

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**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.5. Lease Serial No.
NMSF078766
6. If Indian, Allottee or Tribe Name**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
LOGOS OPERATING, LLC3a. Address 2010 AFTON PLACE,
FARMINGTON, NM 874013b. Phone No. (include area code)
(505) 278-87204. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SEC 23 T31N R06W, NWSW (L) 1811' FSL 434' FWL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No.
ROSA UNIT 614H9 API Well No.
30-039-3143310. Field and Pool or Exploratory Area
BASIN MANCOS11. Country or Parish, State
RIO ARriba COUNTY, NM

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 recompleat 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 performed 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 recompleat 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 determined that the site is ready for final inspection.)

LOGOS Operating request a change in plans for the following:

Original TD @ 17,283' MD 6,857' TVD to new **TD @ 17,304' MD 6,872' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6,373' MD 6,274' TVD to new **KOP @ 6,393 MD 6,294' TVD**Original Landing point @ 7,349' MD 6,874' TVD to new **Landing point @ 7,370' MD 6,895' TVD**Original 13.375" casing Surface @ 320' to **new Surface casing 20" @ 320'**Original 9.625" casing Intermediate @ 6,125' MD to **new 13.375" Intermediate1 casing @ 3,413' MD & Additional 9.625" Intermediate2 casing @ 6,245' MD**Original 5.5" casing Production @ 17,283' MD to new **Production casing @ 17,304' MD 6,872' TVD**

The 13.375", 9.625" Intermediate & 5.5" production cementing bbls and sacks have been update per casing depth changes.

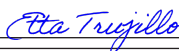
Attached: New C102, Operation and Directional Drill plans.

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

Etta Trujillo

Title Regulatory Specialist

Signature



Date 09/27/2023

THE SPACE FOR FEDERAL OR STATE OFFICE 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

(Instructions on page 2)

Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 23 / NWSW /	County or Parish/State:
Well Number: 614H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF78766	Unit or CA Name: ROSA UNIT	Unit or CA Number: NMNM78407E
US Well Number: 3003931433	Well Status: Location	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2753817

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 09/27/2023

Time Sundry Submitted: 03:04

Date proposed operation will begin: 09/27/2023

Procedure Description: LOGOS Operating request a change in plans for the following: Original TD @ 17,283' MD 6,857' TVD to new TD @ 17,304' MD 6,872' TVD. Geology tops have been updated per changes. Original KOP @ 6,373' MD 6,274' TVD to new KOP @ 6,393 MD 6,294' TVD Original Landing point @ 7,349' MD 6,874' TVD to new Landing point @ 7,370' MD 6,895' TVD Original 13.375" casing Surface @ 320' to new Surface casing 20" @ 320' Original 9.625" casing Intermediate @ 6,125' MD to new 13.375" Intermediate1 casing @ 3,413' MD & Additional 9.625" Intermediate2 casing @ 6,245' MD Original 5.5" casing Production @ 17,283' MD to new Production casing @ 17,304' MD 6,872' TVD The 13.375", 9.625" Intermediate & 5.5" production cementing bbls and sacks have been update per casing depth changes. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

Production_Casing_Assumption_20230928083850.pdf

Intermediate2_Casing_Assumption_20230928083841.pdf

Intermediate1_Casing_Assumption_20230928083832.pdf

3160_5_Rosa_Unit_614H_Plan_1_Change_in_Plans_20230927_20230927150325.pdf

Well Name: ROSA UNIT

Well Location: T31N / R6W / SEC 23 /
NWSW /

County or Parish/State:

Well Number: 614H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMSF78766

Unit or CA Name: ROSA UNIT

Unit or CA Number:
NMNM78407E

US Well Number: 3003931433

Well Status: Location

Operator: LOGOS OPERATING
LLC**Conditions of Approval****Additional**

APD_Change_KR_09282023_20230928091237.pdf

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: SEP 28, 2023 08:39 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: 09/28/2023

Signature: Kenneth Rennick

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
FARMINGTON DISTRICT OFFICE
6251 COLLEGE BLVD.
FARMINGTON, NEW MEXICO 87402**

APD Changes

LOGOS OPERATING LLC

CONDITIONS OF APPROVAL

1. 13 3/8" 1ST Intermediate casing must not fall below 1/3 fluid evacuation.

K. Rennick 09/28/2023



LOGOS Operating, LLC Operations Plan

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

Date:	September 27, 2023	Pool:	Basin Mancos
Well Name:	Rosa Unit 614H	GL Elevation:	6,287'
Surface Location:	Sec 23, T31N, R6W 1811 FSL, 434 FWL (36.882844° N, 107.439701° W – NAD83)	Measured Depth:	17,304' (KB)
Bottom Hole Location:	Sec 21, T31N, R6W 1188 FSL, 159 FWL (36.881057° N, 107.476642° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078766, NMSF078771, CA Serial #NMNM78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,387'	2,368'	*POINT LOOKOUT	5,685'	5,600'
KIRTLAND	2,517'	2,495'	*MANCOS	6,170'	6,076'
*FRUITLAND	2,883'	2,854'	KICKOFF POINT	6,393'	6,294'
*PICTURED CLIFFS	3,009'	3,324'	LANDING POINT	7,370'	6,895'
LEWIS	3,466'	3,425'			
CHACRA	4,576'	4,513'			
*CLIFF HOUSE	5,392'	5,313'			
MENEFEE	5,441'	5,361'	TD	17,304'	6,872'

* 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 26"/24" surface hole, 17-1/2" intermediate 1 and 12-1/4" intermediate hole 2 vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

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

ROSA UNIT 614H



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

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OHSIZE (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"	3,413'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE 2	12.25"	6,245'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	17,304'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

- SURFACE CASING: 20" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- INTERMEDIATE CASING 1: 13-3/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,000ft., 1,500 ft., 1,000 ft., and 500ft.
 - Casing will be kept fluid filled during drilling
- INTERMEDIATE CASING: 9-5/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancellation 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.
- 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.

