00	6,027.71	59.23	41.44	-6.21	804.80	-180.63	3,711.73	3,644.70	67.03	55.377	
10,000.00	6,941.39	6,028.00	6,027.71	60.67	41.44	-6.21	804.80	-180.63	3,809.09	3,741.94	67.14	56.730	
10,100.00	6,941.41	6,028.00	6,027.71	62.11	41.44	-6.21	804.80	-180.63	3,906.58	3,839.33	67.26	58.084	
10,200.00	6,941.42	6,028.00	6,027.71	63.57	41.44	-6.21	804.80	-180.63	4,004.20	3,936.84	67.37	59.440	
10,300.00	6,941.44	6,028.00	6,027.71	65.03	41.44	-6.21	804.80	-180.63	4,101.93	4,034.46	67.47	60.796	
10,400.00	6,941.45	6,028.00	6,027.71	66.50	41.44	-6.21	804.80	-180.63	4,199.77	4,132.20	67.57	62.154	
10,500.00	6,941.47	6,028.00	6,027.71	67.97	41.44	-6.21	804.80	-180.63	4,297.71	4,230.04	67.67	63.512	
10,600.00	6,941.48	6,028.00	6,027.71	69.45	41.44	-6.21	804.80	-180.63	4,395.74	4,327.98	67.76	64.871	
10,700.00	6,941.50	6,028.00	6,027.71	70.94	41.44	-6.21	804.80	-180.63	4,493.86	4,426.01	67.85	66.230	
10,800.00	6,941.51	6,028.00	6,027.71	72.43	41.44	-6.21	804.80	-180.63	4,592.06	4,524.12	67.94	67.589	
10,900.00	6,941.53	6,028.00	6,027.71	73.92	41.44	-6.21	804.80	-180.63	4,690.34	4,622.31	68.03	68.947	
11,000.00	6,941.54	6,028.00	6,027.71	75.42	41.44	-6.21	804.80	-180.63	4,788.68	4,720.57	68.11	70.305	
11,100.00	6,941.56	6,028.00	6,027.71	76.92	41.44	-6.21	804.80	-180.63	4,887.10	4,818.90	68.20	71.663	
11,200.00	6,941.57	6,028.00	6,027.71	78.43	41.44	-6.21	804.80	-180.63	4,985.57	4,917.30	68.28	73.020	
11,300.00	6,941.59	6,028.00	6,027.71	79.94	41.44	-6.21	804.80	-180.63	5,084.11	5,015.75	68.36	74.376	
11,400.00	6,941.60	6,028.00	6,027.71	81.46	41.44	-6.21	804.80	-180.63	5,182.70	5,114.27	68.44	75.731	
11,500.00	6,941.61	6,028.00	6,027.71	82.98	41.44	-6.21	804.80	-180.63	5,281.35	5,212.84	68.51	77.084	
11,600.00	6,941.63	6,028.00	6,027.71	84.50	41.44	-6.21	804.80	-180.63	5,380.04	5,311.45	68.59	78.437	
11,700.00	6,941.64	6,028.00	6,027.71	86.02	41.44	-6.21	804.80	-180.63	5,478.79	5,410.12	68.67	79.788	
11,800.00	6,941.66	6,028.00	6,027.71	87.55	41.44	-6.21	804.80	-180.63	5,577.57	5,508.83	68.74	81.138	
11,900.00	6,941.67	6,028.00	6,027.71	89.08	41.44	-6.21	804.80	-180.63	5,676.41	5,607.59	68.82	82.486	
12,000.00	6,941.69	6,028.00	6,027.71	90.61	41.44	-6.21	804.80	-180.63	5,775.28	5,706.39	68.89	83.833	
12,100.00	6,941.70	6,028.00	6,027.71	92.14	41.44	-6.21	804.80	-180.63	5,874.18	5,805.22	68.96	85.178	
12,200.00	6,941.72	6,028.00	6,027.71	93.68	41.44	-6.21	804.80	-180.63	5,973.13	5,904.09	69.04	86.521	
12,300.00	6,941.73	6,028.00	6,027.71	95.22	41.44	-6.21	804.80	-180.63	6,072.11	6,003.00	69.11	87.862	
12,400.00	6,941.75	6,028.00	6,027.71	96.76	41.44	-6.21	804.80	-180.63	6,171.12	6,101.94	69.18	89.201	
12,500.00	6,941.76	6,028.00	6,027.71	98.30	41.44	-6.21	804.80	-180.63	6,270.16	6,200.91	69.25	90.539	
12,600.00	6,941.78	6,028.00	6,027.71	99.85	41.44	-6.21	804.80	-180.63	6,369.24	6,299.91	69.33	91.874	
12,700.00	6,941.79	6,028.00	6,027.71	101.40	41.44	-6.21	804.80	-180.63	6,468.34	6,398.94	69.40	93.206	
12,800.00	6,941.81	6,028.00	6,027.71	102.95	41.44	-6.21	804.80	-180.63	6,567.47	6,498.00	69.47	94.537	
12,900.00	6,941.82	6,028.00	6,027.71	104.50	41.44	-6.21	804.80	-180.63	6,666.63	6,597.08	69.54	95.865	
13,000.00	6,941.84	6,028.00	6,027.71	106.05	41.44	-6.21	804.80	-180.63	6,765.81	6,696.19	69.61	97.191	
13,100.00	6,941.85	6,028.00	6,027.71	107.60	41.44	-6.21	804.80	-180.63	6,865.01	6,795.32	69.69	98.514	
13,200.00	6,941.87	6,028.00	6,027.71	109.16	41.44	-6.21	804.80	-180.63	6,964.24	6,894.48	69.76	99.835	
13,300.00	6,941.88	6,028.00	6,027.71	110.71	41.44	-6.21	804.80	-180.63	7,063.49	6,993.66	69.83	101.153	
13,400.00	6,941.90	6,028.00	6,027.71	112.27	41.44	-6.21	804.80	-180.63	7,162.75	7,092.85	69.90	102.469	
13,500.00	6,941.91	6,028.00	6,027.71	113.83	41.44	-6.21	804.80	-180.63	7,262.04	7,192.07	69.97	103.782	
13,600.00	6,941.93	6,028.00	6,027.71	115.39	41.44	-6.21	804.80	-180.63	7,361.35	7,291.31	70.05	105.092	
13,700.00	6,941.94	6,028.00	6,027.71	116.95	41.44	-6.21	804.80	-180.63	7,460.68	7,390.56	70.12	106.400	
13,800.00	6,941.96	6,028.00	6,027.71	118.51	41.44	-6.21	804.80	-180.63	7,560.03	7,489.83	70.19	107.705	
13,900.00	6,941.97	6,028.00	6,027.71	120.08	41.44	-6.21	804.80	-180.63	7,659.39	7,589.12	70.27	109.007	
14,000.00	6,941.99	6,028.00	6,027.71	121.64	41.44	-6.21	804.80	-180.63	7,758.77	7,688.43	70.34	110.306	
14,100.00	6,942.00	6,028.00	6,027.71	123.21	41.44	-6.21	804.80	-180.63	7,858.16	7,787.75	70.41	111.602	
14,200.00	6,942.01	6,028.00	6,027.71	124.77	41.44	-6.21	804.80	-180.63	7,957.57	7,887.08	70.49	112.895	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,028.00	6,027.71	126.34	41.44	-6.21	804.80	-180.63	8,056.99	7,986.43	70.56	114.185	
14,400.00	6,942.04	6,028.00	6,027.71	127.91	41.44	-6.21	804.80	-180.63	8,156.43	8,085.80	70.64	115.473	
14,500.00	6,942.06	6,028.00	6,027.71	129.48	41.44	-6.21	804.80	-180.63	8,255.88	8,185.17	70.71	116.757	
14,600.00	6,942.07	6,028.00	6,027.71	131.05	41.44	-6.21	804.80	-180.63	8,355.35	8,284.56	70.79	118.038	
14,700.00	6,942.09	6,028.00	6,027.71	132.62	41.44	-6.21	804.80	-180.63	8,454.83	8,383.96	70.86	119.316	
14,800.00	6,942.10	6,028.00	6,027.71	134.19	41.44	-6.21	804.80	-180.63	8,554.32	8,483.38	70.94	120.591	
14,900.00	6,942.12	6,028.00	6,027.71	135.76	41.44	-6.21	804.80	-180.63	8,653.82	8,582.80	71.01	121.862	
15,000.00	6,942.13	6,028.00	6,027.71	137.34	41.44	-6.21	804.80	-180.63	8,753.33	8,682.24	71.09	123.130	
15,100.00	6,942.15	6,028.00	6,027.71	138.91	41.44	-6.21	804.80	-180.63	8,852.85	8,781.69	71.17	124.396	
15,200.00	6,942.16	6,028.00	6,027.71	140.48	41.44	-6.21	804.80	-180.63	8,952.39	8,881.14	71.24	125.658	
15,300.00	6,942.18	6,028.00	6,027.71	142.06	41.44	-6.21	804.80	-180.63	9,051.93	8,980.61	71.32	126.916	
15,400.00	6,942.19	6,028.00	6,027.71	143.64	41.44	-6.21	804.80	-180.63	9,151.49	9,080.09	71.40	128.171	
15,500.00	6,942.21	6,028.00	6,027.71	145.21	41.44	-6.21	804.80	-180.63	9,251.05	9,179.57	71.48	129.423	
15,600.00	6,942.22	6,028.00	6,027.71	146.79	41.44	-6.21	804.80	-180.63	9,350.62	9,279.07	71.56	130.672	
15,700.00	6,942.24	6,028.00	6,027.71	148.37	41.44	-6.21	804.80	-180.63	9,450.21	9,378.57	71.64	131.917	
15,800.00	6,942.25	6,028.00	6,027.71	149.94	41.44	-6.21	804.80	-180.63	9,549.80	9,478.08	71.72	133.159	
15,900.00	6,942.27	6,028.00	6,027.71	151.52	41.44	-6.21	804.80	-180.63	9,649.40	9,577.60	71.80	134.397	
16,000.00	6,942.28	6,028.00	6,027.71	153.10	41.44	-6.21	804.80	-180.63	9,749.00	9,677.13	71.88	135.632	
16,100.00	6,942.30	6,028.00	6,027.71	154.68	41.44	-6.21	804.80	-180.63	9,848.62	9,776.66	71.96	136.864	
16,200.00	6,942.31	6,028.00	6,027.71	156.26	41.44	-6.21	804.80	-180.63	9,948.24	9,876.20	72.04	138.092	
16,300.00	6,942.33	6,028.00	6,027.71	157.84	41.44	-6.21	804.80	-180.63	10,047.88	9,975.75	72.12	139.317	
16,400.00	6,942.34	6,028.00	6,027.71	159.42	41.44	-6.21	804.80	-180.63	10,147.51	10,075.31	72.20	140.538	
16,500.00	6,942.36	6,028.00	6,027.71	161.00	41.44	-6.21	804.80	-180.63	10,247.16	10,174.87	72.29	141.755	
16,600.00	6,942.37	6,028.00	6,027.71	162.59	41.44	-6.21	804.80	-180.63	10,346.81	10,274.44	72.37	142.969	
16,700.00	6,942.38	6,028.00	6,027.71	164.17	41.44	-6.21	804.80	-180.63	10,446.47	10,374.01	72.45	144.180	
16,800.00	6,942.40	6,028.00	6,027.71	165.75	41.44	-6.21	804.80	-180.63	10,546.13	10,473.60	72.54	145.387	
16,900.00	6,942.41	6,028.00	6,027.71	167.33	41.44	-6.21	804.80	-180.63	10,645.81	10,573.18	72.62	146.590	
17,000.00	6,942.43	6,028.00	6,027.71	168.92	41.44	-6.21	804.80	-180.63	10,745.48	10,672.78	72.71	147.790	
17,100.00	6,942.44	6,028.00	6,027.71	170.50	41.44	-6.21	804.80	-180.63	10,845.17	10,772.37	72.79	148.986	
17,200.00	6,942.46	6,028.00	6,027.71	172.09	41.44	-6.21	804.80	-180.63	10,944.86	10,871.98	72.88	150.178	
17,300.00	6,942.47	6,028.00	6,027.71	173.67	41.44	-6.21	804.80	-180.63	11,044.55	10,971.59	72.97	151.367	
17,400.00	6,942.49	6,028.00	6,027.71	175.26	41.44	-6.21	804.80	-180.63	11,144.25	11,071.20	73.05	152.553	
17,500.00	6,942.50	6,028.00	6,027.71	176.84	41.44	-6.21	804.80	-180.63	11,243.96	11,170.82	73.14	153.734	
17,600.00	6,942.52	6,028.00	6,027.71	178.43	41.44	-6.21	804.80	-180.63	11,343.67	11,270.44	73.23	154.913	
17,700.00	6,942.53	6,028.00	6,027.71	180.01	41.44	-6.21	804.80	-180.63	11,443.38	11,370.07	73.31	156.087	
17,800.00	6,942.55	6,028.00	6,027.71	181.60	41.44	-6.21	804.80	-180.63	11,543.11	11,469.70	73.40	157.258	
17,900.00	6,942.56	6,028.00	6,027.71	183.19	41.44	-6.21	804.80	-180.63	11,642.83	11,569.34	73.49	158.425	
18,000.00	6,942.58	6,028.00	6,027.71	184.77	41.44	-6.21	804.80	-180.63	11,742.56	11,668.98	73.58	159.588	
18,100.00	6,942.59	6,028.00	6,027.71	186.36	41.44	-6.21	804.80	-180.63	11,842.30	11,768.63	73.67	160.748	
18,200.00	6,942.61	6,028.00	6,027.71	187.95	41.44	-6.21	804.80	-180.63	11,942.04	11,868.28	73.76	161.904	
18,300.00	6,942.62	6,028.00	6,027.71	189.54	41.44	-6.21	804.80	-180.63	12,041.78	11,967.93	73.85	163.056	
18,400.00	6,942.64	6,028.00	6,027.71	191.12	41.44	-6.21	804.80	-180.63	12,141.53	12,067.59	73.94	164.205	
18,500.00	6,942.65	6,028.00	6,027.71	192.71	41.44	-6.21	804.80	-180.63	12,241.28	12,167.25	74.03	165.350	
18,600.00	6,942.67	6,028.00	6,027.71	194.30	41.44	-6.21	804.80	-180.63	12,341.03	12,266.91	74.12	166.492	
18,700.00	6,942.68	6,028.00	6,027.71	195.89	41.44	-6.21	804.80	-180.63	12,440.79	12,366.58	74.22	167.629	
18,800.00	6,942.70	6,028.00	6,027.71	197.48	41.44	-6.21	804.80	-180.63	12,540.56	12,466.25	74.31	168.763	
18,900.00	6,942.71	6,028.00	6,027.71	199.07	41.44	-6.21	804.80	-180.63	12,640.33	12,565.92	74.40	169.893	
19,000.00	6,942.73	6,028.00	6,027.71	200.66	41.44	-6.21	804.80	-180.63	12,740.10	12,665.60	74.49	171.020	
19,100.00	6,942.74	6,028.00	6,027.71	202.25	41.44	-6.21	804.80	-180.63	12,839.87	12,765.28	74.59	172.143	
19,200.00	6,942.76	6,028.00	6,027.71	203.84	41.44	-6.21	804.80	-180.63	12,939.65	12,864.97	74.68	173.262	
19,300.00	6,942.77	6,028.00	6,027.71	205.43	41.44	-6.21	804.80	-180.63	13,039.43	12,964.65	74.78	174.377	
19,400.00	6,942.78	6,028.00	6,027.71	207.02	41.44	-6.21	804.80	-180.63	13,139.22	13,064.34	74.87	175.489	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,028.00	6,027.71	208.61	41.44	-6.21	804.80	-180.63	13,239.00	13,164.04	74.97	176.597	
19,600.00	6,942.81	6,028.00	6,027.71	210.20	41.44	-6.21	804.80	-180.63	13,338.80	13,263.73	75.06	177.701	
19,700.00	6,942.83	6,028.00	6,027.71	211.79	41.44	-6.21	804.80	-180.63	13,438.59	13,363.43	75.16	178.802	
19,800.00	6,942.84	6,028.00	6,027.71	213.38	41.44	-6.21	804.80	-180.63	13,538.39	13,463.13	75.26	179.899	
19,900.00	6,942.86	6,028.00	6,027.71	214.97	41.44	-6.21	804.80	-180.63	13,638.19	13,562.84	75.35	180.992	
20,000.00	6,942.87	6,028.00	6,027.71	216.56	41.44	-6.21	804.80	-180.63	13,737.99	13,662.54	75.45	182.082	
20,100.00	6,942.89	6,028.00	6,027.71	218.15	41.44	-6.21	804.80	-180.63	13,837.80	13,762.25	75.55	183.168	
20,200.00	6,942.90	6,028.00	6,027.71	219.75	41.44	-6.21	804.80	-180.63	13,937.61	13,861.96	75.65	184.250	
20,300.00	6,942.92	6,028.00	6,027.71	221.34	41.44	-6.21	804.80	-180.63	14,037.42	13,961.67	75.74	185.328	
20,400.00	6,942.93	6,028.00	6,027.71	222.93	41.44	-6.21	804.80	-180.63	14,137.23	14,061.39	75.84	186.403	
20,500.00	6,942.95	6,028.00	6,027.71	224.52	41.44	-6.21	804.80	-180.63	14,237.05	14,161.11	75.94	187.474	
20,600.00	6,942.96	6,028.00	6,027.71	226.12	41.44	-6.21	804.80	-180.63	14,336.87	14,260.83	76.04	188.541	
20,700.00	6,942.98	6,028.00	6,027.71	227.71	41.44	-6.21	804.80	-180.63	14,436.69	14,360.55	76.14	189.605	
20,800.00	6,942.99	6,028.00	6,027.71	229.30	41.44	-6.21	804.80	-180.63	14,536.51	14,460.27	76.24	190.665	
20,855.77	6,943.00	6,028.00	6,027.71	230.19	41.44	-6.21	804.80	-180.63	14,592.19	14,515.89	76.30	191.255	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-17.62	814.61	-258.74	856.75				
100.00	100.00	38.16	38.16	0.25	0.07	-17.64	814.60	-258.99	854.78	854.45	0.33	2,588.556	CC, ES
200.00	200.00	131.15	131.10	0.61	0.28	-17.81	814.48	-261.63	855.52	854.64	0.88	970.718	
300.00	300.00	223.88	223.67	0.97	0.47	-18.16	814.23	-267.15	857.11	855.68	1.43	598.790	
400.00	400.00	316.18	315.59	1.33	0.67	-18.70	813.85	-275.51	859.59	857.61	1.98	434.180	
500.00	500.00	407.88	406.60	1.68	0.86	-19.41	813.34	-286.62	863.05	860.53	2.53	341.679	
600.00	599.98	498.67	496.34	2.04	1.05	-41.05	812.72	-300.38	866.29	863.22	3.07	282.466	
700.00	699.84	587.60	583.79	2.40	1.30	-42.23	811.99	-316.51	868.21	864.55	3.66	237.360	
800.00	799.45	682.00	676.53	2.77	1.65	-43.68	811.20	-334.10	868.28	863.93	4.35	199.491	
802.22	801.66	682.00	676.53	2.78	1.65	-43.68	811.20	-334.10	868.28	863.92	4.36	199.146	
845.27	844.44	703.04	697.14	2.93	1.74	-44.04	811.41	-338.32	868.63	864.04	4.59	189.072	
900.00	898.77	735.51	728.77	3.13	1.90	-44.63	812.23	-345.57	870.25	865.33	4.92	176.749	
1,000.00	998.04	818.74	809.17	3.50	2.33	-46.27	815.15	-366.89	876.17	870.53	5.65	155.185	
1,100.00	1,097.32	880.47	868.35	3.87	2.68	-47.56	817.66	-384.28	884.95	878.67	6.28	140.969	
1,200.00	1,196.59	955.00	939.07	4.24	3.15	-49.16	822.17	-407.36	897.83	890.84	6.99	128.490	
1,300.00	1,295.87	1,033.06	1,012.34	4.62	3.70	-50.92	826.83	-433.86	913.49	905.75	7.74	118.016	
1,400.00	1,395.14	1,109.00	1,082.76	5.00	4.28	-52.71	831.37	-461.91	932.19	923.70	8.48	109.921	
1,500.00	1,494.42	1,187.17	1,154.71	5.38	4.90	-54.54	836.50	-492.02	953.68	944.46	9.22	103.461	
1,600.00	1,593.69	1,251.54	1,213.57	5.76	5.44	-56.01	841.53	-517.58	978.24	968.39	9.85	99.357	
1,700.00	1,692.96	1,355.89	1,307.82	6.14	6.33	-58.45	848.65	-561.72	1,005.19	994.45	10.73	93.637	
1,800.00	1,792.24	1,486.09	1,426.21	6.52	7.37	-61.50	851.40	-615.75	1,029.51	1,017.72	11.79	87.328	
1,900.00	1,891.51	1,566.79	1,499.62	6.91	8.04	-63.33	852.24	-649.26	1,055.01	1,042.52	12.48	84.514	
2,000.00	1,990.79	1,636.94	1,563.14	7.29	8.66	-64.87	853.45	-679.00	1,082.94	1,069.84	13.09	82.708	
2,100.00	2,090.06	1,707.04	1,626.21	7.67	9.30	-66.36	855.50	-709.53	1,113.68	1,100.00	13.68	81.401	
2,200.00	2,189.34	1,777.85	1,689.61	8.06	9.95	-67.78	858.45	-740.93	1,146.89	1,132.64	14.25	80.466	
2,300.00	2,288.61	1,856.00	1,759.21	8.44	10.70	-69.26	862.91	-776.20	1,182.54	1,167.68	14.86	79.555	
2,400.00	2,387.89	1,902.35	1,800.17	8.82	11.16	-70.09	866.39	-797.61	1,220.76	1,205.55	15.20	80.311	
2,500.00	2,487.16	1,959.31	1,849.95	9.21	11.74	-71.05	871.83	-824.74	1,262.11	1,246.50	15.61	80.868	
2,600.00	2,586.44	2,045.45	1,924.92	9.59	12.62	-72.42	880.64	-866.23	1,305.01	1,288.76	16.24	80.338	
2,700.00	2,685.71	2,129.55	1,998.12	9.98	13.46	-73.68	889.32	-906.72	1,348.57	1,331.72	16.85	80.042	
2,800.00	2,784.99	2,232.14	2,087.88	10.36	14.46	-75.04	901.25	-954.93	1,392.32	1,374.74	17.58	79.192	
2,900.00	2,884.26	2,354.75	2,196.57	10.75	15.59	-76.55	914.27	-1,010.15	1,434.18	1,415.74	18.44	77.759	
3,000.00	2,983.53	2,473.74	2,302.54	11.13	16.69	-77.92	925.91	-1,063.00	1,475.97	1,456.69	19.28	76.572	
3,100.00	3,082.81	2,548.47	2,369.66	11.52	17.38	-78.78	931.34	-1,095.39	1,516.03	1,496.25	19.78	76.652	
3,200.00	3,182.08	2,598.00	2,413.60	11.90	17.84	-79.33	935.60	-1,117.85	1,558.66	1,538.57	20.09	77.566	
3,300.00	3,281.36	2,703.98	2,507.30	12.29	18.86	-80.48	944.48	-1,166.57	1,602.16	1,581.32	20.84	76.861	
3,400.00	3,380.63	2,790.87	2,584.30	12.67	19.68	-81.38	951.04	-1,206.28	1,645.48	1,624.03	21.44	76.735	
3,500.00	3,479.91	2,875.00	2,658.86	13.06	20.48	-82.19	958.10	-1,244.61	1,689.30	1,667.27	22.03	76.699	
3,600.00	3,579.18	3,250.66	3,006.11	13.44	23.26	-84.91	991.13	-1,382.70	1,724.67	1,700.38	24.29	70.994	
3,700.00	3,678.46	3,337.00	3,088.56	13.83	23.75	-85.49	995.44	-1,407.95	1,752.94	1,728.12	24.82	70.639	SF
3,800.00	3,777.73	3,337.00	3,088.56	14.21	23.75	-85.49	995.44	-1,407.95	1,785.09	1,760.18	24.91	71.662	
3,900.00	3,877.01	3,337.00	3,088.56	14.60	23.75	-85.49	995.44	-1,407.95	1,822.18	1,797.22	24.95	73.026	
4,000.00	3,976.28	3,337.00	3,088.56	14.98	23.75	-85.49	995.44	-1,407.95	1,863.89	1,838.94	24.95	74.708	
4,100.00	4,075.55	3,337.00	3,088.56	15.37	23.75	-85.49	995.44	-1,407.95	1,909.94	1,885.03	24.91	76.681	
4,200.00	4,174.83	3,337.00	3,088.56	15.75	23.75	-85.49	995.44	-1,407.95	1,960.01	1,935.17	24.83	78.921	
4,300.00	4,274.10	3,337.00	3,088.56	16.14	23.75	-85.49	995.44	-1,407.95	2,013.80	1,989.06	24.74	81.407	
4,400.00	4,373.38	3,337.00	3,088.56	16.53	23.75	-85.49	995.44	-1,407.95	2,071.03	2,046.41	24.62	84.115	
4,500.00	4,472.65	3,337.00	3,088.56	16.91	23.75	-85.49	995.44	-1,407.95	2,131.41	2,106.92	24.49	87.024	
4,600.00	4,571.93	3,337.00	3,088.56	17.30	23.75	-85.49	995.44	-1,407.95	2,194.69	2,170.34	24.35	90.115	
4,700.00	4,671.20	3,337.00	3,088.56	17.68	23.75	-85.49	995.44	-1,407.95	2,260.63	2,236.42	24.21	93.367	
4,800.00	4,770.48	3,337.00	3,088.56	18.07	23.75	-85.49	995.44	-1,407.95	2,328.99	2,304.92	24.07	96.761	
4,900.00	4,869.75	3,337.00	3,088.56	18.45	23.75	-85.49	995.44	-1,407.95	2,399.58	2,375.65	23.93	100.281	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 561-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,969.03	3,337.00	3,088.56	18.84	23.75	-85.49	995.44	-1,407.95	2,472.19	2,448.40	23.79	103.910	
5,100.00	5,068.30	3,337.00	3,088.56	19.23	23.75	-85.49	995.44	-1,407.95	2,546.67	2,523.01	23.66	107.632	
5,200.00	5,167.58	3,337.00	3,088.56	19.61	23.75	-85.49	995.44	-1,407.95	2,622.84	2,599.30	23.54	111.432	
5,300.00	5,266.85	3,337.00	3,088.56	20.00	23.75	-85.49	995.44	-1,407.95	2,700.56	2,677.14	23.42	115.296	
5,400.00	5,366.12	3,337.00	3,088.56	20.38	23.75	-85.49	995.44	-1,407.95	2,779.71	2,756.40	23.32	119.210	
5,500.00	5,465.40	3,337.00	3,088.56	20.77	23.75	-85.49	995.44	-1,407.95	2,860.17	2,836.95	23.22	123.163	
5,600.00	5,564.67	3,337.00	3,088.56	21.15	23.75	-85.49	995.44	-1,407.95	2,941.83	2,918.69	23.14	127.143	
5,700.00	5,663.95	3,337.00	3,088.56	21.54	23.75	-85.49	995.44	-1,407.95	3,024.58	3,001.52	23.06	131.138	
5,800.00	5,763.22	3,337.00	3,088.56	21.93	23.75	-85.49	995.44	-1,407.95	3,108.35	3,085.35	23.00	135.140	
5,900.00	5,862.50	3,337.00	3,088.56	22.31	23.75	-85.49	995.44	-1,407.95	3,193.06	3,170.11	22.95	139.137	
6,000.00	5,961.77	3,337.00	3,088.56	22.70	23.75	-85.49	995.44	-1,407.95	3,278.63	3,255.72	22.91	143.122	
6,100.00	6,061.05	3,337.00	3,088.56	23.08	23.75	-85.49	995.44	-1,407.95	3,364.99	3,342.11	22.88	147.086	
6,200.00	6,160.32	3,337.00	3,088.56	23.47	23.75	-85.49	995.44	-1,407.95	3,452.09	3,429.23	22.86	151.022	
6,300.00	6,259.60	3,337.00	3,088.56	23.86	23.75	-85.49	995.44	-1,407.95	3,539.87	3,517.02	22.85	154.924	
6,376.00	6,335.04	3,337.00	3,088.56	24.15	23.75	-85.49	995.44	-1,407.95	3,607.01	3,584.16	22.85	157.861	
6,400.00	6,358.85	3,337.00	3,088.56	24.24	23.75	-98.35	995.44	-1,407.95	3,628.47	3,605.62	22.85	158.765	
6,450.00	6,408.16	3,337.00	3,088.56	24.44	23.75	-112.44	995.44	-1,407.95	3,674.35	3,651.47	22.88	160.613	
6,500.00	6,456.87	3,337.00	3,088.56	24.64	23.75	-114.91	995.44	-1,407.95	3,721.53	3,698.61	22.91	162.410	
6,550.00	6,504.65	3,337.00	3,088.56	24.85	23.75	-109.26	995.44	-1,407.95	3,769.67	3,746.71	22.96	164.164	
6,600.00	6,551.23	3,337.00	3,088.56	25.06	23.75	-95.66	995.44	-1,407.95	3,818.46	3,795.44	23.02	165.862	
6,650.00	6,596.31	3,337.00	3,088.56	25.26	23.75	-75.16	995.44	-1,407.95	3,867.57	3,844.48	23.09	167.493	
6,700.00	6,639.62	3,337.00	3,088.56	25.48	23.75	-53.96	995.44	-1,407.95	3,916.69	3,893.52	23.17	169.044	
6,750.00	6,680.88	3,337.00	3,088.56	25.69	23.75	-38.04	995.44	-1,407.95	3,965.52	3,942.27	23.26	170.503	
6,800.00	6,719.85	3,337.00	3,088.56	25.91	23.75	-27.66	995.44	-1,407.95	4,013.79	3,990.43	23.36	171.859	
6,850.00	6,756.28	3,337.00	3,088.56	26.13	23.75	-20.95	995.44	-1,407.95	4,061.21	4,037.75	23.46	173.099	
6,900.00	6,789.95	3,337.00	3,088.56	26.37	23.75	-16.46	995.44	-1,407.95	4,107.53	4,083.95	23.58	174.209	
6,950.00	6,820.65	3,337.00	3,088.56	26.61	23.75	-13.32	995.44	-1,407.95	4,152.50	4,128.80	23.70	175.179	
7,000.00	6,848.19	3,337.00	3,088.56	26.87	23.75	-11.04	995.44	-1,407.95	4,195.90	4,172.06	23.84	175.993	
7,050.00	6,872.41	3,337.00	3,088.56	27.13	23.75	-9.32	995.44	-1,407.95	4,237.51	4,213.53	23.99	176.639	
7,100.00	6,893.15	3,337.00	3,088.56	27.41	23.75	-7.98	995.44	-1,407.95	4,277.13	4,252.98	24.15	177.105	
7,150.00	6,910.28	3,337.00	3,088.56	27.71	23.75	-6.92	995.44	-1,407.95	4,314.58	4,290.25	24.32	177.379	
7,200.00	6,923.70	3,337.00	3,088.56	28.02	23.75	-6.05	995.44	-1,407.95	4,349.67	4,325.16	24.51	177.450	
7,250.00	6,933.33	3,337.00	3,088.56	28.34	23.75	-5.33	995.44	-1,407.95	4,382.26	4,357.54	24.71	177.312	
7,300.00	6,939.11	3,337.00	3,088.56	28.67	23.75	-4.71	995.44	-1,407.95	4,412.20	4,387.26	24.93	176.958	
7,349.12	6,941.00	3,337.00	3,088.56	29.00	23.75	-4.19	995.44	-1,407.95	4,438.90	4,413.74	25.16	176.399	
7,400.00	6,941.01	3,337.00	3,088.56	29.36	23.75	-4.19	995.44	-1,407.95	4,465.35	4,439.94	25.42	175.681	
7,500.00	6,941.02	3,337.00	3,088.56	30.11	23.75	-4.19	995.44	-1,407.95	4,518.55	4,492.62	25.93	174.261	
7,600.00	6,941.04	3,337.00	3,088.56	30.93	23.75	-4.19	995.44	-1,407.95	4,573.32	4,546.88	26.44	172.940	
7,700.00	6,941.05	3,337.00	3,088.56	31.80	23.75	-4.19	995.44	-1,407.95	4,629.60	4,602.65	26.96	171.727	
7,800.00	6,941.07	3,337.00	3,088.56	32.73	23.75	-4.19	995.44	-1,407.95	4,687.34	4,659.87	27.47	170.625	
7,900.00	6,941.08	3,337.00	3,088.56	33.71	23.75	-4.19	995.44	-1,407.95	4,746.49	4,718.51	27.98	169.639	
8,000.00	6,941.10	3,337.00	3,088.56	34.73	23.75	-4.19	995.44	-1,407.95	4,806.98	4,778.50	28.48	168.769	
8,100.00	6,941.11	3,337.00	3,088.56	35.79	23.75	-4.19	995.44	-1,407.95	4,868.78	4,839.81	28.98	168.013	
8,200.00	6,941.13	3,337.00	3,088.56	36.90	23.75	-4.19	995.44	-1,407.95	4,931.84	4,902.37	29.47	167.370	
8,300.00	6,941.14	3,337.00	3,088.56	38.03	23.75	-4.19	995.44	-1,407.95	4,996.09	4,966.15	29.95	166.835	
8,400.00	6,941.16	3,337.00	3,088.56	39.20	23.75	-4.19	995.44	-1,407.95	5,061.51	5,031.10	30.42	166.405	
8,500.00	6,941.17	3,337.00	3,088.56	40.40	23.75	-4.19	995.44	-1,407.95	5,128.05	5,097.17	30.88	166.077	
8,600.00	6,941.19	3,337.00	3,088.56	41.63	23.75	-4.19	995.44	-1,407.95	5,195.65	5,164.33	31.33	165.845	
8,700.00	6,941.20	3,337.00	3,088.56	42.88	23.75	-4.19	995.44	-1,407.95	5,264.29	5,232.52	31.77	165.706	
8,800.00	6,941.22	3,337.00	3,088.56	44.16	23.75	-4.19	995.44	-1,407.95	5,333.92	5,301.72	32.20	165.655	
8,900.00	6,941.23	3,337.00	3,088.56	45.45	23.75	-4.19	995.44	-1,407.95	5,404.51	5,371.89	32.62	165.686	
9,000.00	6,941.24	3,337.00	3,088.56	46.76	23.75	-4.19	995.44	-1,407.95	5,476.01	5,442.98	33.03	165.797	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	3,337.00	3,088.56	48.10	23.75	-4.19	995.44	-1,407.95	5,548.39	5,514.96	33.43	165.983	
9,200.00	6,941.27	3,337.00	3,088.56	49.44	23.75	-4.19	995.44	-1,407.95	5,621.61	5,587.80	33.82	166.240	
9,300.00	6,941.29	3,337.00	3,088.56	50.80	23.75	-4.19	995.44	-1,407.95	5,695.66	5,661.46	34.20	166.564	
9,400.00	6,941.30	3,337.00	3,088.56	52.18	23.75	-4.19	995.44	-1,407.95	5,770.48	5,735.92	34.56	166.951	
9,500.00	6,941.32	3,337.00	3,088.56	53.57	23.75	-4.19	995.44	-1,407.95	5,846.06	5,811.14	34.92	167.398	
9,600.00	6,941.33	3,337.00	3,088.56	54.97	23.75	-4.19	995.44	-1,407.95	5,922.36	5,887.09	35.27	167.901	
9,700.00	6,941.35	3,337.00	3,088.56	56.38	23.75	-4.19	995.44	-1,407.95	5,999.36	5,963.75	35.61	168.458	
9,800.00	6,941.36	3,337.00	3,088.56	57.80	23.75	-4.19	995.44	-1,407.95	6,077.03	6,041.08	35.94	169.065	
9,900.00	6,941.38	3,337.00	3,088.56	59.23	23.75	-4.19	995.44	-1,407.95	6,155.34	6,119.07	36.27	169.719	
10,000.00	6,941.39	3,337.00	3,088.56	60.67	23.75	-4.19	995.44	-1,407.95	6,234.27	6,197.69	36.58	170.419	
10,100.00	6,941.41	3,337.00	3,088.56	62.11	23.75	-4.19	995.44	-1,407.95	6,313.80	6,276.92	36.89	171.161	
10,200.00	6,941.42	3,337.00	3,088.56	63.57	23.75	-4.19	995.44	-1,407.95	6,393.91	6,356.72	37.19	171.943	
10,300.00	6,941.44	3,337.00	3,088.56	65.03	23.75	-4.19	995.44	-1,407.95	6,474.57	6,437.09	37.48	172.763	
10,400.00	6,941.45	3,337.00	3,088.56	66.50	23.75	-4.19	995.44	-1,407.95	6,555.76	6,518.00	37.76	173.618	
10,500.00	6,941.47	3,337.00	3,088.56	67.97	23.75	-4.19	995.44	-1,407.95	6,637.47	6,599.43	38.04	174.507	
10,600.00	6,941.48	3,337.00	3,088.56	69.45	23.75	-4.19	995.44	-1,407.95	6,719.67	6,681.36	38.30	175.428	
10,700.00	6,941.50	3,337.00	3,088.56	70.94	23.75	-4.19	995.44	-1,407.95	6,802.34	6,763.78	38.57	176.379	
10,800.00	6,941.51	3,337.00	3,088.56	72.43	23.75	-4.19	995.44	-1,407.95	6,885.48	6,846.66	38.82	177.359	
10,900.00	6,941.53	3,337.00	3,088.56	73.92	23.75	-4.19	995.44	-1,407.95	6,969.06	6,929.99	39.07	178.366	
11,000.00	6,941.54	3,337.00	3,088.56	75.42	23.75	-4.19	995.44	-1,407.95	7,053.06	7,013.75	39.32	179.397	
11,100.00	6,941.56	3,337.00	3,088.56	76.92	23.75	-4.19	995.44	-1,407.95	7,137.48	7,097.93	39.55	180.453	
11,200.00	6,941.57	3,337.00	3,088.56	78.43	23.75	-4.19	995.44	-1,407.95	7,222.30	7,182.52	39.79	181.532	
11,300.00	6,941.59	3,337.00	3,088.56	79.94	23.75	-4.19	995.44	-1,407.95	7,307.50	7,267.49	40.01	182.632	
11,400.00	6,941.60	3,337.00	3,088.56	81.46	23.75	-4.19	995.44	-1,407.95	7,393.07	7,352.84	40.23	183.752	
11,500.00	6,941.61	3,337.00	3,088.56	82.98	23.75	-4.19	995.44	-1,407.95	7,479.00	7,438.55	40.45	184.892	
11,600.00	6,941.63	3,337.00	3,088.56	84.50	23.75	-4.19	995.44	-1,407.95	7,565.28	7,524.62	40.66	186.049	
11,700.00	6,941.64	3,337.00	3,088.56	86.02	23.75	-4.19	995.44	-1,407.95	7,651.89	7,611.02	40.87	187.223	
11,800.00	6,941.66	3,337.00	3,088.56	87.55	23.75	-4.19	995.44	-1,407.95	7,738.82	7,697.75	41.07	188.414	
11,900.00	6,941.67	3,337.00	3,088.56	89.08	23.75	-4.19	995.44	-1,407.95	7,826.07	7,784.79	41.27	189.620	
12,000.00	6,941.69	3,337.00	3,088.56	90.61	23.75	-4.19	995.44	-1,407.95	7,913.61	7,872.14	41.47	190.840	
12,100.00	6,941.70	3,337.00	3,088.56	92.14	23.75	-4.19	995.44	-1,407.95	8,001.45	7,959.79	41.66	192.074	
12,200.00	6,941.72	3,337.00	3,088.56	93.68	23.75	-4.19	995.44	-1,407.95	8,089.57	8,047.73	41.85	193.320	
12,300.00	6,941.73	3,337.00	3,088.56	95.22	23.75	-4.19	995.44	-1,407.95	8,177.97	8,135.94	42.03	194.579	
12,400.00	6,941.75	3,337.00	3,088.56	96.76	23.75	-4.19	995.44	-1,407.95	8,266.62	8,224.41	42.21	195.849	
12,500.00	6,941.76	3,337.00	3,088.56	98.30	23.75	-4.19	995.44	-1,407.95	8,355.54	8,313.15	42.39	197.129	
12,600.00	6,941.78	3,337.00	3,088.56	99.85	23.75	-4.19	995.44	-1,407.95	8,444.70	8,402.14	42.56	198.420	
12,700.00	6,941.79	3,337.00	3,088.56	101.40	23.75	-4.19	995.44	-1,407.95	8,534.10	8,491.37	42.73	199.720	
12,800.00	6,941.81	3,337.00	3,088.56	102.95	23.75	-4.19	995.44	-1,407.95	8,623.74	8,580.84	42.90	201.028	
12,900.00	6,941.82	3,337.00	3,088.56	104.50	23.75	-4.19	995.44	-1,407.95	8,713.60	8,670.54	43.06	202.346	
13,000.00	6,941.84	3,337.00	3,088.56	106.05	23.75	-4.19	995.44	-1,407.95	8,803.68	8,760.46	43.23	203.670	
13,100.00	6,941.85	3,337.00	3,088.56	107.60	23.75	-4.19	995.44	-1,407.95	8,893.97	8,850.59	43.38	205.003	
13,200.00	6,941.87	3,337.00	3,088.56	109.16	23.75	-4.19	995.44	-1,407.95	8,984.47	8,940.93	43.54	206.342	
13,300.00	6,941.88	3,337.00	3,088.56	110.71	23.75	-4.19	995.44	-1,407.95	9,075.17	9,031.47	43.70	207.687	
13,400.00	6,941.90	3,337.00	3,088.56	112.27	23.75	-4.19	995.44	-1,407.95	9,166.06	9,122.21	43.85	209.038	
13,500.00	6,941.91	3,337.00	3,088.56	113.83	23.75	-4.19	995.44	-1,407.95	9,257.14	9,213.14	44.00	210.395	
13,600.00	6,941.93	3,337.00	3,088.56	115.39	23.75	-4.19	995.44	-1,407.95	9,348.40	9,304.25	44.15	211.757	
13,700.00	6,941.94	3,337.00	3,088.56	116.95	23.75	-4.19	995.44	-1,407.95	9,439.83	9,395.54	44.29	213.124	
13,800.00	6,941.96	3,337.00	3,088.56	118.51	23.75	-4.19	995.44	-1,407.95	9,531.44	9,487.01	44.44	214.494	
13,900.00	6,941.97	3,337.00	3,088.56	120.08	23.75	-4.19	995.44	-1,407.95	9,623.22	9,578.64	44.58	215.869	
14,000.00	6,941.99	3,337.00	3,088.56	121.64	23.75	-4.19	995.44	-1,407.95	9,715.16	9,670.44	44.72	217.248	
14,100.00	6,942.00	3,337.00	3,088.56	123.21	23.75	-4.19	995.44	-1,407.95	9,807.26	9,762.40	44.86	218.630	
14,200.00	6,942.01	3,337.00	3,088.56	124.77	23.75	-4.19	995.44	-1,407.95	9,899.51	9,854.51	44.99	220.015	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	3,337.00	3,088.56	126.34	23.75	-4.19	995.44	-1,407.95	9,991.91	9,946.78	45.13	221.402	