ROSA UNIT 614H



Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

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

1. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface.
408 sks of 15.8 ppg Type Neat G, 1.10 cuft/sk yield or equivalent 323 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess.
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	2,813	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	320	2,493	0.6947	1.3	2,251	401	1.90	1185	12.4
Stage 2 Lead - Cased	-	320	1.019	1	326	58	1.90	172	12.4
					3,153	562		1880	

Set Depth 3413

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 cancellation 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	5,745	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,651	1,094	0.3132	1.3	445	79	1.90	234	12.4
					665	119		434	
Stage 2 Tail	4,051	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,313	738	0.3132	1.3	300	54	1.90	158	12.4
Stage 2 Lead - Cased	3,213	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					581	103		332	
Int 2 Totals					1,247	222		766	
Contingency									
Stage 3 Tail	3,413	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,913	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,913	0.3490	1	1,017	181	1.90	535	12.4
Contingency Stage 3 Totals					1,222	218		665	

ROSA UNIT 614H



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 (ft ³ /ft) Annular Capacity	Excess (15%)	Total (ft ³)	Total (bbl)	Slurry Yield (ft ³ /sk)	Sacks Cement	Density (PPG)
Cased Lead	6,145	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,245	11,059	0.2291	1.15	2,919	520	1.59	1,836	13.2
					2,944	524		1,852	

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 * 6,895' TVD = 1517 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. **STIMULATION**

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

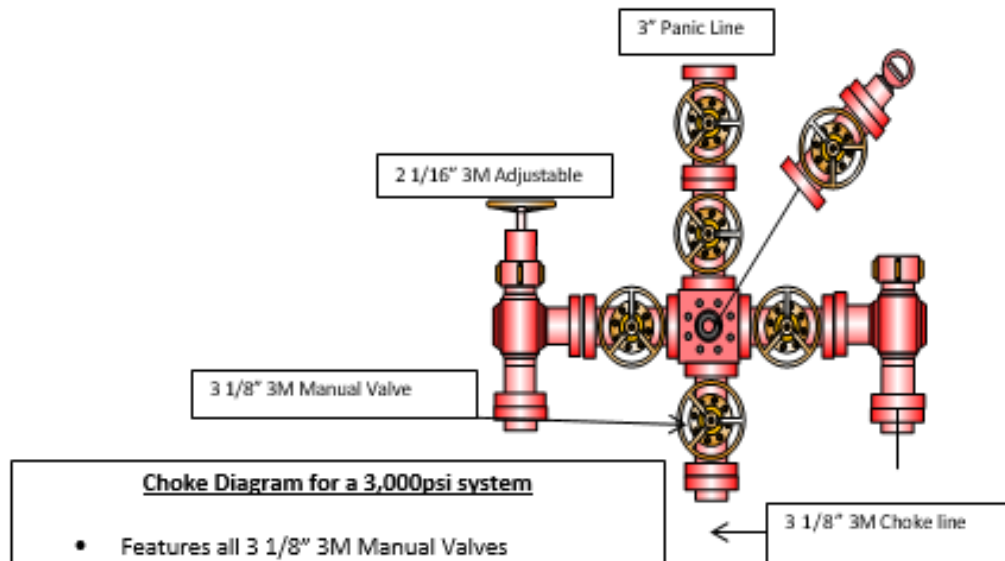
E. **PRODUCTION TUBING**

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-18 months after completion.

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

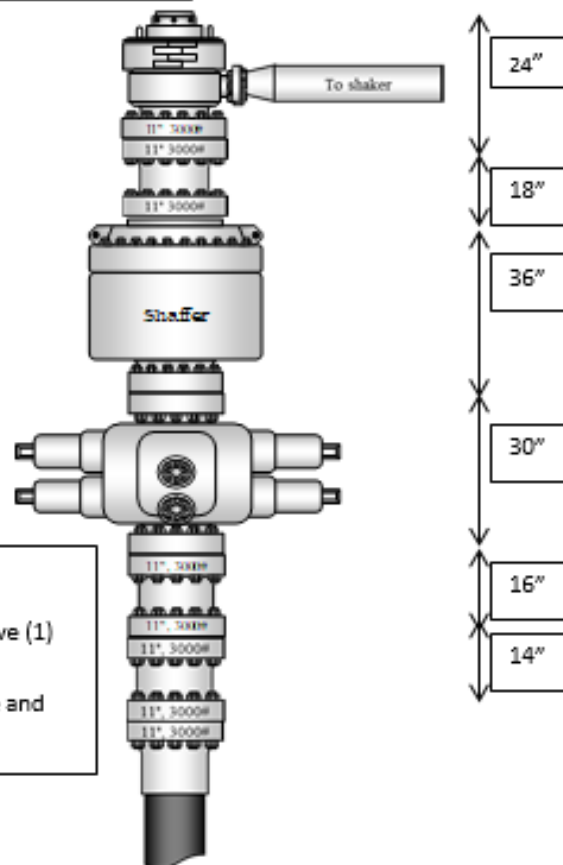


3M 11" B.O.P.E Diagram



Choke Diagram for a 3,000psi system

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



11" 3,000psi BOP

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

ROSA UNIT 614H

Surface Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

					1.125	1.000		1.400
	Size	Weight	Grade	Conn	Collapse	Burst	70% Burst	Tension (Body)
Surface	20.000	94	J-55	BTC	520	2,110	1,477	1,480,000
Collapse								
	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF		
94 J-55 BTC	320	0.00	15.80	0	263	1.98	full evacuation with 15.8 ppg m	
Burst								
94 J-55 BTC	320	15.80	0.00	1263	0	1.67	1000 psi casing test	
Tension								
94 J-55 BTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF		
Tension (Body)	320	15.80	30,080	22,824	122,824	12.05	100k over pull	
Tension (Conn)	320	15.80	30,080	22,824	122,824	11.41	100k over pull	
		BF						BF= 1- (MW)/65.5
		0.7588						

1st Intermediate Casing Design - 1/3 Evacuated/Max SICP (collapse & burst), 100k overpull (tension)

					1.125	1.000		1.400	1.400
	Size	Weight	Grade	Conn	Collapse	Burst	80% Burst	Tension (Body)	Tension (Connection)
Intermediate	13.375	61	J-55	BTC	1,540	3,090	2,472	962,000	1,025,000
	13.375	68	J-55	BTC	1,950	3,450	2,760	1,069,000	1,140,000
	13.375								

Collapse

	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	
61 J-55 BTC	3,374	9.20	9.20	1065	1614	2.81	1/3 Evac with 9.2 ppg mud outside
68 J-55 BTC	3,374	9.20	9.20	1065	1614	3.55	1/3 evacuation with 9.2 ppg mud outside

Burst

61 J-55 BTC	3,374	9.20	0.00	2644	0	1.17	Casing full with 9.2 ppg mud , annulus evacuated+1030 ps
68 J-55 BTC	3,374	9.20	0.00	2764	0	1.25	Casing full with 9.2 ppg mud , annulus evacuated+1150 ps

Tension

		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
61 J-55 BTC							
Tension (Body)	3,374	9.20	205,814	176,906	276,906	3.47	100k over pull
Tension (Conn)	3,374	9.20	205,814	176,906	276,906	3.70	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8595					
68 J-55 BTC							
Tension (Body)	3,374	9.20	229,432	197,206	297,206	3.60	100k over pull
Tension (Conn)	3,374	9.20	229,432	197,206	297,206	3.84	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8595					

Intermediate Casing Design - Evacuated/Max SICP (collapse & burst), 100k overpull (tension)

					1.125	1.000	1.400	
	Size	Weight	Grade	Conn	Collapse	Burst	80% Burst	Tension (Body)
Intermediate	9.625	43.5	N-80 or L-80	LTC	3,810	6,330	5,064	1,005,000
	9.625	43.5	N-80 or L-80	BTC	3,810	6,330	5,064	1,005,000
	9.625	43.5	P-110	BTC	4,420	8,700	6,960	1,381,000
Collapse								
	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF		
43.5 N-80 or L-80 L 6,151		0.00	9.40	0	3007	1.27	full evacuation with 9.4 ppg muc	
43.5 N-80 or L-80 B 6,151		0.00	9.40	0	3007	1.27	full evacuation with 9.4 ppg muc	
Burst								
43.5 N-80 or L-80 L 6,151		9.40	0.00	4507	0	1.40	Casing full with 9.4 ppg mud , ar	
43.5 N-80 or L-80 B 6,151		9.40	0.00	4507	0	1.40	Casing full with 9.4 ppg mud , ar	
Tension								
43.5 N-80 or L-80 LTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF		
Tension (Body)	6,151	9.40	267,569	229,169	329,169	3.05	100k over pull	
Tension (Conn)	6,151	9.40	267,569	229,169	329,169	2.51	100k over pull	
		BF						BF= 1- (MW)/65.5
		0.8565						
43.5 N-80 or L-80 BTC								
Tension (Body)	6,151	9.40	267,569	229,169	329,169	3.05	100k over pull	
Tension (Conn)	6,151	9.40	267,569	229,169	329,169	3.26	100k over pull	
		BF						BF= 1- (MW)/65.5
		0.8565						

Production Casing Design - Evacuated/Max SICP (collapse & burst), 100k overpull (tension)

					1.125	1.000		1.400
	Size	Weight	Grade	Conn	Collapse	Burst	80% Burst	Tension (Body)
Production	5.5	20	P110	LTC	11,080	12,630	10,104	641,000
	5.5	20	P110	BTC	11,080	12,360	9,888	641,000

Collapse

	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	
20 P110 LTC	6,872	0.00	13.30	0	4753	2.33	full evacuation with 13.3 ppg mu
20 P110 BTC	6,872	0.00	13.30	0	4753	2.33	full evacuation with 13.3 ppg mu

Burst

20 P110 LTC	6,872	13.30	0.00	6253	0	2.02	1500 psi casing test
20 P110 BTC	6,872	13.30	0.00	6253	0	1.98	1500 psi casing test

Tension

20 P110 LTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	6,872	13.30	137,440	109,532	209,532	3.06	100k over pull
Tension (Conn)	6,872	13.30	137,440	109,532	209,532	2.62	100k over pull
		BF					BF= 1- (MW)/65.5
		0.7969					
20 P110 BTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	6,872	13.30	137,440	109,532	209,532	3.06	100k over pull
Tension (Conn)	6,872	13.30	137,440	109,532	209,532	3.18	100k over pull
		BF					BF= 1- (MW)/65.5

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 10

Rosa Unit 614H

OH

Plan: Plan #1

Standard Planning Report

22 September, 2023

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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 10				
Site Position:		Northing:	2,140,923.33 usft	Latitude:	36.882859
From:	Lat/Long	Easting:	2,838,241.39 usft	Longitude:	-107.439600
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Rosa Unit 614H					
Well Position	+N/-S	0.00 usft	Northing:	2,140,917.75 usft	Latitude:	36.882844
	+E/-W	0.00 usft	Easting:	2,838,211.88 usft	Longitude:	-107.439701
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,287.00 usft
Grid Convergence:		0.24 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/1/2023	8.51	63.43	49,490.40216442