14,400.00	6,942.04	3,337.00	3,088.56	127.91	23.75	-4.19	995.44	-1,407.95	10,084.45	10,039.19	45.26	222.793	
14,500.00	6,942.06	3,337.00	3,088.56	129.48	23.75	-4.19	995.44	-1,407.95	10,177.14	10,131.74	45.40	224.185	
14,600.00	6,942.07	3,337.00	3,088.56	131.05	23.75	-4.19	995.44	-1,407.95	10,269.96	10,224.43	45.53	225.579	
14,700.00	6,942.09	1,959.51	1,850.12	132.62	11.74	-1.79	871.85	-824.83	10,361.37	10,317.49	43.88	236.108	
14,800.00	6,942.10	1,949.00	1,840.98	134.19	11.63	-1.77	870.77	-819.77	10,448.85	10,404.80	44.04	237.247	
14,900.00	6,942.12	1,949.00	1,840.98	135.76	11.63	-1.77	870.77	-819.77	10,536.54	10,492.33	44.21	238.316	
15,000.00	6,942.13	1,949.00	1,840.98	137.34	11.63	-1.77	870.77	-819.77	10,624.45	10,580.07	44.38	239.394	
15,100.00	6,942.15	1,910.03	1,806.91	138.91	11.24	-1.72	867.05	-801.22	10,712.24	10,667.74	44.50	240.717	
15,200.00	6,942.16	1,900.00	1,798.09	140.48	11.14	-1.71	866.20	-796.51	10,800.37	10,755.72	44.66	241.860	
15,300.00	6,942.18	1,856.00	1,759.21	142.06	10.70	-1.66	862.91	-776.20	10,888.93	10,844.15	44.77	243.194	
15,400.00	6,942.19	1,856.00	1,759.21	143.64	10.70	-1.66	862.91	-776.20	10,977.26	10,932.32	44.94	244.282	
15,500.00	6,942.21	1,856.00	1,759.21	145.21	10.70	-1.66	862.91	-776.20	11,065.79	11,020.69	45.10	245.378	
15,600.00	6,942.22	1,856.00	1,759.21	146.79	10.70	-1.66	862.91	-776.20	11,154.52	11,109.26	45.26	246.481	
15,700.00	6,942.24	1,856.00	1,759.21	148.37	10.70	-1.66	862.91	-776.20	11,243.43	11,198.02	45.41	247.591	
15,800.00	6,942.25	1,856.00	1,759.21	149.94	10.70	-1.66	862.91	-776.20	11,332.53	11,286.97	45.57	248.707	
15,900.00	6,942.27	1,810.92	1,719.11	151.52	10.27	-1.62	860.18	-755.77	11,421.59	11,375.90	45.69	249.971	
16,000.00	6,942.28	1,792.91	1,703.05	153.10	10.10	-1.60	859.21	-747.67	11,510.84	11,465.00	45.83	251.140	
16,100.00	6,942.30	1,763.00	1,676.34	154.68	9.81	-1.58	857.76	-734.30	11,600.21	11,554.23	45.97	252.337	
16,200.00	6,942.31	1,763.00	1,676.34	156.26	9.81	-1.58	857.76	-734.30	11,689.65	11,643.53	46.12	253.456	
16,300.00	6,942.33	1,763.00	1,676.34	157.84	9.81	-1.58	857.76	-734.30	11,779.26	11,732.99	46.27	254.581	
16,400.00	6,942.34	1,720.64	1,638.41	159.42	9.42	-1.55	856.00	-715.52	11,868.86	11,822.45	46.40	255.773	
16,500.00	6,942.36	1,702.64	1,622.26	161.00	9.26	-1.54	855.35	-707.60	11,958.61	11,912.07	46.55	256.920	
16,600.00	6,942.37	1,670.00	1,592.93	162.59	8.95	-1.52	854.31	-693.32	12,048.48	12,001.80	46.69	258.078	
16,700.00	6,942.38	1,670.00	1,592.93	164.17	8.95	-1.52	854.31	-693.32	12,138.41	12,091.58	46.83	259.203	
16,800.00	6,942.40	1,670.00	1,592.93	165.75	8.95	-1.52	854.31	-693.32	12,228.48	12,181.51	46.97	260.332	
16,900.00	6,942.41	1,670.00	1,592.93	167.33	8.95	-1.52	854.31	-693.32	12,318.72	12,271.60	47.11	261.466	
17,000.00	6,942.43	1,630.00	1,556.88	168.92	8.60	-1.50	853.29	-676.02	12,408.88	12,361.62	47.26	262.594	
17,100.00	6,942.44	1,617.63	1,545.70	170.50	8.49	-1.49	853.03	-670.73	12,499.25	12,451.85	47.40	263.722	
17,200.00	6,942.46	1,575.00	1,507.08	172.09	8.11	-1.47	852.34	-652.70	12,589.85	12,542.31	47.54	264.827	
17,300.00	6,942.47	1,575.00	1,507.08	173.67	8.11	-1.47	852.34	-652.70	12,680.34	12,632.67	47.68	265.958	
17,400.00	6,942.49	1,575.00	1,507.08	175.26	8.11	-1.47	852.34	-652.70	12,770.98	12,723.17	47.81	267.092	
17,500.00	6,942.50	1,575.00	1,507.08	176.84	8.11	-1.47	852.34	-652.70	12,861.76	12,813.80	47.95	268.229	
17,600.00	6,942.52	1,546.88	1,481.53	178.43	7.87	-1.46	852.01	-640.94	12,952.60	12,904.50	48.10	269.310	
17,700.00	6,942.53	1,527.99	1,464.36	180.01	7.71	-1.46	851.80	-633.08	13,043.52	12,995.29	48.24	270.403	
17,800.00	6,942.55	1,509.24	1,447.30	181.60	7.56	-1.45	851.61	-625.31	13,134.52	13,086.14	48.38	271.492	
17,900.00	6,942.56	1,481.00	1,421.57	183.19	7.32	-1.44	851.35	-613.65	13,225.60	13,177.07	48.53	272.549	
18,000.00	6,942.58	1,297.00	1,254.58	184.77	5.83	-1.34	845.55	-536.79	13,316.32	13,267.58	48.74	273.193	
18,100.00	6,942.59	1,297.00	1,254.58	186.36	5.83	-1.34	845.55	-536.79	13,407.02	13,358.14	48.88	274.300	
18,200.00	6,942.61	1,297.00	1,254.58	187.95	5.83	-1.34	845.55	-536.79	13,497.84	13,448.83	49.01	275.409	
18,300.00	6,942.62	1,297.00	1,254.58	189.54	5.83	-1.34	845.55	-536.79	13,588.80	13,539.65	49.14	276.520	
18,400.00	6,942.64	1,252.15	1,214.13	191.12	5.45	-1.29	841.58	-517.83	13,679.27	13,629.97	49.30	277.465	
18,500.00	6,942.65	1,247.21	1,209.64	192.71	5.41	-1.29	841.16	-515.80	13,770.33	13,720.90	49.43	278.566	
18,600.00	6,942.67	1,203.00	1,169.26	194.30	5.03	-1.25	837.67	-498.16	13,861.97	13,812.41	49.56	279.725	
18,700.00	6,942.68	1,203.00	1,169.26	195.89	5.03	-1.25	837.67	-498.16	13,953.14	13,903.45	49.69	280.832	
18,800.00	6,942.70	1,203.00	1,169.26	197.48	5.03	-1.25	837.67	-498.16	14,044.43	13,994.62	49.81	281.940	
18,900.00	6,942.71	1,203.00	1,169.26	199.07	5.03	-1.25	837.67	-498.16	14,135.84	14,085.90	49.94	283.051	
19,000.00	6,942.73	1,203.00	1,169.26	200.66	5.03	-1.25	837.67	-498.16	14,227.36	14,177.29	50.07	284.163	
19,100.00	6,942.74	1,203.00	1,169.26	202.25	5.03	-1.25	837.67	-498.16	14,319.00	14,268.81	50.19	285.276	
19,200.00	6,942.76	1,203.00	1,169.26	203.84	5.03	-1.25	837.67	-498.16	14,410.75	14,360.43	50.32	286.391	
19,300.00	6,942.77	1,203.00	1,169.26	205.43	5.03	-1.25	837.67	-498.16	14,502.61	14,452.16	50.44	287.506	
19,400.00	6,942.78	1,203.00	1,169.26	207.02	5.03	-1.25	837.67	-498.16	14,594.57	14,544.00	50.57	288.623	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	1,203.00	1,169.26	208.61	5.03	-1.25	837.67	-498.16	14,686.64	14,635.95	50.69	289.740	
19,600.00	6,942.81	1,174.10	1,142.70	210.20	4.80	-1.22	835.58	-486.96	14,778.75	14,727.92	50.83	290.736	
19,700.00	6,942.83	1,155.09	1,125.21	211.79	4.65	-1.20	834.27	-479.62	14,870.93	14,819.96	50.97	291.774	
19,800.00	6,942.84	1,136.18	1,107.81	213.38	4.50	-1.19	833.04	-472.34	14,963.15	14,912.05	51.10	292.814	
19,900.00	6,942.86	1,109.00	1,082.76	214.97	4.28	-1.17	831.37	-461.91	15,055.44	15,004.20	51.24	293.828	
20,000.00	6,942.87	1,109.00	1,082.76	216.56	4.28	-1.17	831.37	-461.91	15,147.77	15,096.41	51.36	294.937	
20,100.00	6,942.89	1,109.00	1,082.76	218.15	4.28	-1.17	831.37	-461.91	15,240.19	15,188.71	51.48	296.047	
20,200.00	6,942.90	1,109.00	1,082.76	219.75	4.28	-1.17	831.37	-461.91	15,332.71	15,281.12	51.60	297.156	
20,300.00	6,942.92	1,109.00	1,082.76	221.34	4.28	-1.17	831.37	-461.91	15,425.33	15,373.61	51.72	298.266	
20,400.00	6,942.93	1,109.00	1,082.76	222.93	4.28	-1.17	831.37	-461.91	15,518.04	15,466.20	51.83	299.376	
20,500.00	6,942.95	1,109.00	1,082.76	224.52	4.28	-1.17	831.37	-461.91	15,610.83	15,558.88	51.95	300.486	
20,600.00	6,942.96	1,109.00	1,082.76	226.12	4.28	-1.17	831.37	-461.91	15,703.72	15,651.65	52.07	301.595	
20,700.00	6,942.98	1,068.19	1,045.02	227.71	3.97	-1.14	828.94	-446.58	15,796.32	15,744.09	52.22	302.469	
20,800.00	6,942.99	1,063.02	1,040.22	229.30	3.93	-1.13	828.63	-444.68	15,889.27	15,836.93	52.35	303.546	
20,855.77	6,943.00	1,060.16	1,037.57	230.19	3.91	-1.13	828.45	-443.63	15,941.15	15,888.73	52.41	304.146	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	-90.54	-102.95	-10,869.29	10,869.96				
100.00	100.00	111.45	111.45	0.25	0.13	-90.54	-102.76	-10,868.90	10,869.65	10,869.27	0.38	N/A	
200.00	200.00	420.92	420.86	0.61	0.49	-90.53	-100.18	-10,863.80	10,867.99	10,866.90	1.09	9,962.791	
300.00	300.00	583.00	582.84	0.97	0.71	-90.52	-97.90	-10,858.75	10,864.73	10,863.06	1.66	6,535.300	
400.00	400.00	613.00	612.83	1.33	0.77	-90.52	-97.62	-10,857.81	10,861.78	10,859.70	2.08	5,227.139	
500.00	500.00	643.00	642.81	1.68	0.83	-90.51	-96.99	-10,857.17	10,859.57	10,857.08	2.50	4,352.155	
587.10	587.09	643.00	642.81	2.00	0.83	-111.27	-96.99	-10,857.17	10,858.74	10,855.94	2.81	3,869.218	CC
600.00	599.98	643.00	642.81	2.04	0.83	-111.26	-96.99	-10,857.17	10,858.76	10,855.91	2.85	3,806.644	ES
700.00	699.84	673.00	672.81	2.40	0.89	-111.25	-96.53	-10,857.04	10,860.07	10,856.80	3.27	3,324.013	
800.00	799.45	673.00	672.81	2.77	0.89	-111.19	-96.53	-10,857.04	10,863.35	10,859.72	3.63	2,994.620	
845.27	844.44	673.00	672.81	2.93	0.89	-111.14	-96.53	-10,857.04	10,865.55	10,861.76	3.79	2,864.867	
900.00	898.77	673.00	672.81	3.13	0.89	-111.14	-96.53	-10,857.04	10,868.62	10,864.63	3.99	2,721.924	
1,000.00	998.04	688.34	688.15	3.50	0.92	-111.15	-96.36	-10,857.28	10,874.82	10,870.43	4.39	2,476.128	
1,100.00	1,097.32	704.00	703.79	3.87	0.95	-111.16	-96.04	-10,857.75	10,881.90	10,877.11	4.79	2,271.472	
1,200.00	1,196.59	704.00	703.79	4.24	0.95	-111.16	-96.04	-10,857.75	10,889.77	10,884.61	5.16	2,109.403	
1,300.00	1,295.87	719.87	719.64	4.62	0.98	-111.17	-95.67	-10,858.43	10,898.46	10,892.89	5.57	1,957.868	
1,400.00	1,395.14	733.00	732.76	5.00	1.00	-111.17	-95.44	-10,859.10	10,907.94	10,901.98	5.96	1,828.760	
1,500.00	1,494.42	733.00	732.76	5.38	1.00	-111.17	-95.44	-10,859.10	10,918.28	10,911.94	6.34	1,722.730	
1,600.00	1,593.69	749.38	749.10	5.76	1.04	-111.18	-95.03	-10,860.15	10,929.37	10,922.62	6.74	1,620.525	
1,700.00	1,692.96	764.00	763.66	6.14	1.07	-111.19	-94.40	-10,861.31	10,941.34	10,934.20	7.15	1,531.077	
1,800.00	1,792.24	764.00	763.66	6.52	1.07	-111.19	-94.40	-10,861.31	10,954.10	10,946.59	7.52	1,457.051	
1,900.00	1,891.51	764.00	763.66	6.91	1.07	-111.19	-94.40	-10,861.31	10,967.76	10,959.87	7.89	1,390.194	
2,000.00	1,990.79	794.00	793.47	7.29	1.15	-111.20	-92.88	-10,864.31	10,982.14	10,973.82	8.32	1,319.368	
2,100.00	2,090.06	794.00	793.47	7.67	1.15	-111.20	-92.88	-10,864.31	10,997.31	10,988.62	8.69	1,265.118	
2,200.00	2,189.34	794.00	793.47	8.06	1.15	-111.20	-92.88	-10,864.31	11,013.37	11,004.31	9.06	1,215.496	
2,300.00	2,288.61	825.00	824.18	8.44	1.22	-111.21	-91.31	-10,868.24	11,030.23	11,020.74	9.50	1,161.664	
2,400.00	2,387.89	825.00	824.18	8.82	1.22	-111.21	-91.31	-10,868.24	11,047.78	11,037.92	9.86	1,120.423	
2,500.00	2,487.16	825.00	824.18	9.21	1.22	-111.21	-91.31	-10,868.24	11,066.20	11,055.97	10.22	1,082.334	
2,600.00	2,586.44	839.44	838.44	9.59	1.25	-111.21	-90.69	-10,870.35	11,085.39	11,074.77	10.62	1,043.942	
2,700.00	2,685.71	855.00	853.80	9.98	1.29	-111.22	-90.31	-10,872.84	11,105.40	11,094.39	11.01	1,008.330	
2,800.00	2,784.99	855.00	853.80	10.36	1.29	-111.22	-90.31	-10,872.84	11,126.16	11,114.78	11.37	978.299	
2,900.00	2,884.26	886.00	884.33	10.75	1.37	-111.23	-89.81	-10,878.22	11,147.72	11,135.92	11.80	944.758	
3,000.00	2,983.53	886.00	884.33	11.13	1.37	-111.23	-89.81	-10,878.22	11,169.92	11,157.76	12.16	918.925	
3,100.00	3,082.81	886.00	884.33	11.52	1.37	-111.23	-89.81	-10,878.22	11,192.97	11,180.46	12.51	894.743	
3,200.00	3,182.08	886.00	884.33	11.90	1.37	-111.23	-89.81	-10,878.22	11,216.86	11,204.00	12.86	872.069	
3,300.00	3,281.36	886.00	884.33	12.29	1.37	-111.23	-89.81	-10,878.22	11,241.60	11,228.38	13.21	850.778	
3,400.00	3,380.63	917.31	915.01	12.67	1.45	-111.25	-89.13	-10,884.42	11,266.60	11,252.96	13.64	826.098	
3,500.00	3,479.91	948.00	944.86	13.06	1.53	-111.26	-88.15	-10,891.48	11,293.00	11,278.94	14.06	803.177	
3,600.00	3,579.18	948.00	944.86	13.44	1.53	-111.26	-88.15	-10,891.48	11,319.69	11,305.29	14.41	785.795	
3,700.00	3,678.46	948.00	944.86	13.83	1.53	-111.26	-88.15	-10,891.48	11,347.20	11,332.45	14.75	769.379	
3,800.00	3,777.73	948.00	944.86	14.21	1.53	-111.26	-88.15	-10,891.48	11,375.52	11,360.43	15.09	753.858	
3,900.00	3,877.01	966.21	962.48	14.60	1.60	-111.27	-87.39	-10,896.01	11,404.58	11,389.10	15.48	736.835	
4,000.00	3,976.28	978.00	973.87	14.98	1.64	-111.27	-86.82	-10,899.00	11,434.29	11,418.44	15.85	721.575	
4,100.00	4,075.55	1,010.00	1,004.69	15.37	1.76	-111.28	-85.03	-10,907.41	11,464.67	11,448.40	16.27	704.567	
4,200.00	4,174.83	1,010.00	1,004.69	15.75	1.76	-111.28	-85.03	-10,907.41	11,495.67	11,479.07	16.60	692.317	
4,300.00	4,274.10	1,010.00	1,004.69	16.14	1.76	-111.28	-85.03	-10,907.41	11,527.45	11,510.52	16.94	680.677	
4,400.00	4,373.38	1,041.00	1,034.33	16.53	1.90	-111.28	-82.96	-10,916.26	11,559.96	11,542.61	17.36	665.995	
4,500.00	4,472.65	1,041.00	1,034.33	16.91	1.90	-111.28	-82.96	-10,916.26	11,593.04	11,575.36	17.68	655.573	
4,600.00	4,571.93	1,041.00	1,034.33	17.30	1.90	-111.28	-82.96	-10,916.26	11,626.88	11,608.88	18.01	645.647	
4,700.00	4,671.20	1,071.00	1,062.83	17.68	2.05	-111.29	-80.63	-10,925.34	11,661.31	11,642.89	18.43	632.858	
4,800.00	4,770.48	1,071.00	1,062.83	18.07	2.05	-111.29	-80.63	-10,925.34	11,696.43	11,677.68	18.75	623.923	
4,900.00	4,869.75	1,101.00	1,091.15	18.45	2.21	-111.29	-77.89	-10,934.84	11,732.16	11,712.99	19.17	612.114	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	1,101.00	1,091.15	18.84	2.21	-111.29	-77.89	-10,934.84	11,768.53	11,749.04	19.48	604.050	
5,100.00	5,068.30	1,114.86	1,104.14	19.23	2.30	-111.29	-76.42	-10,939.43	11,805.58	11,785.73	19.85	594.819	
5,200.00	5,167.58	1,132.00	1,120.15	19.61	2.40	-111.29	-74.36	-10,945.21	11,843.24	11,823.01	20.22	585.656	
5,300.00	5,266.85	1,163.00	1,148.95	20.00	2.60	-111.28	-70.19	-10,955.88	11,881.49	11,860.84	20.65	575.272	
5,400.00	5,366.12	1,163.00	1,148.95	20.38	2.60	-111.28	-70.19	-10,955.88	11,920.27	11,899.31	20.96	568.669	
5,500.00	5,465.40	1,194.00	1,177.60	20.77	2.82	-111.28	-65.82	-10,966.89	11,959.67	11,938.28	21.39	559.001	
5,600.00	5,564.67	1,194.00	1,177.60	21.15	2.82	-111.28	-65.82	-10,966.89	11,999.63	11,977.93	21.70	553.007	
5,700.00	5,663.95	1,208.22	1,190.68	21.54	2.92	-111.27	-63.79	-10,972.09	12,040.22	12,018.15	22.06	545.738	
5,800.00	5,763.22	1,225.00	1,206.03	21.93	3.04	-111.27	-61.27	-10,978.38	12,081.44	12,059.00	22.43	538.511	
5,900.00	5,862.50	1,225.00	1,206.03	22.31	3.04	-111.27	-61.27	-10,978.38	12,123.24	12,100.51	22.73	533.286	
6,000.00	5,961.77	1,257.00	1,235.10	22.70	3.29	-111.26	-56.17	-10,990.74	12,165.66	12,142.48	23.18	524.909	
6,100.00	6,061.05	1,288.69	1,263.76	23.08	3.55	-111.25	-50.77	-11,003.13	12,208.53	12,184.91	23.62	516.802	
6,200.00	6,160.32	1,315.13	1,287.63	23.47	3.76	-111.23	-46.07	-11,013.50	12,251.75	12,227.70	24.05	509.482	
6,300.00	6,259.60	1,328.00	1,299.18	23.86	3.87	-111.23	-43.61	-11,018.62	12,295.50	12,271.10	24.40	503.840	
6,376.00	6,335.04	1,345.18	1,314.56	24.15	4.01	-111.22	-40.33	-11,025.53	12,329.11	12,304.40	24.71	498.902	
6,400.00	6,358.85	1,359.00	1,326.92	24.24	4.13	-125.97	-37.78	-11,031.15	12,340.21	12,315.35	24.85	496.500	
6,450.00	6,408.16	1,359.00	1,326.92	24.44	4.13	-145.19	-37.78	-11,031.15	12,365.89	12,340.89	25.00	494.623	
6,500.00	6,456.87	1,359.00	1,326.92	24.64	4.13	-155.18	-37.78	-11,031.15	12,395.00	12,369.86	25.14	492.969	
6,550.00	6,504.65	1,359.00	1,326.92	24.85	4.13	-160.97	-37.78	-11,031.15	12,427.33	12,402.05	25.28	491.595	
6,600.00	6,551.23	1,374.60	1,340.84	25.06	4.26	-164.66	-34.92	-11,037.59	12,462.58	12,437.09	25.49	488.921	
6,650.00	6,596.31	1,391.00	1,355.41	25.26	4.41	-167.23	-31.84	-11,044.47	12,500.65	12,474.95	25.70	486.500	
6,700.00	6,639.62	1,391.00	1,355.41	25.48	4.41	-169.14	-31.84	-11,044.47	12,541.14	12,515.34	25.80	486.027	
6,750.00	6,680.88	1,391.00	1,355.41	25.69	4.41	-170.65	-31.84	-11,044.47	12,583.87	12,557.97	25.90	485.853 SF	
6,800.00	6,719.85	1,391.00	1,355.41	25.91	4.41	-171.93	-31.84	-11,044.47	12,628.55	12,602.56	25.99	485.972	
6,850.00	6,756.28	1,391.00	1,355.41	26.13	4.41	-173.11	-31.84	-11,044.47	12,674.87	12,648.81	26.06	486.375	
6,900.00	6,789.95	1,391.00	1,355.41	26.37	4.41	-174.37	-31.84	-11,044.47	12,722.55	12,696.43	26.12	487.051	
6,950.00	6,820.65	1,391.00	1,355.41	26.61	4.41	-176.05	-31.84	-11,044.47	12,771.27	12,745.09	26.17	487.981	
7,000.00	6,848.19	1,391.00	1,355.41	26.87	4.41	-179.36	-31.84	-11,044.47	12,820.72	12,794.50	26.21	489.145	
7,050.00	6,872.41	1,402.97	1,366.01	27.13	4.52	163.24	-29.57	-11,049.55	12,870.56	12,844.26	26.31	489.258	
7,100.00	6,893.15	1,391.00	1,355.41	27.41	4.41	21.23	-31.84	-11,044.47	12,920.57	12,894.31	26.26	492.061	
7,150.00	6,910.28	1,391.00	1,355.41	27.71	4.41	12.49	-31.84	-11,044.47	12,970.35	12,944.08	26.27	493.742	
7,200.00	6,923.70	1,391.00	1,355.41	28.02	4.41	10.21	-31.84	-11,044.47	13,019.63	12,993.35	26.27	495.518	
7,250.00	6,933.33	1,391.00	1,355.41	28.34	4.41	9.14	-31.84	-11,044.47	13,068.11	13,041.84	26.28	497.341	
7,300.00	6,939.11	1,391.00	1,355.41	28.67	4.41	8.54	-31.84	-11,044.47	13,115.51	13,089.23	26.28	499.159	
7,349.12	6,941.00	1,391.00	1,355.41	29.00	4.41	8.18	-31.84	-11,044.47	13,160.75	13,134.47	26.27	500.889	
7,400.00	6,941.01	1,391.00	1,355.41	29.36	4.41	8.18	-31.84	-11,044.47	13,206.85	13,180.57	26.28	502.560	
7,500.00	6,941.02	1,391.00	1,355.41	30.11	4.41	8.18	-31.84	-11,044.47	13,297.57	13,271.27	26.30	505.656	
7,600.00	6,941.04	1,375.37	1,341.52	30.93	4.27	8.19	-34.77	-11,037.91	13,388.35	13,362.11	26.24	510.274	
7,700.00	6,941.05	1,359.00	1,326.92	31.80	4.13	8.20	-37.78	-11,031.15	13,479.30	13,453.12	26.18	514.904	
7,800.00	6,941.07	1,359.00	1,326.92	32.73	4.13	8.20	-37.78	-11,031.15	13,570.30	13,544.09	26.21	517.727	
7,900.00	6,941.08	1,359.00	1,326.92	33.71	4.13	8.20	-37.78	-11,031.15	13,661.44	13,635.19	26.25	520.459	
8,000.00	6,941.10	1,359.00	1,326.92	34.73	4.13	8.20	-37.78	-11,031.15	13,752.69	13,726.40	26.29	523.103	
8,100.00	6,941.11	1,343.80	1,313.33	35.79	4.00	8.20	-40.59	-11,024.97	13,844.02	13,817.76	26.26	527.233	
8,200.00	6,941.13	1,328.00	1,299.18	36.90	3.87	8.21	-43.61	-11,018.62	13,935.48	13,909.25	26.23	531.357	
8,300.00	6,941.14	1,328.00	1,299.18	38.03	3.87	8.21	-43.61	-11,018.62	14,027.00	14,000.72	26.28	533.744	
8,400.00	6,941.16	1,328.00	1,299.18	39.20	3.87	8.21	-43.61	-11,018.62	14,118.63	14,092.30	26.34	536.050	
8,500.00	6,941.17	1,328.00	1,299.18	40.40	3.87	8.21	-43.61	-11,018.62	14,210.38	14,183.98	26.40	538.278	
8,600.00	6,941.19	1,297.00	1,271.28	41.63	3.61	8.23	-49.36	-11,006.38	14,302.21	14,275.90	26.31	543.611	
8,700.00	6,941.20	1,297.00	1,271.28	42.88	3.61	8.23	-49.36	-11,006.38	14,394.09	14,367.72	26.38	545.677	
8,800.00	6,941.22	1,297.00	1,271.28	44.16	3.61	8.23	-49.36	-11,006.38	14,486.08	14,459.63	26.45	547.670	
8,900.00	6,941.23	1,257.00	1,235.10	45.45	3.29	8.25	-56.17	-10,990.74	14,578.08	14,551.74	26.34	553.499	
9,000.00	6,941.24	1,257.00	1,235.10	46.76	3.29	8.25	-56.17	-10,990.74	14,670.17	14,643.76	26.42	555.334	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,100.00	6,941.26	1,241.20	1,220.78	48.10	3.17	8.25	-58.73	-10,984.58	14,762.31	14,735.88	26.43	558.583	
9,200.00	6,941.27	1,225.00	1,206.03	49.44	3.04	8.25	-61.27	-10,978.38	14,854.59	14,828.15	26.44	561.800	
9,300.00	6,941.29	1,225.00	1,206.03	50.80	3.04	8.25	-61.27	-10,978.38	14,946.90	14,920.37	26.53	563.423	
9,400.00	6,941.30	1,225.00	1,206.03	52.18	3.04	8.25	-61.27	-10,978.38	15,039.32	15,012.70	26.62	564.987	
9,500.00	6,941.32	1,225.00	1,206.03	53.57	3.04	8.25	-61.27	-10,978.38	15,131.83	15,105.11	26.71	566.493	
9,600.00	6,941.33	1,225.00	1,206.03	54.97	3.04	8.25	-61.27	-10,978.38	15,224.43	15,197.62	26.81	567.944	
9,700.00	6,941.35	1,225.00	1,206.03	56.38	3.04	8.25	-61.27	-10,978.38	15,317.13	15,290.22	26.90	569.342	
9,800.00	6,941.36	1,225.00	1,206.03	57.80	3.04	8.25	-61.27	-10,978.38	15,409.91	15,382.91	27.00	570.690	
9,900.00	6,941.38	1,208.36	1,190.81	59.23	2.92	8.26	-63.77	-10,972.14	15,502.69	15,475.66	27.04	573.387	
10,000.00	6,941.39	1,194.00	1,177.60	60.67	2.82	8.26	-65.82	-10,966.89	15,595.66	15,568.58	27.08	575.832	
10,100.00	6,941.41	1,194.00	1,177.60	62.11	2.82	8.26	-65.82	-10,966.89	15,688.64	15,661.45	27.19	577.017	
10,200.00	6,941.42	1,194.00	1,177.60	63.57	2.82	8.26	-65.82	-10,966.89	15,781.71	15,754.41	27.30	578.160	
10,300.00	6,941.44	1,194.00	1,177.60	65.03	2.82	8.26	-65.82	-10,966.89	15,874.86	15,847.45	27.41	579.262	
10,400.00	6,941.45	1,194.00	1,177.60	66.50	2.82	8.26	-65.82	-10,966.89	15,968.09	15,940.57	27.52	580.325	
10,500.00	6,941.47	1,194.00	1,177.60	67.97	2.82	8.26	-65.82	-10,966.89	16,061.40	16,033.78	27.63	581.352	
10,600.00	6,941.48	1,194.00	1,177.60	69.45	2.82	8.26	-65.82	-10,966.89	16,154.80	16,127.06	27.74	582.343	
10,700.00	6,941.50	1,177.87	1,162.71	70.94	2.70	8.26	-68.09	-10,961.11	16,248.21	16,220.41	27.80	584.501	
10,800.00	6,941.51	1,163.00	1,148.95	72.43	2.60	8.26	-70.19	-10,955.88	16,341.74	16,313.88	27.86	586.516	
10,900.00	6,941.53	1,163.00	1,148.95	73.92	2.60	8.26	-70.19	-10,955.88	16,435.30	16,407.32	27.98	587.385	
11,000.00	6,941.54	1,163.00	1,148.95	75.42	2.60	8.26	-70.19	-10,955.88	16,528.94	16,500.84	28.10	588.225	
11,100.00	6,941.56	1,163.00	1,148.95	76.92	2.60	8.26	-70.19	-10,955.88	16,622.65	16,594.43	28.22	589.037	
11,200.00	6,941.57	1,163.00	1,148.95	78.43	2.60	8.26	-70.19	-10,955.88	16,716.43	16,688.09	28.34	589.823	
11,300.00	6,941.59	1,148.14	1,135.17	79.94	2.51	8.26	-72.23	-10,950.73	16,810.24	16,781.83	28.42	591.579	
11,400.00	6,941.60	1,132.00	1,120.15	81.46	2.40	8.26	-74.36	-10,945.21	16,904.15	16,875.66	28.49	593.378	
11,500.00	6,941.61	1,132.00	1,120.15	82.98	2.40	8.26	-74.36	-10,945.21	16,998.08	16,969.47	28.61	594.067	
11,600.00	6,941.63	1,132.00	1,120.15	84.50	2.40	8.26	-74.36	-10,945.21	17,092.08	17,063.34	28.74	594.735	
11,700.00	6,941.64	1,132.00	1,120.15	86.02	2.40	8.26	-74.36	-10,945.21	17,186.15	17,157.28	28.87	595.383	
11,800.00	6,941.66	1,132.00	1,120.15	87.55	2.40	8.26	-74.36	-10,945.21	17,280.28	17,251.29	28.99	596.012	
11,900.00	6,941.67	1,118.12	1,107.19	89.08	2.32	8.26	-76.05	-10,940.52	17,374.44	17,345.36	29.08	597.422	
12,000.00	6,941.69	1,101.00	1,091.15	90.61	2.21	8.25	-77.89	-10,934.84	17,468.71	17,439.55	29.16	598.976	
12,100.00	6,941.70	1,101.00	1,091.15	92.14	2.21	8.25	-77.89	-10,934.84	17,562.98	17,533.68	29.29	599.530	
12,200.00	6,941.72	1,101.00	1,091.15	93.68	2.21	8.25	-77.89	-10,934.84	17,657.31	17,627.89	29.43	600.069	
12,300.00	6,941.73	1,101.00	1,091.15	95.22	2.21	8.25	-77.89	-10,934.84	17,751.70	17,722.15	29.56	600.595	
12,400.00	6,941.75	1,101.00	1,091.15	96.76	2.21	8.25	-77.89	-10,934.84	17,846.16	17,816.47	29.69	601.107	
12,500.00	6,941.76	1,101.00	1,091.15	98.30	2.21	8.25	-77.89	-10,934.84	17,940.67	17,910.85	29.82	601.606	
12,600.00	6,941.78	1,101.00	1,091.15	99.85	2.21	8.25	-77.89	-10,934.84	18,035.25	18,005.29	29.95	602.093	
12,700.00	6,941.79	1,101.00	1,091.15	101.40	2.21	8.25	-77.89	-10,934.84	18,129.88	18,099.79	30.09	602.570	
12,800.00	6,941.81	1,101.00	1,091.15	102.95	2.21	8.25	-77.89	-10,934.84	18,224.57	18,194.35	30.22	603.036	
12,900.00	6,941.82	1,101.00	1,091.15	104.50	2.21	8.25	-77.89	-10,934.84	18,319.32	18,288.96	30.36	603.492	
13,000.00	6,941.84	1,086.90	1,077.88	106.05	2.14	8.25	-79.24	-10,930.28	18,414.03	18,383.57	30.46	604.565	
13,100.00	6,941.85	1,071.00	1,062.83	107.60	2.05	8.24	-80.63	-10,925.34	18,508.95	18,478.39	30.56	605.693	
13,200.00	6,941.87	1,071.00	1,062.83	109.16	2.05	8.24	-80.63	-10,925.34	18,603.81	18,573.11	30.69	606.102	
13,300.00	6,941.88	1,071.00	1,062.83	110.71	2.05	8.24	-80.63	-10,925.34	18,698.72	18,667.89	30.83	606.503	
13,400.00	6,941.90	1,071.00	1,062.83	112.27	2.05	8.24	-80.63	-10,925.34	18,793.69	18,762.72	30.97	606.898	
13,500.00	6,941.91	1,071.00	1,062.83	113.83	2.05	8.24	-80.63	-10,925.34	18,888.70	18,857.60	31.10	607.285	
13,600.00	6,941.93	1,071.00	1,062.83	115.39	2.05	8.24	-80.63	-10,925.34	18,983.77	18,952.53	31.24	607.667	
13,700.00	6,941.94	1,071.00	1,062.83	116.95	2.05	8.24	-80.63	-10,925.34	19,078.89	19,047.51	31.38	608.042	
13,800.00	6,941.96	1,071.00	1,062.83	118.51	2.05	8.24	-80.63	-10,925.34	19,174.06	19,142.55	31.51	608.413	
13,900.00	6,941.97	1,071.00	1,062.83	120.08	2.05	8.24	-80.63	-10,925.34	19,269.28	19,237.63	31.65	608.778	
14,000.00	6,941.99	1,071.00	1,062.83	121.64	2.05	8.24	-80.63	-10,925.34	19,364.54	19,332.75	31.79	609.138	
14,100.00	6,942.00	1,052.48	1,045.24	123.21	1.95	8.23	-82.10	-10,919.72	19,459.82	19,427.93	31.89	610.130	
14,200.00	6,942.01	1,041.00	1,034.33	124.77	1.90	8.22	-82.96	-10,916.26	19,555.15	19,523.14	32.01	610.857	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	1,041.00	1,034.33	126.34	1.90	8.22	-82.96	-10,916.26	19,650.51	19,618.36	32.15	611.187	
14,400.00	6,942.04	1,041.00	1,034.33	127.91	1.90	8.22	-82.96	-10,916.26	19,745.92	19,713.63	32.29	611.515	
14,500.00	6,942.06	1,041.00	1,034.33	129.48	1.90	8.22	-82.96	-10,916.26	19,841.37	19,808.94	32.43	611.839	
14,600.00	6,942.07	1,041.00	1,034.33	131.05	1.90	8.22	-82.96	-10,916.26	19,936.87	19,904.30	32.57	612.160	
14,700.00	6,942.09	1,041.00	1,034.33	132.62	1.90	8.22	-82.96	-10,916.26	20,032.41	19,999.70	32.71	612.479	
14,800.00	6,942.10	1,041.00	1,034.33	134.19	1.90	8.22	-82.96	-10,916.26	20,127.99	20,095.14	32.85	612.795	
14,900.00	6,942.12	1,041.00	1,034.33	135.76	1.90	8.22	-82.96	-10,916.26	20,223.62	20,190.63	32.99	613.109	
15,000.00	6,942.13	1,041.00	1,034.33	137.34	1.90	8.22	-82.96	-10,916.26	20,319.28	20,286.16	33.12	613.420	
15,100.00	6,942.15	1,041.00	1,034.33	138.91	1.90	8.22	-82.96	-10,916.26	20,414.99	20,381.73	33.26	613.730	
15,200.00	6,942.16	1,041.00	1,034.33	140.48	1.90	8.22	-82.96	-10,916.26	20,510.75	20,477.34	33.40	614.037	
15,300.00	6,942.18	1,026.22	1,020.24	142.06	1.83	8.21	-84.00	-10,911.93	20,606.42	20,572.90	33.52	614.713	
15,400.00	6,942.19	1,024.88	1,018.96	143.64	1.82	8.21	-84.09	-10,911.55	20,702.23	20,668.57	33.66	615.043	
15,500.00	6,942.21	1,010.00	1,004.69	145.21	1.76	8.20	-85.03	-10,907.41	20,798.18	20,764.40	33.78	615.699	
15,600.00	6,942.22	1,010.00	1,004.69	146.79	1.76	8.20	-85.03	-10,907.41	20,894.04	20,860.12	33.92	615.987	
15,700.00	6,942.24	1,010.00	1,004.69	148.37	1.76	8.20	-85.03	-10,907.41	20,989.95	20,955.89	34.06	616.274	
15,800.00	6,942.25	1,010.00	1,004.69	149.94	1.76	8.20	-85.03	-10,907.41	21,085.89	21,051.69	34.20	616.561	
15,900.00	6,942.27	1,010.00	1,004.69	151.52	1.76	8.20	-85.03	-10,907.41	21,181.87	21,147.53	34.34	616.846	
16,000.00	6,942.28	1,010.00	1,004.69	153.10	1.76	8.20	-85.03	-10,907.41	21,277.89	21,243.41	34.48	617.131	
16,100.00	6,942.30	1,010.00	1,004.69	154.68	1.76	8.20	-85.03	-10,907.41	21,373.94	21,339.33	34.62	617.415	
16,200.00	6,942.31	1,010.00	1,004.69	156.26	1.76	8.20	-85.03	-10,907.41	21,470.04	21,435.28	34.76	617.698	
16,300.00	6,942.33	1,010.00	1,004.69	157.84	1.76	8.20	-85.03	-10,907.41	21,566.16	21,531.26	34.90	617.981	
16,400.00	6,942.34	1,010.00	1,004.69	159.42	1.76	8.20	-85.03	-10,907.41	21,662.32	21,627.29	35.04	618.264	
16,500.00	6,942.36	1,010.00	1,004.69	161.00	1.76	8.20	-85.03	-10,907.41	21,758.52	21,723.34	35.18	618.546	
16,600.00	6,942.37	1,010.00	1,004.69	162.59	1.76	8.20	-85.03	-10,907.41	21,854.75	21,819.43	35.32	618.827	
16,700.00	6,942.38	1,010.00	1,004.69	164.17	1.76	8.20	-85.03	-10,907.41	21,951.01	21,915.56	35.46	619.109	
16,800.00	6,942.40	1,010.00	1,004.69	165.75	1.76	8.20	-85.03	-10,907.41	22,047.31	22,011.71	35.60	619.390	
16,900.00	6,942.41	1,010.00	1,004.69	167.33	1.76	8.20	-85.03	-10,907.41	22,143.64	22,107.90	35.73	619.671	
17,000.00	6,942.43	1,010.00	1,004.69	168.92	1.76	8.20	-85.03	-10,907.41	22,240.00	22,204.13	35.87	619.951	
17,100.00	6,942.44	1,010.00	1,004.69	170.50	1.76	8.20	-85.03	-10,907.41	22,336.40	22,300.38	36.01	620.232	
17,200.00	6,942.46	1,010.00	1,004.69	172.09	1.76	8.20	-85.03	-10,907.41	22,432.82	22,396.67	36.15	620.512	
17,300.00	6,942.47	993.78	989.09	173.67	1.69	8.19	-85.97	-10,903.08	22,529.21	22,492.93	36.28	621.029	
17,400.00	6,942.49	978.00	973.87	175.26	1.64	8.17	-86.82	-10,899.00	22,625.72	22,589.32	36.40	621.530	
17,500.00	6,942.50	978.00	973.87	176.84	1.64	8.17	-86.82	-10,899.00	22,722.21	22,685.66	36.54	621.799	
17,600.00	6,942.52	978.00	973.87	178.43	1.64	8.17	-86.82	-10,899.00	22,818.72	22,782.04	36.68	622.069	
17,700.00	6,942.53	978.00	973.87	180.01	1.64	8.17	-86.82	-10,899.00	22,915.26	22,878.44	36.82	622.339	
17,800.00	6,942.55	978.00	973.87	181.60	1.64	8.17	-86.82	-10,899.00	23,011.83	22,974.87	36.96	622.609	
17,900.00	6,942.56	978.00	973.87	183.19	1.64	8.17	-86.82	-10,899.00	23,108.43	23,071.33	37.10	622.879	
18,000.00	6,942.58	978.00	973.87	184.77	1.64	8.17	-86.82	-10,899.00	23,205.06	23,167.82	37.24	623.149	
18,100.00	6,942.59	978.00	973.87	186.36	1.64	8.17	-86.82	-10,899.00	23,301.72	23,264.34	37.38	623.420	
18,200.00	6,942.61	978.00	973.87	187.95	1.64	8.17	-86.82	-10,899.00	23,398.40	23,360.89	37.52	623.690	