Design	Plan #1				
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	272.45	

Plan Survey Tool Program	Date	9/22/2023			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,304.21 Plan #1 (OH)	MWD+HRGM+MS		
			MWD + HRGM + Multi-Station		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,569.36	11.39	193.58	1,565.62	-54.82	-13.24	2.00	2.00	0.00	193.58	
6,393.02	11.39	193.58	6,294.33	-980.57	-236.90	0.00	0.00	0.00	0.00	
7,370.19	90.13	272.45	6,895.00	-1,072.24	-878.99	9.00	8.06	8.07	79.05	Rosa 614H POE
17,133.01	90.13	272.45	6,872.40	-655.70	-10,632.90	0.00	0.00	0.00	0.00	Rosa 614H FPP
17,304.21	90.13	272.45	6,872.00	-648.40	-10,803.94	0.00	0.00	0.00	0.00	Rosa 614H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	2.00	193.58	1,099.98	-1.70	-0.41	0.34	2.00	2.00	0.00
1,200.00	4.00	193.58	1,199.84	-6.78	-1.64	1.35	2.00	2.00	0.00
1,300.00	6.00	193.58	1,299.45	-15.25	-3.69	3.03	2.00	2.00	0.00
1,400.00	8.00	193.58	1,398.70	-27.10	-6.55	5.38	2.00	2.00	0.00
1,500.00	10.00	193.58	1,497.47	-42.31	-10.22	8.40	2.00	2.00	0.00
1,569.36	11.39	193.58	1,565.62	-54.82	-13.24	10.89	2.00	2.00	0.00
Start 4823.66 hold at 1569.36 MD									
1,600.00	11.39	193.58	1,595.66	-60.70	-14.66	12.06	0.00	0.00	0.00
1,700.00	11.39	193.58	1,693.69	-79.89	-19.30	15.87	0.00	0.00	0.00
1,800.00	11.39	193.58	1,791.72	-99.08	-23.94	19.68	0.00	0.00	0.00
1,900.00	11.39	193.58	1,889.75	-118.27	-28.57	23.49	0.00	0.00	0.00
2,000.00	11.39	193.58	1,987.78	-137.46	-33.21	27.30	0.00	0.00	0.00
2,100.00	11.39	193.58	2,085.81	-156.66	-37.85	31.12	0.00	0.00	0.00
2,200.00	11.39	193.58	2,183.85	-175.85	-42.48	34.93	0.00	0.00	0.00
2,300.00	11.39	193.58	2,281.88	-195.04	-47.12	38.74	0.00	0.00	0.00
2,387.85	11.39	193.58	2,368.00	-211.90	-51.19	42.09	0.00	0.00	0.00
OJO ALAMO									
2,400.00	11.39	193.58	2,379.91	-214.23	-51.76	42.55	0.00	0.00	0.00
2,500.00	11.39	193.58	2,477.94	-233.42	-56.39	46.36	0.00	0.00	0.00
2,517.40	11.39	193.58	2,495.00	-236.76	-57.20	47.03	0.00	0.00	0.00
KIRTLAND									
2,600.00	11.39	193.58	2,575.97	-252.61	-61.03	50.17	0.00	0.00	0.00
2,700.00	11.39	193.58	2,674.00	-271.81	-65.67	53.99	0.00	0.00	0.00
2,800.00	11.39	193.58	2,772.03	-291.00	-70.30	57.80	0.00	0.00	0.00
2,883.61	11.39	193.58	2,854.00	-307.05	-74.18	60.99	0.00	0.00	0.00
FRUITLAND									
2,900.00	11.39	193.58	2,870.07	-310.19	-74.94	61.61	0.00	0.00	0.00
3,000.00	11.39	193.58	2,968.10	-329.38	-79.58	65.42	0.00	0.00	0.00
3,009.08	11.39	193.58	2,977.00	-331.13	-80.00	65.77	0.00	0.00	0.00
TOP OF COALS									
3,100.00	11.39	193.58	3,066.13	-348.57	-84.21	69.23	0.00	0.00	0.00
3,170.25	11.39	193.58	3,135.00	-362.06	-87.47	71.91	0.00	0.00	0.00
BASE OF COALS									
3,200.00	11.39	193.58	3,164.16	-367.77	-88.85	73.05	0.00	0.00	0.00
3,300.00	11.39	193.58	3,262.19	-386.96	-93.49	76.86	0.00	0.00	0.00
3,363.05	11.39	193.58	3,324.00	-399.06	-96.41	79.26	0.00	0.00	0.00
PICTURED CLIFFS									
3,400.00	11.39	193.58	3,360.22	-406.15	-98.12	80.67	0.00	0.00	0.00
3,466.08	11.39	193.58	3,425.00	-418.83	-101.19	83.19	0.00	0.00	0.00
LEWIS									
3,500.00	11.39	193.58	3,458.25	-425.34	-102.76	84.48	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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	11.39	193.58	3,556.29	-444.53	-107.39	88.29	0.00	0.00	0.00
3,700.00	11.39	193.58	3,654.32	-463.73	-112.03	92.11	0.00	0.00	0.00
3,800.00	11.39	193.58	3,752.35	-482.92	-116.67	95.92	0.00	0.00	0.00
3,900.00	11.39	193.58	3,850.38	-502.11	-121.30	99.73	0.00	0.00	0.00
4,000.00	11.39	193.58	3,948.41	-521.30	-125.94	103.54	0.00	0.00	0.00
4,100.00	11.39	193.58	4,046.44	-540.49	-130.58	107.35	0.00	0.00	0.00
4,200.00	11.39	193.58	4,144.48	-559.68	-135.21	111.17	0.00	0.00	0.00
4,300.00	11.39	193.58	4,242.51	-578.88	-139.85	114.98	0.00	0.00	0.00
4,400.00	11.39	193.58	4,340.54	-598.07	-144.49	118.79	0.00	0.00	0.00
4,500.00	11.39	193.58	4,438.57	-617.26	-149.12	122.60	0.00	0.00	0.00
4,575.93	11.39	193.58	4,513.00	-631.83	-152.64	125.50	0.00	0.00	0.00
CHACRA									
4,600.00	11.39	193.58	4,536.60	-636.45	-153.76	126.41	0.00	0.00	0.00
4,700.00	11.39	193.58	4,634.63	-655.64	-158.40	130.23	0.00	0.00	0.00
4,800.00	11.39	193.58	4,732.66	-674.84	-163.03	134.04	0.00	0.00	0.00
4,900.00	11.39	193.58	4,830.70	-694.03	-167.67	137.85	0.00	0.00	0.00
5,000.00	11.39	193.58	4,928.73	-713.22	-172.31	141.66	0.00	0.00	0.00
5,095.15	11.39	193.58	5,022.00	-731.48	-176.72	145.29	0.00	0.00	0.00
UPPER CLIFF HOUSE									
5,100.00	11.39	193.58	5,026.76	-732.41	-176.94	145.47	0.00	0.00	0.00
5,200.00	11.39	193.58	5,124.79	-751.60	-181.58	149.28	0.00	0.00	0.00
5,300.00	11.39	193.58	5,222.82	-770.80	-186.22	153.10	0.00	0.00	0.00
5,391.99	11.39	193.58	5,313.00	-788.45	-190.48	156.60	0.00	0.00	0.00
CLIFF HOUSE									
5,400.00	11.39	193.58	5,320.85	-789.99	-190.85	156.91	0.00	0.00	0.00
5,440.95	11.39	193.58	5,361.00	-797.85	-192.75	158.47	0.00	0.00	0.00
MENELEE									
5,500.00	11.39	193.58	5,418.88	-809.18	-195.49	160.72	0.00	0.00	0.00
5,600.00	11.39	193.58	5,516.92	-828.37	-200.13	164.53	0.00	0.00	0.00
5,684.75	11.39	193.58	5,600.00	-844.64	-204.06	167.76	0.00	0.00	0.00
POINT LOOKOUT									
5,700.00	11.39	193.58	5,614.95	-847.56	-204.76	168.34	0.00	0.00	0.00
5,800.00	11.39	193.58	5,712.98	-866.75	-209.40	172.16	0.00	0.00	0.00
5,900.00	11.39	193.58	5,811.01	-885.95	-214.04	175.97	0.00	0.00	0.00
6,000.00	11.39	193.58	5,909.04	-905.14	-218.67	179.78	0.00	0.00	0.00
6,100.00	11.39	193.58	6,007.07	-924.33	-223.31	183.59	0.00	0.00	0.00
6,170.31	11.39	193.58	6,076.00	-937.82	-226.57	186.27	0.00	0.00	0.00
MANCOS									
6,200.00	11.39	193.58	6,105.10	-943.52	-227.95	187.40	0.00	0.00	0.00
6,300.00	11.39	193.58	6,203.14	-962.71	-232.58	191.22	0.00	0.00	0.00
6,393.02	11.39	193.58	6,294.33	-980.57	-236.90	194.76	0.00	0.00	0.00
Start DLS 9.00 TFO 79.05									
6,400.00	11.52	196.67	6,301.17	-981.90	-237.26	195.07	9.00	1.94	44.25
6,450.00	13.33	215.95	6,350.01	-991.36	-242.08	199.48	9.00	3.62	38.55
6,500.00	16.21	229.61	6,398.37	-1,000.56	-250.78	207.78	9.00	5.75	27.32
6,550.00	19.69	238.91	6,445.94	-1,009.43	-263.32	219.93	9.00	6.96	18.61
6,600.00	23.51	245.41	6,492.42	-1,017.94	-279.61	235.84	9.00	7.64	12.99
6,650.00	27.53	250.14	6,537.54	-1,026.02	-299.56	255.42	9.00	8.03	9.46
6,700.00	31.66	253.73	6,581.01	-1,033.63	-323.03	278.55	9.00	8.27	7.19
6,750.00	35.88	256.57	6,622.57	-1,040.71	-349.89	305.09	9.00	8.43	5.67
6,800.00	40.15	258.87	6,661.96	-1,047.23	-379.98	334.86	9.00	8.54	4.61
6,850.00	44.46	260.80	6,698.93	-1,053.14	-413.10	367.70	9.00	8.62	3.86
6,867.13	45.94	261.40	6,711.00	-1,055.02	-425.11	379.62	9.00	8.66	3.47

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
TOP BLACK									
6,900.00	48.80	262.46	6,733.26	-1,058.41	-449.05	403.39	9.00	8.68	3.23
6,950.00	53.15	263.90	6,764.73	-1,063.01	-487.61	441.72	9.00	8.71	2.90
7,000.00	57.53	265.19	6,793.16	-1,066.90	-528.54	482.45	9.00	8.75	2.58
7,050.00	61.91	266.37	6,818.37	-1,070.07	-571.59	525.32	9.00	8.77	2.34
7,100.00	66.31	267.44	6,840.20	-1,072.49	-616.49	570.08	9.00	8.79	2.16
7,150.00	70.71	268.45	6,858.51	-1,074.15	-662.97	616.45	9.00	8.80	2.02
7,200.00	75.11	269.41	6,873.20	-1,075.03	-710.74	664.14	9.00	8.81	1.91
7,250.00	79.52	270.33	6,884.18	-1,075.14	-759.51	712.86	9.00	8.82	1.83
7,300.00	83.94	271.22	6,891.37	-1,074.48	-808.97	762.30	9.00	8.83	1.78
7,350.00	88.35	272.09	6,894.73	-1,073.04	-858.83	812.17	9.00	8.83	1.75
7,370.19	90.13	272.45	6,895.00	-1,072.24	-878.99	832.35	9.00	8.83	1.75
Start 9762.82 hold at 7370.19 MD									
7,400.00	90.13	272.45	6,894.93	-1,070.96	-908.78	862.17	0.00	0.00	0.00
7,500.00	90.13	272.45	6,894.70	-1,066.70	-1,008.69	962.17	0.00	0.00	0.00
7,600.00	90.13	272.45	6,894.47	-1,062.43	-1,108.60	1,062.17	0.00	0.00	0.00
7,700.00	90.13	272.45	6,894.24	-1,058.16	-1,208.51	1,162.17	0.00	0.00	0.00
7,800.00	90.13	272.45	6,894.00	-1,053.90	-1,308.42	1,262.17	0.00	0.00	0.00
7,900.00	90.13	272.45	6,893.77	-1,049.63	-1,408.32	1,362.17	0.00	0.00	0.00
8,000.00	90.13	272.45	6,893.54	-1,045.36	-1,508.23	1,462.17	0.00	0.00	0.00
8,100.00	90.13	272.45	6,893.31	-1,041.10	-1,608.14	1,562.17	0.00	0.00	0.00
8,200.00	90.13	272.45	6,893.08	-1,036.83	-1,708.05	1,662.17	0.00	0.00	0.00
8,300.00	90.13	272.45	6,892.85	-1,032.57	-1,807.96	1,762.17	0.00	0.00	0.00
8,400.00	90.13	272.45	6,892.62	-1,028.30	-1,907.87	1,862.17	0.00	0.00	0.00
8,500.00	90.13	272.45	6,892.38	-1,024.03	-2,007.78	1,962.17	0.00	0.00	0.00
8,600.00	90.13	272.45	6,892.15	-1,019.77	-2,107.68	2,062.17	0.00	0.00	0.00
8,700.00	90.13	272.45	6,891.92	-1,015.50	-2,207.59	2,162.17	0.00	0.00	0.00
8,800.00	90.13	272.45	6,891.69	-1,011.23	-2,307.50	2,262.16	0.00	0.00	0.00
8,900.00	90.13	272.45	6,891.46	-1,006.97	-2,407.41	2,362.16	0.00	0.00	0.00
9,000.00	90.13	272.45	6,891.23	-1,002.70	-2,507.32	2,462.16	0.00	0.00	0.00
9,100.00	90.13	272.45	6,890.99	-998.43	-2,607.23	2,562.16	0.00	0.00	0.00
9,200.00	90.13	272.45	6,890.76	-994.17	-2,707.14	2,662.16	0.00	0.00	0.00
9,300.00	90.13	272.45	6,890.53	-989.90	-2,807.05	2,762.16	0.00	0.00	0.00
9,400.00	90.13	272.45	6,890.30	-985.63	-2,906.95	2,862.16	0.00	0.00	0.00
9,500.00	90.13	272.45	6,890.07	-981.37	-3,006.86	2,962.16	0.00	0.00	0.00
9,600.00	90.13	272.45	6,889.84	-977.10	-3,106.77	3,062.16	0.00	0.00	0.00
9,700.00	90.13	272.45	6,889.61	-972.83	-3,206.68	3,162.16	0.00	0.00	0.00
9,800.00	90.13	272.45	6,889.37	-968.57	-3,306.59	3,262.16	0.00	0.00	0.00
9,900.00	90.13	272.45	6,889.14	-964.30	-3,406.50	3,362.16	0.00	0.00	0.00
10,000.00	90.13	272.45	6,888.91	-960.03	-3,506.41	3,462.16	0.00	0.00	0.00
10,100.00	90.13	272.45	6,888.68	-955.77	-3,606.31	3,562.16	0.00	0.00	0.00
10,200.00	90.13	272.45	6,888.45	-951.50	-3,706.22	3,662.16	0.00	0.00	0.00
10,300.00	90.13	272.45	6,888.22	-947.23	-3,806.13	3,762.16	0.00	0.00	0.00
10,400.00	90.13	272.45	6,887.99	-942.97	-3,906.04	3,862.16	0.00	0.00	0.00
10,500.00	90.13	272.45	6,887.75	-938.70	-4,005.95	3,962.16	0.00	0.00	0.00
10,600.00	90.13	272.45	6,887.52	-934.44	-4,105.86	4,062.16	0.00	0.00	0.00
10,700.00	90.13	272.45	6,887.29	-930.17	-4,205.77	4,162.16	0.00	0.00	0.00
10,800.00	90.13	272.45	6,887.06	-925.90	-4,305.68	4,262.16	0.00	0.00	0.00
10,900.00	90.13	272.45	6,886.83	-921.64	-4,405.58	4,362.16	0.00	0.00	0.00
11,000.00	90.13	272.45	6,886.60	-917.37	-4,505.49	4,462.16	0.00	0.00	0.00
11,100.00	90.13	272.45	6,886.37	-913.10	-4,605.40	4,562.16	0.00	0.00	0.00
11,200.00	90.13	272.45	6,886.13	-908.84	-4,705.31	4,662.16	0.00	0.00	0.00
11,300.00	90.13	272.45	6,885.90	-904.57	-4,805.22	4,762.16	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,400.00	90.13	272.45	6,885.67	-900.30	-4,905.13	4,862.16	0.00	0.00	0.00