18,300.00	6,942.62	978.00	973.87	189.54	1.64	8.17	-86.82	-10,899.00	23,495.11	23,457.46	37.65	623.961	
18,400.00	6,942.64	978.00	973.87	191.12	1.64	8.17	-86.82	-10,899.00	23,591.86	23,554.06	37.79	624.232	
18,500.00	6,942.65	964.40	960.73	192.71	1.59	8.16	-87.47	-10,895.55	23,688.59	23,650.67	37.92	624.625	
18,600.00	6,942.67	961.45	957.88	194.30	1.58	8.16	-87.60	-10,894.81	23,785.37	23,747.31	38.06	624.918	
18,700.00	6,942.68	948.00	944.86	195.89	1.53	8.15	-88.15	-10,891.48	23,882.19	23,844.00	38.19	625.297	
18,800.00	6,942.70	948.00	944.86	197.48	1.53	8.15	-88.15	-10,891.48	23,979.01	23,940.67	38.33	625.562	
18,900.00	6,942.71	948.00	944.86	199.07	1.53	8.15	-88.15	-10,891.48	24,075.85	24,037.38	38.47	625.828	
19,000.00	6,942.73	948.00	944.86	200.66	1.53	8.15	-88.15	-10,891.48	24,172.71	24,134.11	38.61	626.094	
19,100.00	6,942.74	948.00	944.86	202.25	1.53	8.15	-88.15	-10,891.48	24,269.61	24,230.86	38.75	626.360	
19,200.00	6,942.76	948.00	944.86	203.84	1.53	8.15	-88.15	-10,891.48	24,366.53	24,327.64	38.89	626.626	
19,300.00	6,942.77	948.00	944.86	205.43	1.53	8.15	-88.15	-10,891.48	24,463.47	24,424.45	39.02	626.892	
19,400.00	6,942.78	948.00	944.86	207.02	1.53	8.15	-88.15	-10,891.48	24,560.44	24,521.27	39.16	627.158	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	948.00	944.86	208.61	1.53	8.15	-88.15	-10,891.48	24,657.43	24,618.13	39.30	627.425	
19,600.00	6,942.81	948.00	944.86	210.20	1.53	8.15	-88.15	-10,891.48	24,754.44	24,715.01	39.44	627.692	
19,700.00	6,942.83	948.00	944.86	211.79	1.53	8.15	-88.15	-10,891.48	24,851.48	24,811.91	39.58	627.959	
19,800.00	6,942.84	948.00	944.86	213.38	1.53	8.15	-88.15	-10,891.48	24,948.54	24,908.83	39.71	628.225	
19,900.00	6,942.86	948.00	944.86	214.97	1.53	8.15	-88.15	-10,891.48	25,045.63	25,005.78	39.85	628.492	
20,000.00	6,942.87	948.00	944.86	216.56	1.53	8.15	-88.15	-10,891.48	25,142.74	25,102.75	39.99	628.760	
20,100.00	6,942.89	948.00	944.86	218.15	1.53	8.15	-88.15	-10,891.48	25,239.87	25,199.74	40.13	629.027	
20,200.00	6,942.90	948.00	944.86	219.75	1.53	8.15	-88.15	-10,891.48	25,337.02	25,296.76	40.26	629.294	
20,300.00	6,942.92	948.00	944.86	221.34	1.53	8.15	-88.15	-10,891.48	25,434.20	25,393.80	40.40	629.561	
20,400.00	6,942.93	948.00	944.86	222.93	1.53	8.15	-88.15	-10,891.48	25,531.40	25,490.86	40.54	629.828	
20,500.00	6,942.95	948.00	944.86	224.52	1.53	8.15	-88.15	-10,891.48	25,628.61	25,587.94	40.67	630.095	
20,600.00	6,942.96	948.00	944.86	226.12	1.53	8.15	-88.15	-10,891.48	25,725.85	25,685.04	40.81	630.362	
20,700.00	6,942.98	948.00	944.86	227.71	1.53	8.15	-88.15	-10,891.48	25,823.12	25,782.17	40.95	630.629	
20,800.00	6,942.99	948.00	944.86	229.30	1.53	8.15	-88.15	-10,891.48	25,920.40	25,879.31	41.09	630.896	
20,855.77	6,943.00	948.00	944.86	230.19	1.53	8.15	-88.15	-10,891.48	25,974.66	25,933.50	41.16	631.045	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-46.41	479.92	-504.08	698.76				
100.00	100.00	38.79	38.79	0.25	0.04	-46.41	479.91	-504.06	695.98	695.69	0.29	2,361.224	
200.00	200.00	140.86	140.86	0.61	0.16	-46.41	479.71	-503.88	695.72	694.95	0.77	905.877	
300.00	300.00	242.93	242.93	0.97	0.27	-46.41	479.28	-503.50	695.16	693.92	1.24	560.037	
400.00	400.00	344.99	344.99	1.33	0.39	-46.42	478.63	-502.91	694.30	692.59	1.71	404.924	
457.14	457.14	395.15	395.15	1.53	0.48	-46.42	478.34	-502.73	693.94	691.93	2.01	345.137	CC, ES
500.00	500.00	428.74	428.73	1.68	0.54	-46.43	478.44	-502.94	694.22	691.99	2.23	311.701	
600.00	599.98	498.51	498.46	2.04	0.69	-67.21	480.02	-504.61	696.90	694.18	2.72	255.847	
700.00	699.84	567.00	566.74	2.40	0.85	-67.37	483.61	-508.44	702.64	699.42	3.22	218.125	
800.00	799.45	634.09	633.30	2.77	1.02	-67.64	489.36	-514.50	711.78	708.06	3.72	191.402	
845.27	844.44	665.20	664.04	2.93	1.10	-67.79	492.77	-517.96	716.95	713.01	3.95	181.729	
900.00	898.77	701.94	700.20	3.13	1.20	-68.09	497.34	-522.54	724.20	719.98	4.22	171.440	
1,000.00	998.04	768.30	765.06	3.50	1.45	-68.62	507.24	-532.41	740.96	736.24	4.73	156.767	
1,100.00	1,097.32	831.53	826.21	3.87	1.73	-69.08	518.70	-543.64	762.16	756.93	5.22	145.937	
1,200.00	1,196.59	894.34	886.19	4.24	2.06	-69.49	532.08	-556.62	787.74	782.02	5.72	137.789	
1,300.00	1,295.87	962.48	950.38	4.62	2.47	-69.90	548.39	-572.65	817.26	811.03	6.23	131.089	
1,400.00	1,395.14	1,024.86	1,008.37	5.00	2.90	-70.24	564.81	-588.67	850.13	843.40	6.73	126.324	
1,500.00	1,494.42	1,083.94	1,062.51	5.38	3.34	-70.51	581.86	-605.06	886.41	879.20	7.21	122.932	
1,600.00	1,593.69	1,143.26	1,115.86	5.76	3.83	-70.74	600.57	-623.02	926.35	918.66	7.69	120.401	
1,700.00	1,692.96	1,200.49	1,166.35	6.14	4.36	-70.92	620.21	-641.47	969.58	961.41	8.17	118.648	
1,800.00	1,792.24	1,263.78	1,221.22	6.52	4.97	-71.04	643.58	-662.65	1,015.48	1,006.79	8.69	116.859	
1,900.00	1,891.51	1,311.00	1,261.52	6.91	5.46	-71.10	661.92	-679.05	1,063.90	1,054.80	9.10	116.882	
2,000.00	1,990.79	1,378.47	1,318.10	7.29	6.20	-71.19	689.06	-703.83	1,114.65	1,104.98	9.66	115.336	
2,100.00	2,090.06	1,436.00	1,365.60	7.67	6.86	-71.27	712.81	-725.95	1,167.40	1,157.24	10.16	114.892	
2,200.00	2,189.34	1,498.00	1,416.09	8.06	7.59	-71.38	738.49	-751.16	1,221.98	1,211.28	10.69	114.288	
2,300.00	2,288.61	1,566.31	1,471.18	8.44	8.42	-71.56	766.41	-780.33	1,277.85	1,266.57	11.28	113.303	
2,400.00	2,387.89	1,627.24	1,519.78	8.82	9.20	-71.70	791.81	-806.89	1,334.93	1,323.12	11.81	113.005	
2,500.00	2,487.16	1,689.40	1,568.76	9.21	10.00	-71.81	818.59	-834.25	1,393.25	1,380.89	12.36	112.688	
2,600.00	2,586.44	1,760.98	1,624.77	9.59	10.91	-71.92	849.87	-865.97	1,452.25	1,439.25	13.00	111.739	
2,700.00	2,685.71	1,826.43	1,675.45	9.98	11.77	-71.99	879.02	-895.40	1,512.22	1,498.63	13.59	111.297	
2,800.00	2,784.99	1,926.28	1,752.92	10.36	13.03	-72.06	924.05	-939.44	1,571.93	1,557.45	14.48	108.581	
2,900.00	2,884.26	2,048.63	1,849.60	10.75	14.52	-72.12	978.22	-991.27	1,629.51	1,613.96	15.55	104.773	
3,000.00	2,983.53	2,198.90	1,971.06	11.13	16.28	-72.23	1,041.88	-1,052.69	1,684.83	1,667.99	16.84	100.059	
3,100.00	3,082.81	2,275.66	2,033.53	11.52	17.19	-72.22	1,075.18	-1,082.33	1,739.00	1,721.47	17.53	99.222	
3,200.00	3,182.08	2,393.66	2,131.15	11.90	18.51	-72.27	1,123.83	-1,127.34	1,791.10	1,772.57	18.53	96.658	
3,300.00	3,281.36	3,253.00	2,925.31	12.29	24.19	-73.93	1,337.18	-1,331.44	1,804.11	1,781.38	22.72	79.391	
3,400.00	3,380.63	3,253.00	2,925.31	12.67	24.19	-73.93	1,337.18	-1,331.44	1,819.90	1,796.72	23.18	78.501	
3,500.00	3,479.91	3,253.00	2,925.31	13.06	24.19	-73.93	1,337.18	-1,331.44	1,841.00	1,817.42	23.58	78.080	SF
3,600.00	3,579.18	3,253.00	2,925.31	13.44	24.19	-73.93	1,337.18	-1,331.44	1,867.23	1,843.31	23.91	78.091	
3,700.00	3,678.46	3,253.00	2,925.31	13.83	24.19	-73.93	1,337.18	-1,331.44	1,898.36	1,874.18	24.18	78.499	
3,800.00	3,777.73	3,253.00	2,925.31	14.21	24.19	-73.93	1,337.18	-1,331.44	1,934.17	1,909.77	24.40	79.272	
3,900.00	3,877.01	3,253.00	2,925.31	14.60	24.19	-73.93	1,337.18	-1,331.44	1,974.40	1,949.84	24.56	80.378	
4,000.00	3,976.28	3,253.00	2,925.31	14.98	24.19	-73.93	1,337.18	-1,331.44	2,018.79	1,994.11	24.68	81.790	
4,100.00	4,075.55	3,253.00	2,925.31	15.37	24.19	-73.93	1,337.18	-1,331.44	2,067.06	2,042.30	24.76	83.480	
4,200.00	4,174.83	3,253.00	2,925.31	15.75	24.19	-73.93	1,337.18	-1,331.44	2,118.96	2,094.16	24.81	85.424	
4,300.00	4,274.10	3,253.00	2,925.31	16.14	24.19	-73.93	1,337.18	-1,331.44	2,174.22	2,149.40	24.82	87.600	
4,400.00	4,373.38	3,253.00	2,925.31	16.53	24.19	-73.93	1,337.18	-1,331.44	2,232.60	2,207.79	24.81	89.984	
4,500.00	4,472.65	3,253.00	2,925.31	16.91	24.19	-73.93	1,337.18	-1,331.44	2,293.85	2,269.06	24.78	92.558	
4,600.00	4,571.93	3,253.00	2,925.31	17.30	24.19	-73.93	1,337.18	-1,331.44	2,357.75	2,333.01	24.74	95.302	
4,700.00	4,671.20	3,253.00	2,925.31	17.68	24.19	-73.93	1,337.18	-1,331.44	2,424.09	2,399.41	24.69	98.198	
4,800.00	4,770.48	3,253.00	2,925.31	18.07	24.19	-73.93	1,337.18	-1,331.44	2,492.68	2,468.06	24.62	101.231	
4,900.00	4,869.75	3,253.00	2,925.31	18.45	24.19	-73.93	1,337.18	-1,331.44	2,563.34	2,538.78	24.56	104.383	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	4,969.03	3,253.00	2,925.31	18.84	24.19	-73.93	1,337.18	-1,331.44	2,635.90	2,611.41	24.49	107.640	
5,100.00	5,068.30	3,253.00	2,925.31	19.23	24.19	-73.93	1,337.18	-1,331.44	2,710.20	2,685.78	24.42	110.990	
5,200.00	5,167.58	3,253.00	2,925.31	19.61	24.19	-73.93	1,337.18	-1,331.44	2,786.12	2,761.77	24.35	114.417	
5,300.00	5,266.85	3,253.00	2,925.31	20.00	24.19	-73.93	1,337.18	-1,331.44	2,863.51	2,839.23	24.29	117.911	
5,400.00	5,366.12	3,253.00	2,925.31	20.38	24.19	-73.93	1,337.18	-1,331.44	2,942.27	2,918.04	24.22	121.459	
5,500.00	5,465.40	3,253.00	2,925.31	20.77	24.19	-73.93	1,337.18	-1,331.44	3,022.28	2,998.11	24.17	125.052	
5,600.00	5,564.67	3,253.00	2,925.31	21.15	24.19	-73.93	1,337.18	-1,331.44	3,103.45	3,079.34	24.12	128.678	
5,700.00	5,663.95	3,253.00	2,925.31	21.54	24.19	-73.93	1,337.18	-1,331.44	3,185.70	3,161.62	24.07	132.328	
5,800.00	5,763.22	3,253.00	2,925.31	21.93	24.19	-73.93	1,337.18	-1,331.44	3,268.93	3,244.89	24.04	135.993	
5,900.00	5,862.50	3,253.00	2,925.31	22.31	24.19	-73.93	1,337.18	-1,331.44	3,353.08	3,329.07	24.01	139.665	
6,000.00	5,961.77	3,253.00	2,925.31	22.70	24.19	-73.93	1,337.18	-1,331.44	3,438.08	3,414.10	23.99	143.335	
6,100.00	6,061.05	3,253.00	2,925.31	23.08	24.19	-73.93	1,337.18	-1,331.44	3,523.87	3,499.90	23.97	146.998	
6,200.00	6,160.32	3,253.00	2,925.31	23.47	24.19	-73.93	1,337.18	-1,331.44	3,610.39	3,586.42	23.97	150.645	
6,300.00	6,259.60	3,253.00	2,925.31	23.86	24.19	-73.93	1,337.18	-1,331.44	3,697.59	3,673.62	23.97	154.270	
6,376.00	6,335.04	3,253.00	2,925.31	24.15	24.19	-73.93	1,337.18	-1,331.44	3,764.28	3,740.31	23.98	157.007	
6,400.00	6,358.85	3,253.00	2,925.31	24.24	24.19	-86.13	1,337.18	-1,331.44	3,785.58	3,761.60	23.98	157.848	
6,450.00	6,408.16	3,253.00	2,925.31	24.44	24.19	-98.70	1,337.18	-1,331.44	3,831.03	3,807.01	24.01	159.546	
6,500.00	6,456.87	3,253.00	2,925.31	24.64	24.19	-99.76	1,337.18	-1,331.44	3,877.64	3,853.58	24.06	161.167	
6,550.00	6,504.65	3,253.00	2,925.31	24.85	24.19	-93.71	1,337.18	-1,331.44	3,925.09	3,900.96	24.12	162.716	
6,600.00	6,551.23	3,253.00	2,925.31	25.06	24.19	-82.66	1,337.18	-1,331.44	3,973.06	3,948.86	24.20	164.180	
6,650.00	6,596.31	3,253.00	2,925.31	25.26	24.19	-68.92	1,337.18	-1,331.44	4,021.25	3,996.96	24.29	165.547	
6,700.00	6,639.62	3,253.00	2,925.31	25.48	24.19	-55.37	1,337.18	-1,331.44	4,069.36	4,044.96	24.40	166.804	
6,750.00	6,680.88	3,253.00	2,925.31	25.69	24.19	-44.05	1,337.18	-1,331.44	4,117.09	4,092.58	24.51	167.942	
6,800.00	6,719.85	3,253.00	2,925.31	25.91	24.19	-35.40	1,337.18	-1,331.44	4,164.18	4,139.53	24.65	168.949	
6,850.00	6,756.28	3,253.00	2,925.31	26.13	24.19	-28.99	1,337.18	-1,331.44	4,210.35	4,185.56	24.79	169.814	
6,900.00	6,789.95	3,253.00	2,925.31	26.37	24.19	-24.22	1,337.18	-1,331.44	4,255.36	4,230.41	24.95	170.526	
6,950.00	6,820.65	3,253.00	2,925.31	26.61	24.19	-20.63	1,337.18	-1,331.44	4,298.97	4,273.84	25.13	171.076	
7,000.00	6,848.19	3,253.00	2,925.31	26.87	24.19	-17.87	1,337.18	-1,331.44	4,340.96	4,315.64	25.32	171.453	
7,050.00	6,872.41	3,253.00	2,925.31	27.13	24.19	-15.70	1,337.18	-1,331.44	4,381.12	4,355.60	25.52	171.649	
7,100.00	6,893.15	3,253.00	2,925.31	27.41	24.19	-13.97	1,337.18	-1,331.44	4,419.25	4,393.51	25.74	171.656	
7,150.00	6,910.28	3,253.00	2,925.31	27.71	24.19	-12.56	1,337.18	-1,331.44	4,455.18	4,429.19	25.98	171.467	
7,200.00	6,923.70	3,253.00	2,925.31	28.02	24.19	-11.40	1,337.18	-1,331.44	4,488.73	4,462.49	26.24	171.079	
7,250.00	6,933.33	3,253.00	2,925.31	28.34	24.19	-10.43	1,337.18	-1,331.44	4,519.76	4,493.25	26.51	170.490	
7,300.00	6,939.11	3,253.00	2,925.31	28.67	24.19	-9.61	1,337.18	-1,331.44	4,548.13	4,521.33	26.80	169.701	
7,349.12	6,941.00	3,253.00	2,925.31	29.00	24.19	-8.91	1,337.18	-1,331.44	4,573.29	4,546.19	27.10	168.734	
7,400.00	6,941.01	3,253.00	2,925.31	29.36	24.19	-8.91	1,337.18	-1,331.44	4,598.14	4,570.71	27.43	167.617	
7,500.00	6,941.02	3,253.00	2,925.31	30.11	24.19	-8.91	1,337.18	-1,331.44	4,648.21	4,620.11	28.09	165.448	
7,600.00	6,941.04	3,253.00	2,925.31	30.93	24.19	-8.91	1,337.18	-1,331.44	4,699.87	4,671.11	28.76	163.407	
7,700.00	6,941.05	3,253.00	2,925.31	31.80	24.19	-8.91	1,337.18	-1,331.44	4,753.08	4,723.65	29.43	161.503	
7,800.00	6,941.07	3,253.00	2,925.31	32.73	24.19	-8.91	1,337.18	-1,331.44	4,807.78	4,777.68	30.10	159.740	
7,900.00	6,941.08	3,253.00	2,925.31	33.71	24.19	-8.91	1,337.18	-1,331.44	4,863.92	4,833.16	30.76	158.120	
8,000.00	6,941.10	3,253.00	2,925.31	34.73	24.19	-8.91	1,337.18	-1,331.44	4,921.45	4,890.03	31.42	156.642	
8,100.00	6,941.11	3,253.00	2,925.31	35.79	24.19	-8.91	1,337.18	-1,331.44	4,980.33	4,948.26	32.07	155.302	
8,200.00	6,941.13	3,253.00	2,925.31	36.90	24.19	-8.91	1,337.18	-1,331.44	5,040.50	5,007.79	32.71	154.097	
8,300.00	6,941.14	3,253.00	2,925.31	38.03	24.19	-8.91	1,337.18	-1,331.44	5,101.92	5,068.58	33.34	153.022	
8,400.00	6,941.16	3,253.00	2,925.31	39.20	24.19	-8.91	1,337.18	-1,331.44	5,164.55	5,130.59	33.96	152.072	
8,500.00	6,941.17	3,253.00	2,925.31	40.40	24.19	-8.91	1,337.18	-1,331.44	5,228.34	5,193.77	34.57	151.240	
8,600.00	6,941.19	3,253.00	2,925.31	41.63	24.19	-8.91	1,337.18	-1,331.44	5,293.25	5,258.08	35.17	150.520	
8,700.00	6,941.20	3,253.00	2,925.31	42.88	24.19	-8.91	1,337.18	-1,331.44	5,359.24	5,323.49	35.75	149.908	
8,800.00	6,941.22	3,253.00	2,925.31	44.16	24.19	-8.91	1,337.18	-1,331.44	5,426.27	5,389.95	36.32	149.397	
8,900.00	6,941.23	3,253.00	2,925.31	45.45	24.19	-8.91	1,337.18	-1,331.44	5,494.31	5,457.43	36.88	148.981	
9,000.00	6,941.24	3,253.00	2,925.31	46.76	24.19	-8.91	1,337.18	-1,331.44	5,563.31	5,525.88	37.42	148.656	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,941.26	3,253.00	2,925.31	48.10	24.19	-8.91	1,337.18	-1,331.44	5,633.24	5,595.28	37.96	148.416	
9,200.00	6,941.27	3,253.00	2,925.31	49.44	24.19	-8.91	1,337.18	-1,331.44	5,704.06	5,665.59	38.47	148.256	
9,300.00	6,941.29	3,253.00	2,925.31	50.80	24.19	-8.91	1,337.18	-1,331.44	5,775.75	5,736.77	38.98	148.172	
9,400.00	6,941.30	3,253.00	2,925.31	52.18	24.19	-8.91	1,337.18	-1,331.44	5,848.27	5,808.80	39.47	148.159	
9,500.00	6,941.32	3,253.00	2,925.31	53.57	24.19	-8.91	1,337.18	-1,331.44	5,921.59	5,881.64	39.95	148.213	
9,600.00	6,941.33	3,253.00	2,925.31	54.97	24.19	-8.91	1,337.18	-1,331.44	5,995.68	5,955.26	40.42	148.330	
9,700.00	6,941.35	3,253.00	2,925.31	56.38	24.19	-8.91	1,337.18	-1,331.44	6,070.51	6,029.64	40.88	148.507	
9,800.00	6,941.36	3,253.00	2,925.31	57.80	24.19	-8.91	1,337.18	-1,331.44	6,146.06	6,104.74	41.32	148.740	
9,900.00	6,941.38	3,253.00	2,925.31	59.23	24.19	-8.91	1,337.18	-1,331.44	6,222.31	6,180.55	41.75	149.025	
10,000.00	6,941.39	3,253.00	2,925.31	60.67	24.19	-8.91	1,337.18	-1,331.44	6,299.21	6,257.04	42.17	149.361	
10,100.00	6,941.41	3,253.00	2,925.31	62.11	24.19	-8.91	1,337.18	-1,331.44	6,376.76	6,334.17	42.58	149.743	
10,200.00	6,941.42	3,253.00	2,925.31	63.57	24.19	-8.91	1,337.18	-1,331.44	6,454.92	6,411.94	42.98	150.170	
10,300.00	6,941.44	3,253.00	2,925.31	65.03	24.19	-8.91	1,337.18	-1,331.44	6,533.68	6,490.31	43.37	150.638	
10,400.00	6,941.45	3,253.00	2,925.31	66.50	24.19	-8.91	1,337.18	-1,331.44	6,613.01	6,569.26	43.75	151.147	
10,500.00	6,941.47	3,253.00	2,925.31	67.97	24.19	-8.91	1,337.18	-1,331.44	6,692.90	6,648.78	44.12	151.692	
10,600.00	6,941.48	3,253.00	2,925.31	69.45	24.19	-8.91	1,337.18	-1,331.44	6,773.32	6,728.84	44.48	152.272	
10,700.00	6,941.50	3,253.00	2,925.31	70.94	24.19	-8.91	1,337.18	-1,331.44	6,854.26	6,809.42	44.83	152.886	
10,800.00	6,941.51	3,253.00	2,925.31	72.43	24.19	-8.91	1,337.18	-1,331.44	6,935.69	6,890.52	45.17	153.532	
10,900.00	6,941.53	3,253.00	2,925.31	73.92	24.19	-8.91	1,337.18	-1,331.44	7,017.60	6,972.10	45.51	154.207	
11,000.00	6,941.54	3,253.00	2,925.31	75.42	24.19	-8.91	1,337.18	-1,331.44	7,099.98	7,054.15	45.83	154.910	
11,100.00	6,941.56	3,253.00	2,925.31	76.92	24.19	-8.91	1,337.18	-1,331.44	7,182.81	7,136.66	46.15	155.640	
11,200.00	6,941.57	3,253.00	2,925.31	78.43	24.19	-8.91	1,337.18	-1,331.44	7,266.06	7,219.60	46.46	156.395	
11,300.00	6,941.59	3,253.00	2,925.31	79.94	24.19	-8.91	1,337.18	-1,331.44	7,349.74	7,302.98	46.76	157.175	
11,400.00	6,941.60	3,253.00	2,925.31	81.46	24.19	-8.91	1,337.18	-1,331.44	7,433.81	7,386.76	47.06	157.976	
11,500.00	6,941.61	3,253.00	2,925.31	82.98	24.19	-8.91	1,337.18	-1,331.44	7,518.28	7,470.94	47.34	158.800	
11,600.00	6,941.63	3,253.00	2,925.31	84.50	24.19	-8.91	1,337.18	-1,331.44	7,603.13	7,555.50	47.63	159.643	
11,700.00	6,941.64	3,253.00	2,925.31	86.02	24.19	-8.91	1,337.18	-1,331.44	7,688.34	7,640.43	47.90	160.506	
11,800.00	6,941.66	3,253.00	2,925.31	87.55	24.19	-8.91	1,337.18	-1,331.44	7,773.90	7,725.73	48.17	161.387	
11,900.00	6,941.67	3,253.00	2,925.31	89.08	24.19	-8.91	1,337.18	-1,331.44	7,859.80	7,811.37	48.43	162.285	
12,000.00	6,941.69	3,253.00	2,925.31	90.61	24.19	-8.91	1,337.18	-1,331.44	7,946.03	7,897.34	48.69	163.200	
12,100.00	6,941.70	3,253.00	2,925.31	92.14	24.19	-8.91	1,337.18	-1,331.44	8,032.58	7,983.64	48.94	164.131	
12,200.00	6,941.72	3,253.00	2,925.31	93.68	24.19	-8.91	1,337.18	-1,331.44	8,119.44	8,070.26	49.19	165.076	
12,300.00	6,941.73	3,253.00	2,925.31	95.22	24.19	-8.91	1,337.18	-1,331.44	8,206.60	8,157.17	49.43	166.035	
12,400.00	6,941.75	3,253.00	2,925.31	96.76	24.19	-8.91	1,337.18	-1,331.44	8,294.05	8,244.39	49.66	167.007	
12,500.00	6,941.76	3,253.00	2,925.31	98.30	24.19	-8.91	1,337.18	-1,331.44	8,381.78	8,331.89	49.89	167.992	
12,600.00	6,941.78	3,253.00	2,925.31	99.85	24.19	-8.91	1,337.18	-1,331.44	8,469.78	8,419.66	50.12	168.989	
12,700.00	6,941.79	3,253.00	2,925.31	101.40	24.19	-8.91	1,337.18	-1,331.44	8,558.05	8,507.71	50.34	169.998	
12,800.00	6,941.81	3,253.00	2,925.31	102.95	24.19	-8.91	1,337.18	-1,331.44	8,646.57	8,596.01	50.56	171.017	
12,900.00	6,941.82	3,253.00	2,925.31	104.50	24.19	-8.91	1,337.18	-1,331.44	8,735.34	8,684.56	50.77	172.046	
13,000.00	6,941.84	3,253.00	2,925.31	106.05	24.19	-8.91	1,337.18	-1,331.44	8,824.35	8,773.36	50.98	173.085	
13,100.00	6,941.85	3,253.00	2,925.31	107.60	24.19	-8.91	1,337.18	-1,331.44	8,913.59	8,862.40	51.19	174.132	
13,200.00	6,941.87	3,253.00	2,925.31	109.16	24.19	-8.91	1,337.18	-1,331.44	9,003.06	8,951.67	51.39	175.189	
13,300.00	6,941.88	3,253.00	2,925.31	110.71	24.19	-8.91	1,337.18	-1,331.44	9,092.74	9,041.15	51.59	176.254	
13,400.00	6,941.90	3,253.00	2,925.31	112.27	24.19	-8.91	1,337.18	-1,331.44	9,182.64	9,130.86	51.78	177.326	
13,500.00	6,941.91	3,253.00	2,925.31	113.83	24.19	-8.91	1,337.18	-1,331.44	9,272.75	9,220.78	51.98	178.406	
13,600.00	6,941.93	3,253.00	2,925.31	115.39	24.19	-8.91	1,337.18	-1,331.44	9,363.06	9,310.90	52.16	179.492	
13,700.00	6,941.94	3,253.00	2,925.31	116.95	24.19	-8.91	1,337.18	-1,331.44	9,453.56	9,401.21	52.35	180.586	
13,800.00	6,941.96	3,253.00	2,925.31	118.51	24.19	-8.91	1,337.18	-1,331.44	9,544.26	9,491.72	52.53	181.685	
13,900.00	6,941.97	3,253.00	2,925.31	120.08	24.19	-8.91	1,337.18	-1,331.44	9,635.13	9,582.42	52.71	182.790	
14,000.00	6,941.99	3,253.00	2,925.31	121.64	24.19	-8.91	1,337.18	-1,331.44	9,726.19	9,673.30	52.89	183.901	
14,100.00	6,942.00	3,253.00	2,925.31	123.21	24.19	-8.91	1,337.18	-1,331.44	9,817.42	9,764.36	53.06	185.016	
14,200.00	6,942.01	3,253.00	2,925.31	124.77	24.19	-8.91	1,337.18	-1,331.44	9,908.82	9,855.59	53.23	186.137	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	3,253.00	2,925.31	126.34	24.19	-8.91	1,337.18	-1,331.44	10,000.38	9,946.98	53.40	187.262	
14,400.00	6,942.04	3,253.00	2,925.31	127.91	24.19	-8.91	1,337.18	-1,331.44	10,092.11	10,038.54	53.57	188.391	
14,500.00	6,942.06	3,253.00	2,925.31	129.48	24.19	-8.91	1,337.18	-1,331.44	10,183.99	10,130.25	53.73	189.525	
14,600.00	6,942.07	3,253.00	2,925.31	131.05	24.19	-8.91	1,337.18	-1,331.44	10,276.02	10,222.12	53.90	190.662	
14,700.00	6,942.09	3,253.00	2,925.31	132.62	24.19	-8.91	1,337.18	-1,331.44	10,368.20	10,314.14	54.06	191.802	
14,800.00	6,942.10	3,253.00	2,925.31	134.19	24.19	-8.91	1,337.18	-1,331.44	10,460.52	10,406.31	54.21	192.946	
14,900.00	6,942.12	3,253.00	2,925.31	135.76	24.19	-8.91	1,337.18	-1,331.44	10,552.98	10,498.61	54.37	194.092	
15,000.00	6,942.13	3,253.00	2,925.31	137.34	24.19	-8.91	1,337.18	-1,331.44	10,645.58	10,591.06	54.53	195.242	
15,100.00	6,942.15	3,253.00	2,925.31	138.91	24.19	-8.91	1,337.18	-1,331.44	10,738.32	10,683.64	54.68	196.394	
15,200.00	6,942.16	3,253.00	2,925.31	140.48	24.19	-8.91	1,337.18	-1,331.44	10,831.18	10,776.35	54.83	197.548	
15,300.00	6,942.18	3,253.00	2,925.31	142.06	24.19	-8.91	1,337.18	-1,331.44	10,924.16	10,869.19	54.98	198.705	
15,400.00	6,942.19	3,253.00	2,925.31	143.64	24.19	-8.91	1,337.18	-1,331.44	11,017.27	10,962.15	55.12	199.863	
15,500.00	6,942.21	3,253.00	2,925.31	145.21	24.19	-8.91	1,337.18	-1,331.44	11,110.50	11,055.23	55.27	201.024	
15,600.00	6,942.22	3,253.00	2,925.31	146.79	24.19	-8.91	1,337.18	-1,331.44	11,203.85	11,148.44	55.41	202.185	
15,700.00	6,942.24	3,253.00	2,925.31	148.37	24.19	-8.91	1,337.18	-1,331.44	11,297.31	11,241.75	55.56	203.349	
15,800.00	6,942.25	3,253.00	2,925.31	149.94	24.19	-8.91	1,337.18	-1,331.44	11,390.88	11,335.18	55.70	204.513	
15,900.00	6,942.27	3,253.00	2,925.31	151.52	24.19	-8.91	1,337.18	-1,331.44	11,484.56	11,428.72	55.84	205.679	
16,000.00	6,942.28	3,253.00	2,925.31	153.10	24.19	-8.91	1,337.18	-1,331.44	11,578.35	11,522.37	55.98	206.846	
16,100.00	6,942.30	3,253.00	2,925.31	154.68	24.19	-8.91	1,337.18	-1,331.44	11,672.24	11,616.12	56.11	208.013	
16,200.00	6,942.31	3,253.00	2,925.31	156.26	24.19	-8.91	1,337.18	-1,331.44	11,766.23	11,709.98	56.25	209.181	
16,300.00	6,942.33	3,253.00	2,925.31	157.84	24.19	-8.91	1,337.18	-1,331.44	11,860.31	11,803.93	56.38	210.350	
16,400.00	6,942.34	3,253.00	2,925.31	159.42	24.19	-8.91	1,337.18	-1,331.44	11,954.50	11,897.98	56.52	211.519	
16,500.00	6,942.36	3,253.00	2,925.31	161.00	24.19	-8.91	1,337.18	-1,331.44	12,048.77	11,992.12	56.65	212.688	
16,600.00	6,942.37	3,253.00	2,925.31	162.59	24.19	-8.91	1,337.18	-1,331.44	12,143.14	12,086.36	56.78	213.857	
16,700.00	6,942.38	3,253.00	2,925.31	164.17	24.19	-8.91	1,337.18	-1,331.44	12,237.60	12,180.69	56.91	215.027	
16,800.00	6,942.40	3,253.00	2,925.31	165.75	24.19	-8.91	1,337.18	-1,331.44	12,332.15	12,275.11	57.04	216.196	
16,900.00	6,942.41	3,253.00	2,925.31	167.33	24.19	-8.91	1,337.18	-1,331.44	12,426.78	12,369.61	57.17	217.365	
17,000.00	6,942.43	3,253.00	2,925.31	168.92	24.19	-8.91	1,337.18	-1,331.44	12,521.49	12,464.20	57.30	218.534	
17,100.00	6,942.44	3,253.00	2,925.31	170.50	24.19	-8.91	1,337.18	-1,331.44	12,616.29	12,558.87	57.42	219.703	
17,200.00	6,942.46	3,253.00	2,925.31	172.09	24.19	-8.91	1,337.18	-1,331.44	12,711.17	12,653.62	57.55	220.871	
17,300.00	6,942.47	1,436.00	1,365.60	173.67	6.86	0.02	712.81	-725.95	12,804.42	12,755.61	48.81	262.345	
17,400.00	6,942.49	1,421.68	1,353.86	175.26	6.69	0.08	706.82	-720.34	12,894.69	12,845.82	48.87	263.849	
17,500.00	6,942.50	1,405.00	1,340.10	176.84	6.50	0.15	699.92	-713.92	12,985.15	12,936.22	48.92	265.424	
17,600.00	6,942.52	1,405.00	1,340.10	178.43	6.50	0.15	699.92	-713.92	13,075.66	13,026.60	49.07	266.496	
17,700.00	6,942.53	1,405.00	1,340.10	180.01	6.50	0.15	699.92	-713.92	13,166.32	13,117.11	49.21	267.572	
17,800.00	6,942.55	1,405.00	1,340.10	181.60	6.50	0.15	699.92	-713.92	13,257.10	13,207.76	49.35	268.651	
17,900.00	6,942.56	1,374.00	1,314.38	183.19	6.15	0.28	687.24	-702.14	13,347.97	13,298.65	49.32	270.633	
18,000.00	6,942.58	1,374.00	1,314.38	184.77	6.15	0.28	687.24	-702.14	13,438.94	13,389.48	49.46	271.716	
18,100.00	6,942.59	1,374.00	1,314.38	186.36	6.15	0.28	687.24	-702.14	13,530.02	13,480.43	49.60	272.801	
18,200.00	6,942.61	1,374.00	1,314.38	187.95	6.15	0.28	687.24	-702.14	13,621.24	13,571.50	49.73	273.889	
18,300.00	6,942.62	1,374.00	1,314.38	189.54	6.15	0.28	687.24	-702.14	13,712.57	13,662.71	49.87	274.979	
18,400.00	6,942.64	1,374.00	1,314.38	191.12	6.15	0.28	687.24	-702.14	13,804.03	13,754.03	50.00	276.071	
18,500.00	6,942.65	1,345.76	1,290.80	192.71	5.84	0.39	675.83	-691.60	13,895.40	13,845.40	50.00	277.899	
18,600.00	6,942.67	1,340.60	1,286.47	194.30	5.78	0.42	673.76	-689.71	13,987.01	13,936.90	50.11	279.132	
18,700.00	6,942.68	1,311.00	1,261.52	195.89	5.46	0.53	661.92	-679.05	14,078.87	14,028.78	50.09	281.088	
18,800.00	6,942.70	1,311.00	1,261.52	197.48	5.46	0.53	661.92	-679.05	14,170.62	14,120.40	50.22	282.184	
18,900.00	6,942.71	1,311.00	1,261.52	199.07	5.46	0.53	661.92	-679.05	14,262.48	14,212.14	50.35	283.281	
19,000.00	6,942.73	1,311.00	1,261.52	200.66	5.46	0.53	661.92	-679.05	14,354.45	14,303.98	50.48	284.379	
19,100.00	6,942.74	1,311.00	1,261.52	202.25	5.46	0.53	661.92	-679.05	14,446.53	14,395.93	50.60	285.479	
19,200.00	6,942.76	1,311.00	1,261.52	203.84	5.46	0.53	661.92	-679.05	14,538.71	14,487.98	50.73	286.579	
19,300.00	6,942.77	1,311.00	1,261.52	205.43	5.46	0.53	661.92	-679.05	14,631.00	14,580.14	50.86	287.681	
19,400.00	6,942.78	1,311.00	1,261.52	207.02	5.46	0.53	661.92	-679.05	14,723.38	14,672.40	50.98	288.783	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.00 usft

Survey Program: 352-APC_ISCWSA REV 2 MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,500.00	6,942.80	1,295.62	1,248.47	208.61	5.30	0.59	655.85	-673.63	14,815.81	14,764.77	51.04	290.278	
19,600.00	6,942.81	1,279.00	1,234.28	210.20	5.13	0.66	649.39	-667.86	14,908.39	14,857.30	51.09	291.810	
19,700.00	6,942.83	1,279.00	1,234.28	211.79	5.13	0.66	649.39	-667.86	15,000.99	14,949.77	51.21	292.912	
19,800.00	6,942.84	1,279.00	1,234.28	213.38	5.13	0.66	649.39	-667.86	15,093.68	15,042.35	51.34	294.014	
19,900.00	6,942.86	1,279.00	1,234.28	214.97	5.13	0.66	649.39	-667.86	15,186.47	15,135.01	51.46	295.117	
20,000.00	6,942.87	1,279.00	1,234.28	216.56	5.13	0.66	649.39	-667.86	15,279.35	15,227.77	51.58	296.220	
20,100.00	6,942.89	1,264.97	1,222.24	218.15	4.98	0.71	644.03	-663.06	15,372.28	15,320.64	51.64	297.654	
20,200.00	6,942.90	1,248.00	1,207.61	219.75	4.81	0.77	637.63	-657.32	15,465.33	15,413.64	51.70	299.160	
20,300.00	6,942.92	1,248.00	1,207.61	221.34	4.81	0.77	637.63	-657.32	15,558.41	15,506.59	51.82	300.261	
20,400.00	6,942.93	1,248.00	1,207.61	222.93	4.81	0.77	637.63	-657.32	15,651.57	15,599.63	51.94	301.362	
20,500.00	6,942.95	1,248.00	1,207.61	224.52	4.81	0.77	637.63	-657.32	15,744.81	15,692.76	52.06	302.463	
20,600.00	6,942.96	1,228.34	1,190.58	226.12	4.62	0.84	630.34	-650.73	15,838.10	15,786.00	52.10	303.996	
20,700.00	6,942.98	1,217.00	1,180.74	227.71	4.51	0.88	626.18	-646.94	15,931.46	15,879.28	52.18	305.346	
20,800.00	6,942.99	1,217.00	1,180.74	229.30	4.51	0.88	626.18	-646.94	16,024.88	15,972.59	52.29	306.444	
20,855.77	6,943.00	1,217.00	1,180.74	230.19	4.51	0.88	626.18	-646.94	16,077.02	16,024.66	52.36	307.056	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #53 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-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	55.00	55.00	0.00	0.93	71.31	1,516.31	4,482.83	4,732.33				
100.00	100.00	155.00	155.00	0.25	2.62	71.31	1,516.31	4,482.83	4,732.33	4,729.46	2.87	1,649.524	
200.00	200.00	255.00	255.00	0.61	4.31	71.31	1,516.31	4,482.83	4,732.33	4,727.42	4.92	962.561	
300.00	300.00	355.00	355.00	0.97	6.06	71.31	1,516.31	4,482.83	4,732.33	4,725.31	7.03	673.549	
400.00	400.00	455.00	455.00	1.33	7.86	71.31	1,516.31	4,482.83	4,732.33	4,723.15	9.19	515.151	
500.00	500.00	555.05	555.05	1.68	9.66	71.31	1,516.59	4,482.83	4,732.42	4,721.07	11.35	417.045	
600.00	599.98	656.36	656.36	2.04	11.49	50.61	1,516.54	4,482.83	4,731.30	4,717.77	13.53	349.671	
700.00	699.84	757.54	757.54	2.40	13.31	50.71	1,516.40	4,482.83	4,727.93	4,712.22	15.71	300.909	
800.00	799.45	854.46	854.45	2.77	15.15	50.88	1,516.31	4,482.83	4,722.38	4,704.47	17.91	263.673	
845.27	844.44	899.45	899.44	2.93	16.04	50.97	1,516.31	4,482.83	4,719.16	4,700.20	18.97	248.834	
900.00	898.77	953.78	953.77	3.13	17.11	51.04	1,516.31	4,482.83	4,715.00	4,694.76	20.24	232.968	
1,000.00	998.04	1,054.46	1,054.45	3.50	19.11	51.14	1,516.74	4,482.83	4,707.55	4,684.96	22.60	208.339	