11,500.00	90.13	272.45	6,885.44	-896.04	-5,005.04	4,962.16	0.00	0.00	0.00
11,600.00	90.13	272.45	6,885.21	-891.77	-5,104.94	5,062.16	0.00	0.00	0.00
11,700.00	90.13	272.45	6,884.98	-887.50	-5,204.85	5,162.16	0.00	0.00	0.00
11,800.00	90.13	272.45	6,884.74	-883.24	-5,304.76	5,262.16	0.00	0.00	0.00
11,900.00	90.13	272.45	6,884.51	-878.97	-5,404.67	5,362.16	0.00	0.00	0.00
12,000.00	90.13	272.45	6,884.28	-874.70	-5,504.58	5,462.16	0.00	0.00	0.00
12,100.00	90.13	272.45	6,884.05	-870.44	-5,604.49	5,562.16	0.00	0.00	0.00
12,200.00	90.13	272.45	6,883.82	-866.17	-5,704.40	5,662.16	0.00	0.00	0.00
12,300.00	90.13	272.45	6,883.59	-861.90	-5,804.31	5,762.16	0.00	0.00	0.00
12,400.00	90.13	272.45	6,883.36	-857.64	-5,904.21	5,862.16	0.00	0.00	0.00
12,500.00	90.13	272.45	6,883.12	-853.37	-6,004.12	5,962.16	0.00	0.00	0.00
12,600.00	90.13	272.45	6,882.89	-849.10	-6,104.03	6,062.15	0.00	0.00	0.00
12,700.00	90.13	272.45	6,882.66	-844.84	-6,203.94	6,162.15	0.00	0.00	0.00
12,800.00	90.13	272.45	6,882.43	-840.57	-6,303.85	6,262.15	0.00	0.00	0.00
12,900.00	90.13	272.45	6,882.20	-836.31	-6,403.76	6,362.15	0.00	0.00	0.00
13,000.00	90.13	272.45	6,881.97	-832.04	-6,503.67	6,462.15	0.00	0.00	0.00
13,100.00	90.13	272.45	6,881.74	-827.77	-6,603.57	6,562.15	0.00	0.00	0.00
13,200.00	90.13	272.45	6,881.50	-823.51	-6,703.48	6,662.15	0.00	0.00	0.00
13,300.00	90.13	272.45	6,881.27	-819.24	-6,803.39	6,762.15	0.00	0.00	0.00
13,400.00	90.13	272.45	6,881.04	-814.97	-6,903.30	6,862.15	0.00	0.00	0.00
13,500.00	90.13	272.45	6,880.81	-810.71	-7,003.21	6,962.15	0.00	0.00	0.00
13,600.00	90.13	272.45	6,880.58	-806.44	-7,103.12	7,062.15	0.00	0.00	0.00
13,700.00	90.13	272.45	6,880.35	-802.17	-7,203.03	7,162.15	0.00	0.00	0.00
13,800.00	90.13	272.45	6,880.12	-797.91	-7,302.94	7,262.15	0.00	0.00	0.00
13,900.00	90.13	272.45	6,879.88	-793.64	-7,402.84	7,362.15	0.00	0.00	0.00
14,000.00	90.13	272.45	6,879.65	-789.37	-7,502.75	7,462.15	0.00	0.00	0.00
14,100.00	90.13	272.45	6,879.42	-785.11	-7,602.66	7,562.15	0.00	0.00	0.00
14,200.00	90.13	272.45	6,879.19	-780.84	-7,702.57	7,662.15	0.00	0.00	0.00
14,300.00	90.13	272.45	6,878.96	-776.57	-7,802.48	7,762.15	0.00	0.00	0.00
14,400.00	90.13	272.45	6,878.73	-772.31	-7,902.39	7,862.15	0.00	0.00	0.00
14,500.00	90.13	272.45	6,878.50	-768.04	-8,002.30	7,962.15	0.00	0.00	0.00
14,600.00	90.13	272.45	6,878.26	-763.77	-8,102.21	8,062.15	0.00	0.00	0.00
14,700.00	90.13	272.45	6,878.03	-759.51	-8,202.11	8,162.15	0.00	0.00	0.00
14,800.00	90.13	272.45	6,877.80	-755.24	-8,302.02	8,262.15	0.00	0.00	0.00
14,900.00	90.13	272.45	6,877.57	-750.97	-8,401.93	8,362.15	0.00	0.00	0.00
15,000.00	90.13	272.45	6,877.34	-746.71	-8,501.84	8,462.15	0.00	0.00	0.00
15,100.00	90.13	272.45	6,877.11	-742.44	-8,601.75	8,562.15	0.00	0.00	0.00
15,200.00	90.13	272.45	6,876.87	-738.18	-8,701.66	8,662.15	0.00	0.00	0.00
15,300.00	90.13	272.45	6,876.64	-733.91	-8,801.57	8,762.15	0.00	0.00	0.00
15,400.00	90.13	272.45	6,876.41	-729.64	-8,901.47	8,862.15	0.00	0.00	0.00
15,500.00	90.13	272.45	6,876.18	-725.38	-9,001.38	8,962.15	0.00	0.00	0.00
15,600.00	90.13	272.45	6,875.95	-721.11	-9,101.29	9,062.15	0.00	0.00	0.00
15,700.00	90.13	272.45	6,875.72	-716.84	-9,201.20	9,162.15	0.00	0.00	0.00
15,800.00	90.13	272.45	6,875.49	-712.58	-9,301.11	9,262.15	0.00	0.00	0.00
15,900.00	90.13	272.45	6,875.25	-708.31	-9,401.02	9,362.15	0.00	0.00	0.00
16,000.00	90.13	272.45	6,875.02	-704.04	-9,500.93	9,462.15	0.00	0.00	0.00
16,100.00	90.13	272.45	6,874.79	-699.78	-9,600.84	9,562.15	0.00	0.00	0.00
16,200.00	90.13	272.45	6,874.56	-695.51	-9,700.74	9,662.15	0.00	0.00	0.00
16,300.00	90.13	272.45	6,874.33	-691.24	-9,800.65	9,762.14	0.00	0.00	0.00
16,400.00	90.13	272.45	6,874.10	-686.98	-9,900.56	9,862.14	0.00	0.00	0.00
16,500.00	90.13	272.45	6,873.87	-682.71	-10,000.47	9,962.14	0.00	0.00	0.00
16,600.00	90.13	272.45	6,873.63	-678.44	-10,100.38	10,062.14	0.00	0.00	0.00
16,700.00	90.13	272.45	6,873.40	-674.18	-10,200.29	10,162.14	0.00	0.00	0.00