1,100.00	1,097.32	1,156.91	1,156.89	3.87	21.13	51.26	1,516.53	4,482.83	4,699.92	4,674.93	24.99	188.072	
1,200.00	1,196.59	1,251.65	1,251.59	4.24	23.10	51.38	1,516.31	4,482.83	4,692.31	4,664.97	27.33	171.688	
1,300.00	1,295.87	1,355.01	1,354.94	4.62	25.43	51.49	1,516.88	4,482.83	4,684.95	4,654.93	30.03	156.032	
1,400.00	1,395.14	1,450.27	1,450.14	5.00	27.60	51.61	1,516.31	4,482.83	4,677.27	4,644.70	32.57	143.612	
1,500.00	1,494.42	1,549.54	1,549.42	5.38	30.05	51.72	1,516.31	4,482.83	4,669.77	4,634.39	35.39	131.953	
1,600.00	1,593.69	1,652.28	1,652.13	5.76	32.58	51.83	1,517.46	4,482.83	4,662.65	4,624.35	38.30	121.752	
1,700.00	1,692.96	1,762.74	1,762.58	6.14	35.31	51.96	1,516.75	4,482.83	4,655.00	4,613.61	41.39	112.457	
1,800.00	1,792.24	1,847.51	1,847.24	6.52	37.39	52.07	1,516.31	4,482.83	4,647.42	4,603.56	43.86	105.970	
1,900.00	1,891.51	1,946.79	1,946.51	6.91	39.83	52.18	1,516.31	4,482.83	4,640.00	4,593.33	46.67	99.418	
2,000.00	1,990.79	2,046.06	2,045.79	7.29	42.27	52.30	1,516.31	4,482.83	4,632.61	4,583.12	49.49	93.612	
2,100.00	2,090.06	2,151.49	2,151.17	7.67	44.86	52.40	1,518.21	4,482.83	4,625.79	4,573.33	52.45	88.187	
2,200.00	2,189.34	2,258.91	2,258.58	8.06	47.50	52.54	1,517.40	4,482.83	4,618.21	4,562.74	55.47	83.255	
2,300.00	2,288.61	2,344.07	2,343.61	8.44	49.60	52.65	1,516.31	4,482.83	4,610.54	4,552.59	57.94	79.573	
2,400.00	2,387.89	2,443.35	2,442.89	8.82	51.97	52.77	1,516.31	4,482.83	4,603.22	4,542.52	60.70	75.841	
2,500.00	2,487.16	2,542.62	2,542.16	9.21	54.35	52.89	1,516.31	4,482.83	4,595.92	4,532.47	63.45	72.434	
2,600.00	2,586.44	2,648.42	2,647.94	9.59	56.89	53.01	1,517.22	4,482.83	4,588.90	4,522.54	66.36	69.151	
2,700.00	2,685.71	2,754.82	2,754.33	9.98	59.43	53.15	1,516.39	4,482.83	4,581.43	4,512.14	69.28	66.124	
2,800.00	2,784.99	2,840.57	2,839.99	10.36	61.49	53.25	1,516.31	4,482.83	4,574.15	4,502.42	71.72	63.774	
2,900.00	2,884.26	2,939.84	2,939.26	10.75	63.88	53.37	1,516.31	4,482.83	4,566.93	4,492.44	74.49	61.312	
3,000.00	2,983.53	3,039.12	3,038.53	11.13	66.26	53.49	1,516.31	4,482.83	4,559.73	4,482.48	77.25	59.025	
3,100.00	3,082.81	3,143.41	3,142.80	11.52	68.77	53.60	1,518.04	4,482.83	4,553.03	4,472.90	80.13	56.818	
3,200.00	3,182.08	3,248.51	3,247.88	11.90	71.29	53.73	1,517.38	4,482.83	4,545.70	4,462.67	83.04	54.743	
3,300.00	3,281.36	3,353.50	3,352.85	12.29	73.82	53.88	1,516.21	4,482.83	4,538.27	4,452.33	85.94	52.809	
3,400.00	3,380.63	3,436.38	3,435.63	12.67	75.47	53.98	1,516.31	4,482.83	4,531.15	4,443.18	87.98	51.504	
3,500.00	3,479.91	3,535.66	3,534.91	13.06	77.49	54.10	1,516.31	4,482.83	4,524.06	4,433.68	90.37	50.059	
3,600.00	3,579.18	3,637.43	3,636.66	13.44	79.56	54.21	1,517.60	4,482.83	4,517.32	4,424.50	92.82	48.666	
3,700.00	3,678.46	3,742.21	3,741.44	13.83	81.69	54.35	1,517.13	4,482.83	4,510.15	4,414.82	95.33	47.310	
3,800.00	3,777.73	3,846.90	3,846.11	14.21	83.82	54.49	1,516.18	4,482.83	4,502.89	4,405.05	97.84	46.023	
3,900.00	3,877.01	3,932.82	3,932.01	14.60	85.40	54.59	1,516.31	4,482.83	4,495.89	4,396.10	99.79	45.051	
4,000.00	3,976.28	4,032.09	4,031.28	14.98	87.24	54.72	1,516.31	4,482.83	4,488.90	4,386.88	102.02	44.001	
4,100.00	4,075.55	4,132.49	4,131.67	15.37	89.10	54.84	1,516.82	4,482.83	4,482.06	4,377.80	104.26	42.989	
4,200.00	4,174.83	4,233.80	4,232.98	15.75	90.98	54.97	1,516.62	4,482.83	4,475.07	4,368.55	106.52	42.011	
4,300.00	4,274.10	4,329.94	4,329.10	16.14	92.75	55.09	1,516.31	4,482.83	4,468.06	4,359.39	108.67	41.115	
4,400.00	4,373.38	4,429.22	4,428.38	16.53	94.44	55.22	1,516.31	4,482.83	4,461.16	4,350.43	110.73	40.288	
4,500.00	4,472.65	4,528.49	4,527.65	16.91	96.12	55.35	1,516.31	4,482.83	4,454.28	4,341.49	112.79	39.490	
4,600.00	4,571.93	4,629.27	4,628.42	17.30	97.82	55.47	1,517.11	4,482.83	4,447.61	4,332.73	114.88	38.715	
4,700.00	4,671.20	4,731.33	4,730.48	17.68	99.55	55.60	1,516.83	4,482.83	4,440.71	4,323.72	116.99	37.958	
4,800.00	4,770.48	4,833.33	4,832.47	18.07	101.28	55.74	1,516.29	4,482.83	4,433.77	4,314.67	119.10	37.228	
4,900.00	4,869.75	4,925.61	4,924.75	18.45	103.26	55.86	1,516.31	4,482.83	4,426.98	4,305.52	121.46	36.448	
5,000.00	4,969.03	5,024.88	5,024.03	18.84	105.37	55.98	1,516.31	4,482.83	4,420.21	4,296.25	123.95	35.661	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #53 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,100.00	5,068.30	5,124.16	5,123.30	19.23	107.48	56.11	1,516.31	4,482.83	4,413.46	4,287.01	126.45	34.904	
5,200.00	5,167.58	5,223.43	5,222.58	19.61	109.60	56.24	1,516.31	4,482.83	4,406.73	4,277.79	128.94	34.177	
5,300.00	5,266.85	5,322.70	5,321.85	20.00	111.71	56.37	1,516.31	4,482.83	4,400.03	4,268.59	131.43	33.477	
5,400.00	5,366.12	5,422.01	5,421.12	20.38	113.82	56.50	1,516.31	4,482.83	4,393.35	4,259.42	133.93	32.804	
5,500.00	5,465.40	5,521.28	5,520.40	20.77	115.94	56.63	1,516.31	4,482.83	4,386.69	4,250.27	136.42	32.155	
5,600.00	5,564.67	5,622.05	5,621.16	21.15	118.08	56.75	1,517.28	4,482.83	4,380.27	4,241.32	138.95	31.525	
5,700.00	5,663.95	5,725.07	5,724.18	21.54	120.27	56.89	1,516.92	4,482.83	4,373.58	4,232.06	141.52	30.904	
5,800.00	5,763.22	5,819.17	5,818.22	21.93	122.27	57.03	1,516.31	4,482.83	4,366.85	4,222.95	143.91	30.345	
5,900.00	5,862.50	5,918.45	5,917.50	22.31	124.39	57.16	1,516.31	4,482.83	4,360.29	4,213.89	146.40	29.783	
6,000.00	5,961.77	6,017.72	6,016.77	22.70	126.50	57.29	1,516.31	4,482.83	4,353.74	4,204.85	148.89	29.240	
6,100.00	6,061.05	6,118.67	6,117.71	23.08	128.65	57.41	1,517.38	4,482.83	4,347.45	4,196.02	151.42	28.710	
6,200.00	6,160.32	6,221.08	6,220.12	23.47	130.83	57.55	1,517.01	4,482.83	4,340.88	4,186.89	153.98	28.190	
6,300.00	6,259.60	6,323.42	6,322.44	23.86	133.01	57.70	1,516.28	4,482.83	4,334.26	4,177.72	156.54	27.687	
6,376.00	6,335.04	6,391.07	6,390.04	24.15	134.51	57.79	1,516.31	4,482.83	4,329.36	4,171.02	158.34	27.343	
6,400.00	6,358.85	6,414.87	6,413.85	24.24	135.03	43.04	1,516.31	4,482.83	4,327.37	4,168.41	158.96	27.224	
6,450.00	6,408.16	6,464.19	6,463.16	24.44	136.12	23.79	1,516.31	4,482.83	4,320.41	4,160.17	160.24	26.962	
6,500.00	6,456.87	6,512.89	6,511.87	24.64	137.20	13.70	1,516.31	4,482.83	4,309.67	4,148.17	161.50	26.685	
6,550.00	6,504.65	6,560.68	6,559.65	24.85	138.26	7.73	1,516.31	4,482.83	4,295.23	4,132.48	162.74	26.393	
6,600.00	6,551.23	6,607.60	6,606.56	25.06	139.30	3.73	1,517.51	4,482.83	4,277.39	4,113.44	163.95	26.089	
6,650.00	6,596.31	6,653.93	6,652.89	25.26	140.33	0.79	1,517.46	4,482.83	4,255.80	4,090.65	165.15	25.770	
6,700.00	6,639.62	6,698.42	6,697.38	25.48	141.31	-1.59	1,517.34	4,482.83	4,230.81	4,064.52	166.29	25.443	
6,750.00	6,680.88	6,740.81	6,739.76	25.69	142.25	-3.68	1,517.18	4,482.83	4,202.58	4,035.21	167.37	25.110	
6,800.00	6,719.85	6,780.82	6,779.77	25.91	143.14	-5.66	1,516.97	4,482.83	4,171.30	4,002.91	168.39	24.772	
6,850.00	6,756.28	6,818.22	6,817.17	26.13	143.96	-7.68	1,516.72	4,482.83	4,137.15	3,967.81	169.33	24.432	
6,900.00	6,789.95	6,852.78	6,851.73	26.37	144.73	-9.86	1,516.46	4,482.83	4,100.34	3,930.14	170.20	24.091	
6,950.00	6,820.65	6,876.78	6,875.65	26.61	145.27	-12.32	1,516.31	4,482.83	4,061.14	3,890.31	170.83	23.773	
7,000.00	6,848.19	6,904.33	6,903.19	26.87	145.90	-15.29	1,516.31	4,482.83	4,019.80	3,848.27	171.53	23.435	
7,050.00	6,872.41	6,928.54	6,927.41	27.13	146.46	-19.02	1,516.31	4,482.83	3,976.54	3,804.40	172.15	23.100	
7,100.00	6,893.15	6,949.28	6,948.15	27.41	146.93	-23.90	1,516.31	4,482.83	3,931.65	3,758.98	172.66	22.771	
7,150.00	6,910.28	6,966.42	6,965.28	27.71	147.33	-30.55	1,516.31	4,482.83	3,885.38	3,712.30	173.08	22.448	
7,200.00	6,923.70	6,979.84	6,978.70	28.02	147.64	-39.87	1,516.31	4,482.83	3,838.05	3,664.65	173.40	22.134	
7,250.00	6,933.33	6,989.47	6,988.33	28.34	147.86	-53.03	1,516.31	4,482.83	3,789.94	3,616.32	173.62	21.829	
7,300.00	6,939.11	6,995.25	6,994.11	28.67	147.99	-70.54	1,516.31	4,482.83	3,741.36	3,567.63	173.73	21.535	
7,349.12	6,941.00	6,997.14	6,996.00	29.00	148.04	-89.96	1,516.31	4,482.83	3,693.47	3,519.72	173.75	21.258	
7,400.00	6,941.01	6,997.14	6,996.01	29.36	148.04	-89.96	1,516.31	4,482.83	3,643.89	3,470.18	173.72	20.976	
7,500.00	6,941.02	6,997.16	6,996.02	30.11	148.04	-89.96	1,516.31	4,482.83	3,546.56	3,372.91	173.65	20.423	
7,600.00	6,941.04	6,997.17	6,996.04	30.93	148.04	-89.97	1,516.31	4,482.83	3,449.39	3,275.79	173.60	19.870	
7,700.00	6,941.05	6,997.19	6,996.05	31.80	148.04	-89.97	1,516.31	4,482.83	3,352.38	3,178.83	173.55	19.317	
7,800.00	6,941.07	6,997.20	6,996.07	32.73	148.04	-89.97	1,516.31	4,482.83	3,255.55	3,082.04	173.51	18.763	
7,900.00	6,941.08	6,997.22	6,996.08	33.71	148.04	-89.97	1,516.31	4,482.83	3,158.92	2,985.44	173.48	18.209	
8,000.00	6,941.10	6,997.23	6,996.10	34.73	148.04	-89.97	1,516.31	4,482.83	3,062.51	2,889.05	173.46	17.655	
8,100.00	6,941.11	6,997.25	6,996.11	35.79	148.04	-89.97	1,516.31	4,482.83	2,966.34	2,792.87	173.46	17.101	
8,200.00	6,941.13	6,997.26	6,996.13	36.90	148.04	-89.97	1,516.31	4,482.83	2,870.42	2,696.94	173.48	16.546	
8,300.00	6,941.14	6,997.28	6,996.14	38.03	148.04	-89.97	1,516.31	4,482.83	2,774.80	2,601.28	173.52	15.991	
8,400.00	6,941.16	6,997.29	6,996.16	39.20	148.04	-89.97	1,516.31	4,482.83	2,679.49	2,505.90	173.58	15.436	
8,500.00	6,941.17	6,997.31	6,996.17	40.40	148.04	-89.97	1,516.31	4,482.83	2,584.54	2,410.85	173.68	14.881	
8,600.00	6,941.19	6,997.32	6,996.19	41.63	148.04	-89.98	1,516.31	4,482.83	2,489.98	2,316.16	173.82	14.325	
8,700.00	6,941.20	6,997.34	6,996.20	42.88	148.04	-89.98	1,516.31	4,482.83	2,395.87	2,221.86	174.00	13.769	
8,800.00	6,941.22	6,997.35	6,996.22	44.16	148.04	-89.98	1,516.31	4,482.83	2,302.25	2,128.00	174.24	13.213	
8,900.00	6,941.23	6,997.37	6,996.23	45.45	148.04	-89.98	1,516.31	4,482.83	2,209.19	2,034.64	174.55	12.657	
9,000.00	6,941.24	6,997.38	6,996.24	46.76	148.04	-89.98	1,516.31	4,482.83	2,116.76	1,941.83	174.93	12.100	
9,100.00	6,941.26	6,997.39	6,996.26	48.10	148.04	-89.98	1,516.31	4,482.83	2,025.06	1,849.64	175.41	11.545	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #53 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,200.00	6,941.27	6,997.41	6,996.27	49.44	148.04	-89.98	1,516.31	4,482.83	1,934.17	1,758.17	176.00	10.989	
9,300.00	6,941.29	6,997.42	6,996.29	50.80	148.04	-89.98	1,516.31	4,482.83	1,844.23	1,667.51	176.73	10.436	
9,400.00	6,941.30	6,997.44	6,996.30	52.18	148.04	-89.98	1,516.31	4,482.83	1,755.38	1,577.78	177.60	9.884	
9,500.00	6,941.32	6,997.45	6,996.32	53.57	148.04	-89.99	1,516.31	4,482.83	1,667.80	1,489.13	178.66	9.335	
9,600.00	6,941.33	6,997.47	6,996.33	54.97	148.04	-89.99	1,516.31	4,482.83	1,581.68	1,401.75	179.93	8.791	
9,700.00	6,941.35	6,997.48	6,996.35	56.38	148.04	-89.99	1,516.31	4,482.83	1,497.29	1,315.85	181.44	8.252	
9,800.00	6,941.36	6,997.50	6,996.36	57.80	148.04	-89.99	1,516.31	4,482.83	1,414.94	1,231.71	183.23	7.722	
9,900.00	6,941.38	6,997.51	6,996.38	59.23	148.04	-89.99	1,516.31	4,482.83	1,335.00	1,149.67	185.33	7.203	
10,000.00	6,941.39	6,997.53	6,996.39	60.67	148.04	-89.99	1,516.31	4,482.83	1,257.93	1,070.16	187.78	6.699	
10,100.00	6,941.41	6,997.54	6,996.41	62.11	148.05	-89.99	1,516.31	4,482.83	1,184.30	993.70	190.60	6.214	
10,200.00	6,941.42	6,997.56	6,996.42	63.57	148.05	-89.99	1,516.31	4,482.83	1,114.78	920.97	193.81	5.752	
10,300.00	6,941.44	6,997.57	6,996.44	65.03	148.05	-89.99	1,516.31	4,482.83	1,050.20	852.79	197.40	5.320	
10,400.00	6,941.45	6,997.59	6,996.45	66.50	148.05	-89.99	1,516.31	4,482.83	991.50	790.16	201.35	4.924	
10,500.00	6,941.47	6,997.60	6,996.47	67.97	148.05	-90.00	1,516.31	4,482.83	939.82	734.27	205.55	4.572	
10,600.00	6,941.48	6,997.62	6,996.48	69.45	148.05	-90.00	1,516.31	4,482.83	896.34	686.48	209.86	4.271	
10,700.00	6,941.50	6,997.63	6,996.50	70.94	148.05	-90.00	1,516.31	4,482.83	862.32	648.26	214.06	4.028	
10,800.00	6,941.51	6,997.65	6,996.51	72.43	148.05	-90.00	1,516.31	4,482.83	838.91	621.02	217.89	3.850	
10,900.00	6,941.53	6,997.66	6,996.53	73.92	148.05	-90.00	1,516.31	4,482.83	827.01	605.92	221.08	3.741	
10,949.14	6,941.53	6,997.67	6,996.53	74.66	148.05	-90.00	1,516.31	4,482.83	825.54	603.20	222.34	3.713	CC, ES
11,000.00	6,941.54	6,997.68	6,996.54	75.42	148.05	-90.00	1,516.31	4,482.83	827.11	603.70	223.41	3.702	SF
11,100.00	6,941.56	6,997.69	6,996.56	76.92	148.05	-90.00	1,516.31	4,482.83	839.21	614.45	224.76	3.734	
11,200.00	6,941.57	6,997.71	6,996.57	78.43	148.05	-90.00	1,516.31	4,482.83	862.82	637.66	225.16	3.832	
11,300.00	6,941.59	6,997.72	6,996.59	79.94	148.05	-90.00	1,516.31	4,482.83	897.01	672.28	224.73	3.992	
11,400.00	6,941.60	6,997.74	6,996.60	81.46	148.05	-90.00	1,516.31	4,482.83	940.63	716.98	223.66	4.206	
11,500.00	6,941.61	6,997.75	6,996.61	82.98	148.05	-90.01	1,516.31	4,482.83	992.45	770.31	222.15	4.468	
11,600.00	6,941.63	6,997.76	6,996.63	84.50	148.05	-90.01	1,516.31	4,482.83	1,051.25	830.88	220.38	4.770	
11,700.00	6,941.64	6,997.78	6,996.64	86.02	148.05	-90.01	1,516.31	4,482.83	1,115.93	897.45	218.48	5.108	
11,800.00	6,941.66	6,997.79	6,996.66	87.55	148.05	-90.01	1,516.31	4,482.83	1,185.53	968.97	216.56	5.474	
11,900.00	6,941.67	6,997.81	6,996.67	89.08	148.05	-90.01	1,516.31	4,482.83	1,259.23	1,044.54	214.69	5.865	
12,000.00	6,941.69	6,997.82	6,996.69	90.61	148.05	-90.01	1,516.31	4,482.83	1,336.35	1,123.46	212.89	6.277	
12,100.00	6,941.70	6,997.84	6,996.70	92.14	148.05	-90.01	1,516.31	4,482.83	1,416.33	1,205.13	211.20	6.706	
12,200.00	6,941.72	6,997.85	6,996.72	93.68	148.05	-90.01	1,516.31	4,482.83	1,498.72	1,289.10	209.62	7.150	
12,300.00	6,941.73	6,997.87	6,996.73	95.22	148.05	-90.01	1,516.31	4,482.83	1,583.14	1,374.99	208.15	7.606	
12,400.00	6,941.75	6,997.88	6,996.75	96.76	148.05	-90.01	1,516.31	4,482.83	1,669.28	1,462.48	206.80	8.072	
12,500.00	6,941.76	6,997.90	6,996.76	98.30	148.05	-90.02	1,516.31	4,482.83	1,756.89	1,551.34	205.55	8.547	
12,600.00	6,941.78	6,997.91	6,996.78	99.85	148.05	-90.02	1,516.31	4,482.83	1,845.76	1,641.36	204.41	9.030	
12,700.00	6,941.79	6,997.93	6,996.79	101.40	148.05	-90.02	1,516.31	4,482.83	1,935.72	1,732.37	203.35	9.519	
12,800.00	6,941.81	6,997.94	6,996.81	102.95	148.05	-90.02	1,516.31	4,482.83	2,026.62	1,824.24	202.38	10.014	
12,900.00	6,941.82	6,997.96	6,996.82	104.50	148.05	-90.02	1,516.31	4,482.83	2,118.34	1,916.85	201.49	10.513	
13,000.00	6,941.84	6,997.97	6,996.84	106.05	148.05	-90.02	1,516.31	4,482.83	2,210.78	2,010.11	200.67	11.017	
13,100.00	6,941.85	6,997.99	6,996.85	107.60	148.06	-90.02	1,516.31	4,482.83	2,303.85	2,103.94	199.91	11.525	
13,200.00	6,941.87	6,998.00	6,996.87	109.16	148.06	-90.02	1,516.31	4,482.83	2,397.47	2,198.27	199.21	12.035	
13,300.00	6,941.88	6,998.02	6,996.88	110.71	148.06	-90.02	1,516.31	4,482.83	2,491.60	2,293.04	198.56	12.548	
13,400.00	6,941.90	6,998.03	6,996.90	112.27	148.06	-90.03	1,516.31	4,482.83	2,586.16	2,388.20	197.96	13.064	
13,500.00	6,941.91	6,998.05	6,996.91	113.83	148.06	-90.03	1,516.31	4,482.83	2,681.12	2,483.71	197.40	13.582	
13,600.00	6,941.93	6,998.06	6,996.93	115.39	148.06	-90.03	1,516.31	4,482.83	2,776.43	2,579.54	196.89	14.102	
13,700.00	6,941.94	6,998.08	6,996.94	116.95	148.06	-90.03	1,516.31	4,482.83	2,872.06	2,675.65	196.41	14.623	
13,800.00	6,941.96	6,998.09	6,996.96	118.51	148.06	-90.03	1,516.31	4,482.83	2,967.98	2,772.01	195.97	15.145	
13,900.00	6,941.97	6,998.11	6,996.97	120.08	148.06	-90.03	1,516.31	4,482.83	3,064.16	2,868.61	195.55	15.669	
14,000.00	6,941.99	6,998.12	6,996.99	121.64	148.06	-90.03	1,516.31	4,482.83	3,160.58	2,965.41	195.17	16.194	
14,100.00	6,942.00	6,998.14	6,997.00	123.21	148.06	-90.03	1,516.31	4,482.83	3,257.21	3,062.40	194.81	16.720	
14,200.00	6,942.01	6,998.15	6,997.01	124.77	148.06	-90.03	1,516.31	4,482.83	3,354.04	3,159.57	194.47	17.247	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #53 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-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
14,300.00	6,942.03	6,998.16	6,997.03	126.34	148.06	-90.03	1,516.31	4,482.83	3,451.05	3,256.89	194.16	17.774	
14,400.00	6,942.04	6,998.18	6,997.04	127.91	148.06	-90.04	1,516.31	4,482.83	3,548.23	3,354.36	193.87	18.303	
14,500.00	6,942.06	6,998.19	6,997.06	129.48	148.06	-90.04	1,516.31	4,482.83	3,645.56	3,451.97	193.59	18.831	
14,600.00	6,942.07	6,998.21	6,997.07	131.05	148.06	-90.04	1,516.31	4,482.83	3,743.03	3,549.69	193.34	19.360	
14,700.00	6,942.09	6,998.22	6,997.09	132.62	148.06	-90.04	1,516.31	4,482.83	3,840.63	3,647.53	193.10	19.890	
14,800.00	6,942.10	6,998.24	6,997.10	134.19	148.06	-90.04	1,516.31	4,482.83	3,938.35	3,745.48	192.87	20.419	
14,900.00	6,942.12	6,998.25	6,997.12	135.76	148.06	-90.04	1,516.31	4,482.83	4,036.18	3,843.52	192.66	20.949	
15,000.00	6,942.13	6,998.27	6,997.13	137.34	148.06	-90.04	1,516.31	4,482.83	4,134.12	3,941.65	192.47	21.480	
15,100.00	6,942.15	6,998.28	6,997.15	138.91	148.06	-90.04	1,516.31	4,482.83	4,232.15	4,039.87	192.28	22.010	
15,200.00	6,942.16	6,998.30	6,997.16	140.48	148.06	-90.04	1,516.31	4,482.83	4,330.28	4,138.17	192.11	22.540	
15,300.00	6,942.18	6,998.31	6,997.18	142.06	148.06	-90.04	1,516.31	4,482.83	4,428.48	4,236.53	191.95	23.071	
15,400.00	6,942.19	6,998.33	6,997.19	143.64	148.06	-90.05	1,516.31	4,482.83	4,526.77	4,334.97	191.80	23.602	
15,500.00	6,942.21	6,998.34	6,997.21	145.21	148.06	-90.05	1,516.31	4,482.83	4,625.13	4,433.47	191.66	24.132	
15,600.00	6,942.22	6,998.36	6,997.22	146.79	148.06	-90.05	1,516.31	4,482.83	4,723.56	4,532.03	191.53	24.663	
15,700.00	6,942.24	6,998.37	6,997.24	148.37	148.06	-90.05	1,516.31	4,482.83	4,822.05	4,630.65	191.40	25.193	
15,800.00	6,942.25	6,998.39	6,997.25	149.94	148.06	-90.05	1,516.31	4,482.83	4,920.60	4,729.31	191.29	25.723	
15,900.00	6,942.27	6,998.40	6,997.27	151.52	148.06	-90.05	1,516.31	4,482.83	5,019.21	4,828.03	191.18	26.254	
16,000.00	6,942.28	6,998.42	6,997.28	153.10	148.07	-90.05	1,516.31	4,482.83	5,117.88	4,926.80	191.08	26.784	
16,100.00	6,942.30	6,998.43	6,997.30	154.68	148.07	-90.05	1,516.31	4,482.83	5,216.59	5,025.61	190.99	27.314	
16,200.00	6,942.31	6,998.45	6,997.31	156.26	148.07	-90.05	1,516.31	4,482.83	5,315.36	5,124.46	190.90	27.844	
16,300.00	6,942.33	6,998.46	6,997.33	157.84	148.07	-90.05	1,516.31	4,482.83	5,414.17	5,223.35	190.82	28.373	
16,400.00	6,942.34	6,998.48	6,997.34	159.42	148.07	-90.06	1,516.31	4,482.83	5,513.02	5,322.27	190.75	28.903	
16,500.00	6,942.36	6,998.49	6,997.36	161.00	148.07	-90.06	1,516.31	4,482.83	5,611.91	5,421.23	190.68	29.432	
16,600.00	6,942.37	6,998.51	6,997.37	162.59	148.07	-90.06	1,516.31	4,482.83	5,710.84	5,520.23	190.61	29.961	
16,700.00	6,942.38	6,998.52	6,997.38	164.17	148.07	-90.06	1,516.31	4,482.83	5,809.81	5,619.25	190.55	30.489	
16,800.00	6,942.40	6,998.54	6,997.40	165.75	148.07	-90.06	1,516.31	4,482.83	5,908.81	5,718.31	190.50	31.017	
16,900.00	6,942.41	6,998.55	6,997.41	167.33	148.07	-90.06	1,516.31	4,482.83	6,007.85	5,817.40	190.45	31.545	
17,000.00	6,942.43	6,998.56	6,997.43	168.92	148.07	-90.06	1,516.31	4,482.83	6,106.91	5,916.51	190.41	32.073	
17,100.00	6,942.44	6,998.58	6,997.44	170.50	148.07	-90.06	1,516.31	4,482.83	6,206.01	6,015.64	190.37	32.600	
17,200.00	6,942.46	6,998.59	6,997.46	172.09	148.07	-90.06	1,516.31	4,482.83	6,305.13	6,114.81	190.33	33.128	
17,300.00	6,942.47	6,998.61	6,997.47	173.67	148.07	-90.07	1,516.31	4,482.83	6,404.29	6,213.99	190.30	33.654	
17,400.00	6,942.49	6,998.62	6,997.49	175.26	148.07	-90.07	1,516.31	4,482.83	6,503.47	6,313.20	190.27	34.181	
17,500.00	6,942.50	6,998.64	6,997.50	176.84	148.07	-90.07	1,516.31	4,482.83	6,602.67	6,412.43	190.24	34.706	
17,600.00	6,942.52	6,998.65	6,997.52	178.43	148.07	-90.07	1,516.31	4,482.83	6,701.90	6,511.67	190.22	35.232	
17,700.00	6,942.53	6,998.67	6,997.53	180.01	148.07	-90.07	1,516.31	4,482.83	6,801.15	6,610.94	190.20	35.757	
17,800.00	6,942.55	6,998.68	6,997.55	181.60	148.07	-90.07	1,516.31	4,482.83	6,900.42	6,710.23	190.19	36.282	
17,900.00	6,942.56	6,998.70	6,997.56	183.19	148.07	-90.07	1,516.31	4,482.83	6,999.71	6,809.53	190.18	36.806	
18,000.00	6,942.58	6,998.71	6,997.58	184.77	148.07	-90.07	1,516.31	4,482.83	7,099.02	6,908.85	190.17	37.330	
18,100.00	6,942.59	6,998.73	6,997.59	186.36	148.07	-90.07	1,516.31	4,482.83	7,198.35	7,008.19	190.16	37.854	
18,200.00	6,942.61	6,998.74	6,997.61	187.95	148.07	-90.07	1,516.31	4,482.83	7,297.70	7,107.54	190.16	38.377	
18,300.00	6,942.62	6,998.76	6,997.62	189.54	148.07	-90.08	1,516.31	4,482.83	7,397.07	7,206.91	190.16	38.900	
18,400.00	6,942.64	6,998.77	6,997.64	191.12	148.07	-90.08	1,516.31	4,482.83	7,496.45	7,306.29	190.16	39.422	
18,500.00	6,942.65	6,998.79	6,997.65	192.71	148.07	-90.08	1,516.31	4,482.83	7,595.85	7,405.69	190.16	39.944	
18,600.00	6,942.67	6,998.80	6,997.67	194.30	148.07	-90.08	1,516.31	4,482.83	7,695.27	7,505.10	190.17	40.465	
18,700.00	6,942.68	6,998.82	6,997.68	195.89	148.07	-90.08	1,516.31	4,482.83	7,794.70	7,604.52	190.18	40.986	
18,800.00	6,942.70	6,998.83	6,997.70	197.48	148.07	-90.08	1,516.31	4,482.83	7,894.14	7,703.95	190.19	41.507	
18,900.00	6,942.71	6,998.85	6,997.71	199.07	148.08	-90.08	1,516.31	4,482.83	7,993.60	7,803.40	190.20	42.027	
19,000.00	6,942.73	6,998.86	6,997.73	200.66	148.08	-90.08	1,516.31	4,482.83	8,093.07	7,902.85	190.22	42.546	
19,100.00	6,942.74	6,998.88	6,997.74	202.25	148.08	-90.08	1,516.31	4,482.83	8,192.56	8,002.32	190.24	43.065	
19,200.00	6,942.76	6,998.89	6,997.76	203.84	148.08	-90.08	1,516.31	4,482.83	8,292.05	8,101.80	190.26	43.584	
19,300.00	6,942.77	6,998.91	6,997.77	205.43	148.08	-90.09	1,516.31	4,482.83	8,391.56	8,201.29	190.28	44.102	
19,400.00	6,942.78	6,998.92	6,997.78	207.02	148.08	-90.09	1,516.31	4,482.83	8,491.08	8,300.78	190.30	44.619	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - (O) Rosa Unit #53 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-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
19,500.00	6,942.80	6,998.93	6,997.80	208.61	148.08	-90.09	1,516.31	4,482.83	8,590.61	8,400.29	190.33	45.136	
19,600.00	6,942.81	6,998.95	6,997.81	210.20	148.08	-90.09	1,516.31	4,482.83	8,690.16	8,499.80	190.35	45.653	
19,700.00	6,942.83	6,998.96	6,997.83	211.79	148.08	-90.09	1,516.31	4,482.83	8,789.71	8,599.33	190.38	46.169	
19,800.00	6,942.84	6,998.98	6,997.84	213.38	148.08	-90.09	1,516.31	4,482.83	8,889.27	8,698.86	190.41	46.684	
19,900.00	6,942.86	6,998.99	6,997.86	214.97	148.08	-90.09	1,516.31	4,482.83	8,988.85	8,798.40	190.44	47.199	
20,000.00	6,942.87	6,999.01	6,997.87	216.56	148.08	-90.09	1,516.31	4,482.83	9,088.43	8,897.95	190.48	47.714	
20,100.00	6,942.89	6,999.02	6,997.89	218.15	148.08	-90.09	1,516.31	4,482.83	9,188.02	8,997.51	190.51	48.228	
20,200.00	6,942.90	6,999.04	6,997.90	219.75	148.08	-90.10	1,516.31	4,482.83	9,287.62	9,097.07	190.55	48.741	
20,300.00	6,942.92	6,999.05	6,997.92	221.34	148.08	-90.10	1,516.31	4,482.83	9,387.23	9,196.64	190.59	49.254	
20,400.00	6,942.93	6,999.07	6,997.93	222.93	148.08	-90.10	1,516.31	4,482.83	9,486.84	9,296.22	190.63	49.766	
20,500.00	6,942.95	6,999.08	6,997.95	224.52	148.08	-90.10	1,516.31	4,482.83	9,586.47	9,395.80	190.67	50.278	
20,600.00	6,942.96	6,999.10	6,997.96	226.12	148.08	-90.10	1,516.31	4,482.83	9,686.10	9,495.39	190.71	50.789	
20,700.00	6,942.98	6,999.11	6,997.98	227.71	148.08	-90.10	1,516.31	4,482.83	9,785.74	9,594.99	190.75	51.300	
20,800.00	6,942.99	6,999.13	6,997.99	229.30	148.08	-90.10	1,516.31	4,482.83	9,885.39	9,694.59	190.80	51.810	
20,855.77	6,943.00	6,999.14	6,998.00	230.19	148.08	-90.10	1,516.31	4,482.83	9,940.96	9,750.14	190.83	52.095	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
0.00	0.00	0.00	0.00	0.00	0.00	-35.11	61.53	-43.27	75.22				
100.00	100.00	100.00	100.00	0.25	0.25	-35.11	61.53	-43.27	75.22	74.72	0.50	149.877	
200.00	200.00	200.00	200.00	0.61	0.61	-35.11	61.53	-43.27	75.22	74.00	1.22	61.714	
300.00	300.00	300.00	300.00	0.97	0.97	-35.11	61.53	-43.27	75.22	73.28	1.94	38.857	
400.00	400.00	400.00	400.00	1.33	1.33	-35.11	61.53	-43.27	75.22	72.56	2.65	28.355	
500.00	500.00	500.00	500.00	1.68	1.68	-35.11	61.53	-43.27	75.22	71.85	3.37	22.322	CC
600.00	599.98	598.24	598.22	2.04	2.04	-55.99	63.18	-42.92	75.40	71.33	4.08	18.487	
700.00	699.84	696.49	696.33	2.40	2.39	-56.40	68.12	-41.87	75.97	71.18	4.79	15.871	ES
800.00	799.45	794.72	794.20	2.77	2.75	-57.06	76.34	-40.12	76.92	71.42	5.50	13.995	
845.27	844.44	839.20	838.41	2.93	2.91	-57.44	81.15	-39.10	77.48	71.66	5.82	13.313	
900.00	898.77	892.95	891.72	3.13	3.11	-57.66	87.85	-37.67	78.54	72.33	6.21	12.645	
1,000.00	998.04	991.05	988.65	3.50	3.47	-56.67	102.59	-34.54	82.24	75.31	6.93	11.864	
1,100.00	1,097.32	1,088.80	1,084.67	3.87	3.85	-54.17	120.51	-30.73	88.32	80.67	7.65	11.539	
1,200.00	1,196.59	1,188.14	1,181.84	4.24	4.24	-51.11	140.69	-26.44	96.07	87.67	8.40	11.443	
1,300.00	1,295.87	1,287.71	1,279.24	4.62	4.65	-48.50	160.94	-22.14	104.07	94.93	9.14	11.382	
1,400.00	1,395.14	1,387.29	1,376.64	5.00	5.06	-46.27	181.19	-17.83	112.25	102.36	9.89	11.346	
1,500.00	1,494.42	1,486.87	1,474.04	5.38	5.47	-44.34	201.44	-13.53	120.58	109.94	10.65	11.327	
1,600.00	1,593.69	1,586.44	1,571.44	5.76	5.89	-42.66	221.69	-9.22	129.03	117.63	11.40	11.320	SF
1,700.00	1,692.96	1,686.02	1,668.84	6.14	6.31	-41.19	241.94	-4.92	137.58	125.42	12.15	11.321	
1,800.00	1,792.24	1,785.59	1,766.24	6.52	6.74	-39.89	262.19	-0.61	146.20	133.29	12.91	11.328	
1,900.00	1,891.51	1,885.17	1,863.64	6.91	7.16	-38.74	282.44	3.69	154.89	141.23	13.66	11.339	
2,000.00	1,990.79	1,984.75	1,961.04	7.29	7.59	-37.71	302.69	7.99	163.64	149.22	14.41	11.352	
2,100.00	2,090.06	2,084.32	2,058.44	7.67	8.02	-36.78	322.94	12.30	172.43	157.26	15.17	11.367	
2,200.00	2,189.34	2,183.90	2,155.84	8.06	8.44	-35.95	343.19	16.60	181.26	165.34	15.92	11.383	
2,300.00	2,288.61	2,283.47	2,253.24	8.44	8.87	-35.19	363.44	20.91	190.13	173.45	16.68	11.399	
2,400.00	2,387.89	2,383.05	2,350.64	8.82	9.31	-34.50	383.69	25.21	199.03	181.60	17.43	11.416	
2,500.00	2,487.16	2,482.63	2,448.04	9.21	9.74	-33.87	403.94	29.52	207.95	189.76	18.19	11.432	
2,600.00	2,586.44	2,582.20	2,545.44	9.59	10.17	-33.29	424.20	33.82	216.90	197.96	18.95	11.449	
2,700.00	2,685.71	2,681.78	2,642.84	9.98	10.60	-32.76	444.45	38.13	225.87	206.17	19.70	11.465	
2,800.00	2,784.99	2,781.35	2,740.24	10.36	11.04	-32.26	464.70	42.43	234.86	214.40	20.46	11.480	
2,900.00	2,884.26	2,880.93	2,837.64	10.75	11.47	-31.81	484.95	46.73	243.86	222.64	21.21	11.496	
3,000.00	2,983.53	2,980.51	2,935.04	11.13	11.90	-31.38	505.20	51.04	252.87	230.90	21.97	11.510	
3,100.00	3,082.81	3,080.08	3,032.44	11.52	12.34	-30.99	525.45	55.34	261.90	239.18	22.73	11.525	
3,200.00	3,182.08	3,179.66	3,129.84	11.90	12.77	-30.62	545.70	59.65	270.94	247.46	23.48	11.539	
3,300.00	3,281.36	3,279.23	3,227.24	12.29	13.21	-30.28	565.95	63.95	279.99	255.75	24.24	11.552	
3,400.00	3,380.63	3,378.81	3,324.63	12.67	13.64	-29.95	586.20	68.26	289.05	264.06	24.99	11.565	
3,500.00	3,479.91	3,478.39	3,422.03	13.06	14.08	-29.65	606.45	72.56	298.12	272.37	25.75	11.577	
3,600.00	3,579.18	3,577.96	3,519.43	13.44	14.51	-29.37	626.70	76.87	307.20	280.69	26.51	11.589	
3,700.00	3,678.46	3,677.54	3,616.83	13.83	14.95	-29.10	646.95	81.17	316.28	289.02	27.26	11.601	
3,800.00	3,777.73	3,777.11	3,714.23	14.21	15.38	-28.84	667.20	85.47	325.37	297.35	28.02	11.612	
3,900.00	3,877.01	3,876.69	3,811.63	14.60	15.82	-28.60	687.45	89.78	334.47	305.69	28.78	11.623	
4,000.00	3,976.28	3,976.26	3,909.03	14.98	16.26	-28.38	707.70	94.08	343.57	314.03	29.53	11.633	
4,100.00	4,075.55	4,075.84	4,006.43	15.37	16.69	-28.16	727.95	98.39	352.67	322.38	30.29	11.643	
4,200.00	4,174.83	4,175.42	4,103.83	15.75	17.13	-27.96	748.20	102.69	361.79	330.74	31.05	11.653	
4,300.00	4,274.10	4,274.99	4,201.23	16.14	17.57	-27.76	768.46	107.00	370.90	339.10	31.80	11.662	
4,400.00	4,373.38	4,374.57	4,298.63	16.53	18.00	-27.58	788.71	111.30	380.02	347.46	32.56	11.671	
4,500.00	4,472.65	4,474.14	4,396.03	16.91	18.44	-27.40	808.96	115.61	389.14	355.83	33.32	11.679	
4,600.00	4,571.93	4,573.72	4,493.43	17.30	18.88	-27.23	829.21	119.91	398.27	364.20	34.08	11.688	
4,700.00	4,671.20	4,673.30	4,590.83	17.68	19.31	-27.07	849.46	124.21	407.40	372.57	34.83	11.696	
4,800.00	4,770.48	4,772.87	4,688.23	18.07	19.75	-26.92	869.71	128.52	416.54	380.95	35.59	11.704	
4,900.00	4,869.75	4,872.45	4,785.63	18.45	20.19	-26.77	889.96	132.82	425.67	389.32	36.35	11.711	
5,000.00	4,969.03	4,972.02	4,883.03	18.84	20.62	-26.63	910.21	137.13	434.81	397.71	37.10	11.719	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,100.00	5,068.30	5,071.60	4,980.43	19.23	21.06	-26.49	930.46	141.43	443.95	406.09	37.86	11.726	
5,200.00	5,167.58	5,171.18	5,077.83	19.61	21.50	-26.36	950.71	145.74	453.10	414.48	38.62	11.732	
5,300.00	5,266.85	5,270.75	5,175.23	20.00	21.94	-26.24	970.96	150.04	462.24	422.86	39.38	11.739	
5,400.00	5,366.12	5,370.33	5,272.63	20.38	22.37	-26.12	991.21	154.35	471.39	431.26	40.13	11.745	
5,500.00	5,465.40	5,469.90	5,370.03	20.77	22.81	-26.00	1,011.46	158.65	480.54	439.65	40.89	11.752	
5,600.00	5,564.67	5,569.48	5,467.43	21.15	23.25	-25.89	1,031.71	162.95	489.69	448.04	41.65	11.758	
5,700.00	5,663.95	5,669.06	5,564.83	21.54	23.69	-25.78	1,051.96	167.26	498.84	456.44	42.41	11.764	
5,800.00	5,763.22	5,768.63	5,662.23	21.93	24.12	-25.68	1,072.21	171.56	508.00	464.84	43.16	11.769	
5,900.00	5,862.50	5,868.21	5,759.63	22.31	24.56	-25.58	1,092.46	175.87	517.16	473.24	43.92	11.775	
6,000.00	5,961.77	5,967.78	5,857.03	22.70	25.00	-25.48	1,112.72	180.17	526.31	481.64	44.68	11.780	
6,100.00	6,061.05	6,067.36	5,954.43	23.08	25.44	-25.39	1,132.97	184.48	535.47	490.04	45.44	11.785	
6,200.00	6,160.32	6,166.94	6,051.83	23.47	25.87	-25.30	1,153.22	188.78	544.64	498.44	46.19	11.790	
6,300.00	6,259.60	6,266.51	6,149.23	23.86	26.31	-25.22	1,173.47	193.09	553.80	506.85	46.95	11.795	
6,376.00	6,335.04	6,342.19	6,223.26	24.15	26.65	-25.15	1,188.86	196.36	560.76	513.23	47.53	11.799	
6,400.00	6,358.85	6,366.08	6,246.63	24.24	26.75	-39.72	1,193.72	197.39	563.00	515.29	47.71	11.800	
6,450.00	6,408.16	6,415.03	6,294.51	24.44	26.96	-58.81	1,203.67	199.36	567.91	519.80	48.11	11.805	
6,500.00	6,456.87	6,461.03	6,339.56	24.64	27.16	-69.19	1,212.94	198.69	573.38	524.87	48.51	11.821	
6,550.00	6,504.65	6,504.17	6,381.67	24.85	27.34	-75.80	1,221.50	195.05	579.77	530.85	48.92	11.852	
6,600.00	6,551.23	6,543.36	6,419.66	25.06	27.50	-80.55	1,229.14	189.22	587.58	538.26	49.32	11.914	
6,650.00	6,596.31	6,577.93	6,452.84	25.26	27.63	-84.10	1,235.74	182.12	597.35	547.65	49.70	12.018	
6,700.00	6,639.62	6,607.60	6,480.98	25.48	27.74	-86.71	1,241.29	174.56	609.60	559.54	50.06	12.178	
6,750.00	6,680.88	6,632.38	6,504.21	25.69	27.82	-88.44	1,245.83	167.24	624.72	574.35	50.37	12.403	
6,800.00	6,719.85	6,650.00	6,520.56	25.91	27.89	-89.10	1,249.00	161.47	642.96	592.36	50.60	12.708	
6,850.00	6,756.28	6,668.32	6,537.38	26.13	27.95	-89.33	1,252.25	154.99	664.34	613.49	50.86	13.063	
6,900.00	6,789.95	6,680.23	6,548.22	26.37	27.98	-88.52	1,254.33	150.51	688.80	637.76	51.04	13.496	
6,950.00	6,820.65	6,688.65	6,555.83	26.61	28.01	-86.88	1,255.79	147.22	716.09	664.90	51.19	13.989	
7,000.00	6,848.19	6,700.00	6,566.03	26.87	28.05	-85.03	1,257.73	142.62	745.93	694.48	51.45	14.498	
7,050.00	6,872.41	6,700.00	6,566.03	27.13	28.05	-81.62	1,257.73	142.62	777.85	726.32	51.53	15.095	
7,100.00	6,893.15	6,700.00	6,566.03	27.41	28.05	-77.78	1,257.73	142.62	811.53	759.87	51.66	15.708	
7,150.00	6,910.28	6,700.00	6,566.03	27.71	28.05	-73.59	1,257.73	142.62	846.58	794.73	51.86	16.326	
7,200.00	6,923.70	6,700.00	6,566.03	28.02	28.05	-69.16	1,257.73	142.62	882.63	830.53	52.10	16.941	
7,250.00	6,933.33	6,685.99	6,553.43	28.34	28.00	-63.39	1,255.33	148.27	919.14	867.03	52.11	17.639	
7,300.00	6,939.11	6,679.28	6,547.35	28.67	27.98	-58.37	1,254.17	150.88	955.98	903.66	52.32	18.272	
7,349.12	6,941.00	6,671.48	6,540.26	29.00	27.96	-53.55	1,252.80	153.82	992.13	939.59	52.54	18.882	
7,400.00	6,941.01	6,650.00	6,520.56	29.36	27.89	-52.03	1,249.00	161.47	1,030.15	977.61	52.53	19.609	
7,500.00	6,941.02	6,650.00	6,520.56	30.11	27.89	-52.03	1,249.00	161.47	1,106.98	1,053.72	53.26	20.785	
7,600.00	6,941.04	6,650.00	6,520.56	30.93	27.89	-52.03	1,249.00	161.47	1,187.27	1,133.41	53.87	22.041	
7,700.00	6,941.05	6,623.20	6,495.64	31.80	27.79	-50.17	1,244.16	170.06	1,269.59	1,215.63	53.97	23.525	
7,800.00	6,941.07	6,600.00	6,473.81	32.73	27.71	-48.58	1,239.88	176.63	1,354.43	1,300.35	54.09	25.041	
7,900.00	6,941.08	6,600.00	6,473.81	33.71	27.71	-48.58	1,239.88	176.63	1,440.71	1,386.21	54.50	26.434	
8,000.00	6,941.10	6,600.00	6,473.81	34.73	27.71	-48.58	1,239.88	176.63	1,528.67	1,473.81	54.85	27.868	
8,100.00	6,941.11	6,600.00	6,473.81	35.79	27.71	-48.58	1,239.88	176.63	1,618.02	1,562.87	55.15	29.336	
8,200.00	6,941.13	6,579.72	6,454.54	36.90	27.63	-47.23	1,236.08	181.70	1,708.14	1,652.96	55.18	30.957	
8,300.00	6,941.14	6,573.21	6,448.33	38.03	27.61	-46.80	1,234.85	183.20	1,799.37	1,744.03	55.34	32.514	
8,400.00	6,941.16	6,550.00	6,426.06	39.20	27.52	-45.29	1,230.42	188.00	1,891.71	1,836.41	55.30	34.208	
8,500.00	6,941.17	6,550.00	6,426.06	40.40	27.52	-45.29	1,230.42	188.00	1,984.30	1,928.80	55.50	35.754	
8,600.00	6,941.19	6,550.00	6,426.06	41.63	27.52	-45.29	1,230.42	188.00	2,077.58	2,021.90	55.68	37.316	
8,700.00	6,941.20	6,550.00	6,426.06	42.88	27.52	-45.29	1,230.42	188.00	2,171.45	2,115.62	55.83	38.892	
8,800.00	6,941.22	6,550.00	6,426.06	44.16	27.52	-45.29	1,230.42	188.00	2,265.85	2,209.88	55.98	40.480	
8,900.00	6,941.23	6,550.00	6,426.06	45.45	27.52	-45.29	1,230.42	188.00	2,360.71	2,304.61	56.10	42.078	
9,000.00	6,941.24	6,550.00	6,426.06	46.76	27.52	-45.29	1,230.42	188.00	2,455.98	2,399.76	56.22	43.685	
9,100.00	6,941.26	6,550.00	6,426.06	48.10	27.52	-45.29	1,230.42	188.00	2,551.61	2,495.29	56.33	45.299	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
9,200.00	6,941.27	6,550.00	6,426.06	49.44	27.52	-45.29	1,230.42	188.00	2,647.57	2,591.14	56.43	46.920	
9,300.00	6,941.29	6,529.47	6,406.24	50.80	27.44	-43.99	1,226.45	191.56	2,743.42	2,687.07	56.35	48.687	
9,400.00	6,941.30	6,526.50	6,403.35	52.18	27.43	-43.81	1,225.87	192.02	2,839.80	2,783.38	56.41	50.338	
9,500.00	6,941.32	6,523.69	6,400.63	53.57	27.42	-43.63	1,225.33	192.44	2,936.41	2,879.93	56.48	51.993	
9,600.00	6,941.33	6,521.04	6,398.06	54.97	27.41	-43.47	1,224.81	192.83	3,033.22	2,976.69	56.54	53.651	
9,700.00	6,941.35	6,500.00	6,377.61	56.38	27.32	-42.18	1,220.68	195.52	3,130.54	3,074.09	56.45	55.458	
9,800.00	6,941.36	6,500.00	6,377.61	57.80	27.32	-42.18	1,220.68	195.52	3,227.64	3,171.12	56.52	57.101	
9,900.00	6,941.38	6,500.00	6,377.61	59.23	27.32	-42.18	1,220.68	195.52	3,324.91	3,268.31	56.60	58.747	
10,000.00	6,941.39	6,500.00	6,377.61	60.67	27.32	-42.18	1,220.68	195.52	3,422.34	3,365.67	56.67	60.394	
10,100.00	6,941.41	6,500.00	6,377.61	62.11	27.32	-42.18	1,220.68	195.52	3,519.91	3,463.18	56.73	62.042	
10,200.00	6,941.42	6,500.00	6,377.61	63.57	27.32	-42.18	1,220.68	195.52	3,617.62	3,560.82	56.80	63.691	
10,300.00	6,941.44	6,500.00	6,377.61	65.03	27.32	-42.18	1,220.68	195.52	3,715.44	3,658.58	56.86	65.341	
10,400.00	6,941.45	6,500.00	6,377.61	66.50	27.32	-42.18	1,220.68	195.52	3,813.38	3,756.46	56.92	66.991	
10,500.00	6,941.47	6,500.00	6,377.61	67.97	27.32	-42.18	1,220.68	195.52	3,911.43	3,854.44	56.98	68.641	
10,600.00	6,941.48	6,500.00	6,377.61	69.45	27.32	-42.18	1,220.68	195.52	4,009.57	3,952.53	57.04	70.291	
10,700.00	6,941.50	6,500.00	6,377.61	70.94	27.32	-42.18	1,220.68	195.52	4,107.80	4,050.70	57.10	71.941	
10,800.00	6,941.51	6,500.00	6,377.61	72.43	27.32	-42.18	1,220.68	195.52	4,206.11	4,148.96	57.16	73.589	
10,900.00	6,941.53	6,500.00	6,377.61	73.92	27.32	-42.18	1,220.68	195.52	4,304.50	4,247.29	57.21	75.237	
11,000.00	6,941.54	6,500.00	6,377.61	75.42	27.32	-42.18	1,220.68	195.52	4,402.97	4,345.70	57.27	76.884	
11,100.00	6,941.56	6,500.00	6,377.61	76.92	27.32	-42.18	1,220.68	195.52	4,501.50	4,444.18	57.32	78.529	
11,200.00	6,941.57	6,500.00	6,377.61	78.43	27.32	-42.18	1,220.68	195.52	4,600.09	4,542.72	57.38	80.173	
11,300.00	6,941.59	6,500.00	6,377.61	79.94	27.32	-42.18	1,220.68	195.52	4,698.75	4,641.32	57.43	81.815	
11,400.00	6,941.60	6,500.00	6,377.61	81.46	27.32	-42.18	1,220.68	195.52	4,797.46	4,739.97	57.49	83.456	
11,500.00	6,941.61	6,500.00	6,377.61	82.98	27.32	-42.18	1,220.68	195.52	4,896.22	4,838.68	57.54	85.094	
11,600.00	6,941.63	6,500.00	6,377.61	84.50	27.32	-42.18	1,220.68	195.52	4,995.03	4,937.44	57.59	86.731	
11,700.00	6,941.64	6,500.00	6,377.61	86.02	27.32	-42.18	1,220.68	195.52	5,093.89	5,036.24	57.65	88.365	
11,800.00	6,941.66	6,500.00	6,377.61	87.55	27.32	-42.18	1,220.68	195.52	5,192.79	5,135.09	57.70	89.997	
11,900.00	6,941.67	6,500.00	6,377.61	89.08	27.32	-42.18	1,220.68	195.52	5,291.73	5,233.98	57.75	91.627	
12,000.00	6,941.69	6,500.00	6,377.61	90.61	27.32	-42.18	1,220.68	195.52	5,390.72	5,332.91	57.81	93.254	
12,100.00	6,941.70	6,500.00	6,377.61	92.14	27.32	-42.18	1,220.68	195.52	5,489.74	5,431.88	57.86	94.878	
12,200.00	6,941.72	6,500.00	6,377.61	93.68	27.32	-42.18	1,220.68	195.52	5,588.79	5,530.88	57.91	96.500	
12,300.00	6,941.73	6,500.00	6,377.61	95.22	27.32	-42.18	1,220.68	195.52	5,687.88	5,629.91	57.97	98.119	
12,400.00	6,941.75	6,500.00	6,377.61	96.76	27.32	-42.18	1,220.68	195.52	5,787.00	5,728.97	58.02	99.735	
12,500.00	6,941.76	6,500.00	6,377.61	98.30	27.32	-42.18	1,220.68	195.52	5,886.14	5,828.06	58.08	101.348	
12,600.00	6,941.78	6,500.00	6,377.61	99.85	27.32	-42.18	1,220.68	195.52	5,985.32	5,927.19	58.13	102.958	
12,700.00	6,941.79	6,500.00	6,377.61	101.40	27.32	-42.18	1,220.68	195.52	6,084.52	6,026.33	58.19	104.565	
12,800.00	6,941.81	6,477.29	6,355.45	102.95	27.23	-40.83	1,216.18	197.66	6,183.31	6,125.20	58.11	106.414	
12,900.00	6,941.82	6,476.57	6,354.75	104.50	27.23	-40.79	1,216.04	197.71	6,282.54	6,224.38	58.16	108.024	
13,000.00	6,941.84	6,475.88	6,354.08	106.05	27.22	-40.75	1,215.90	197.76	6,381.79	6,323.57	58.21	109.631	
13,100.00	6,941.85	6,475.21	6,353.42	107.60	27.22	-40.71	1,215.77	197.81	6,481.06	6,422.79	58.26	111.235	
13,200.00	6,941.87	6,474.55	6,352.78	109.16	27.22	-40.67	1,215.64	197.86	6,580.35	6,522.03	58.32	112.834	
13,300.00	6,941.88	6,473.92	6,352.16	110.71	27.22	-40.64	1,215.51	197.90	6,679.66	6,621.29	58.37	114.431	
13,400.00	6,941.90	6,473.30	6,351.55	112.27	27.21	-40.60	1,215.39	197.95	6,779.00	6,720.57	58.43	116.023	
13,500.00	6,941.91	6,450.00	6,328.76	113.83	27.12	-39.27	1,210.73	199.15	6,878.79	6,820.44	58.35	117.892	
13,600.00	6,941.93	6,450.00	6,328.76	115.39	27.12	-39.27	1,210.73	199.15	6,978.13	6,919.72	58.41	119.472	
13,700.00	6,941.94	6,450.00	6,328.76	116.95	27.12	-39.27	1,210.73	199.15	7,077.50	7,019.03	58.47	121.048	
13,800.00	6,941.96	6,450.00	6,328.76	118.51	27.12	-39.27	1,210.73	199.15	7,176.88	7,118.35	58.53	122.621	
13,900.00	6,941.97	6,450.00	6,328.76	120.08	27.12	-39.27	1,210.73	199.15	7,276.28	7,217.69	58.59	124.189	
14,000.00	6,941.99	6,450.00	6,328.76	121.64	27.12	-39.27	1,210.73	199.15	7,375.70	7,317.04	58.65	125.753	
14,100.00	6,942.00	6,450.00	6,328.76	123.21	27.12	-39.27	1,210.73	199.15	7,475.13	7,416.41	58.71	127.314	
14,200.00	6,942.01	6,450.00	6,328.76	124.77	27.12	-39.27	1,210.73	199.15	7,574.57	7,515.80	58.78	128.870	
14,300.00	6,942.03	6,450.00	6,328.76	126.34	27.12	-39.27	1,210.73	199.15	7,674.03	7,615.19	58.84	130.422	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	6,450.00	6,328.76	127.91	27.12	-39.27	1,210.73	199.15	7,773.51	7,714.61	58.90	131.970	
14,500.00	6,942.06	6,450.00	6,328.76	129.48	27.12	-39.27	1,210.73	199.15	7,873.00	7,814.03	58.97	133.514	
14,600.00	6,942.07	6,450.00	6,328.76	131.05	27.12	-39.27	1,210.73	199.15	7,972.50	7,913.47	59.03	135.054	
14,700.00	6,942.09	6,450.00	6,328.76	132.62	27.12	-39.27	1,210.73	199.15	8,072.01	8,012.91	59.10	136.589	
14,800.00	6,942.10	6,450.00	6,328.76	134.19	27.12	-39.27	1,210.73	199.15	8,171.54	8,112.37	59.16	138.120	
14,900.00	6,942.12	6,450.00	6,328.76	135.76	27.12	-39.27	1,210.73	199.15	8,271.07	8,211.84	59.23	139.647	
15,000.00	6,942.13	6,450.00	6,328.76	137.34	27.12	-39.27	1,210.73	199.15	8,370.62	8,311.32	59.30	141.169	
15,100.00	6,942.15	6,450.00	6,328.76	138.91	27.12	-39.27	1,210.73	199.15	8,470.18	8,410.82	59.36	142.687	
15,200.00	6,942.16	6,450.00	6,328.76	140.48	27.12	-39.27	1,210.73	199.15	8,569.75	8,510.32	59.43	144.200	
15,300.00	6,942.18	6,450.00	6,328.76	142.06	27.12	-39.27	1,210.73	199.15	8,669.32	8,609.83	59.50	145.709	
15,400.00	6,942.19	6,450.00	6,328.76	143.64	27.12	-39.27	1,210.73	199.15	8,768.91	8,709.35	59.57	147.214	
15,500.00	6,942.21	6,450.00	6,328.76	145.21	27.12	-39.27	1,210.73	199.15	8,868.51	8,808.87	59.63	148.714	
15,600.00	6,942.22	6,450.00	6,328.76	146.79	27.12	-39.27	1,210.73	199.15	8,968.12	8,908.41	59.70	150.209	
15,700.00	6,942.24	6,450.00	6,328.76	148.37	27.12	-39.27	1,210.73	199.15	9,067.73	9,007.96	59.77	151.700	
15,800.00	6,942.25	6,450.00	6,328.76	149.94	27.12	-39.27	1,210.73	199.15	9,167.35	9,107.51	59.84	153.186	
15,900.00	6,942.27	6,450.00	6,328.76	151.52	27.12	-39.27	1,210.73	199.15	9,266.99	9,207.07	59.92	154.667	
16,000.00	6,942.28	6,450.00	6,328.76	153.10	27.12	-39.27	1,210.73	199.15	9,366.62	9,306.64	59.99	156.144	
16,100.00	6,942.30	6,450.00	6,328.76	154.68	27.12	-39.27	1,210.73	199.15	9,466.27	9,406.21	60.06	157.616	
16,200.00	6,942.31	6,450.00	6,328.76	156.26	27.12	-39.27	1,210.73	199.15	9,565.93	9,505.79	60.13	159.084	
16,300.00	6,942.33	6,450.00	6,328.76	157.84	27.12	-39.27	1,210.73	199.15	9,665.59	9,605.38	60.20	160.546	
16,400.00	6,942.34	6,450.00	6,328.76	159.42	27.12	-39.27	1,210.73	199.15	9,765.26	9,704.98	60.28	162.004	
16,500.00	6,942.36	6,450.00	6,328.76	161.00	27.12	-39.27	1,210.73	199.15	9,864.93	9,804.58	60.35	163.457	
16,600.00	6,942.37	6,450.00	6,328.76	162.59	27.12	-39.27	1,210.73	199.15	9,964.61	9,904.19	60.43	164.906	
16,700.00	6,942.38	6,450.00	6,328.76	164.17	27.12	-39.27	1,210.73	199.15	10,064.30	10,003.80	60.50	166.349	
16,800.00	6,942.40	6,450.00	6,328.76	165.75	27.12	-39.27	1,210.73	199.15	10,163.99	10,103.42	60.58	167.788	
16,900.00	6,942.41	6,450.00	6,328.76	167.33	27.12	-39.27	1,210.73	199.15	10,263.69	10,203.04	60.65	169.222	
17,000.00	6,942.43	6,450.00	6,328.76	168.92	27.12	-39.27	1,210.73	199.15	10,363.40	10,302.67	60.73	170.651	
17,100.00	6,942.44	6,450.00	6,328.76	170.50	27.12	-39.27	1,210.73	199.15	10,463.11	10,402.30	60.81	172.075	
17,200.00	6,942.46	6,450.00	6,328.76	172.09	27.12	-39.27	1,210.73	199.15	10,562.83	10,501.94	60.88	173.494	
17,300.00	6,942.47	6,450.00	6,328.76	173.67	27.12	-39.27	1,210.73	199.15	10,662.55	10,601.59	60.96	174.908	
17,400.00	6,942.49	6,450.00	6,328.76	175.26	27.12	-39.27	1,210.73	199.15	10,762.28	10,701.24	61.04	176.318	
17,500.00	6,942.50	6,450.00	6,328.76	176.84	27.12	-39.27	1,210.73	199.15	10,862.01	10,800.89	61.12	177.722	
17,600.00	6,942.52	6,450.00	6,328.76	178.43	27.12	-39.27	1,210.73	199.15	10,961.75	10,900.55	61.20	179.122	
17,700.00	6,942.53	6,450.00	6,328.76	180.01	27.12	-39.27	1,210.73	199.15	11,061.49	11,000.21	61.28	180.516	
17,800.00	6,942.55	6,450.00	6,328.76	181.60	27.12	-39.27	1,210.73	199.15	11,161.23	11,099.88	61.36	181.906	
17,900.00	6,942.56	6,450.00	6,328.76	183.19	27.12	-39.27	1,210.73	199.15	11,260.99	11,199.55	61.44	183.291	
18,000.00	6,942.58	6,450.00	6,328.76	184.77	27.12	-39.27	1,210.73	199.15	11,360.74	11,299.22	61.52	184.670	
18,100.00	6,942.59	6,450.00	6,328.76	186.36	27.12	-39.27	1,210.73	199.15	11,460.50	11,398.90	61.60	186.045	
18,200.00	6,942.61	6,450.00	6,328.76	187.95	27.12	-39.27	1,210.73	199.15	11,560.26	11,498.58	61.68	187.415	
18,300.00	6,942.62	6,450.00	6,328.76	189.54	27.12	-39.27	1,210.73	199.15	11,660.03	11,598.27	61.77	188.779	
18,400.00	6,942.64	6,450.00	6,328.76	191.12	27.12	-39.27	1,210.73	199.15	11,759.80	11,697.96	61.85	190.139	
18,500.00	6,942.65	6,450.00	6,328.76	192.71	27.12	-39.27	1,210.73	199.15	11,859.58	11,797.65	61.93	191.494	
18,600.00	6,942.67	6,450.00	6,328.76	194.30	27.12	-39.27	1,210.73	199.15	11,959.36	11,897.34	62.02	192.844	
18,700.00	6,942.68	6,450.00	6,328.76	195.89	27.12	-39.27	1,210.73	199.15	12,059.14	11,997.04	62.10	194.188	
18,800.00	6,942.70	6,450.00	6,328.76	197.48	27.12	-39.27	1,210.73	199.15	12,158.93	12,096.74	62.19	195.528	
18,900.00	6,942.71	6,450.00	6,328.76	199.07	27.12	-39.27	1,210.73	199.15	12,258.72	12,196.45	62.27	196.863	
19,000.00	6,942.73	6,450.00	6,328.76	200.66	27.12	-39.27	1,210.73	199.15	12,358.51	12,296.16	62.36	198.193	
19,100.00	6,942.74	6,450.00	6,328.76	202.25	27.12	-39.27	1,210.73	199.15	12,458.31	12,395.87	62.44	199.517	
19,200.00	6,942.76	6,450.00	6,328.76	203.84	27.12	-39.27	1,210.73	199.15	12,558.11	12,495.58	62.53	200.837	
19,300.00	6,942.77	6,450.00	6,328.76	205.43	27.12	-39.27	1,210.73	199.15	12,657.91	12,595.30	62.62	202.152	
19,400.00	6,942.78	6,450.00	6,328.76	207.02	27.12	-39.27	1,210.73	199.15	12,757.72	12,695.01	62.70	203.461	
19,500.00	6,942.80	6,450.00	6,328.76	208.61	27.12	-39.27	1,210.73	199.15	12,857.53	12,794.74	62.79	204.766	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,600.00	6,942.81	6,450.00	6,328.76	210.20	27.12	-39.27	1,210.73	199.15	12,957.34	12,894.46	62.88	206.066	
19,700.00	6,942.83	6,450.00	6,328.76	211.79	27.12	-39.27	1,210.73	199.15	13,057.15	12,994.19	62.97	207.360	
19,800.00	6,942.84	6,450.00	6,328.76	213.38	27.12	-39.27	1,210.73	199.15	13,156.97	13,093.91	63.06	208.650	
19,900.00	6,942.86	6,450.00	6,328.76	214.97	27.12	-39.27	1,210.73	199.15	13,256.79	13,193.65	63.15	209.935	
20,000.00	6,942.87	6,450.00	6,328.76	216.56	27.12	-39.27	1,210.73	199.15	13,356.62	13,293.38	63.24	211.214	
20,100.00	6,942.89	6,450.00	6,328.76	218.15	27.12	-39.27	1,210.73	199.15	13,456.44	13,393.11	63.33	212.489	
20,200.00	6,942.90	6,450.00	6,328.76	219.75	27.12	-39.27	1,210.73	199.15	13,556.27	13,492.85	63.42	213.759	
20,300.00	6,942.92	6,450.00	6,328.76	221.34	27.12	-39.27	1,210.73	199.15	13,656.10	13,592.59	63.51	215.023	
20,400.00	6,942.93	6,450.00	6,328.76	222.93	27.12	-39.27	1,210.73	199.15	13,755.94	13,692.33	63.60	216.283	
20,500.00	6,942.95	6,450.00	6,328.76	224.52	27.12	-39.27	1,210.73	199.15	13,855.77	13,792.08	63.69	217.538	
20,600.00	6,942.96	6,450.00	6,328.76	226.12	27.12	-39.27	1,210.73	199.15	13,955.61	13,891.82	63.79	218.788	
20,700.00	6,942.98	6,450.00	6,328.76	227.71	27.12	-39.27	1,210.73	199.15	14,055.45	13,991.57	63.88	220.032	
20,800.00	6,942.99	6,450.00	6,328.76	229.30	27.12	-39.27	1,210.73	199.15	14,155.29	14,091.32	63.97	221.272	
20,855.77	6,943.00	6,450.00	6,328.76	230.19	27.12	-39.27	1,210.73	199.15	14,210.97	14,146.95	64.02	221.962	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - 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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-35.13	41.14	-28.94	50.30				
100.00	100.00	100.00	100.00	0.25	0.25	-35.13	41.14	-28.94	50.30	49.80	0.50	100.228	
200.00	200.00	200.00	200.00	0.61	0.61	-35.13	41.14	-28.94	50.30	49.08	1.22	41.270	
300.00	300.00	300.00	300.00	0.97	0.97	-35.13	41.14	-28.94	50.30	48.36	1.94	25.985	
400.00	400.00	400.00	400.00	1.33	1.33	-35.13	41.14	-28.94	50.30	47.65	2.65	18.962	
500.00	500.00	500.00	500.00	1.68	1.68	-35.13	41.14	-28.94	50.30	46.93	3.37	14.928	
600.00	599.98	599.98	599.98	2.04	2.04	-57.56	41.14	-28.94	49.34	45.26	4.09	12.076	
700.00	699.84	699.84	699.84	2.40	2.40	-63.02	41.14	-28.94	46.74	41.94	4.80	9.734	
800.00	799.45	799.45	799.45	2.77	2.76	-73.33	41.14	-28.94	43.48	37.96	5.52	7.878	
845.27	844.44	844.44	844.44	2.93	2.92	-79.93	41.14	-28.94	42.29	36.45	5.84	7.237	
900.00	898.77	898.77	898.77	3.13	3.11	-88.82	41.14	-28.94	41.64	35.40	6.24	6.674	
907.19	905.91	905.91	905.91	3.16	3.14	-90.00	41.14	-28.94	41.63	35.34	6.29	6.618	CC, ES
1,000.00	998.04	998.04	998.04	3.50	3.47	-104.90	41.14	-28.94	43.10	36.14	6.96	6.190	SF
1,100.00	1,097.32	1,096.69	1,096.67	3.87	3.81	-120.65	39.55	-29.31	48.28	40.61	7.67	6.298	
1,200.00	1,196.59	1,195.11	1,195.00	4.24	4.13	-134.79	35.40	-30.28	57.93	49.58	8.35	6.940	
1,300.00	1,295.87	1,293.74	1,293.53	4.62	4.46	-144.66	31.06	-31.29	70.22	61.19	9.03	7.774	
1,400.00	1,395.14	1,392.38	1,392.06	5.00	4.79	-151.49	26.72	-32.30	83.96	74.23	9.72	8.635	
1,500.00	1,494.42	1,491.01	1,490.60	5.38	5.13	-156.36	22.38	-33.31	98.53	88.12	10.42	9.460	
1,600.00	1,593.69	1,589.65	1,589.13	5.76	5.47	-159.96	18.03	-34.32	113.63	102.51	11.11	10.226	
1,700.00	1,692.96	1,688.28	1,687.66	6.14	5.81	-162.71	13.69	-35.34	129.06	117.25	11.81	10.927	
1,800.00	1,792.24	1,786.91	1,786.20	6.52	6.15	-164.87	9.35	-36.35	144.72	132.20	12.51	11.566	
1,900.00	1,891.51	1,885.55	1,884.73	6.91	6.50	-166.61	5.01	-37.36	160.54	147.32	13.22	12.147	
2,000.00	1,990.79	1,984.18	1,983.27	7.29	6.84	-168.03	0.66	-38.37	176.48	162.56	13.92	12.677	
2,100.00	2,090.06	2,082.82	2,081.80	7.67	7.19	-169.22	-3.68	-39.38	192.51	177.88	14.63	13.160	
2,200.00	2,189.34	2,181.45	2,180.33	8.06	7.54	-170.23	-8.02	-40.39	208.61	193.27	15.34	13.603	
2,300.00	2,288.61	2,280.09	2,278.87	8.44	7.89	-171.09	-12.36	-41.40	224.76	208.72	16.04	14.009	
2,400.00	2,387.89	2,378.72	2,377.40	8.82	8.24	-171.84	-16.70	-42.42	240.96	224.20	16.75	14.382	
2,500.00	2,487.16	2,477.36	2,475.93	9.21	8.59	-172.49	-21.05	-43.43	257.19	239.72	17.46	14.726	
2,600.00	2,586.44	2,575.99	2,574.47	9.59	8.95	-173.07	-25.39	-44.44	273.44	255.27	18.18	15.044	
2,700.00	2,685.71	2,674.62	2,673.00	9.98	9.30	-173.58	-29.73	-45.45	289.73	270.84	18.89	15.339	
2,800.00	2,784.99	2,773.26	2,771.53	10.36	9.65	-174.03	-34.07	-46.46	306.03	286.43	19.60	15.613	
2,900.00	2,884.26	2,871.89	2,870.07	10.75	10.01	-174.44	-38.41	-47.47	322.35	302.03	20.31	15.869	
3,000.00	2,983.53	2,970.53	2,968.60	11.13	10.36	-174.81	-42.76	-48.48	338.68	317.65	21.03	16.107	
3,100.00	3,082.81	3,069.16	3,067.14	11.52	10.72	-175.15	-47.10	-49.50	355.03	333.29	21.74	16.330	
3,200.00	3,182.08	3,167.80	3,165.67	11.90	11.07	-175.46	-51.44	-50.51	371.39	348.93	22.45	16.539	
3,300.00	3,281.36	3,266.43	3,264.20	12.29	11.43	-175.74	-55.78	-51.52	387.75	364.58	23.17	16.736	
3,400.00	3,380.63	3,365.07	3,362.74	12.67	11.78	-176.00	-60.13	-52.53	404.13	380.24	23.88	16.920	
3,500.00	3,479.91	3,463.70	3,461.27	13.06	12.14	-176.23	-64.47	-53.54	420.51	395.91	24.60	17.094	
3,600.00	3,579.18	3,562.33	3,559.80	13.44	12.50	-176.45	-68.81	-54.55	436.90	411.58	25.31	17.259	
3,700.00	3,678.46	3,660.97	3,658.34	13.83	12.85	-176.66	-73.15	-55.56	453.29	427.26	26.03	17.414	
3,800.00	3,777.73	3,759.60	3,756.87	14.21	13.21	-176.85	-77.49	-56.58	469.69	442.95	26.75	17.561	
3,900.00	3,877.01	3,858.24	3,855.40	14.60	13.56	-177.03	-81.84	-57.59	486.10	458.64	27.46	17.701	
4,000.00	3,976.28	3,956.87	3,953.94	14.98	13.92	-177.19	-86.18	-58.60	502.51	474.33	28.18	17.833	
4,100.00	4,075.55	4,055.51	4,052.47	15.37	14.28	-177.35	-90.52	-59.61	518.92	490.02	28.89	17.959	
4,200.00	4,174.83	4,154.14	4,151.01	15.75	14.64	-177.49	-94.86	-60.62	535.34	505.72	29.61	18.079	
4,300.00	4,274.10	4,252.78	4,249.54	16.14	14.99	-177.63	-99.20	-61.63	551.76	521.43	30.33	18.193	
4,400.00	4,373.38	4,351.41	4,348.07	16.53	15.35	-177.76	-103.55	-62.64	568.18	537.13	31.04	18.302	
4,500.00	4,472.65	4,450.04	4,446.61	16.91	15.71	-177.88	-107.89	-63.66	584.60	552.84	31.76	18.406	
4,600.00	4,571.93	4,548.68	4,545.14	17.30	16.07	-178.00	-112.23	-64.67	601.03	568.55	32.48	18.505	
4,700.00	4,671.20	4,647.31	4,643.67	17.68	16.42	-178.10	-116.57	-65.68	617.46	584.26	33.20	18.600	
4,800.00	4,770.48	4,745.95	4,742.21	18.07	16.78	-178.21	-120.92	-66.69	633.89	599.98	33.91	18.691	
4,900.00	4,869.75	4,844.58	4,840.74	18.45	17.14	-178.31	-125.26	-67.70	650.32	615.69	34.63	18.778	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - 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
5,000.00	4,969.03	4,943.22	4,939.28	18.84	17.50	-178.40	-129.60	-68.71	666.76	631.41	35.35	18.862	
5,100.00	5,068.30	5,041.85	5,037.81	19.23	17.85	-178.49	-133.94	-69.72	683.20	647.13	36.07	18.942	
5,200.00	5,167.58	5,140.49	5,136.34	19.61	18.21	-178.57	-138.28	-70.74	699.64	662.85	36.78	19.020	
5,300.00	5,266.85	5,239.12	5,234.88	20.00	18.57	-178.65	-142.63	-71.75	716.08	678.57	37.50	19.094	
5,400.00	5,366.12	5,337.76	5,333.41	20.38	18.93	-178.73	-146.97	-72.76	732.52	694.30	38.22	19.165	
5,500.00	5,465.40	5,436.39	5,431.94	20.77	19.29	-178.80	-151.31	-73.77	748.96	710.02	38.94	19.234	
5,600.00	5,564.67	5,535.02	5,530.48	21.15	19.65	-178.88	-155.65	-74.78	765.40	725.75	39.66	19.300	
5,700.00	5,663.95	5,633.66	5,629.01	21.54	20.00	-178.94	-159.99	-75.79	781.85	741.47	40.38	19.364	
5,800.00	5,763.22	5,732.29	5,727.54	21.93	20.36	-179.01	-164.34	-76.80	798.29	757.20	41.09	19.426	
5,900.00	5,862.50	5,830.93	5,826.08	22.31	20.72	-179.07	-168.68	-77.82	814.74	772.93	41.81	19.486	
6,000.00	5,961.77	5,929.56	5,924.61	22.70	21.08	-179.13	-173.02	-78.83	831.19	788.66	42.53	19.543	
6,100.00	6,061.05	6,028.20	6,023.15	23.08	21.44	-179.19	-177.36	-79.84	847.64	804.39	43.25	19.599	
6,200.00	6,160.32	6,126.83	6,121.68	23.47	21.80	-179.24	-181.71	-80.85	864.09	820.12	43.97	19.652	
6,300.00	6,259.60	6,225.47	6,220.21	23.86	22.16	-179.30	-186.05	-81.86	880.54	835.85	44.69	19.704	
6,376.00	6,335.04	6,300.43	6,295.10	24.15	22.43	-179.33	-189.35	-82.63	893.04	847.80	45.23	19.743	
6,400.00	6,358.85	6,320.93	6,315.58	24.24	22.50	165.58	-190.25	-82.87	897.16	851.78	45.38	19.768	
6,450.00	6,408.16	6,350.00	6,344.59	24.44	22.61	145.70	-191.52	-84.11	907.36	861.77	45.59	19.902	
6,500.00	6,456.87	6,383.94	6,378.35	24.64	22.73	135.14	-193.00	-87.24	919.79	873.96	45.83	20.071	
6,550.00	6,504.65	6,412.87	6,406.96	24.85	22.83	128.73	-194.24	-91.33	934.49	888.48	46.01	20.310	
6,600.00	6,551.23	6,439.40	6,433.01	25.06	22.93	124.31	-195.37	-96.21	951.48	905.32	46.16	20.611	
6,650.00	6,596.31	6,463.20	6,456.19	25.26	23.01	120.86	-196.37	-101.52	970.80	924.52	46.28	20.975	
6,700.00	6,639.62	6,484.09	6,476.36	25.48	23.09	117.85	-197.24	-106.89	992.44	946.07	46.37	21.404	
6,750.00	6,680.88	6,500.00	6,491.60	25.69	23.15	114.88	-197.89	-111.41	1,016.36	969.97	46.39	21.907	
6,800.00	6,719.85	6,517.04	6,507.78	25.91	23.20	112.03	-198.58	-116.69	1,042.47	996.03	46.44	22.449	
6,850.00	6,756.28	6,529.25	6,519.29	26.13	23.25	108.90	-199.07	-120.73	1,070.63	1,024.20	46.43	23.059	
6,900.00	6,789.95	6,550.00	6,538.67	26.37	23.32	106.15	-199.89	-128.11	1,100.78	1,054.23	46.54	23.650	
6,950.00	6,820.65	6,550.00	6,538.67	26.61	23.32	102.00	-199.89	-128.11	1,132.37	1,085.95	46.42	24.395	
7,000.00	6,848.19	6,550.00	6,538.67	26.87	23.32	97.63	-199.89	-128.11	1,165.45	1,119.15	46.31	25.168	
7,050.00	6,872.41	6,550.00	6,538.67	27.13	23.32	93.08	-199.89	-128.11	1,199.71	1,153.49	46.22	25.955	
7,100.00	6,893.15	6,550.00	6,538.67	27.41	23.32	88.41	-199.89	-128.11	1,234.84	1,188.68	46.17	26.748	
7,150.00	6,910.28	6,550.00	6,538.67	27.71	23.32	83.70	-199.89	-128.11	1,270.57	1,224.43	46.14	27.537	
7,200.00	6,923.70	6,550.00	6,538.67	28.02	23.32	79.04	-199.89	-128.11	1,306.63	1,260.48	46.15	28.315	
7,250.00	6,933.33	6,550.00	6,538.67	28.34	23.32	74.51	-199.89	-128.11	1,342.78	1,296.60	46.18	29.076	
7,300.00	6,939.11	6,550.00	6,538.67	28.67	23.32	70.18	-199.89	-128.11	1,378.81	1,332.56	46.25	29.814	
7,349.12	6,941.00	6,550.00	6,538.67	29.00	23.32	66.19	-199.89	-128.11	1,413.88	1,367.54	46.34	30.514	
7,400.00	6,941.01	6,530.16	6,520.15	29.36	23.25	65.21	-199.10	-121.04	1,450.05	1,403.85	46.20	31.388	
7,500.00	6,941.02	6,518.38	6,509.05	30.11	23.21	64.62	-198.63	-117.12	1,523.69	1,477.41	46.28	32.925	
7,600.00	6,941.04	6,500.00	6,491.60	30.93	23.15	63.71	-197.89	-111.41	1,600.02	1,553.74	46.28	34.570	
7,700.00	6,941.05	6,500.00	6,491.60	31.80	23.15	63.71	-197.89	-111.41	1,678.55	1,632.06	46.49	36.102	
7,800.00	6,941.07	6,500.00	6,491.60	32.73	23.15	63.71	-197.89	-111.41	1,759.26	1,712.57	46.69	37.680	
7,900.00	6,941.08	6,481.33	6,473.71	33.71	23.08	62.79	-197.12	-106.14	1,841.53	1,794.85	46.69	39.445	
8,000.00	6,941.10	6,473.98	6,466.62	34.73	23.05	62.43	-196.82	-104.20	1,925.47	1,878.68	46.79	41.149	
8,100.00	6,941.11	6,450.00	6,443.36	35.79	22.97	61.27	-195.82	-98.47	2,011.08	1,964.34	46.74	43.029	
8,200.00	6,941.13	6,450.00	6,443.36	36.90	22.97	61.27	-195.82	-98.47	2,097.45	2,050.55	46.90	44.720	
8,300.00	6,941.14	6,450.00	6,443.36	38.03	22.97	61.27	-195.82	-98.47	2,184.99	2,137.94	47.05	46.437	
8,400.00	6,941.16	6,450.00	6,443.36	39.20	22.97	61.27	-195.82	-98.47	2,273.56	2,226.36	47.19	48.175	
8,500.00	6,941.17	6,450.00	6,443.36	40.40	22.97	61.27	-195.82	-98.47	2,363.04	2,315.71	47.33	49.932	
8,600.00	6,941.19	6,450.00	6,443.36	41.63	22.97	61.27	-195.82	-98.47	2,453.33	2,405.88	47.45	51.706	