SDT Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,800.00	90.13	272.45	6,873.17	-669.91	-10,300.20	10,262.14	0.00	0.00	0.00
16,900.00	90.13	272.45	6,872.94	-665.64	-10,400.10	10,362.14	0.00	0.00	0.00
17,000.00	90.13	272.45	6,872.71	-661.38	-10,500.01	10,462.14	0.00	0.00	0.00
17,100.00	90.13	272.45	6,872.48	-657.11	-10,599.92	10,562.14	0.00	0.00	0.00
17,133.01	90.13	272.45	6,872.40	-655.70	-10,632.90	10,595.15	0.00	0.00	0.00
FPP @ 330' FWL									
17,200.00	90.13	272.45	6,872.25	-652.84	-10,699.83	10,662.14	0.00	0.00	0.00
17,304.21	90.13	272.45	6,872.00	-648.40	-10,803.94	10,766.35	0.00	0.00	0.00
TD at 17304.21 @ 159' FEL									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Rosa 614H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,140,917.75	2,838,211.88	36.882844	-107.439701
Rosa 614H PBHL - plan misses target center by 0.02usft at 17304.21usft MD (6872.00 TVD, -648.40 N, -10803.94 E) - Point	0.00	0.00	6,872.00	-648.38	-10,803.94	2,140,224.82	2,827,410.70	36.881057	-107.476642
Rosa 614H FPP - plan hits target center - Point	0.00	0.00	6,872.40	-655.70	-10,632.90	2,140,218.21	2,827,581.77	36.881037	-107.476057
Rosa 614H POE - plan hits target center - Point	0.00	0.00	6,895.00	-1,072.24	-878.99	2,139,841.90	2,837,337.31	36.879899	-107.442707