8,700.00	6,941.20	6,450.00	6,443.36	42.88	22.97	61.27	-195.82	-98.47	2,544.35	2,496.78	47.56	53.494	
8,800.00	6,941.22	6,450.00	6,443.36	44.16	22.97	61.27	-195.82	-98.47	2,636.01	2,588.34	47.67	55.296	
8,900.00	6,941.23	6,427.93	6,421.77	45.45	22.89	60.20	-194.88	-93.97	2,727.82	2,680.20	47.62	57.282	
9,000.00	6,941.24	6,424.33	6,418.24	46.76	22.88	60.03	-194.73	-93.30	2,820.44	2,772.75	47.70	59.132	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - 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	6,941.26	6,420.94	6,414.90	48.10	22.86	59.87	-194.59	-92.70	2,913.54	2,865.76	47.77	60.988	
9,200.00	6,941.27	6,400.00	6,394.26	49.44	22.79	58.88	-193.69	-89.35	3,007.34	2,959.61	47.73	63.007	
9,300.00	6,941.29	6,400.00	6,394.26	50.80	22.79	58.88	-193.69	-89.35	3,101.15	3,053.33	47.82	64.847	
9,400.00	6,941.30	6,400.00	6,394.26	52.18	22.79	58.88	-193.69	-89.35	3,195.34	3,147.43	47.91	66.692	
9,500.00	6,941.32	6,400.00	6,394.26	53.57	22.79	58.88	-193.69	-89.35	3,289.87	3,241.88	48.00	68.543	
9,600.00	6,941.33	6,400.00	6,394.26	54.97	22.79	58.88	-193.69	-89.35	3,384.72	3,336.64	48.08	70.399	
9,700.00	6,941.35	6,400.00	6,394.26	56.38	22.79	58.88	-193.69	-89.35	3,479.85	3,431.69	48.16	72.258	
9,800.00	6,941.36	6,400.00	6,394.26	57.80	22.79	58.88	-193.69	-89.35	3,575.25	3,527.02	48.24	74.120	
9,900.00	6,941.38	6,400.00	6,394.26	59.23	22.79	58.88	-193.69	-89.35	3,670.90	3,622.59	48.31	75.985	
10,000.00	6,941.39	6,400.00	6,394.26	60.67	22.79	58.88	-193.69	-89.35	3,766.77	3,718.38	48.38	77.851	
10,100.00	6,941.41	6,400.00	6,394.26	62.11	22.79	58.88	-193.69	-89.35	3,862.85	3,814.39	48.46	79.719	
10,200.00	6,941.42	6,400.00	6,394.26	63.57	22.79	58.88	-193.69	-89.35	3,959.12	3,910.60	48.53	81.588	
10,300.00	6,941.44	6,400.00	6,394.26	65.03	22.79	58.88	-193.69	-89.35	4,055.58	4,006.98	48.59	83.457	
10,400.00	6,941.45	6,400.00	6,394.26	66.50	22.79	58.88	-193.69	-89.35	4,152.20	4,103.54	48.66	85.326	
10,500.00	6,941.47	6,400.00	6,394.26	67.97	22.79	58.88	-193.69	-89.35	4,248.98	4,200.25	48.73	87.195	
10,600.00	6,941.48	6,400.00	6,394.26	69.45	22.79	58.88	-193.69	-89.35	4,345.91	4,297.11	48.80	89.064	
10,700.00	6,941.50	6,400.00	6,394.26	70.94	22.79	58.88	-193.69	-89.35	4,442.97	4,394.11	48.86	90.931	
10,800.00	6,941.51	6,400.00	6,394.26	72.43	22.79	58.88	-193.69	-89.35	4,540.16	4,491.23	48.93	92.797	
10,900.00	6,941.53	6,400.00	6,394.26	73.92	22.79	58.88	-193.69	-89.35	4,637.46	4,588.47	48.99	94.662	
11,000.00	6,941.54	6,400.00	6,394.26	75.42	22.79	58.88	-193.69	-89.35	4,734.88	4,685.83	49.05	96.524	
11,100.00	6,941.56	6,400.00	6,394.26	76.92	22.79	58.88	-193.69	-89.35	4,832.41	4,783.29	49.12	98.385	
11,200.00	6,941.57	6,400.00	6,394.26	78.43	22.79	58.88	-193.69	-89.35	4,930.03	4,880.85	49.18	100.244	
11,300.00	6,941.59	6,376.76	6,371.22	79.94	22.70	57.79	-192.69	-86.43	5,027.28	4,978.15	49.14	102.314	
11,400.00	6,941.60	6,375.55	6,370.03	81.46	22.70	57.73	-192.64	-86.30	5,125.04	5,075.84	49.19	104.180	
11,500.00	6,941.61	6,374.39	6,368.87	82.98	22.70	57.68	-192.59	-86.18	5,222.88	5,173.63	49.25	106.042	
11,600.00	6,941.63	6,373.27	6,367.76	84.50	22.69	57.63	-192.54	-86.07	5,320.80	5,271.48	49.31	107.901	
11,700.00	6,941.64	6,350.00	6,344.59	86.02	22.61	56.56	-191.52	-84.11	5,419.21	5,369.94	49.27	109.988	
11,800.00	6,941.66	6,350.00	6,344.59	87.55	22.61	56.56	-191.52	-84.11	5,517.24	5,467.90	49.34	111.830	
11,900.00	6,941.67	6,350.00	6,344.59	89.08	22.61	56.56	-191.52	-84.11	5,615.33	5,565.93	49.40	113.669	
12,000.00	6,941.69	6,350.00	6,344.59	90.61	22.61	56.56	-191.52	-84.11	5,713.49	5,664.02	49.47	115.504	
12,100.00	6,941.70	6,350.00	6,344.59	92.14	22.61	56.56	-191.52	-84.11	5,811.71	5,762.18	49.53	117.335	
12,200.00	6,941.72	6,350.00	6,344.59	93.68	22.61	56.56	-191.52	-84.11	5,909.99	5,860.39	49.60	119.163	
12,300.00	6,941.73	6,350.00	6,344.59	95.22	22.61	56.56	-191.52	-84.11	6,008.33	5,958.66	49.66	120.986	
12,400.00	6,941.75	6,350.00	6,344.59	96.76	22.61	56.56	-191.52	-84.11	6,106.72	6,056.99	49.73	122.805	
12,500.00	6,941.76	6,350.00	6,344.59	98.30	22.61	56.56	-191.52	-84.11	6,205.16	6,155.37	49.79	124.620	
12,600.00	6,941.78	6,350.00	6,344.59	99.85	22.61	56.56	-191.52	-84.11	6,303.65	6,253.79	49.86	126.430	
12,700.00	6,941.79	6,350.00	6,344.59	101.40	22.61	56.56	-191.52	-84.11	6,402.19	6,352.26	49.93	128.236	
12,800.00	6,941.81	6,350.00	6,344.59	102.95	22.61	56.56	-191.52	-84.11	6,500.77	6,450.78	49.99	130.037	
12,900.00	6,941.82	6,350.00	6,344.59	104.50	22.61	56.56	-191.52	-84.11	6,599.40	6,549.34	50.06	131.834	
13,000.00	6,941.84	6,350.00	6,344.59	106.05	22.61	56.56	-191.52	-84.11	6,698.06	6,647.94	50.13	133.625	
13,100.00	6,941.85	6,350.00	6,344.59	107.60	22.61	56.56	-191.52	-84.11	6,796.77	6,746.58	50.19	135.412	
13,200.00	6,941.87	6,350.00	6,344.59	109.16	22.61	56.56	-191.52	-84.11	6,895.51	6,845.25	50.26	137.193	
13,300.00	6,941.88	6,350.00	6,344.59	110.71	22.61	56.56	-191.52	-84.11	6,994.29	6,943.96	50.33	138.970	
13,400.00	6,941.90	6,350.00	6,344.59	112.27	22.61	56.56	-191.52	-84.11	7,093.10	7,042.71	50.40	140.741	
13,500.00	6,941.91	6,350.00	6,344.59	113.83	22.61	56.56	-191.52	-84.11	7,191.95	7,141.48	50.47	142.507	
13,600.00	6,941.93	6,350.00	6,344.59	115.39	22.61	56.56	-191.52	-84.11	7,290.83	7,240.29	50.54	144.267	
13,700.00	6,941.94	6,350.00	6,344.59	116.95	22.61	56.56	-191.52	-84.11	7,389.73	7,339.13	50.61	146.022	
13,800.00	6,941.96	6,350.00	6,344.59	118.51	22.61	56.56	-191.52	-84.11	7,488.67	7,437.99	50.68	147.772	
13,900.00	6,941.97	6,350.00	6,344.59	120.08	22.61	56.56	-191.52	-84.11	7,587.63	7,536.89	50.75	149.516	
14,000.00	6,941.99	6,350.00	6,344.59	121.64	22.61	56.56	-191.52	-84.11	7,686.63	7,635.81	50.82	151.254	
14,100.00	6,942.00	6,350.00	6,344.59	123.21	22.61	56.56	-191.52	-84.11	7,785.64	7,734.75	50.89	152.987	
14,200.00	6,942.01	6,350.00	6,344.59	124.77	22.61	56.56	-191.52	-84.11	7,884.68	7,833.72	50.96	154.714	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - 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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,300.00	6,942.03	6,350.00	6,344.59	126.34	22.61	56.56	-191.52	-84.11	7,983.75	7,932.71	51.04	156.435	
14,400.00	6,942.04	6,350.00	6,344.59	127.91	22.61	56.56	-191.52	-84.11	8,082.84	8,031.73	51.11	158.150	
14,500.00	6,942.06	6,350.00	6,344.59	129.48	22.61	56.56	-191.52	-84.11	8,181.95	8,130.77	51.18	159.859	
14,600.00	6,942.07	6,350.00	6,344.59	131.05	22.61	56.56	-191.52	-84.11	8,281.08	8,229.82	51.26	161.562	
14,700.00	6,942.09	6,350.00	6,344.59	132.62	22.61	56.56	-191.52	-84.11	8,380.23	8,328.90	51.33	163.260	
14,800.00	6,942.10	6,350.00	6,344.59	134.19	22.61	56.56	-191.52	-84.11	8,479.41	8,428.00	51.41	164.951	
14,900.00	6,942.12	6,350.00	6,344.59	135.76	22.61	56.56	-191.52	-84.11	8,578.60	8,527.12	51.48	166.636	
15,000.00	6,942.13	6,350.00	6,344.59	137.34	22.61	56.56	-191.52	-84.11	8,677.81	8,626.25	51.56	168.315	
15,100.00	6,942.15	6,350.00	6,344.59	138.91	22.61	56.56	-191.52	-84.11	8,777.04	8,725.40	51.63	169.988	
15,200.00	6,942.16	6,350.00	6,344.59	140.48	22.61	56.56	-191.52	-84.11	8,876.28	8,824.57	51.71	171.654	
15,300.00	6,942.18	6,350.00	6,344.59	142.06	22.61	56.56	-191.52	-84.11	8,975.54	8,923.76	51.79	173.315	
15,400.00	6,942.19	6,350.00	6,344.59	143.64	22.61	56.56	-191.52	-84.11	9,074.82	9,022.96	51.87	174.969	
15,500.00	6,942.21	6,350.00	6,344.59	145.21	22.61	56.56	-191.52	-84.11	9,174.12	9,122.17	51.94	176.617	
15,600.00	6,942.22	6,350.00	6,344.59	146.79	22.61	56.56	-191.52	-84.11	9,273.43	9,221.40	52.02	178.258	
15,700.00	6,942.24	6,350.00	6,344.59	148.37	22.61	56.56	-191.52	-84.11	9,372.75	9,320.65	52.10	179.893	
15,800.00	6,942.25	6,350.00	6,344.59	149.94	22.61	56.56	-191.52	-84.11	9,472.09	9,419.91	52.18	181.522	
15,900.00	6,942.27	6,350.00	6,344.59	151.52	22.61	56.56	-191.52	-84.11	9,571.44	9,519.18	52.26	183.144	
16,000.00	6,942.28	6,350.00	6,344.59	153.10	22.61	56.56	-191.52	-84.11	9,670.81	9,618.46	52.34	184.760	
16,100.00	6,942.30	6,350.00	6,344.59	154.68	22.61	56.56	-191.52	-84.11	9,770.18	9,717.76	52.42	186.369	
16,200.00	6,942.31	6,350.00	6,344.59	156.26	22.61	56.56	-191.52	-84.11	9,869.58	9,817.07	52.51	187.972	
16,300.00	6,942.33	6,350.00	6,344.59	157.84	22.61	56.56	-191.52	-84.11	9,968.98	9,916.39	52.59	189.568	
16,400.00	6,942.34	6,350.00	6,344.59	159.42	22.61	56.56	-191.52	-84.11	10,068.39	10,015.72	52.67	191.158	
16,500.00	6,942.36	6,350.00	6,344.59	161.00	22.61	56.56	-191.52	-84.11	10,167.82	10,115.07	52.75	192.741	
16,600.00	6,942.37	6,350.00	6,344.59	162.59	22.61	56.56	-191.52	-84.11	10,267.26	10,214.42	52.84	194.318	
16,700.00	6,942.38	6,350.00	6,344.59	164.17	22.61	56.56	-191.52	-84.11	10,366.71	10,313.78	52.92	195.888	
16,800.00	6,942.40	6,350.00	6,344.59	165.75	22.61	56.56	-191.52	-84.11	10,466.16	10,413.16	53.01	197.452	
16,900.00	6,942.41	6,350.00	6,344.59	167.33	22.61	56.56	-191.52	-84.11	10,565.63	10,512.54	53.09	199.009	
17,000.00	6,942.43	6,350.00	6,344.59	168.92	22.61	56.56	-191.52	-84.11	10,665.11	10,611.94	53.18	200.560	
17,100.00	6,942.44	6,350.00	6,344.59	170.50	22.61	56.56	-191.52	-84.11	10,764.60	10,711.34	53.26	202.104	
17,200.00	6,942.46	6,350.00	6,344.59	172.09	22.61	56.56	-191.52	-84.11	10,864.10	10,810.75	53.35	203.641	
17,300.00	6,942.47	6,350.00	6,344.59	173.67	22.61	56.56	-191.52	-84.11	10,963.61	10,910.17	53.44	205.172	
17,400.00	6,942.49	6,350.00	6,344.59	175.26	22.61	56.56	-191.52	-84.11	11,063.12	11,009.60	53.52	206.696	
17,500.00	6,942.50	6,350.00	6,344.59	176.84	22.61	56.56	-191.52	-84.11	11,162.65	11,109.04	53.61	208.213	
17,600.00	6,942.52	6,350.00	6,344.59	178.43	22.61	56.56	-191.52	-84.11	11,262.18	11,208.48	53.70	209.724	
17,700.00	6,942.53	6,350.00	6,344.59	180.01	22.61	56.56	-191.52	-84.11	11,361.72	11,307.93	53.79	211.229	
17,800.00	6,942.55	6,350.00	6,344.59	181.60	22.61	56.56	-191.52	-84.11	11,461.27	11,407.39	53.88	212.726	
17,900.00	6,942.56	6,350.00	6,344.59	183.19	22.61	56.56	-191.52	-84.11	11,560.83	11,506.86	53.97	214.217	
18,000.00	6,942.58	6,350.00	6,344.59	184.77	22.61	56.56	-191.52	-84.11	11,660.39	11,606.34	54.06	215.702	
18,100.00	6,942.59	6,350.00	6,344.59	186.36	22.61	56.56	-191.52	-84.11	11,759.97	11,705.82	54.15	217.180	
18,200.00	6,942.61	6,350.00	6,344.59	187.95	22.61	56.56	-191.52	-84.11	11,859.54	11,805.30	54.24	218.651	
18,300.00	6,942.62	6,350.00	6,344.59	189.54	22.61	56.56	-191.52	-84.11	11,959.13	11,904.80	54.33	220.116	
18,400.00	6,942.64	6,350.00	6,344.59	191.12	22.61	56.56	-191.52	-84.11	12,058.72	12,004.30	54.42	221.574	
18,500.00	6,942.65	6,350.00	6,344.59	192.71	22.61	56.56	-191.52	-84.11	12,158.32	12,103.81	54.52	223.025	
18,600.00	6,942.67	6,350.00	6,344.59	194.30	22.61	56.56	-191.52	-84.11	12,257.93	12,203.32	54.61	224.470	
18,700.00	6,942.68	6,350.00	6,344.59	195.89	22.61	56.56	-191.52	-84.11	12,357.54	12,302.84	54.70	225.908	
18,800.00	6,942.70	6,350.00	6,344.59	197.48	22.61	56.56	-191.52	-84.11	12,457.16	12,402.37	54.80	227.340	
18,900.00	6,942.71	6,350.00	6,344.59	199.07	22.61	56.56	-191.52	-84.11	12,556.79	12,501.90	54.89	228.765	
19,000.00	6,942.73	6,350.00	6,344.59	200.66	22.61	56.56	-191.52	-84.11	12,656.42	12,601.43	54.98	230.184	
19,100.00	6,942.74	6,350.00	6,344.59	202.25	22.61	56.56	-191.52	-84.11	12,756.05	12,700.98	55.08	231.596	
19,200.00	6,942.76	6,350.00	6,344.59	203.84	22.61	56.56	-191.52	-84.11	12,855.70	12,800.52	55.17	233.001	
19,300.00	6,942.77	6,350.00	6,344.59	205.43	22.61	56.56	-191.52	-84.11	12,955.34	12,900.07	55.27	234.400	
19,400.00	6,942.78	6,350.00	6,344.59	207.02	22.61	56.56	-191.52	-84.11	13,055.00	12,999.63	55.37	235.793	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 24 - Rosa Unit 701H - OH - Prelim #2

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
19,500.00	6,942.80	6,350.00	6,344.59	208.61	22.61	56.56	-191.52	-84.11	13,154.66	13,099.19	55.46	237.179	
19,600.00	6,942.81	6,350.00	6,344.59	210.20	22.61	56.56	-191.52	-84.11	13,254.32	13,198.76	55.56	238.558	
19,700.00	6,942.83	6,350.00	6,344.59	211.79	22.61	56.56	-191.52	-84.11	13,353.99	13,298.33	55.66	239.931	
19,800.00	6,942.84	6,350.00	6,344.59	213.38	22.61	56.56	-191.52	-84.11	13,453.66	13,397.91	55.76	241.298	
19,900.00	6,942.86	6,350.00	6,344.59	214.97	22.61	56.56	-191.52	-84.11	13,553.34	13,497.49	55.85	242.658	
20,000.00	6,942.87	6,350.00	6,344.59	216.56	22.61	56.56	-191.52	-84.11	13,653.02	13,597.07	55.95	244.012	
20,100.00	6,942.89	6,350.00	6,344.59	218.15	22.61	56.56	-191.52	-84.11	13,752.71	13,696.66	56.05	245.359	
20,200.00	6,942.90	6,350.00	6,344.59	219.75	22.61	56.56	-191.52	-84.11	13,852.40	13,796.25	56.15	246.700	
20,300.00	6,942.92	6,350.00	6,344.59	221.34	22.61	56.56	-191.52	-84.11	13,952.10	13,895.85	56.25	248.035	
20,400.00	6,942.93	6,350.00	6,344.59	222.93	22.61	56.56	-191.52	-84.11	14,051.80	13,995.45	56.35	249.363	
20,500.00	6,942.95	6,350.00	6,344.59	224.52	22.61	56.56	-191.52	-84.11	14,151.51	14,095.05	56.45	250.685	
20,600.00	6,942.96	6,350.00	6,344.59	226.12	22.61	56.56	-191.52	-84.11	14,251.21	14,194.66	56.55	252.000	
20,700.00	6,942.98	6,350.00	6,344.59	227.71	22.61	56.56	-191.52	-84.11	14,350.93	14,294.27	56.65	253.310	
20,800.00	6,942.99	6,350.00	6,344.59	229.30	22.61	56.56	-191.52	-84.11	14,450.65	14,393.89	56.76	254.613	
20,855.77	6,943.00	6,350.00	6,344.59	230.19	22.61	56.56	-191.52	-84.11	14,506.26	14,449.45	56.81	255.337	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 — **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	-34.62	20.75	-14.32	25.22				
100.00	100.00	100.00	100.00	0.25	0.25	-34.62	20.75	-14.32	25.22	24.71	0.50	50.245	
200.00	200.00	200.00	200.00	0.61	0.61	-34.62	20.75	-14.32	25.22	24.00	1.22	20.689	
300.00	300.00	300.00	300.00	0.97	0.97	-34.62	20.75	-14.32	25.22	23.28	1.94	13.026	
400.00	400.00	400.00	400.00	1.33	1.33	-34.62	20.75	-14.32	25.22	22.56	2.65	9.506	
500.00	500.00	500.00	500.00	1.68	1.68	-34.62	20.75	-14.32	25.22	21.85	3.37	7.483	
600.00	599.98	600.61	600.59	2.04	2.03	-61.53	18.99	-14.32	22.91	18.84	4.07	5.627	
700.00	699.84	700.51	700.34	2.40	2.36	-87.61	13.74	-14.32	18.28	13.52	4.76	3.841	
727.90	727.66	728.16	727.92	2.51	2.46	-100.43	11.67	-14.32	17.82	12.86	4.95	3.596	CC, ES, SF
800.00	799.45	799.00	798.46	2.77	2.70	-135.98	5.16	-14.31	22.05	16.59	5.46	4.038	
845.27	844.44	842.95	842.13	2.93	2.86	-151.83	0.25	-14.31	29.03	23.25	5.78	5.020	
900.00	898.77	895.56	894.31	3.13	3.04	-163.64	-6.51	-14.30	40.32	34.17	6.16	6.549	
1,000.00	998.04	990.42	988.03	3.50	3.39	-174.62	-21.12	-14.29	65.24	58.42	6.82	9.562	
1,100.00	1,097.32	1,083.47	1,079.45	3.87	3.75	179.83	-38.46	-14.28	94.14	86.67	7.48	12.593	
1,200.00	1,196.59	1,174.59	1,168.38	4.24	4.12	176.48	-58.31	-14.26	126.42	118.30	8.12	15.572	
1,300.00	1,295.87	1,266.70	1,257.73	4.62	4.51	174.21	-80.65	-14.25	161.24	152.46	8.77	18.376	
1,400.00	1,395.14	1,360.21	1,348.40	5.00	4.92	172.70	-103.52	-14.23	196.40	186.94	9.46	20.753	
1,500.00	1,494.42	1,453.72	1,439.07	5.38	5.33	171.65	-126.39	-14.21	231.65	221.49	10.16	22.806	
1,600.00	1,593.69	1,547.23	1,529.74	5.76	5.75	170.88	-149.26	-14.19	266.95	256.09	10.85	24.594	
1,700.00	1,692.96	1,640.74	1,620.42	6.14	6.17	170.29	-172.13	-14.18	302.28	290.72	11.55	26.161	
1,800.00	1,792.24	1,734.25	1,711.09	6.52	6.60	169.82	-195.00	-14.16	337.63	325.37	12.26	27.546	
1,900.00	1,891.51	1,827.76	1,801.76	6.91	7.03	169.44	-217.87	-14.14	373.00	360.04	12.96	28.776	
2,000.00	1,990.79	1,921.27	1,892.43	7.29	7.46	169.13	-240.74	-14.12	408.38	394.71	13.67	29.876	
2,100.00	2,090.06	2,014.78	1,983.10	7.67	7.90	168.87	-263.61	-14.10	443.77	429.39	14.38	30.865	
2,200.00	2,189.34	2,108.30	2,073.77	8.06	8.34	168.64	-286.48	-14.09	479.17	464.08	15.09	31.759	
2,300.00	2,288.61	2,201.81	2,164.44	8.44	8.77	168.45	-309.35	-14.07	514.57	498.77	15.80	32.571	
2,400.00	2,387.89	2,295.32	2,255.11	8.82	9.21	168.28	-332.22	-14.05	549.98	533.47	16.51	33.310	
2,500.00	2,487.16	2,388.83	2,345.78	9.21	9.66	168.13	-355.09	-14.03	585.39	568.16	17.22	33.987	
2,600.00	2,586.44	2,482.34	2,436.45	9.59	10.10	168.00	-377.96	-14.02	620.80	602.86	17.94	34.609	
2,700.00	2,685.71	2,575.85	2,527.12	9.98	10.54	167.88	-400.83	-14.00	656.22	637.57	18.65	35.182	
2,800.00	2,784.99	2,669.36	2,617.79	10.36	10.98	167.78	-423.70	-13.98	691.64	672.27	19.37	35.711	
2,900.00	2,884.26	2,762.87	2,708.46	10.75	11.43	167.68	-446.57	-13.96	727.06	706.97	20.08	36.202	
3,000.00	2,983.53	2,856.38	2,799.13	11.13	11.87	167.59	-469.44	-13.95	762.48	741.68	20.80	36.658	
3,100.00	3,082.81	2,949.89	2,889.80	11.52	12.32	167.52	-492.31	-13.93	797.90	776.38	21.52	37.083	
3,200.00	3,182.08	3,043.40	2,980.47	11.90	12.77	167.44	-515.18	-13.91	833.33	811.09	22.23	37.479	
3,300.00	3,281.36	3,136.91	3,071.14	12.29	13.21	167.38	-538.05	-13.89	868.75	845.80	22.95	37.851	
3,400.00	3,380.63	3,230.42	3,161.82	12.67	13.66	167.32	-560.92	-13.87	904.18	880.51	23.67	38.199	
3,500.00	3,479.91	3,323.93	3,252.49	13.06	14.11	167.26	-583.79	-13.86	939.60	915.21	24.39	38.526	
3,600.00	3,579.18	3,417.44	3,343.16	13.44	14.55	167.21	-606.66	-13.84	975.03	949.92	25.11	38.834	
3,700.00	3,678.46	3,510.95	3,433.83	13.83	15.00	167.16	-629.53	-13.82	1,010.46	984.63	25.83	39.124	
3,800.00	3,777.73	3,604.46	3,524.50	14.21	15.45	167.11	-652.40	-13.80	1,045.89	1,019.34	26.55	39.398	
3,900.00	3,877.01	3,697.97	3,615.17	14.60	15.90	167.07	-675.27	-13.79	1,081.32	1,054.05	27.27	39.657	
4,000.00	3,976.28	3,791.48	3,705.84	14.98	16.35	167.03	-698.14	-13.77	1,116.75	1,088.76	27.99	39.903	
4,100.00	4,075.55	3,884.99	3,796.51	15.37	16.80	167.00	-721.01	-13.75	1,152.18	1,123.47	28.71	40.135	
4,200.00	4,174.83	3,978.50	3,887.18	15.75	17.24	166.96	-743.88	-13.73	1,187.61	1,158.18	29.43	40.356	
4,300.00	4,274.10	4,072.01	3,977.85	16.14	17.69	166.93	-766.76	-13.71	1,223.04	1,192.89	30.15	40.567	
4,400.00	4,373.38	4,165.53	4,068.52	16.53	18.14	166.90	-789.63	-13.70	1,258.47	1,227.60	30.87	40.767	
4,500.00	4,472.65	4,259.04	4,159.19	16.91	18.59	166.87	-812.50	-13.68	1,293.91	1,262.31	31.59	40.957	
4,600.00	4,571.93	4,352.55	4,249.86	17.30	19.04	166.84	-835.37	-13.66	1,329.34	1,297.02	32.31	41.139	
4,700.00	4,671.20	4,446.06	4,340.53	17.68	19.49	166.81	-858.24	-13.64	1,364.77	1,331.73	33.04	41.313	
4,800.00	4,770.48	4,539.57	4,431.20	18.07	19.94	166.79	-881.11	-13.63	1,400.20	1,366.45	33.76	41.478	
4,900.00	4,869.75	4,633.08	4,521.87	18.45	20.39	166.76	-903.98	-13.61	1,435.64	1,401.16	34.48	41.637	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
5,000.00	4,969.03	4,726.59	4,612.54	18.84	20.84	166.74	-926.85	-13.59	1,471.07	1,435.87	35.20	41.789	
5,100.00	5,068.30	4,820.10	4,703.22	19.23	21.29	166.72	-949.72	-13.57	1,506.50	1,470.58	35.93	41.935	
5,200.00	5,167.58	4,913.61	4,793.89	19.61	21.74	166.70	-972.59	-13.56	1,541.94	1,505.29	36.65	42.074	
5,300.00	5,266.85	5,007.12	4,884.56	20.00	22.19	166.68	-995.46	-13.54	1,577.37	1,540.00	37.37	42.208	
5,400.00	5,366.12	5,100.63	4,975.23	20.38	22.64	166.66	-1,018.33	-13.52	1,612.80	1,574.71	38.09	42.337	
5,500.00	5,465.40	5,194.14	5,065.90	20.77	23.09	166.64	-1,041.20	-13.50	1,648.24	1,609.42	38.82	42.460	
5,600.00	5,564.67	5,287.65	5,156.57	21.15	23.54	166.63	-1,064.07	-13.48	1,683.67	1,644.13	39.54	42.579	
5,700.00	5,663.95	5,381.16	5,247.24	21.54	23.99	166.61	-1,086.94	-13.47	1,719.11	1,678.84	40.27	42.694	
5,800.00	5,763.22	5,474.67	5,337.91	21.93	24.45	166.59	-1,109.81	-13.45	1,754.54	1,713.55	40.99	42.804	
5,900.00	5,862.50	5,568.18	5,428.58	22.31	24.90	166.58	-1,132.68	-13.43	1,789.97	1,748.26	41.71	42.910	
6,000.00	5,961.77	5,661.69	5,519.25	22.70	25.35	166.56	-1,155.55	-13.41	1,825.41	1,782.97	42.44	43.012	
6,100.00	6,061.05	5,755.20	5,609.92	23.08	25.80	166.55	-1,178.42	-13.40	1,860.84	1,817.68	43.16	43.111	
6,200.00	6,160.32	5,848.71	5,700.59	23.47	26.25	166.54	-1,201.29	-13.38	1,896.28	1,852.39	43.89	43.206	
6,300.00	6,259.60	5,942.22	5,791.26	23.86	26.70	166.52	-1,224.16	-13.36	1,931.71	1,887.10	44.61	43.298	
6,376.00	6,335.04	6,013.29	5,860.17	24.15	27.04	166.51	-1,241.54	-13.35	1,958.64	1,913.48	45.17	43.366	
6,400.00	6,358.85	6,035.71	5,881.91	24.24	27.15	150.96	-1,247.03	-13.34	1,967.20	1,921.86	45.34	43.388	
6,450.00	6,408.16	6,082.17	5,926.96	24.44	27.38	130.16	-1,258.39	-13.33	1,985.29	1,939.58	45.71	43.436	
6,500.00	6,456.87	6,128.05	5,971.45	24.64	27.60	118.67	-1,269.61	-13.33	2,003.68	1,957.61	46.07	43.488	
6,550.00	6,504.65	6,173.08	6,015.11	24.85	27.81	111.49	-1,280.62	-13.32	2,022.30	1,975.86	46.44	43.545	
6,600.00	6,551.23	6,216.98	6,057.67	25.06	28.03	106.46	-1,291.36	-13.31	2,041.09	1,994.29	46.81	43.606	
6,650.00	6,596.31	6,259.46	6,098.87	25.26	28.23	102.66	-1,301.75	-13.30	2,060.02	2,012.85	47.17	43.671	
6,700.00	6,639.62	6,300.28	6,138.45	25.48	28.43	99.61	-1,311.73	-13.29	2,079.06	2,031.53	47.53	43.741	
6,750.00	6,680.88	6,339.19	6,176.17	25.69	28.62	97.05	-1,321.25	-13.29	2,098.20	2,050.31	47.89	43.817	
6,800.00	6,719.85	6,375.93	6,211.80	25.91	28.79	94.83	-1,330.23	-13.28	2,117.42	2,069.19	48.23	43.899	
6,850.00	6,756.28	6,410.29	6,245.11	26.13	28.96	92.83	-1,338.64	-13.27	2,136.73	2,088.16	48.58	43.987	
6,900.00	6,789.95	6,442.05	6,275.91	26.37	29.11	90.99	-1,346.40	-13.27	2,156.13	2,107.22	48.91	44.082	
6,950.00	6,820.65	6,471.02	6,304.00	26.61	29.25	89.25	-1,353.49	-13.26	2,175.61	2,126.37	49.24	44.184	
7,000.00	6,848.19	6,496.84	6,329.04	26.87	29.38	87.56	-1,359.81	-13.26	2,195.17	2,145.61	49.56	44.294	
7,050.00	6,872.41	6,500.00	6,332.10	27.13	29.39	85.42	-1,360.58	-13.26	2,214.89	2,165.17	49.72	44.552	
7,100.00	6,893.15	6,518.06	6,349.61	27.41	29.48	83.73	-1,364.99	-13.61	2,234.66	2,184.66	50.00	44.692	
7,150.00	6,910.28	6,525.08	6,356.41	27.71	29.51	81.83	-1,366.71	-13.88	2,254.52	2,204.31	50.21	44.898	
7,200.00	6,923.70	6,529.97	6,361.15	28.02	29.53	79.94	-1,367.90	-14.11	2,274.35	2,223.93	50.42	45.104	
7,250.00	6,933.33	6,532.91	6,363.99	28.34	29.55	78.08	-1,368.62	-14.27	2,294.06	2,243.43	50.63	45.308	
7,300.00	6,939.11	6,534.07	6,365.11	28.67	29.55	76.26	-1,368.90	-14.34	2,313.54	2,262.71	50.84	45.508	
7,349.12	6,941.00	6,533.64	6,364.70	29.00	29.55	74.52	-1,368.80	-14.31	2,332.36	2,281.32	51.04	45.698	
7,400.00	6,941.01	6,532.48	6,363.58	29.36	29.55	74.49	-1,368.51	-14.25	2,352.11	2,300.86	51.25	45.894	
7,500.00	6,941.02	6,530.41	6,361.57	30.11	29.54	74.43	-1,368.01	-14.13	2,393.61	2,341.92	51.69	46.303	
7,600.00	6,941.04	6,528.57	6,359.79	30.93	29.53	74.38	-1,367.56	-14.04	2,438.51	2,386.35	52.16	46.752	
7,700.00	6,941.05	6,526.92	6,358.20	31.80	29.52	74.34	-1,367.16	-13.96	2,486.61	2,433.98	52.63	47.243	
7,800.00	6,941.07	6,525.45	6,356.77	32.73	29.51	74.30	-1,366.80	-13.89	2,537.75	2,484.63	53.12	47.775	
7,900.00	6,941.08	6,524.11	6,355.47	33.71	29.51	74.26	-1,366.47	-13.83	2,591.73	2,538.12	53.60	48.351	
8,000.00	6,941.10	6,522.90	6,354.30	34.73	29.50	74.23	-1,366.18	-13.78	2,648.38	2,594.30	54.08	48.970	
8,100.00	6,941.11	6,521.80	6,353.23	35.79	29.50	74.20	-1,365.91	-13.74	2,707.55	2,652.99	54.55	49.630	
8,200.00	6,941.13	6,520.78	6,352.25	36.90	29.49	74.18	-1,365.66	-13.70	2,769.06	2,714.04	55.02	50.332	
8,300.00	6,941.14	6,519.85	6,351.35	38.03	29.49	74.15	-1,365.43	-13.67	2,832.76	2,777.30	55.46	51.073	
8,400.00	6,941.16	6,518.99	6,350.51	39.20	29.48	74.13	-1,365.22	-13.64	2,898.51	2,842.62	55.90	51.853	
8,500.00	6,941.17	6,500.00	6,332.10	40.40	29.39	73.63	-1,360.58	-13.26	2,966.42	2,910.25	56.17	52.814	
8,600.00	6,941.19	6,500.00	6,332.10	41.63	29.39	73.63	-1,360.58	-13.26	3,035.85	2,979.28	56.58	53.660	
8,700.00	6,941.20	6,500.00	6,332.10	42.88	29.39	73.63	-1,360.58	-13.26	3,106.96	3,049.99	56.97	54.539	
8,800.00	6,941.22	6,500.00	6,332.10	44.16	29.39	73.63	-1,360.58	-13.26	3,179.62	3,122.27	57.34	55.449	
8,900.00	6,941.23	6,500.00	6,332.10	45.45	29.39	73.63	-1,360.58	-13.26	3,253.73	3,196.03	57.70	56.388	
9,000.00	6,941.24	6,500.00	6,332.10	46.76	29.39	73.63	-1,360.58	-13.26	3,329.19	3,271.15	58.04	57.356	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,941.26	6,500.00	6,332.10	48.10	29.39	73.63	-1,360.58	-13.26	3,405.92	3,347.55	58.37	58.349	
9,200.00	6,941.27	6,500.00	6,332.10	49.44	29.39	73.63	-1,360.58	-13.26	3,483.83	3,425.15	58.68	59.367	
9,300.00	6,941.29	6,500.00	6,332.10	50.80	29.39	73.63	-1,360.58	-13.26	3,562.84	3,503.86	58.98	60.407	
9,400.00	6,941.30	6,500.00	6,332.10	52.18	29.39	73.63	-1,360.58	-13.26	3,642.89	3,583.63	59.26	61.469	
9,500.00	6,941.32	6,500.00	6,332.10	53.57	29.39	73.63	-1,360.58	-13.26	3,723.90	3,664.36	59.53	62.551	
9,600.00	6,941.33	6,500.00	6,332.10	54.97	29.39	73.63	-1,360.58	-13.26	3,805.81	3,746.02	59.79	63.651	
9,700.00	6,941.35	6,500.00	6,332.10	56.38	29.39	73.63	-1,360.58	-13.26	3,888.57	3,828.53	60.04	64.768	
9,800.00	6,941.36	6,500.00	6,332.10	57.80	29.39	73.63	-1,360.58	-13.26	3,972.12	3,911.85	60.27	65.901	
9,900.00	6,941.38	6,500.00	6,332.10	59.23	29.39	73.63	-1,360.58	-13.26	4,056.42	3,995.92	60.50	67.050	
10,000.00	6,941.39	6,500.00	6,332.10	60.67	29.39	73.63	-1,360.58	-13.26	4,141.42	4,080.70	60.71	68.212	
10,100.00	6,941.41	6,500.00	6,332.10	62.11	29.39	73.63	-1,360.58	-13.26	4,227.07	4,166.15	60.92	69.388	
10,200.00	6,941.42	6,500.00	6,332.10	63.57	29.39	73.63	-1,360.58	-13.26	4,313.34	4,252.22	61.12	70.575	
10,300.00	6,941.44	6,500.00	6,332.10	65.03	29.39	73.63	-1,360.58	-13.26	4,400.19	4,338.88	61.31	71.774	
10,400.00	6,941.45	6,500.00	6,332.10	66.50	29.39	73.63	-1,360.58	-13.26	4,487.59	4,426.10	61.49	72.983	
10,500.00	6,941.47	6,500.00	6,332.10	67.97	29.39	73.63	-1,360.58	-13.26	4,575.50	4,513.84	61.66	74.202	
10,600.00	6,941.48	6,500.00	6,332.10	69.45	29.39	73.63	-1,360.58	-13.26	4,663.90	4,602.07	61.83	75.430	
10,700.00	6,941.50	6,500.00	6,332.10	70.94	29.39	73.63	-1,360.58	-13.26	4,752.77	4,690.77	61.99	76.667	
10,800.00	6,941.51	6,500.00	6,332.10	72.43	29.39	73.63	-1,360.58	-13.26	4,842.06	4,779.91	62.15	77.911	
10,900.00	6,941.53	6,500.00	6,332.10	73.92	29.39	73.63	-1,360.58	-13.26	4,931.77	4,869.47	62.30	79.163	
11,000.00	6,941.54	6,500.00	6,332.10	75.42	29.39	73.63	-1,360.58	-13.26	5,021.86	4,959.42	62.44	80.421	
11,100.00	6,941.56	6,500.00	6,332.10	76.92	29.39	73.63	-1,360.58	-13.26	5,112.33	5,049.74	62.59	81.686	
11,200.00	6,941.57	6,500.00	6,332.10	78.43	29.39	73.63	-1,360.58	-13.26	5,203.14	5,140.42	62.72	82.956	
11,300.00	6,941.59	6,500.00	6,332.10	79.94	29.39	73.63	-1,360.58	-13.26	5,294.29	5,231.43	62.85	84.232	
11,400.00	6,941.60	6,500.00	6,332.10	81.46	29.39	73.63	-1,360.58	-13.26	5,385.74	5,322.76	62.98	85.512	
11,500.00	6,941.61	6,500.00	6,332.10	82.98	29.39	73.63	-1,360.58	-13.26	5,477.50	5,414.39	63.11	86.798	
11,600.00	6,941.63	6,500.00	6,332.10	84.50	29.39	73.63	-1,360.58	-13.26	5,569.54	5,506.31	63.23	88.087	
11,700.00	6,941.64	6,500.00	6,332.10	86.02	29.39	73.63	-1,360.58	-13.26	5,661.85	5,598.51	63.35	89.380	
11,800.00	6,941.66	6,500.00	6,332.10	87.55	29.39	73.63	-1,360.58	-13.26	5,754.42	5,690.96	63.46	90.676	
11,900.00	6,941.67	6,500.00	6,332.10	89.08	29.39	73.63	-1,360.58	-13.26	5,847.23	5,783.66	63.57	91.976	
12,000.00	6,941.69	6,500.00	6,332.10	90.61	29.39	73.63	-1,360.58	-13.26	5,940.28	5,876.60	63.68	93.278	
12,100.00	6,941.70	6,500.00	6,332.10	92.14	29.39	73.63	-1,360.58	-13.26	6,033.55	5,969.76	63.79	94.584	
12,200.00	6,941.72	6,500.00	6,332.10	93.68	29.39	73.63	-1,360.58	-13.26	6,127.03	6,063.13	63.90	95.891	
12,300.00	6,941.73	6,500.00	6,332.10	95.22	29.39	73.63	-1,360.58	-13.26	6,220.71	6,156.71	64.00	97.201	
12,400.00	6,941.75	6,500.00	6,332.10	96.76	29.39	73.63	-1,360.58	-13.26	6,314.59	6,250.49	64.10	98.512	
12,500.00	6,941.76	6,500.00	6,332.10	98.30	29.39	73.63	-1,360.58	-13.26	6,408.65	6,344.45	64.20	99.825	
12,600.00	6,941.78	6,500.00	6,332.10	99.85	29.39	73.63	-1,360.58	-13.26	6,502.89	6,438.60	64.30	101.140	
12,700.00	6,941.79	6,500.00	6,332.10	101.40	29.39	73.63	-1,360.58	-13.26	6,597.30	6,532.91	64.39	102.455	
12,800.00	6,941.81	6,500.00	6,332.10	102.95	29.39	73.63	-1,360.58	-13.26	6,691.87	6,627.39	64.49	103.772	
12,900.00	6,941.82	6,500.00	6,332.10	104.50	29.39	73.63	-1,360.58	-13.26	6,786.60	6,722.02	64.58	105.089	
13,000.00	6,941.84	6,500.00	6,332.10	106.05	29.39	73.63	-1,360.58	-13.26	6,881.48	6,816.81	64.67	106.408	
13,100.00	6,941.85	6,500.00	6,332.10	107.60	29.39	73.63	-1,360.58	-13.26	6,976.50	6,911.73	64.76	107.726	
13,200.00	6,941.87	6,500.00	6,332.10	109.16	29.39	73.63	-1,360.58	-13.26	7,071.65	7,006.80	64.85	109.045	
13,300.00	6,941.88	6,500.00	6,332.10	110.71	29.39	73.63	-1,360.58	-13.26	7,166.94	7,102.00	64.94	110.364	
13,400.00	6,941.90	6,500.00	6,332.10	112.27	29.39	73.63	-1,360.58	-13.26	7,262.36	7,197.33	65.03	111.684	
13,500.00	6,941.91	6,500.00	6,332.10	113.83	29.39	73.63	-1,360.58	-13.26	7,357.89	7,292.78	65.11	113.003	
13,600.00	6,941.93	6,500.00	6,332.10	115.39	29.39	73.63	-1,360.58	-13.26	7,453.55	7,388.35	65.20	114.322	
13,700.00	6,941.94	6,500.00	6,332.10	116.95	29.39	73.63	-1,360.58	-13.26	7,549.32	7,484.03	65.28	115.640	
13,800.00	6,941.96	6,500.00	6,332.10	118.51	29.39	73.63	-1,360.58	-13.26	7,645.19	7,579.83	65.37	116.958	
13,900.00	6,941.97	6,500.00	6,332.10	120.08	29.39	73.63	-1,360.58	-13.26	7,741.17	7,675.72	65.45	118.276	
14,000.00	6,941.99	6,500.00	6,332.10	121.64	29.39	73.63	-1,360.58	-13.26	7,837.25	7,771.72	65.53	119.593	
14,100.00	6,942.00	6,500.00	6,332.10	123.21	29.39	73.63	-1,360.58	-13.26	7,933.43	7,867.81	65.62	120.909	
14,200.00	6,942.01	6,500.00	6,332.10	124.77	29.39	73.63	-1,360.58	-13.26	8,029.70	7,964.00	65.70	122.224	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,300.00	6,942.03	6,500.00	6,332.10	126.34	29.39	73.63	-1,360.58	-13.26	8,126.06	8,060.28	65.78	123.538	
14,400.00	6,942.04	6,500.00	6,332.10	127.91	29.39	73.63	-1,360.58	-13.26	8,222.51	8,156.65	65.86	124.851	
14,500.00	6,942.06	6,500.00	6,332.10	129.48	29.39	73.63	-1,360.58	-13.26	8,319.04	8,253.10	65.94	126.162	
14,600.00	6,942.07	6,500.00	6,332.10	131.05	29.39	73.63	-1,360.58	-13.26	8,415.65	8,349.63	66.02	127.473	
14,700.00	6,942.09	6,500.00	6,332.10	132.62	29.39	73.63	-1,360.58	-13.26	8,512.34	8,446.24	66.10	128.782	
14,800.00	6,942.10	6,500.00	6,332.10	134.19	29.39	73.63	-1,360.58	-13.26	8,609.11	8,542.93	66.18	130.089	
14,900.00	6,942.12	6,500.00	6,332.10	135.76	29.39	73.63	-1,360.58	-13.26	8,705.95	8,639.69	66.26	131.395	
15,000.00	6,942.13	6,500.00	6,332.10	137.34	29.39	73.63	-1,360.58	-13.26	8,802.86	8,736.52	66.34	132.700	
15,100.00	6,942.15	6,500.00	6,332.10	138.91	29.39	73.63	-1,360.58	-13.26	8,899.84	8,833.42	66.42	134.003	
15,200.00	6,942.16	6,500.00	6,332.10	140.48	29.39	73.63	-1,360.58	-13.26	8,996.88	8,930.39	66.49	135.304	
15,300.00	6,942.18	6,500.00	6,332.10	142.06	29.39	73.63	-1,360.58	-13.26	9,093.99	9,027.42	66.57	136.603	
15,400.00	6,942.19	6,500.00	6,332.10	143.64	29.39	73.63	-1,360.58	-13.26	9,191.16	9,124.51	66.65	137.900	
15,500.00	6,942.21	6,500.00	6,332.10	145.21	29.39	73.63	-1,360.58	-13.26	9,288.39	9,221.66	66.73	139.196	
15,600.00	6,942.22	6,500.00	6,332.10	146.79	29.39	73.63	-1,360.58	-13.26	9,385.68	9,318.87	66.81	140.489	
15,700.00	6,942.24	6,500.00	6,332.10	148.37	29.39	73.63	-1,360.58	-13.26	9,483.03	9,416.14	66.89	141.780	
15,800.00	6,942.25	6,500.00	6,332.10	149.94	29.39	73.63	-1,360.58	-13.26	9,580.43	9,513.46	66.96	143.069	
15,900.00	6,942.27	6,500.00	6,332.10	151.52	29.39	73.63	-1,360.58	-13.26	9,677.88	9,610.84	67.04	144.356	
16,000.00	6,942.28	6,500.00	6,332.10	153.10	29.39	73.63	-1,360.58	-13.26	9,775.38	9,708.26	67.12	145.641	
16,100.00	6,942.30	6,500.00	6,332.10	154.68	29.39	73.63	-1,360.58	-13.26	9,872.94	9,805.74	67.20	146.924	
16,200.00	6,942.31	6,500.00	6,332.10	156.26	29.39	73.63	-1,360.58	-13.26	9,970.54	9,903.26	67.28	148.204	
16,300.00	6,942.33	6,500.00	6,332.10	157.84	29.39	73.63	-1,360.58	-13.26	10,068.19	10,000.84	67.35	149.482	
16,400.00	6,942.34	6,500.00	6,332.10	159.42	29.39	73.63	-1,360.58	-13.26	10,165.89	10,098.45	67.43	150.757	
16,500.00	6,942.36	6,500.00	6,332.10	161.00	29.39	73.63	-1,360.58	-13.26	10,263.63	10,196.12	67.51	152.030	
16,600.00	6,942.37	6,500.00	6,332.10	162.59	29.39	73.63	-1,360.58	-13.26	10,361.41	10,293.82	67.59	153.300	
16,700.00	6,942.38	6,500.00	6,332.10	164.17	29.39	73.63	-1,360.58	-13.26	10,459.23	10,391.57	67.67	154.568	
16,800.00	6,942.40	6,500.00	6,332.10	165.75	29.39	73.63	-1,360.58	-13.26	10,557.10	10,489.35	67.75	155.833	
16,900.00	6,942.41	6,500.00	6,332.10	167.33	29.39	73.63	-1,360.58	-13.26	10,655.01	10,587.18	67.82	157.096	
17,000.00	6,942.43	6,500.00	6,332.10	168.92	29.39	73.63	-1,360.58	-13.26	10,752.95	10,685.05	67.90	158.356	
17,100.00	6,942.44	6,500.00	6,332.10	170.50	29.39	73.63	-1,360.58	-13.26	10,850.93	10,782.95	67.98	159.613	
17,200.00	6,942.46	6,500.00	6,332.10	172.09	29.39	73.63	-1,360.58	-13.26	10,948.95	10,880.89	68.06	160.868	
17,300.00	6,942.47	6,500.00	6,332.10	173.67	29.39	73.63	-1,360.58	-13.26	11,047.00	10,978.86	68.14	162.120	
17,400.00	6,942.49	6,500.00	6,332.10	175.26	29.39	73.63	-1,360.58	-13.26	11,145.09	11,076.87	68.22	163.368	
17,500.00	6,942.50	6,500.00	6,332.10	176.84	29.39	73.63	-1,360.58	-13.26	11,243.21	11,174.91	68.30	164.615	
17,600.00	6,942.52	6,500.00	6,332.10	178.43	29.39	73.63	-1,360.58	-13.26	11,341.37	11,272.99	68.38	165.858	
17,700.00	6,942.53	6,500.00	6,332.10	180.01	29.39	73.63	-1,360.58	-13.26	11,439.55	11,371.09	68.46	167.098	
17,800.00	6,942.55	6,500.00	6,332.10	181.60	29.39	73.63	-1,360.58	-13.26	11,537.77	11,469.23	68.54	168.336	
17,900.00	6,942.56	6,500.00	6,332.10	183.19	29.39	73.63	-1,360.58	-13.26	11,636.02	11,567.40	68.62	169.570	
18,000.00	6,942.58	6,500.00	6,332.10	184.77	29.39	73.63	-1,360.58	-13.26	11,734.30	11,665.60	68.70	170.801	
18,100.00	6,942.59	6,500.00	6,332.10	186.36	29.39	73.63	-1,360.58	-13.26	11,832.60	11,763.82	68.78	172.030	
18,200.00	6,942.61	6,500.00	6,332.10	187.95	29.39	73.63	-1,360.58	-13.26	11,930.94	11,862.07	68.86	173.255	
18,300.00	6,942.62	6,500.00	6,332.10	189.54	29.39	73.63	-1,360.58	-13.26	12,029.30	11,960.36	68.94	174.478	
18,400.00	6,942.64	6,500.00	6,332.10	191.12	29.39	73.63	-1,360.58	-13.26	12,127.69	12,058.66	69.03	175.697	
18,500.00	6,942.65	6,500.00	6,332.10	192.71	29.39	73.63	-1,360.58	-13.26	12,226.10	12,157.00	69.11	176.913	
18,600.00	6,942.67	6,500.00	6,332.10	194.30	29.39	73.63	-1,360.58	-13.26	12,324.54	12,255.35	69.19	178.126	
18,700.00	6,942.68	6,500.00	6,332.10	195.89	29.39	73.63	-1,360.58	-13.26	12,423.01	12,353.74	69.27	179.336	
18,800.00	6,942.70	6,500.00	6,332.10	197.48	29.39	73.63	-1,360.58	-13.26	12,521.50	12,452.15	69.35	180.543	
18,900.00	6,942.71	6,500.00	6,332.10	199.07	29.39	73.63	-1,360.58	-13.26	12,620.01	12,550.58	69.44	181.747	
19,000.00	6,942.73	6,500.00	6,332.10	200.66	29.39	73.63	-1,360.58	-13.26	12,718.55	12,649.03	69.52	182.947	
19,100.00	6,942.74	6,500.00	6,332.10	202.25	29.39	73.63	-1,360.58	-13.26	12,817.11	12,747.51	69.60	184.145	
19,200.00	6,942.76	6,500.00	6,332.10	203.84	29.39	73.63	-1,360.58	-13.26	12,915.69	12,846.00	69.69	185.339	
19,300.00	6,942.77	6,500.00	6,332.10	205.43	29.39	73.63	-1,360.58	-13.26	13,014.29	12,944.52	69.77	186.529	
19,400.00	6,942.78	6,500.00	6,332.10	207.02	29.39	73.63	-1,360.58	-13.26	13,112.92	13,043.06	69.85	187.717	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
19,500.00	6,942.80	6,500.00	6,332.10	208.61	29.39	73.63	-1,360.58	-13.26	13,211.56	13,141.62	69.94	188.901	
19,600.00	6,942.81	6,500.00	6,332.10	210.20	29.39	73.63	-1,360.58	-13.26	13,310.23	13,240.21	70.02	190.082	
19,700.00	6,942.83	6,500.00	6,332.10	211.79	29.39	73.63	-1,360.58	-13.26	13,408.91	13,338.81	70.11	191.259	
19,800.00	6,942.84	6,500.00	6,332.10	213.38	29.39	73.63	-1,360.58	-13.26	13,507.62	13,437.42	70.19	192.434	
19,900.00	6,942.86	6,500.00	6,332.10	214.97	29.39	73.63	-1,360.58	-13.26	13,606.34	13,536.06	70.28	193.605	
20,000.00	6,942.87	6,500.00	6,332.10	216.56	29.39	73.63	-1,360.58	-13.26	13,705.08	13,634.72	70.36	194.772	
20,100.00	6,942.89	6,500.00	6,332.10	218.15	29.39	73.63	-1,360.58	-13.26	13,803.84	13,733.39	70.45	195.937	
20,200.00	6,942.90	6,500.00	6,332.10	219.75	29.39	73.63	-1,360.58	-13.26	13,902.62	13,832.08	70.54	197.098	
20,300.00	6,942.92	6,500.00	6,332.10	221.34	29.39	73.63	-1,360.58	-13.26	14,001.42	13,930.79	70.62	198.255	
20,400.00	6,942.93	6,500.00	6,332.10	222.93	29.39	73.63	-1,360.58	-13.26	14,100.23	14,029.52	70.71	199.409	
20,500.00	6,942.95	6,500.00	6,332.10	224.52	29.39	73.63	-1,360.58	-13.26	14,199.06	14,128.26	70.80	200.560	
20,600.00	6,942.96	6,500.00	6,332.10	226.12	29.39	73.63	-1,360.58	-13.26	14,297.90	14,227.02	70.88	201.707	
20,700.00	6,942.98	6,500.00	6,332.10	227.71	29.39	73.63	-1,360.58	-13.26	14,396.76	14,325.79	70.97	202.851	
20,800.00	6,942.99	6,500.00	6,332.10	229.30	29.39	73.63	-1,360.58	-13.26	14,495.64	14,424.58	71.06	203.992	
20,855.77	6,943.00	6,500.00	6,332.10	230.19	29.39	73.63	-1,360.58	-13.26	14,550.79	14,479.68	71.11	204.626	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	144.63	-40.78	28.94	50.00				
100.00	100.00	100.00	100.00	0.25	0.25	144.63	-40.78	28.94	50.00	49.50	0.50	99.635	
200.00	200.00	200.00	200.00	0.61	0.61	144.63	-40.78	28.94	50.00	48.78	1.22	41.026	
300.00	300.00	300.00	300.00	0.97	0.97	144.63	-40.78	28.94	50.00	48.07	1.94	25.831	
400.00	400.00	400.00	400.00	1.33	1.33	144.63	-40.78	28.94	50.00	47.35	2.65	18.850	
500.00	500.00	500.00	500.00	1.68	1.68	144.63	-40.78	28.94	50.00	46.63	3.37	14.839	CC, ES
600.00	599.98	598.19	598.17	2.04	2.02	125.50	-42.20	29.84	52.71	48.64	4.07	12.966	
700.00	699.84	695.83	695.67	2.40	2.35	129.42	-46.43	32.51	61.03	56.28	4.75	12.843	
800.00	799.45	792.35	791.85	2.77	2.68	133.94	-53.38	36.90	75.31	69.87	5.44	13.844	
845.27	844.44	836.71	835.97	2.93	2.84	135.92	-57.23	39.33	83.50	77.74	5.76	14.496	
900.00	898.77	890.35	889.32	3.13	3.03	138.16	-61.90	42.28	93.84	87.70	6.14	15.275	
1,000.00	998.04	988.35	986.80	3.50	3.38	141.18	-70.42	47.66	112.99	106.15	6.84	16.509	
1,100.00	1,097.32	1,086.35	1,084.29	3.87	3.74	143.32	-78.95	53.04	132.36	124.81	7.55	17.531	
1,200.00	1,196.59	1,184.36	1,181.77	4.24	4.10	144.91	-87.47	58.42	151.86	143.60	8.26	18.388	
1,300.00	1,295.87	1,282.36	1,279.26	4.62	4.47	146.14	-95.99	63.80	171.44	162.47	8.97	19.111	
1,400.00	1,395.14	1,380.37	1,376.74	5.00	4.84	147.12	-104.52	69.19	191.09	181.41	9.69	19.730	
1,500.00	1,494.42	1,478.37	1,474.23	5.38	5.20	147.92	-113.04	74.57	210.78	200.38	10.40	20.265	
1,600.00	1,593.69	1,576.37	1,571.71	5.76	5.57	148.58	-121.56	79.95	230.50	219.39	11.12	20.732	
1,700.00	1,692.96	1,674.38	1,669.19	6.14	5.94	149.13	-130.08	85.33	250.25	238.42	11.84	21.141	
1,800.00	1,792.24	1,772.38	1,766.68	6.52	6.31	149.61	-138.61	90.71	270.02	257.46	12.56	21.504	
1,900.00	1,891.51	1,870.39	1,864.16	6.91	6.69	150.02	-147.13	96.09	289.80	276.53	13.28	21.827	
2,000.00	1,990.79	1,968.39	1,961.65	7.29	7.06	150.37	-155.65	101.48	309.60	295.60	14.00	22.117	
2,100.00	2,090.06	2,066.39	2,059.13	7.67	7.43	150.69	-164.18	106.86	329.40	314.68	14.72	22.378	
2,200.00	2,189.34	2,164.40	2,156.61	8.06	7.80	150.97	-172.70	112.24	349.22	333.78	15.44	22.614	
2,300.00	2,288.61	2,262.40	2,254.10	8.44	8.18	151.22	-181.22	117.62	369.04	352.87	16.17	22.829	
2,400.00	2,387.89	2,360.41	2,351.58	8.82	8.55	151.44	-189.75	123.00	388.87	371.98	16.89	23.026	
2,500.00	2,487.16	2,458.41	2,449.07	9.21	8.93	151.64	-198.27	128.38	408.70	391.09	17.61	23.206	
2,600.00	2,586.44	2,556.41	2,546.55	9.59	9.30	151.82	-206.79	133.76	428.54	410.20	18.34	23.372	
2,700.00	2,685.71	2,654.42	2,644.04	9.98	9.67	151.99	-215.32	139.15	448.38	429.32	19.06	23.525	
2,800.00	2,784.99	2,752.42	2,741.52	10.36	10.05	152.14	-223.84	144.53	468.22	448.44	19.78	23.666	
2,900.00	2,884.26	2,850.43	2,839.00	10.75	10.42	152.28	-232.36	149.91	488.07	467.56	20.51	23.798	
3,000.00	2,983.53	2,948.43	2,936.49	11.13	10.80	152.41	-240.89	155.29	507.92	486.68	21.23	23.920	
3,100.00	3,082.81	3,046.43	3,033.97	11.52	11.18	152.53	-249.41	160.67	527.77	505.81	21.96	24.035	
3,200.00	3,182.08	3,144.44	3,131.46	11.90	11.55	152.64	-257.93	166.05	547.62	524.94	22.68	24.142	
3,300.00	3,281.36	3,242.44	3,228.94	12.29	11.93	152.75	-266.45	171.43	567.48	544.07	23.41	24.242	
3,400.00	3,380.63	3,340.45	3,326.43	12.67	12.30	152.84	-274.98	176.82	587.34	563.20	24.13	24.336	
3,500.00	3,479.91	3,438.45	3,423.91	13.06	12.68	152.93	-283.50	182.20	607.19	582.33	24.86	24.424	
3,600.00	3,579.18	3,536.45	3,521.39	13.44	13.05	153.02	-292.02	187.58	627.05	601.47	25.59	24.507	
3,700.00	3,678.46	3,634.46	3,618.88	13.83	13.43	153.10	-300.55	192.96	646.92	620.60	26.31	24.586	
3,800.00	3,777.73	3,732.46	3,716.36	14.21	13.81	153.17	-309.07	198.34	666.78	639.74	27.04	24.661	
3,900.00	3,877.01	3,830.47	3,813.85	14.60	14.18	153.24	-317.59	203.72	686.64	658.88	27.76	24.731	
4,000.00	3,976.28	3,928.47	3,911.33	14.98	14.56	153.31	-326.12	209.10	706.51	678.01	28.49	24.798	
4,100.00	4,075.55	4,026.47	4,008.82	15.37	14.93	153.37	-334.64	214.49	726.37	697.15	29.22	24.861	
4,200.00	4,174.83	4,124.48	4,106.30	15.75	15.31	153.43	-343.16	219.87	746.24	716.29	29.94	24.922	
4,300.00	4,274.10	4,222.48	4,203.78	16.14	15.69	153.49	-351.69	225.25	766.10	735.43	30.67	24.979	
4,400.00	4,373.38	4,320.49	4,301.27	16.53	16.06	153.54	-360.21	230.63	785.97	754.57	31.40	25.034	
4,500.00	4,472.65	4,418.49	4,398.75	16.91	16.44	153.59	-368.73	236.01	805.84	773.72	32.12	25.086	
4,600.00	4,571.93	4,516.49	4,496.24	17.30	16.82	153.64	-377.26	241.39	825.71	792.86	32.85	25.135	
4,700.00	4,671.20	4,614.50	4,593.72	17.68	17.19	153.68	-385.78	246.77	845.58	812.00	33.58	25.183	
4,800.00	4,770.48	4,712.50	4,691.21	18.07	17.57	153.73	-394.30	252.16	865.45	831.14	34.30	25.229	
4,900.00	4,869.75	4,810.51	4,788.69	18.45	17.94	153.77	-402.83	257.54	885.32	850.29	35.03	25.272	
5,000.00	4,969.03	4,908.51	4,886.17	18.84	18.32	153.81	-411.35	262.92	905.19	869.43	35.76	25.314	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	5,068.30	5,006.51	4,983.66	19.23	18.70	153.85	-419.87	268.30	925.06	888.57	36.49	25.354	
5,200.00	5,167.58	5,104.52	5,081.14	19.61	19.07	153.88	-428.39	273.68	944.93	907.72	37.21	25.393	
5,300.00	5,266.85	5,202.52	5,178.63	20.00	19.45	153.92	-436.92	279.06	964.80	926.86	37.94	25.430	
5,400.00	5,366.12	5,300.53	5,276.11	20.38	19.83	153.95	-445.44	284.44	984.67	946.01	38.67	25.465	
5,500.00	5,465.40	5,398.53	5,373.60	20.77	20.20	153.99	-453.96	289.83	1,004.55	965.15	39.40	25.499	
5,600.00	5,564.67	5,496.53	5,471.08	21.15	20.58	154.02	-462.49	295.21	1,024.42	984.30	40.12	25.532	
5,700.00	5,663.95	5,594.54	5,568.56	21.54	20.96	154.05	-471.01	300.59	1,044.29	1,003.44	40.85	25.564	
5,800.00	5,763.22	5,692.54	5,666.05	21.93	21.33	154.08	-479.53	305.97	1,064.16	1,022.59	41.58	25.594	
5,900.00	5,862.50	5,790.55	5,763.53	22.31	21.71	154.10	-488.06	311.35	1,084.04	1,041.73	42.31	25.624	
6,000.00	5,961.77	5,888.55	5,861.02	22.70	22.09	154.13	-496.58	316.73	1,103.91	1,060.88	43.03	25.652	
6,100.00	6,061.05	5,986.55	5,958.50	23.08	22.46	154.16	-505.10	322.11	1,123.79	1,080.02	43.76	25.680	
6,200.00	6,160.32	6,084.56	6,055.99	23.47	22.84	154.18	-513.63	327.50	1,143.66	1,099.17	44.49	25.706	
6,300.00	6,259.60	6,182.56	6,153.47	23.86	23.22	154.21	-522.15	332.88	1,163.53	1,118.32	45.22	25.732	
6,376.00	6,335.04	6,257.04	6,227.56	24.15	23.50	154.22	-528.63	336.97	1,178.64	1,132.87	45.77	25.751	
6,400.00	6,358.85	6,280.57	6,250.95	24.24	23.59	139.08	-530.67	338.26	1,183.37	1,137.42	45.95	25.755	
6,450.00	6,408.16	6,329.47	6,299.59	24.44	23.78	119.23	-534.92	340.94	1,192.92	1,146.61	46.32	25.756	
6,500.00	6,456.87	6,377.73	6,347.60	24.64	23.97	108.83	-539.12	343.60	1,202.08	1,155.39	46.69	25.747	
6,550.00	6,504.65	6,420.33	6,389.86	24.85	24.14	102.73	-542.82	347.48	1,210.95	1,163.92	47.03	25.748	
6,600.00	6,551.23	6,463.45	6,432.26	25.06	24.31	98.76	-546.55	354.28	1,219.63	1,172.24	47.39	25.737	
6,650.00	6,596.31	6,507.13	6,474.65	25.26	24.49	95.98	-550.28	364.10	1,228.07	1,180.31	47.76	25.712	
6,700.00	6,639.62	6,550.00	6,515.51	25.48	24.67	93.94	-553.89	376.55	1,236.23	1,188.09	48.14	25.679	
6,750.00	6,680.88	6,596.47	6,558.74	25.69	24.87	92.43	-557.72	393.12	1,244.07	1,195.50	48.56	25.618	
6,800.00	6,719.85	6,642.25	6,600.04	25.91	25.06	91.26	-561.40	412.51	1,251.54	1,202.55	48.99	25.546	
6,850.00	6,756.28	6,688.88	6,640.56	26.13	25.27	90.36	-565.02	435.26	1,258.62	1,209.18	49.44	25.456	
6,900.00	6,789.95	6,736.41	6,680.05	26.37	25.48	89.68	-568.56	461.45	1,265.26	1,215.35	49.92	25.347	
6,950.00	6,820.65	6,784.91	6,718.23	26.61	25.70	89.18	-572.00	491.16	1,271.43	1,221.01	50.42	25.218	
7,000.00	6,848.19	6,834.47	6,754.79	26.87	25.93	88.84	-575.32	524.43	1,277.09	1,226.14	50.95	25.067	
7,050.00	6,872.41	6,885.13	6,789.39	27.13	26.17	88.63	-578.47	561.29	1,282.20	1,230.70	51.50	24.895	
7,100.00	6,893.15	6,936.97	6,821.65	27.41	26.43	88.54	-581.44	601.73	1,286.73	1,234.64	52.09	24.701	
7,150.00	6,910.28	6,990.03	6,851.16	27.71	26.70	88.56	-584.18	645.72	1,290.65	1,237.94	52.71	24.485	
7,200.00	6,923.70	7,044.36	6,877.50	28.02	27.00	88.69	-586.65	693.16	1,293.92	1,240.55	53.36	24.247	
7,250.00	6,933.33	7,099.99	6,900.18	28.34	27.32	88.92	-588.82	743.89	1,296.50	1,242.46	54.05	23.988	
7,300.00	6,939.11	7,156.93	6,918.74	28.67	27.66	89.23	-590.64	797.67	1,298.38	1,243.62	54.76	23.709	
7,349.12	6,941.00	7,214.14	6,932.50	29.00	28.03	89.63	-592.05	853.16	1,299.50	1,244.01	55.49	23.417	
7,400.00	6,941.01	7,275.01	6,941.62	29.36	28.43	90.03	-593.07	913.31	1,300.11	1,243.83	56.28	23.100	
7,500.00	6,941.02	7,386.90	6,945.00	30.11	29.21	90.18	-593.79	1,025.08	1,300.28	1,242.42	57.86	22.473	
7,600.00	6,941.04	7,486.90	6,945.00	30.93	29.98	90.17	-594.16	1,125.08	1,300.20	1,240.72	59.48	21.859	
7,700.00	6,941.05	7,586.90	6,945.00	31.80	30.82	90.17	-594.54	1,225.08	1,300.12	1,238.90	61.22	21.236	
7,800.00	6,941.07	7,686.90	6,945.00	32.73	31.71	90.17	-594.91	1,325.08	1,300.04	1,236.96	63.08	20.609	
7,900.00	6,941.08	7,786.90	6,945.00	33.71	32.66	90.17	-595.29	1,425.08	1,299.96	1,234.92	65.05	19.986	
8,000.00	6,941.10	7,886.90	6,945.00	34.73	33.66	90.17	-595.67	1,525.08	1,299.88	1,232.78	67.10	19.371	
8,100.00	6,941.11	7,986.90	6,945.00	35.79	34.70	90.17	-596.04	1,625.08	1,299.80	1,230.55	69.25	18.769	
8,200.00	6,941.13	8,086.90	6,945.00	36.90	35.79	90.17	-596.42	1,725.08	1,299.72	1,228.24	71.48	18.184	
8,300.00	6,941.14	8,186.90	6,945.00	38.03	36.92	90.17	-596.79	1,825.08	1,299.64	1,225.86	73.78	17.616	
8,400.00	6,941.16	8,286.90	6,945.00	39.20	38.08	90.17	-597.17	1,925.08	1,299.56	1,223.42	76.14	17.068	
8,500.00	6,941.17	8,386.90	6,945.00	40.40	39.27	90.17	-597.54	2,025.08	1,299.48	1,220.92	78.57	16.540	
8,600.00	6,941.19	8,486.90	6,945.00	41.63	40.49	90.17	-597.92	2,125.08	1,299.40	1,218.36	81.04	16.033	
8,700.00	6,941.20	8,586.90	6,945.00	42.88	41.73	90.17	-598.29	2,225.07	1,299.32	1,215.75	83.57	15.547	
8,800.00	6,941.22	8,686.90	6,945.00	44.16	43.00	90.17	-598.67	2,325.07	1,299.24	1,213.10	86.15	15.082	
8,900.00	6,941.23	8,786.90	6,945.00	45.45	44.29	90.17	-599.04	2,425.07	1,299.16	1,210.40	88.76	14.637	
9,000.00	6,941.24	8,886.90	6,945.00	46.76	45.60	90.17	-599.42	2,525.07	1,299.08	1,207.67	91.41	14.211	
9,100.00	6,941.26	8,986.90	6,945.00	48.10	46.93	90.16	-599.79	2,625.07	1,299.00	1,204.90	94.10	13.804	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	9,086.90	6,945.00	49.44	48.28	90.16	-600.17	2,725.07	1,298.92	1,202.10	96.82	13.416	
9,300.00	6,941.29	9,186.90	6,945.00	50.80	49.64	90.16	-600.55	2,825.07	1,298.84	1,199.28	99.57	13.045	
9,400.00	6,941.30	9,286.90	6,945.00	52.18	51.02	90.16	-600.92	2,925.07	1,298.76	1,196.42	102.34	12.690	
9,500.00	6,941.32	9,386.90	6,945.00	53.57	52.41	90.16	-601.30	3,025.07	1,298.68	1,193.54	105.14	12.352	
9,600.00	6,941.33	9,486.90	6,945.00	54.97	53.81	90.16	-601.67	3,125.07	1,298.60	1,190.64	107.96	12.028	
9,700.00	6,941.35	9,586.90	6,945.00	56.38	55.22	90.16	-602.05	3,225.07	1,298.53	1,187.72	110.81	11.719	
9,800.00	6,941.36	9,686.90	6,945.00	57.80	56.64	90.16	-602.42	3,325.07	1,298.45	1,184.78	113.67	11.423	
9,900.00	6,941.38	9,786.90	6,945.00	59.23	58.07	90.16	-602.80	3,425.07	1,298.37	1,181.82	116.55	11.140	
10,000.00	6,941.39	9,886.90	6,945.00	60.67	59.51	90.16	-603.17	3,525.06	1,298.29	1,178.84	119.45	10.869	
10,100.00	6,941.41	9,986.90	6,945.00	62.11	60.96	90.16	-603.55	3,625.06	1,298.21	1,175.85	122.36	10.610	
10,200.00	6,941.42	10,086.90	6,945.00	63.57	62.42	90.16	-603.92	3,725.06	1,298.13	1,172.84	125.28	10.361	
10,300.00	6,941.44	10,186.90	6,945.00	65.03	63.88	90.16	-604.30	3,825.06	1,298.05	1,169.82	128.23	10.123	
10,400.00	6,941.45	10,286.90	6,945.00	66.50	65.35	90.16	-604.68	3,925.06	1,297.97	1,166.79	131.18	9.895	
10,500.00	6,941.47	10,386.90	6,945.00	67.97	66.82	90.16	-605.05	4,025.06	1,297.89	1,163.74	134.14	9.675	
10,600.00	6,941.48	10,486.90	6,945.00	69.45	68.31	90.16	-605.43	4,125.06	1,297.81	1,160.69	137.12	9.465	
10,700.00	6,941.50	10,586.90	6,945.00	70.94	69.79	90.15	-605.80	4,225.06	1,297.73	1,157.62	140.10	9.263	
10,800.00	6,941.51	10,686.90	6,945.00	72.43	71.29	90.15	-606.18	4,325.06	1,297.65	1,154.55	143.10	9.068	
10,900.00	6,941.53	10,786.90	6,945.00	73.92	72.78	90.15	-606.55	4,425.06	1,297.57	1,151.47	146.10	8.881	
11,000.00	6,941.54	10,886.90	6,945.00	75.42	74.28	90.15	-606.93	4,525.06	1,297.49	1,148.37	149.12	8.701	
11,100.00	6,941.56	10,986.90	6,945.00	76.92	75.79	90.15	-607.30	4,625.06	1,297.41	1,145.27	152.14	8.528	
11,200.00	6,941.57	11,086.90	6,945.00	78.43	77.30	90.15	-607.68	4,725.06	1,297.33	1,142.16	155.16	8.361	
11,300.00	6,941.59	11,186.90	6,945.00	79.94	78.81	90.15	-608.05	4,825.06	1,297.25	1,139.05	158.20	8.200	
11,400.00	6,941.60	11,286.90	6,945.00	81.46	80.33	90.15	-608.43	4,925.05	1,297.17	1,135.93	161.24	8.045	
11,500.00	6,941.61	11,386.90	6,945.00	82.98	81.85	90.15	-608.81	5,025.05	1,297.09	1,132.80	164.29	7.895	
11,600.00	6,941.63	11,486.90	6,945.00	84.50	83.37	90.15	-609.18	5,125.05	1,297.01	1,129.67	167.34	7.751	
11,700.00	6,941.64	11,586.90	6,945.00	86.02	84.90	90.15	-609.56	5,225.05	1,296.93	1,126.53	170.40	7.611	
11,800.00	6,941.66	11,686.90	6,945.00	87.55	86.43	90.15	-609.93	5,325.05	1,296.85	1,123.38	173.47	7.476	
11,900.00	6,941.67	11,786.90	6,945.00	89.08	87.96	90.15	-610.31	5,425.05	1,296.77	1,120.23	176.54	7.346	
12,000.00	6,941.69	11,886.90	6,945.00	90.61	89.49	90.15	-610.68	5,525.05	1,296.69	1,117.08	179.61	7.219	
12,100.00	6,941.70	11,986.90	6,945.00	92.14	91.03	90.15	-611.06	5,625.05	1,296.61	1,113.92	182.69	7.097	
12,200.00	6,941.72	12,086.90	6,945.00	93.68	92.57	90.15	-611.43	5,725.05	1,296.53	1,110.75	185.78	6.979	
12,300.00	6,941.73	12,186.90	6,945.00	95.22	94.11	90.14	-611.81	5,825.05	1,296.45	1,107.59	188.87	6.864	
12,400.00	6,941.75	12,286.90	6,945.00	96.76	95.65	90.14	-612.18	5,925.05	1,296.37	1,104.42	191.96	6.753	
12,500.00	6,941.76	12,386.90	6,945.00	98.30	97.20	90.14	-612.56	6,025.05	1,296.29	1,101.24	195.05	6.646	
12,600.00	6,941.78	12,486.90	6,945.00	99.85	98.74	90.14	-612.93	6,125.05	1,296.21	1,098.06	198.15	6.542	
12,700.00	6,941.79	12,586.90	6,945.00	101.40	100.29	90.14	-613.31	6,225.04	1,296.13	1,094.88	201.25	6.440	
12,800.00	6,941.81	12,686.90	6,945.00	102.95	101.84	90.14	-613.69	6,325.04	1,296.05	1,091.69	204.36	6.342	
12,900.00	6,941.82	12,786.90	6,945.00	104.50	103.39	90.14	-614.06	6,425.04	1,295.97	1,088.50	207.47	6.247	
13,000.00	6,941.84	12,886.90	6,945.00	106.05	104.95	90.14	-614.44	6,525.04	1,295.89	1,085.31	210.58	6.154	
13,100.00	6,941.85	12,986.90	6,945.00	107.60	106.50	90.14	-614.81	6,625.04	1,295.81	1,082.12	213.70	6.064	
13,200.00	6,941.87	13,086.90	6,945.00	109.16	108.06	90.14	-615.19	6,725.04	1,295.73	1,078.92	216.81	5.976	
13,300.00	6,941.88	13,186.89	6,945.00	110.71	109.62	90.14	-615.56	6,825.04	1,295.65	1,075.72	219.93	5.891	
13,400.00	6,941.90	13,286.89	6,945.00	112.27	111.18	90.14	-615.94	6,925.04	1,295.57	1,072.52	223.05	5.808	
13,500.00	6,941.91	13,386.89	6,945.00	113.83	112.74	90.14	-616.31	7,025.04	1,295.50	1,069.32	226.18	5.728	
13,600.00	6,941.93	13,486.89	6,945.00	115.39	114.30	90.14	-616.69	7,125.04	1,295.42	1,066.11	229.31	5.649	
13,700.00	6,941.94	13,586.89	6,945.00	116.95	115.86	90.14	-617.06	7,225.04	1,295.34	1,062.90	232.44	5.573	
13,800.00	6,941.96	13,686.89	6,945.00	118.51	117.42	90.13	-617.44	7,325.04	1,295.26	1,059.69	235.57	5.498	
13,900.00	6,941.97	13,786.89	6,945.00	120.08	118.99	90.13	-617.82	7,425.04	1,295.18	1,056.48	238.70	5.426	
14,000.00	6,941.99	13,886.89	6,945.00	121.64	120.56	90.13	-618.19	7,525.04	1,295.10	1,053.26	241.84	5.355	
14,100.00	6,942.00	13,986.89	6,945.00	123.21	122.12	90.13	-618.57	7,625.03	1,295.02	1,050.04	244.97	5.286	
14,200.00	6,942.01	14,086.89	6,945.00	124.77	123.69	90.13	-618.94	7,725.03	1,294.94	1,046.83	248.11	5.219	
14,300.00	6,942.03	14,186.89	6,945.00	126.34	125.26	90.13	-619.32	7,825.03	1,294.86	1,043.60	251.25	5.154	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	14,286.89	6,945.00	127.91	126.83	90.13	-619.69	7,925.03	1,294.78	1,040.38	254.39	5.090	
14,500.00	6,942.06	14,386.89	6,945.00	129.48	128.40	90.13	-620.07	8,025.03	1,294.70	1,037.16	257.54	5.027	
14,600.00	6,942.07	14,486.89	6,945.00	131.05	129.97	90.13	-620.44	8,125.03	1,294.62	1,033.93	260.68	4.966	
14,700.00	6,942.09	14,586.89	6,945.00	132.62	131.54	90.13	-620.82	8,225.03	1,294.54	1,030.71	263.83	4.907	
14,800.00	6,942.10	14,686.89	6,945.00	134.19	133.12	90.13	-621.19	8,325.03	1,294.46	1,027.48	266.98	4.849	
14,900.00	6,942.12	14,786.89	6,945.00	135.76	134.69	90.13	-621.57	8,425.03	1,294.38	1,024.25	270.13	4.792	
15,000.00	6,942.13	14,886.89	6,945.00	137.34	136.26	90.13	-621.95	8,525.03	1,294.30	1,021.02	273.28	4.736	
15,100.00	6,942.15	14,986.89	6,945.00	138.91	137.84	90.13	-622.32	8,625.03	1,294.22	1,017.79	276.43	4.682	
15,200.00	6,942.16	15,086.89	6,945.00	140.48	139.41	90.13	-622.70	8,725.03	1,294.14	1,014.55	279.59	4.629	
15,300.00	6,942.18	15,186.89	6,945.00	142.06	140.99	90.12	-623.07	8,825.03	1,294.06	1,011.32	282.74	4.577	
15,400.00	6,942.19	15,286.89	6,945.00	143.64	142.57	90.12	-623.45	8,925.03	1,293.98	1,008.08	285.90	4.526	
15,500.00	6,942.21	15,386.89	6,945.00	145.21	144.14	90.12	-623.82	9,025.02	1,293.90	1,004.85	289.05	4.476	
15,600.00	6,942.22	15,486.89	6,945.00	146.79	145.72	90.12	-624.20	9,125.02	1,293.82	1,001.61	292.21	4.428	
15,700.00	6,942.24	15,586.89	6,945.00	148.37	147.30	90.12	-624.57	9,225.02	1,293.74	998.37	295.37	4.380	
15,800.00	6,942.25	15,686.89	6,945.00	149.94	148.88	90.12	-624.95	9,325.02	1,293.66	995.13	298.53	4.333	
15,900.00	6,942.27	15,786.89	6,945.00	151.52	150.46	90.12	-625.32	9,425.02	1,293.58	991.89	301.69	4.288	
16,000.00	6,942.28	15,886.89	6,945.00	153.10	152.04	90.12	-625.70	9,525.02	1,293.50	988.65	304.86	4.243	
16,100.00	6,942.30	15,986.89	6,945.00	154.68	153.62	90.12	-626.07	9,625.02	1,293.42	985.40	308.02	4.199	
16,200.00	6,942.31	16,086.89	6,945.00	156.26	155.20	90.12	-626.45	9,725.02	1,293.34	982.16	311.18	4.156	
16,300.00	6,942.33	16,186.89	6,945.00	157.84	156.78	90.12	-626.83	9,825.02	1,293.26	978.91	314.35	4.114	
16,400.00	6,942.34	16,286.89	6,945.00	159.42	158.36	90.12	-627.20	9,925.02	1,293.18	975.67	317.51	4.073	
16,500.00	6,942.36	16,386.89	6,945.00	161.00	159.95	90.12	-627.58	10,025.02	1,293.10	972.42	320.68	4.032	
16,600.00	6,942.37	16,486.89	6,945.00	162.59	161.53	90.12	-627.95	10,125.02	1,293.02	969.18	323.85	3.993	
16,700.00	6,942.38	16,586.89	6,945.00	164.17	163.11	90.12	-628.33	10,225.02	1,292.94	965.93	327.02	3.954	
16,800.00	6,942.40	16,686.89	6,945.00	165.75	164.70	90.12	-628.70	10,325.01	1,292.86	962.68	330.19	3.916	
16,900.00	6,942.41	16,786.89	6,945.00	167.33	166.28	90.11	-629.08	10,425.01	1,292.78	959.43	333.36	3.878	
17,000.00	6,942.43	16,886.89	6,945.00	168.92	167.86	90.11	-629.45	10,525.01	1,292.70	956.18	336.53	3.841	
17,100.00	6,942.44	16,986.89	6,945.00	170.50	169.45	90.11	-629.83	10,625.01	1,292.63	952.93	339.70	3.805	
17,200.00	6,942.46	17,086.89	6,945.00	172.09	171.03	90.11	-630.20	10,725.01	1,292.55	949.68	342.87	3.770	
17,300.00	6,942.47	17,186.89	6,945.00	173.67	172.62	90.11	-630.58	10,825.01	1,292.47	946.42	346.04	3.735	
17,400.00	6,942.49	17,286.89	6,945.00	175.26	174.20	90.11	-630.96	10,925.01	1,292.39	943.17	349.21	3.701	
17,500.00	6,942.50	17,386.89	6,945.00	176.84	175.79	90.11	-631.33	11,025.01	1,292.31	939.92	352.39	3.667	
17,600.00	6,942.52	17,486.89	6,945.00	178.43	177.38	90.11	-631.71	11,125.01	1,292.23	936.66	355.56	3.634	
17,700.00	6,942.53	17,586.89	6,945.00	180.01	178.96	90.11	-632.08	11,225.01	1,292.15	933.41	358.74	3.602	
17,800.00	6,942.55	17,686.89	6,945.00	181.60	180.55	90.11	-632.46	11,325.01	1,292.07	930.15	361.91	3.570	
17,900.00	6,942.56	17,786.89	6,945.00	183.19	182.14	90.11	-632.83	11,425.01	1,291.99	926.90	365.09	3.539	
18,000.00	6,942.58	17,886.89	6,945.00	184.77	183.73	90.11	-633.21	11,525.01	1,291.91	923.64	368.27	3.508	
18,100.00	6,942.59	17,986.89	6,945.00	186.36	185.31	90.11	-633.58	11,625.01	1,291.83	920.39	371.44	3.478	
18,200.00	6,942.61	18,086.89	6,945.00	187.95	186.90	90.11	-633.96	11,725.00	1,291.75	917.13	374.62	3.448	
18,300.00	6,942.62	18,186.89	6,945.00	189.54	188.49	90.11	-634.33	11,825.00	1,291.67	913.87	377.80	3.419	
18,400.00	6,942.64	18,286.89	6,945.00	191.12	190.08	90.10	-634.71	11,925.00	1,291.59	910.61	380.98	3.390	
18,500.00	6,942.65	18,386.89	6,945.00	192.71	191.67	90.10	-635.09	12,025.00	1,291.51	907.35	384.16	3.362	
18,600.00	6,942.67	18,486.89	6,945.00	194.30	193.26	90.10	-635.46	12,125.00	1,291.43	904.09	387.34	3.334	
18,700.00	6,942.68	18,586.89	6,945.00	195.89	194.85	90.10	-635.84	12,225.00	1,291.35	900.83	390.52	3.307	
18,800.00	6,942.70	18,686.89	6,945.00	197.48	196.44	90.10	-636.21	12,325.00	1,291.27	897.57	393.70	3.280	
18,900.00	6,942.71	18,786.89	6,945.00	199.07	198.03	90.10	-636.59	12,425.00	1,291.19	894.31	396.88	3.253	
19,000.00	6,942.73	18,886.89	6,945.00	200.66	199.62	90.10	-636.96	12,525.00	1,291.11	891.05	400.06	3.227	
19,100.00	6,942.74	18,986.89	6,945.00	202.25	201.21	90.10	-637.34	12,625.00	1,291.03	887.79	403.24	3.202	
19,200.00	6,942.76	19,086.89	6,945.00	203.84	202.80	90.10	-637.71	12,725.00	1,290.95	884.53	406.42	3.176	
19,300.00	6,942.77	19,186.89	6,945.00	205.43	204.39	90.10	-638.09	12,825.00	1,290.87	881.27	409.60	3.152	
19,400.00	6,942.78	19,286.89	6,945.00	207.02	205.98	90.10	-638.46	12,925.00	1,290.79	878.00	412.79	3.127	
19,500.00	6,942.80	19,386.89	6,945.00	208.61	207.57	90.10	-638.84	13,024.99	1,290.71	874.74	415.97	3.103	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
19,600.00	6,942.81	19,486.89	6,945.00	210.20	209.16	90.10	-639.21	13,124.99	1,290.63	871.48	419.15	3.079	
19,700.00	6,942.83	19,586.89	6,945.00	211.79	210.75	90.10	-639.59	13,224.99	1,290.55	868.21	422.34	3.056	
19,800.00	6,942.84	19,686.89	6,945.00	213.38	212.34	90.10	-639.97	13,324.99	1,290.47	864.95	425.52	3.033	
19,900.00	6,942.86	19,786.89	6,945.00	214.97	213.93	90.10	-640.34	13,424.99	1,290.39	861.69	428.71	3.010	
20,000.00	6,942.87	19,886.89	6,945.00	216.56	215.53	90.09	-640.72	13,524.99	1,290.31	858.42	431.89	2.988	
20,100.00	6,942.89	19,986.89	6,945.00	218.15	217.12	90.09	-641.09	13,624.99	1,290.23	855.16	435.08	2.966	
20,200.00	6,942.90	20,086.89	6,945.00	219.75	218.71	90.09	-641.47	13,724.99	1,290.15	851.89	438.26	2.944	
20,300.00	6,942.92	20,186.89	6,945.00	221.34	220.30	90.09	-641.84	13,824.99	1,290.07	848.63	441.45	2.922	
20,400.00	6,942.93	20,286.89	6,945.00	222.93	221.90	90.09	-642.22	13,924.99	1,289.99	845.36	444.63	2.901	
20,500.00	6,942.95	20,386.89	6,945.00	224.52	223.49	90.09	-642.59	14,024.99	1,289.91	842.09	447.82	2.880	
20,600.00	6,942.96	20,486.89	6,945.00	226.12	225.08	90.09	-642.97	14,124.99	1,289.83	838.83	451.01	2.860	
20,700.00	6,942.98	20,586.89	6,945.00	227.71	226.68	90.09	-643.34	14,224.99	1,289.76	835.56	454.20	2.840	
20,800.00	6,942.99	20,686.89	6,945.00	229.30	228.27	90.09	-643.72	14,324.99	1,289.68	832.29	457.38	2.820	
20,855.54	6,943.00	20,741.48	6,945.00	230.19	229.14	90.09	-643.92	14,379.57	1,289.63	830.50	459.14	2.809	
20,855.77	6,943.00	20,741.48	6,945.00	230.19	229.14	90.09	-643.92	14,379.57	1,289.63	830.49	459.14	2.809 SF	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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)	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	599.98	599.08	599.06	2.04	2.02	127.81	-22.04	15.06	27.75	23.68	4.07	6.822	
700.00	699.84	697.51	697.36	2.40	2.35	136.45	-26.96	16.38	36.35	31.59	4.76	7.642	
800.00	799.45	794.67	794.15	2.77	2.69	144.11	-35.01	18.54	51.63	46.18	5.45	9.480	
845.27	844.44	838.08	837.29	2.93	2.84	146.75	-39.63	19.77	60.78	55.02	5.76	10.551	
900.00	898.77	890.08	888.88	3.13	3.02	149.24	-46.00	21.48	73.23	67.10	6.13	11.945	
1,000.00	998.04	983.93	981.63	3.50	3.37	151.91	-59.77	25.17	98.63	91.84	6.79	14.517	
1,100.00	1,097.32	1,076.13	1,072.25	3.87	3.73	153.25	-76.16	29.56	127.25	119.80	7.45	17.086	
1,200.00	1,196.59	1,170.16	1,164.25	4.24	4.10	153.97	-94.95	34.60	158.09	149.96	8.13	19.449	
1,300.00	1,295.87	1,265.24	1,257.25	4.62	4.49	154.45	-114.04	39.71	189.05	180.23	8.82	21.435	
1,400.00	1,395.14	1,360.31	1,350.25	5.00	4.89	154.80	-133.14	44.83	220.02	210.50	9.52	23.108	
1,500.00	1,494.42	1,455.39	1,443.25	5.38	5.29	155.07	-152.23	49.94	250.99	240.77	10.23	24.545	
1,600.00	1,593.69	1,550.47	1,536.24	5.76	5.70	155.27	-171.32	55.06	281.97	271.04	10.93	25.791	
1,700.00	1,692.96	1,645.54	1,629.24	6.14	6.11	155.43	-190.42	60.18	312.96	301.31	11.64	26.880	
1,800.00	1,792.24	1,740.62	1,722.24	6.52	6.52	155.57	-209.51	65.29	343.94	331.58	12.35	27.840	
1,900.00	1,891.51	1,835.69	1,815.24	6.91	6.94	155.68	-228.60	70.41	374.92	361.86	13.07	28.691	
2,000.00	1,990.79	1,930.77	1,908.24	7.29	7.35	155.78	-247.70	75.52	405.91	392.13	13.78	29.452	
2,100.00	2,090.06	2,025.85	2,001.24	7.67	7.77	155.86	-266.79	80.64	436.90	422.40	14.50	30.135	
2,200.00	2,189.34	2,120.92	2,094.24	8.06	8.19	155.93	-285.89	85.76	467.88	452.67	15.22	30.751	
2,300.00	2,288.61	2,216.00	2,187.23	8.44	8.61	155.99	-304.98	90.87	498.87	482.94	15.93	31.310	
2,400.00	2,387.89	2,311.07	2,280.23	8.82	9.03	156.05	-324.07	95.99	529.86	513.21	16.65	31.820	
2,500.00	2,487.16	2,406.15	2,373.23	9.21	9.46	156.10	-343.17	101.11	560.85	543.48	17.37	32.285	
2,600.00	2,586.44	2,501.23	2,466.23	9.59	9.88	156.14	-362.26	106.22	591.84	573.75	18.09	32.713	
2,700.00	2,685.71	2,596.30	2,559.23	9.98	10.30	156.18	-381.36	111.34	622.83	604.02	18.81	33.107	
2,800.00	2,784.99	2,691.38	2,652.23	10.36	10.73	156.22	-400.45	116.45	653.82	634.29	19.53	33.471	
2,900.00	2,884.26	2,786.46	2,745.23	10.75	11.15	156.25	-419.54	121.57	684.81	664.55	20.26	33.808	
3,000.00	2,983.53	2,881.53	2,838.22	11.13	11.58	156.28	-438.64	126.69	715.80	694.82	20.98	34.122	
3,100.00	3,082.81	2,976.61	2,931.22	11.52	12.00	156.30	-457.73	131.80	746.79	725.09	21.70	34.414	
3,200.00	3,182.08	3,071.68	3,024.22	11.90	12.43	156.33	-476.83	136.92	777.78	755.36	22.42	34.686	
3,300.00	3,281.36	3,166.76	3,117.22	12.29	12.86	156.35	-495.92	142.04	808.77	785.63	23.15	34.941	
3,400.00	3,380.63	3,261.84	3,210.22	12.67	13.28	156.37	-515.01	147.15	839.76	815.89	23.87	35.180	
3,500.00	3,479.91	3,356.91	3,303.22	13.06	13.71	156.39	-534.11	152.27	870.75	846.16	24.59	35.405	
3,600.00	3,579.18	3,451.99	3,396.22	13.44	14.14	156.41	-553.20	157.38	901.75	876.43	25.32	35.616	
3,700.00	3,678.46	3,547.06	3,489.21	13.83	14.56	156.43	-572.29	162.50	932.74	906.69	26.04	35.816	
3,800.00	3,777.73	3,642.14	3,582.21	14.21	14.99	156.45	-591.39	167.62	963.73	936.96	26.77	36.004	
3,900.00	3,877.01	3,737.22	3,675.21	14.60	15.42	156.46	-610.48	172.73	994.72	967.23	27.49	36.182	
4,000.00	3,976.28	3,832.29	3,768.21	14.98	15.85	156.47	-629.58	177.85	1,025.71	997.49	28.22	36.350	
4,100.00	4,075.55	3,927.37	3,861.21	15.37	16.28	156.49	-648.67	182.97	1,056.70	1,027.76	28.94	36.510	
4,200.00	4,174.83	4,022.45	3,954.21	15.75	16.70	156.50	-667.76	188.08	1,087.69	1,058.03	29.67	36.662	
4,300.00	4,274.10	4,117.52	4,047.20	16.14	17.13	156.51	-686.86	193.20	1,118.69	1,088.29	30.39	36.806	
4,400.00	4,373.38	4,212.60	4,140.20	16.53	17.56	156.52	-705.95	198.31	1,149.68	1,118.56	31.12	36.943	
4,500.00	4,472.65	4,307.67	4,233.20	16.91	17.99	156.53	-725.05	203.43	1,180.67	1,148.82	31.85	37.074	
4,600.00	4,571.93	4,402.75	4,326.20	17.30	18.42	156.55	-744.14	208.55	1,211.66	1,179.09	32.57	37.199	
4,700.00	4,671.20	4,497.83	4,419.20	17.68	18.85	156.55	-763.23	213.66	1,242.65	1,209.35	33.30	37.318	
4,800.00	4,770.48	4,592.90	4,512.20	18.07	19.28	156.56	-782.33	218.78	1,273.64	1,239.62	34.03	37.432	
4,900.00	4,869.75	4,687.98	4,605.20	18.45	19.71	156.57	-801.42	223.89	1,304.64	1,269.88	34.75	37.541	
5,000.00	4,969.03	4,783.05	4,698.19	18.84	20.13	156.58	-820.52	229.01	1,335.63	1,300.15	35.48	37.645	

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 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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	5,068.30	4,878.13	4,791.19	19.23	20.56	156.59	-839.61	234.13	1,366.62	1,330.41	36.21	37.745	
5,200.00	5,167.58	4,973.21	4,884.19	19.61	20.99	156.60	-858.70	239.24	1,397.61	1,360.68	36.93	37.841	
5,300.00	5,266.85	5,068.28	4,977.19	20.00	21.42	156.60	-877.80	244.36	1,428.60	1,390.94	37.66	37.933	
5,400.00	5,366.12	5,163.36	5,070.19	20.38	21.85	156.61	-896.89	249.48	1,459.59	1,421.21	38.39	38.021	
5,500.00	5,465.40	5,258.44	5,163.19	20.77	22.28	156.62	-915.98	254.59	1,490.59	1,451.47	39.12	38.106	
5,600.00	5,564.67	5,353.51	5,256.19	21.15	22.71	156.62	-935.08	259.71	1,521.58	1,481.73	39.84	38.188	
5,700.00	5,663.95	5,448.59	5,349.18	21.54	23.14	156.63	-954.17	264.82	1,552.57	1,512.00	40.57	38.267	
5,800.00	5,763.22	5,543.66	5,442.18	21.93	23.57	156.64	-973.27	269.94	1,583.56	1,542.26	41.30	38.342	
5,900.00	5,862.50	5,638.74	5,535.18	22.31	24.00	156.64	-992.36	275.06	1,614.55	1,572.52	42.03	38.415	
6,000.00	5,961.77	5,733.82	5,628.18	22.70	24.43	156.65	-1,011.45	280.17	1,645.55	1,602.79	42.76	38.485	
6,100.00	6,061.05	5,828.89	5,721.18	23.08	24.86	156.65	-1,030.55	285.29	1,676.54	1,633.05	43.49	38.553	
6,200.00	6,160.32	5,923.97	5,814.18	23.47	25.29	156.66	-1,049.64	290.41	1,707.53	1,663.31	44.22	38.619	
6,300.00	6,259.60	6,019.05	5,907.18	23.86	25.72	156.66	-1,068.74	295.52	1,738.52	1,693.58	44.94	38.682	
6,376.00	6,335.04	6,091.30	5,977.85	24.15	26.04	156.67	-1,083.25	299.41	1,762.08	1,716.58	45.50	38.728	
6,400.00	6,358.85	6,114.12	6,000.18	24.24	26.15	141.24	-1,087.83	300.64	1,769.49	1,723.82	45.67	38.742	
6,450.00	6,408.16	6,161.56	6,046.58	24.44	26.36	120.76	-1,097.36	303.19	1,784.75	1,738.71	46.05	38.761	
6,500.00	6,456.87	6,208.63	6,092.62	24.64	26.58	109.67	-1,106.81	305.72	1,799.71	1,753.29	46.42	38.769	
6,550.00	6,504.65	6,255.03	6,138.01	24.85	26.78	102.96	-1,116.13	308.22	1,814.32	1,767.52	46.80	38.767	
6,600.00	6,551.23	6,300.48	6,182.46	25.06	26.99	98.48	-1,125.26	310.67	1,828.56	1,781.38	47.18	38.755	
6,650.00	6,596.31	6,344.70	6,225.71	25.26	27.19	95.29	-1,134.14	313.05	1,842.44	1,794.87	47.56	38.735	
6,700.00	6,639.62	6,387.41	6,267.49	25.48	27.38	92.90	-1,142.71	315.34	1,855.97	1,808.02	47.95	38.709	
6,750.00	6,680.88	6,428.36	6,307.54	25.69	27.57	91.05	-1,150.94	317.55	1,869.20	1,820.87	48.33	38.677	
6,800.00	6,719.85	6,467.28	6,345.62	25.91	27.74	89.58	-1,158.75	319.64	1,882.17	1,833.46	48.71	38.641	
6,850.00	6,756.28	6,503.95	6,381.48	26.13	27.91	88.37	-1,166.12	321.62	1,894.94	1,845.86	49.09	38.604	
6,900.00	6,789.95	6,530.62	6,407.57	26.37	28.03	87.17	-1,171.47	323.05	1,907.60	1,858.19	49.40	38.612	
6,950.00	6,820.65	6,550.00	6,426.48	26.61	28.12	85.95	-1,175.50	324.35	1,920.36	1,870.67	49.68	38.652	
7,000.00	6,848.19	6,550.00	6,426.48	26.87	28.12	84.36	-1,175.50	324.35	1,933.40	1,883.58	49.82	38.808	
7,050.00	6,872.41	6,575.84	6,451.54	27.13	28.25	83.50	-1,181.27	326.90	1,946.43	1,896.24	50.19	38.784	
7,100.00	6,893.15	6,600.00	6,474.77	27.41	28.36	82.67	-1,187.08	330.11	1,959.74	1,909.18	50.56	38.763	
7,150.00	6,910.28	6,600.00	6,474.77	27.71	28.36	81.28	-1,187.08	330.11	1,972.99	1,922.25	50.74	38.884	
7,200.00	6,923.70	6,600.00	6,474.77	28.02	28.36	79.93	-1,187.08	330.11	1,986.40	1,935.46	50.94	38.996	
7,250.00	6,933.33	6,619.33	6,493.20	28.34	28.46	79.17	-1,192.01	333.25	1,999.72	1,948.40	51.33	38.961	
7,300.00	6,939.11	6,627.33	6,500.77	28.67	28.50	78.15	-1,194.12	334.70	2,013.06	1,961.43	51.63	38.993	
7,349.12	6,941.00	6,633.77	6,506.86	29.00	28.54	77.17	-1,195.85	335.93	2,026.07	1,974.15	51.92	39.022	
7,400.00	6,941.01	6,639.92	6,512.64	29.36	28.57	77.34	-1,197.53	337.16	2,040.07	1,987.84	52.23	39.058	
7,500.00	6,941.02	6,650.00	6,522.09	30.11	28.62	77.63	-1,200.33	339.28	2,070.86	2,018.02	52.85	39.187	
7,600.00	6,941.04	6,670.08	6,540.75	30.93	28.73	78.20	-1,206.11	343.91	2,105.79	2,052.21	53.57	39.307	
7,700.00	6,941.05	6,690.10	6,559.14	31.80	28.84	78.76	-1,212.11	349.07	2,144.60	2,090.30	54.30	39.492	
7,800.00	6,941.07	6,714.96	6,581.64	32.73	28.98	79.45	-1,219.91	356.20	2,187.03	2,131.94	55.09	39.702	
7,900.00	6,941.08	6,746.53	6,609.63	33.71	29.16	80.31	-1,230.33	366.43	2,232.74	2,176.81	55.93	39.920	
8,000.00	6,941.10	6,787.73	6,645.07	34.73	29.41	81.39	-1,244.77	381.68	2,281.37	2,224.50	56.87	40.116	
8,100.00	6,941.11	6,843.18	6,690.57	35.79	29.75	82.77	-1,265.60	405.51	2,332.45	2,274.50	57.96	40.246	
8,200.00	6,941.13	6,920.32	6,749.10	36.90	30.25	84.54	-1,296.96	444.67	2,385.34	2,326.06	59.29	40.235	
8,300.00	6,941.14	7,030.70	6,821.67	38.03	31.01	86.68	-1,345.83	511.75	2,439.05	2,378.03	61.02	39.970	
8,400.00	6,941.16	7,188.80	6,898.83	39.20	32.19	88.87	-1,421.30	626.72	2,492.03	2,428.62	63.41	39.303	
8,500.00	6,941.17	7,399.17	6,945.73	40.40	33.90	90.12	-1,524.38	802.87	2,542.08	2,475.52	66.57	38.188	
8,600.00	6,941.19	8,180.11	6,947.00	41.63	41.21	90.13	-1,807.06	1,528.24	2,579.69	2,503.05	76.65	33.657	
8,700.00	6,941.20	8,876.09	6,947.00	42.88	48.50	90.13	-1,886.21	2,218.01	2,587.26	2,502.57	84.69	30.550	
8,800.00	6,941.22	8,976.09	6,947.00	44.16	49.59	90.13	-1,886.67	2,318.01	2,587.27	2,500.03	87.23	29.660	
8,900.00	6,941.23	9,076.09	6,947.00	45.45	50.70	90.13	-1,887.13	2,418.01	2,587.27	2,497.46	89.82	28.806	
9,000.00	6,941.24	9,176.09	6,947.00	46.76	51.84	90.13	-1,887.60	2,518.01	2,587.28	2,494.84	92.44	27.988	
9,100.00	6,941.26	9,276.09	6,947.00	48.10	53.00	90.13	-1,888.06	2,618.01	2,587.29	2,492.18	95.10	27.206	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
9,200.00	6,941.27	9,376.09	6,947.00	49.44	54.19	90.13	-1,888.52	2,718.01	2,587.29	2,489.50	97.79	26.457	
9,300.00	6,941.29	9,476.09	6,947.00	50.80	55.40	90.13	-1,888.98	2,818.01	2,587.30	2,486.78	100.52	25.740	
9,400.00	6,941.30	9,576.09	6,947.00	52.18	56.63	90.13	-1,889.44	2,918.01	2,587.30	2,484.04	103.27	25.054	
9,500.00	6,941.32	9,676.09	6,947.00	53.57	57.87	90.13	-1,889.90	3,018.00	2,587.31	2,481.27	106.04	24.398	
9,600.00	6,941.33	9,776.09	6,947.00	54.97	59.14	90.13	-1,890.37	3,118.00	2,587.32	2,478.47	108.84	23.771	
9,700.00	6,941.35	9,876.09	6,947.00	56.38	60.42	90.13	-1,890.83	3,218.00	2,587.32	2,475.66	111.67	23.170	
9,800.00	6,941.36	9,976.09	6,947.00	57.80	61.72	90.12	-1,891.29	3,318.00	2,587.33	2,472.82	114.51	22.595	
9,900.00	6,941.38	10,076.09	6,947.00	59.23	63.03	90.12	-1,891.75	3,418.00	2,587.34	2,469.97	117.37	22.044	
10,000.00	6,941.39	10,176.09	6,947.00	60.67	64.35	90.12	-1,892.21	3,518.00	2,587.34	2,467.09	120.25	21.517	
10,100.00	6,941.41	10,276.09	6,947.00	62.11	65.69	90.12	-1,892.67	3,618.00	2,587.35	2,464.20	123.14	21.011	
10,200.00	6,941.42	10,376.09	6,947.00	63.57	67.04	90.12	-1,893.13	3,718.00	2,587.36	2,461.30	126.05	20.526	
10,300.00	6,941.44	10,476.09	6,947.00	65.03	68.40	90.12	-1,893.60	3,818.00	2,587.36	2,458.38	128.98	20.060	
10,400.00	6,941.45	10,576.09	6,947.00	66.50	69.77	90.12	-1,894.06	3,917.99	2,587.37	2,455.45	131.92	19.614	
10,500.00	6,941.47	10,676.09	6,947.00	67.97	71.15	90.12	-1,894.52	4,017.99	2,587.37	2,452.51	134.87	19.185	
10,600.00	6,941.48	10,776.09	6,947.00	69.45	72.54	90.12	-1,894.98	4,117.99	2,587.38	2,449.55	137.83	18.773	
10,700.00	6,941.50	10,876.09	6,947.00	70.94	73.94	90.12	-1,895.44	4,217.99	2,587.39	2,446.59	140.80	18.377	
10,800.00	6,941.51	10,976.09	6,947.00	72.43	75.35	90.12	-1,895.90	4,317.99	2,587.39	2,443.61	143.78	17.995	
10,900.00	6,941.53	11,076.09	6,947.00	73.92	76.76	90.12	-1,896.36	4,417.99	2,587.40	2,440.63	146.77	17.629	
11,000.00	6,941.54	11,176.09	6,947.00	75.42	78.19	90.12	-1,896.83	4,517.99	2,587.41	2,437.63	149.77	17.276	
11,100.00	6,941.56	11,276.09	6,947.00	76.92	79.62	90.12	-1,897.29	4,617.99	2,587.41	2,434.63	152.78	16.935	
11,200.00	6,941.57	11,376.09	6,947.00	78.43	81.05	90.12	-1,897.75	4,717.99	2,587.42	2,431.62	155.80	16.608	
11,300.00	6,941.59	11,476.09	6,947.00	79.94	82.50	90.12	-1,898.21	4,817.99	2,587.42	2,428.60	158.82	16.291	
11,400.00	6,941.60	11,576.09	6,947.00	81.46	83.95	90.12	-1,898.67	4,917.98	2,587.43	2,425.58	161.85	15.986	
11,500.00	6,941.61	11,676.09	6,947.00	82.98	85.40	90.12	-1,899.13	5,017.98	2,587.44	2,422.55	164.89	15.692	
11,600.00	6,941.63	11,776.09	6,947.00	84.50	86.86	90.12	-1,899.59	5,117.98	2,587.44	2,419.51	167.94	15.407	
11,700.00	6,941.64	11,876.09	6,947.00	86.02	88.32	90.12	-1,900.06	5,217.98	2,587.45	2,416.46	170.99	15.133	
11,800.00	6,941.66	11,976.09	6,947.00	87.55	89.79	90.12	-1,900.52	5,317.98	2,587.46	2,413.41	174.04	14.867	
11,900.00	6,941.67	12,076.09	6,947.00	89.08	91.27	90.12	-1,900.98	5,417.98	2,587.46	2,410.36	177.10	14.610	
12,000.00	6,941.69	12,176.09	6,947.00	90.61	92.75	90.12	-1,901.44	5,517.98	2,587.47	2,407.30	180.17	14.361	
12,100.00	6,941.70	12,276.09	6,947.00	92.14	94.23	90.12	-1,901.90	5,617.98	2,587.48	2,404.23	183.24	14.121	
12,200.00	6,941.72	12,376.09	6,947.00	93.68	95.72	90.12	-1,902.36	5,717.98	2,587.48	2,401.16	186.32	13.888	
12,300.00	6,941.73	12,476.09	6,947.00	95.22	97.21	90.12	-1,902.82	5,817.97	2,587.49	2,398.09	189.40	13.662	
12,400.00	6,941.75	12,576.09	6,947.00	96.76	98.70	90.12	-1,903.29	5,917.97	2,587.49	2,395.01	192.48	13.443	
12,500.00	6,941.76	12,676.09	6,947.00	98.30	100.20	90.12	-1,903.75	6,017.97	2,587.50	2,391.93	195.57	13.231	
12,600.00	6,941.78	12,776.09	6,947.00	99.85	101.70	90.12	-1,904.21	6,117.97	2,587.51	2,388.85	198.66	13.025	
12,700.00	6,941.79	12,876.09	6,947.00	101.40	103.20	90.12	-1,904.67	6,217.97	2,587.51	2,385.76	201.76	12.825	
12,800.00	6,941.81	12,976.09	6,947.00	102.95	104.71	90.11	-1,905.13	6,317.97	2,587.52	2,382.66	204.86	12.631	
12,900.00	6,941.82	13,076.09	6,947.00	104.50	106.22	90.11	-1,905.59	6,417.97	2,587.53	2,379.57	207.96	12.443	
13,000.00	6,941.84	13,176.09	6,947.00	106.05	107.73	90.11	-1,906.06	6,517.97	2,587.53	2,376.47	211.06	12.259	
13,100.00	6,941.85	13,276.09	6,947.00	107.60	109.25	90.11	-1,906.52	6,617.97	2,587.54	2,373.37	214.17	12.082	
13,200.00	6,941.87	13,376.09	6,947.00	109.16	110.77	90.11	-1,906.98	6,717.96	2,587.54	2,370.26	217.28	11.909	
13,300.00	6,941.88	13,476.09	6,947.00	110.71	112.29	90.11	-1,907.44	6,817.96	2,587.55	2,367.15	220.40	11.740	
13,400.00	6,941.90	13,576.09	6,947.00	112.27	113.81	90.11	-1,907.90	6,917.96	2,587.56	2,364.04	223.51	11.577	
13,500.00	6,941.91	13,676.09	6,947.00	113.83	115.34	90.11	-1,908.36	7,017.96	2,587.56	2,360.93	226.63	11.417	
13,600.00	6,941.93	13,776.09	6,947.00	115.39	116.86	90.11	-1,908.82	7,117.96	2,587.57	2,357.81	229.76	11.262	
13,700.00	6,941.94	13,876.09	6,947.00	116.95	118.39	90.11	-1,909.29	7,217.96	2,587.58	2,354.70	232.88	11.111	
13,800.00	6,941.96	13,976.09	6,947.00	118.51	119.92	90.11	-1,909.75	7,317.96	2,587.58	2,351.58	236.01	10.964	
13,900.00	6,941.97	14,076.09	6,947.00	120.08	121.45	90.11	-1,910.21	7,417.96	2,587.59	2,348.45	239.13	10.821	
14,000.00	6,941.99	14,176.09	6,947.00	121.64	122.99	90.11	-1,910.67	7,517.96	2,587.60	2,345.33	242.26	10.681	
14,100.00	6,942.00	14,276.09	6,947.00	123.21	124.53	90.11	-1,911.13	7,617.96	2,587.60	2,342.20	245.40	10.545	
14,200.00	6,942.01	14,376.09	6,947.00	124.77	126.06	90.11	-1,911.59	7,717.95	2,587.61	2,339.08	248.53	10.412	
14,300.00	6,942.03	14,476.09	6,947.00	126.34	127.60	90.11	-1,912.05	7,817.95	2,587.61	2,335.95	251.67	10.282	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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
14,400.00	6,942.04	14,576.09	6,947.00	127.91	129.15	90.11	-1,912.52	7,917.95	2,587.62	2,332.81	254.81	10.155	
14,500.00	6,942.06	14,676.09	6,947.00	129.48	130.69	90.11	-1,912.98	8,017.95	2,587.63	2,329.68	257.95	10.032	
14,600.00	6,942.07	14,776.09	6,947.00	131.05	132.23	90.11	-1,913.44	8,117.95	2,587.63	2,326.55	261.09	9.911	
14,700.00	6,942.09	14,876.09	6,947.00	132.62	133.78	90.11	-1,913.90	8,217.95	2,587.64	2,323.41	264.23	9.793	
14,800.00	6,942.10	14,976.09	6,947.00	134.19	135.33	90.11	-1,914.36	8,317.95	2,587.65	2,320.27	267.37	9.678	
14,900.00	6,942.12	15,076.09	6,947.00	135.76	136.87	90.11	-1,914.82	8,417.95	2,587.65	2,317.13	270.52	9.565	
15,000.00	6,942.13	15,176.09	6,947.00	137.34	138.42	90.11	-1,915.28	8,517.95	2,587.66	2,313.99	273.67	9.455	
15,100.00	6,942.15	15,276.09	6,947.00	138.91	139.97	90.11	-1,915.75	8,617.94	2,587.67	2,310.85	276.82	9.348	
15,200.00	6,942.16	15,376.09	6,947.00	140.48	141.53	90.11	-1,916.21	8,717.94	2,587.67	2,307.70	279.97	9.243	
15,300.00	6,942.18	15,476.09	6,947.00	142.06	143.08	90.11	-1,916.67	8,817.94	2,587.68	2,304.56	283.12	9.140	
15,400.00	6,942.19	15,576.09	6,947.00	143.64	144.63	90.11	-1,917.13	8,917.94	2,587.68	2,301.41	286.27	9.039	
15,500.00	6,942.21	15,676.09	6,947.00	145.21	146.19	90.11	-1,917.59	9,017.94	2,587.69	2,298.27	289.42	8.941	
15,600.00	6,942.22	15,776.09	6,947.00	146.79	147.75	90.11	-1,918.05	9,117.94	2,587.70	2,295.12	292.58	8.844	
15,700.00	6,942.24	15,876.09	6,947.00	148.37	149.30	90.11	-1,918.52	9,217.94	2,587.70	2,291.97	295.74	8.750	
15,800.00	6,942.25	15,976.09	6,947.00	149.94	150.86	90.11	-1,918.98	9,317.94	2,587.71	2,288.82	298.89	8.658	
15,900.00	6,942.27	16,076.09	6,947.00	151.52	152.42	90.10	-1,919.44	9,417.94	2,587.72	2,285.66	302.05	8.567	
16,000.00	6,942.28	16,176.09	6,947.00	153.10	153.98	90.10	-1,919.90	9,517.94	2,587.72	2,282.51	305.21	8.478	
16,100.00	6,942.30	16,276.09	6,947.00	154.68	155.54	90.10	-1,920.36	9,617.93	2,587.73	2,279.36	308.37	8.392	
16,200.00	6,942.31	16,376.09	6,947.00	156.26	157.11	90.10	-1,920.82	9,717.93	2,587.73	2,276.20	311.53	8.306	
16,300.00	6,942.33	16,476.09	6,947.00	157.84	158.67	90.10	-1,921.28	9,817.93	2,587.74	2,273.05	314.69	8.223	
16,400.00	6,942.34	16,576.09	6,947.00	159.42	160.23	90.10	-1,921.75	9,917.93	2,587.75	2,269.89	317.86	8.141	
16,500.00	6,942.36	16,676.09	6,947.00	161.00	161.80	90.10	-1,922.21	10,017.93	2,587.75	2,266.73	321.02	8.061	
16,600.00	6,942.37	16,776.09	6,947.00	162.59	163.36	90.10	-1,922.67	10,117.93	2,587.76	2,263.57	324.19	7.982	
16,700.00	6,942.38	16,876.09	6,947.00	164.17	164.93	90.10	-1,923.13	10,217.93	2,587.77	2,260.42	327.35	7.905	
16,800.00	6,942.40	16,976.09	6,947.00	165.75	166.49	90.10	-1,923.59	10,317.93	2,587.77	2,257.26	330.52	7.829	
16,900.00	6,942.41	17,076.09	6,947.00	167.33	168.06	90.10	-1,924.05	10,417.93	2,587.78	2,254.09	333.68	7.755	
17,000.00	6,942.43	17,176.09	6,947.00	168.92	169.63	90.10	-1,924.51	10,517.92	2,587.79	2,250.93	336.85	7.682	
17,100.00	6,942.44	17,276.09	6,947.00	170.50	171.20	90.10	-1,924.98	10,617.92	2,587.79	2,247.77	340.02	7.611	
17,200.00	6,942.46	17,376.09	6,947.00	172.09	172.77	90.10	-1,925.44	10,717.92	2,587.80	2,244.61	343.19	7.540	
17,300.00	6,942.47	17,476.09	6,947.00	173.67	174.34	90.10	-1,925.90	10,817.92	2,587.80	2,241.44	346.36	7.471	
17,400.00	6,942.49	17,576.09	6,947.00	175.26	175.91	90.10	-1,926.36	10,917.92	2,587.81	2,238.28	349.53	7.404	
17,500.00	6,942.50	17,676.09	6,947.00	176.84	177.48	90.10	-1,926.82	11,017.92	2,587.82	2,235.11	352.70	7.337	
17,600.00	6,942.52	17,776.09	6,947.00	178.43	179.05	90.10	-1,927.28	11,117.92	2,587.82	2,231.95	355.88	7.272	
17,700.00	6,942.53	17,876.09	6,947.00	180.01	180.62	90.10	-1,927.74	11,217.92	2,587.83	2,228.78	359.05	7.207	
17,800.00	6,942.55	17,976.09	6,947.00	181.60	182.20	90.10	-1,928.21	11,317.92	2,587.84	2,225.61	362.22	7.144	
17,900.00	6,942.56	18,076.09	6,947.00	183.19	183.77	90.10	-1,928.67	11,417.91	2,587.84	2,222.45	365.40	7.082	
18,000.00	6,942.58	18,176.09	6,947.00	184.77	185.35	90.10	-1,929.13	11,517.91	2,587.85	2,219.28	368.57	7.021	
18,100.00	6,942.59	18,276.09	6,947.00	186.36	186.92	90.10	-1,929.59	11,617.91	2,587.85	2,216.11	371.75	6.961	
18,200.00	6,942.61	18,376.09	6,947.00	187.95	188.50	90.10	-1,930.05	11,717.91	2,587.86	2,212.94	374.92	6.902	
18,300.00	6,942.62	18,476.09	6,947.00	189.54	190.07	90.10	-1,930.51	11,817.91	2,587.87	2,209.77	378.10	6.844	
18,400.00	6,942.64	18,576.09	6,947.00	191.12	191.65	90.10	-1,930.97	11,917.91	2,587.87	2,206.60	381.27	6.787	
18,500.00	6,942.65	18,676.09	6,947.00	192.71	193.22	90.10	-1,931.44	12,017.91	2,587.88	2,203.43	384.45	6.731	
18,600.00	6,942.67	18,776.09	6,947.00	194.30	194.80	90.10	-1,931.90	12,117.91	2,587.89	2,200.26	387.63	6.676	
18,700.00	6,942.68	18,876.09	6,947.00	195.89	196.38	90.10	-1,932.36	12,217.91	2,587.89	2,197.09	390.81	6.622	
18,800.00	6,942.70	18,976.09	6,947.00	197.48	197.96	90.10	-1,932.82	12,317.91	2,587.90	2,193.91	393.99	6.569	
18,900.00	6,942.71	19,076.09	6,947.00	199.07	199.53	90.09	-1,933.28	12,417.90	2,587.91	2,190.74	397.16	6.516	
19,000.00	6,942.73	19,176.09	6,947.00	200.66	201.11	90.09	-1,933.74	12,517.90	2,587.91	2,187.57	400.34	6.464	
19,100.00	6,942.74	19,276.09	6,947.00	202.25	202.69	90.09	-1,934.21	12,617.90	2,587.92	2,184.39	403.52	6.413	
19,200.00	6,942.76	19,376.09	6,947.00	203.84	204.27	90.09	-1,934.67	12,717.90	2,587.92	2,181.22	406.70	6.363	
19,300.00	6,942.77	19,476.09	6,947.00	205.43	205.85	90.09	-1,935.13	12,817.90	2,587.93	2,178.05	409.89	6.314	
19,400.00	6,942.78	19,576.09	6,947.00	207.02	207.43	90.09	-1,935.59	12,917.90	2,587.94	2,174.87	413.07	6.265	
19,500.00	6,942.80	19,676.09	6,947.00	208.61	209.01	90.09	-1,936.05	13,017.90	2,587.94	2,171.70	416.25	6.217	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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

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
19,600.00	6,942.81	19,776.09	6,947.00	210.20	210.59	90.09	-1,936.51	13,117.90	2,587.95	2,168.52	419.43	6.170	
19,700.00	6,942.83	19,876.09	6,947.00	211.79	212.17	90.09	-1,936.97	13,217.90	2,587.96	2,165.34	422.61	6.124	
19,800.00	6,942.84	19,976.09	6,947.00	213.38	213.75	90.09	-1,937.44	13,317.89	2,587.96	2,162.17	425.80	6.078	
19,900.00	6,942.86	20,076.09	6,947.00	214.97	215.34	90.09	-1,937.90	13,417.89	2,587.97	2,158.99	428.98	6.033	
20,000.00	6,942.87	20,176.09	6,947.00	216.56	216.92	90.09	-1,938.36	13,517.89	2,587.98	2,155.81	432.16	5.988	
20,100.00	6,942.89	20,276.09	6,947.00	218.15	218.50	90.09	-1,938.82	13,617.89	2,587.98	2,152.64	435.35	5.945	
20,200.00	6,942.90	20,376.09	6,947.00	219.75	220.08	90.09	-1,939.28	13,717.89	2,587.99	2,149.46	438.53	5.902	
20,300.00	6,942.92	20,476.09	6,947.00	221.34	221.67	90.09	-1,939.74	13,817.89	2,587.99	2,146.28	441.71	5.859	
20,400.00	6,942.93	20,576.09	6,947.00	222.93	223.25	90.09	-1,940.20	13,917.89	2,588.00	2,143.10	444.90	5.817	
20,500.00	6,942.95	20,676.09	6,947.00	224.52	224.83	90.09	-1,940.67	14,017.89	2,588.01	2,139.92	448.08	5.776	
20,600.00	6,942.96	20,776.09	6,947.00	226.12	226.42	90.09	-1,941.13	14,117.89	2,588.01	2,136.74	451.27	5.735	
20,700.00	6,942.98	20,876.09	6,947.00	227.71	228.00	90.09	-1,941.59	14,217.89	2,588.02	2,133.56	454.46	5.695	
20,800.00	6,942.99	20,976.09	6,947.00	229.30	229.59	90.09	-1,942.05	14,317.88	2,588.03	2,130.38	457.64	5.655	
20,855.77	6,943.00	21,031.86	6,947.00	230.19	230.47	90.09	-1,942.31	14,373.65	2,588.03	2,128.61	459.42	5.633 SF	

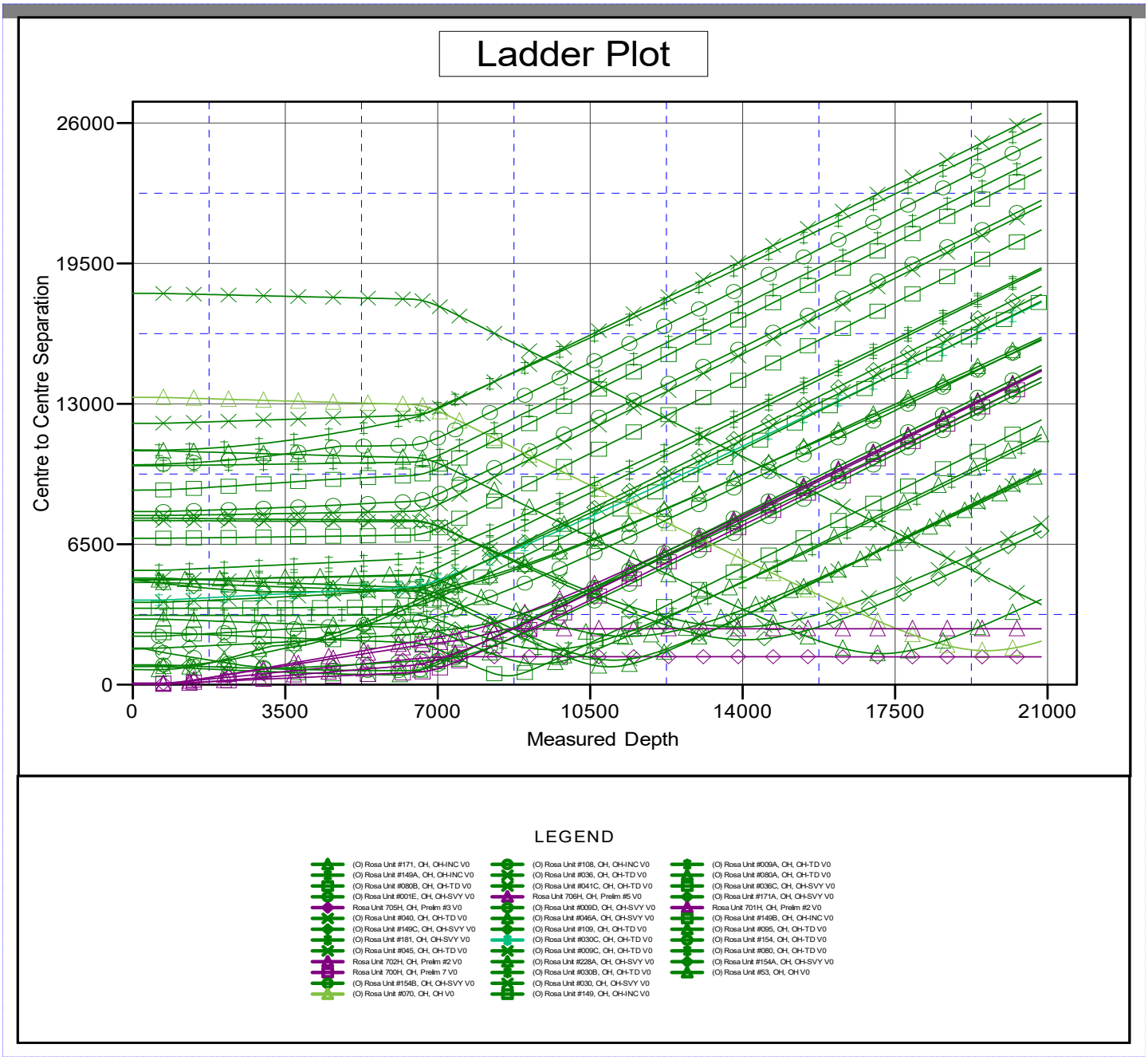
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**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 704H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.26°

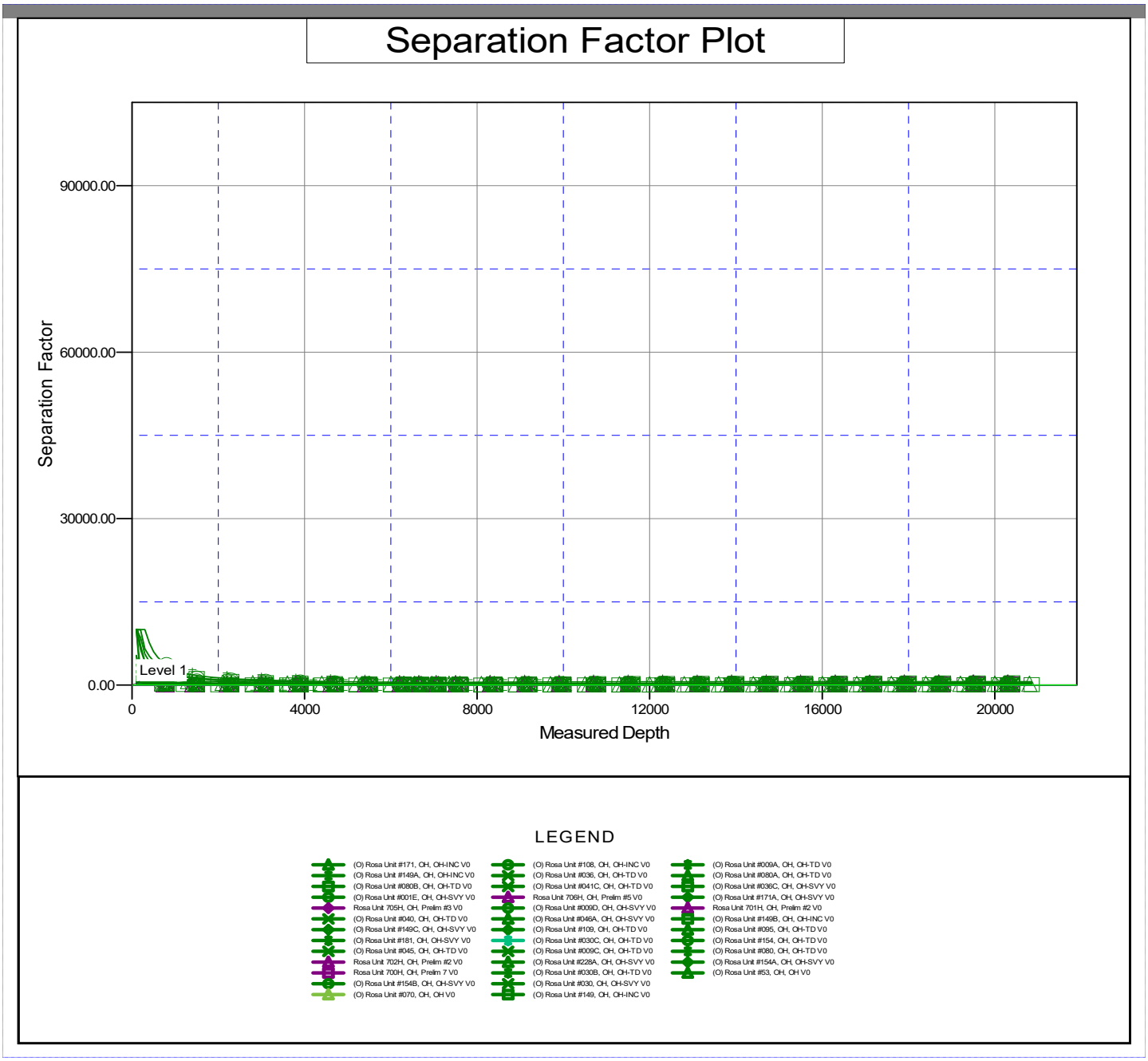


SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 704H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Reference Site:	Rosa Unit 24	**MD Reference:**	6295+30 @ 6325.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 704H	**Survey Calculation Method:**	Minimum 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 #4	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6295+30 @ 6325.00usft (H&P 530)	Coordinates are relative to: Rosa Unit 704H
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 322811

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 322811
	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, a CBL is required.	3/21/2024