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,387.85	2,368.00	OJO ALAMO				
2,517.40	2,495.00	KIRTLAND				
2,883.61	2,854.00	FRUITLAND				
3,009.08	2,977.00	TOP OF COALS				
3,170.25	3,135.00	BASE OF COALS				
3,363.05	3,324.00	PICTURED CLIFFS				
3,466.08	3,425.00	LEWIS				
4,575.93	4,513.00	CHACRA				
5,095.15	5,022.00	UPPER CLIFF HOUSE				
5,391.99	5,313.00	CLIFF HOUSE				
5,440.95	5,361.00	MENEFEE				
5,684.75	5,600.00	POINT LOOKOUT				
6,170.31	6,076.00	MANCOS				
6,867.13	6,711.00	TOP BLACK				

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 614H
Company:	Logos Operating LLC	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site:	Rosa Unit 10	North Reference:	True
Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,000.00	1,000.00	0.00	0.00	Start Build 2.00	
1,569.36	1,565.62	-54.82	-13.24	Start 4823.66 hold at 1569.36 MD	
6,393.02	6,294.33	-980.57	-236.90	Start DLS 9.00 TFO 79.05	
7,370.19	6,895.00	-1,072.24	-878.99	Start 9762.82 hold at 7370.19 MD	
17,133.01	6,872.40	-655.70	-10,632.90	FPP @ 330' FWL	
17,304.21	6,872.00	-648.40	-10,803.94	TD at 17304.21 @ 159' FEL	

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 10

Rosa Unit 614H

OH

Plan #1

Anticollision Report

22 September, 2023

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCSWA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Max. Cent. Dist. of 100,000.00usft or Max. SF of 10	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	9/22/2023		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,304.21	Plan #1 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 10						
(O) Rosa Unit 100 - OH - OH	15,593.25	6,946.29	228.23	-47.10	0.829	Level 3, CC
(O) Rosa Unit 100 - OH - OH	15,600.00	6,946.27	228.33	-47.39	0.828	Level 3, ES, SF
(O) Rosa Unit 100B - OH - OH	14,236.09	6,938.08	293.32	152.52	2.083	CC, ES, SF
(O) Rosa Unit 100C - OH - OH	16,576.92	6,130.00	963.01	842.41	7.985	CC, ES, SF
(O) Rosa Unit 100E - OH - OH	13,034.00	6,834.22	673.95	541.36	5.083	CC, ES, SF
(O) Rosa Unit 140 - OH - OH	4,100.00	3,555.00	3,929.56	3,844.81	46.366	SF
(O) Rosa Unit 140 - OH - OH	10,532.27	3,555.00	3,445.42	3,388.73	60.774	CC, ES
(O) Rosa Unit 170 - OH - OH	15,624.00	6,175.00	759.56	663.55	7.912	CC
(O) Rosa Unit 170 - OH - OH	15,700.00	6,175.00	763.26	663.47	7.648	ES
(O) Rosa Unit 170 - OH - OH	16,100.00	6,175.00	895.93	755.41	6.376	SF
(O) Rosa Unit 18A - OH - OH	6,063.56	5,955.00	1,030.81	864.08	6.182	ES, SF
(O) Rosa Unit 18A - OH - OH	7,737.50	5,955.00	994.95	926.25	14.484	CC
(O) Rosa Unit 18B - OH - OH	8,000.00	5,985.00	1,157.71	1,027.07	8.862	SF
(O) Rosa Unit 18B - OH - OH	8,793.58	5,985.00	842.92	790.60	16.110	CC, ES
(O) Rosa Unit 18C - OH - OH	8,900.00	7,130.09	2,207.26	2,140.84	33.235	CC
(O) Rosa Unit 18C - OH - OH	8,904.45	7,130.09	2,207.26	2,140.83	33.225	ES
(O) Rosa Unit 18C - OH - OH	9,100.00	7,130.24	2,216.14	2,148.99	33.002	SF
(O) Rosa Unit 201A - OH - OH	3,037.28	4,722.70	1,099.00	1,044.98	20.348	CC, ES, SF
(O) Rosa Unit 260 - OH - OH	16,165.09	3,219.00	3,690.01	3,604.16	42.983	CC
(O) Rosa Unit 260 - OH - OH	16,200.00	3,219.00	3,690.17	3,604.04	42.845	ES
(O) Rosa Unit 260 - OH - OH	17,304.21	3,219.00	3,861.83	3,758.33	37.314	SF
(O) Rosa Unit 260A - OH - OH	13,761.34	3,554.00	3,752.14	3,689.71	60.106	CC
(O) Rosa Unit 260A - OH - OH	13,800.00	3,554.00	3,752.34	3,689.65	59.863	ES
(O) Rosa Unit 260A - OH - OH	14,800.00	3,492.00	3,888.62	3,820.50	57.091	SF
(O) Rosa Unit 79 - OH - OH	10,448.72	6,826.73	925.90	803.54	7.567	CC, ES, SF
(O) Rosa Unit 79C - OH - OH	410.00	328.00	5,187.36	4,956.40	22.460	CC
(O) Rosa Unit 79C - OH - OH	500.00	370.00	5,187.59	4,926.91	19.901	ES
(O) Rosa Unit 79C - OH - OH	600.00	370.00	5,189.47	4,928.54	19.888	SF
(O) Rosa Unit 98 - OH - OH	1,000.00	950.16	355.89	332.33	15.105	CC
(O) Rosa Unit 98 - OH - OH	1,200.00	1,150.06	358.34	329.33	12.352	ES
(O) Rosa Unit 98 - OH - OH	2,800.00	2,722.53	537.82	469.85	7.913	SF
Rosa Unit 612H - OH - Plan #1	1,021.60	1,021.65	15.20	8.09	2.139	CC
Rosa Unit 612H - OH - Plan #1	1,100.00	1,100.13	15.49	7.84	2.025	ES, SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100 - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 90-A027Ua_INC-ONLY														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Rule Assigned:		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	70.00	70.00	0.00	1.29	-95.95	-949.42	-9,104.29	9,153.66						
100.00	100.00	169.90	169.90	0.25	3.18	-95.95	-949.25	-9,104.29	9,153.64	9,150.20	3.43	2,665.239			
200.00	200.00	270.01	270.00	0.61	5.09	-95.95	-949.42	-9,104.29	9,153.66	9,147.96	5.70	1,606.588			
249.99	249.99	320.00	319.99	0.79	6.04	-95.95	-949.18	-9,104.29	9,153.63	9,146.80	6.83	1,340.504			
300.00	300.00	366.13	366.12	0.97	6.92	-95.95	-949.27	-9,104.29	9,153.64	9,145.76	7.89	1,160.764			
400.00	400.00	470.02	470.00	1.33	8.90	-95.95	-949.42	-9,104.29	9,153.66	9,143.43	10.22	895.457			
500.00	500.00	570.02	570.00	1.68	10.80	-95.95	-949.42	-9,104.29	9,153.66	9,141.17	12.48	733.184			
573.06	573.06	643.08	643.05	1.95	12.19	-95.95	-948.87	-9,104.29	9,153.60	9,139.46	14.14	647.459			
600.00	600.00	669.58	669.55	2.04	12.70	-95.95	-948.88	-9,104.29	9,153.60	9,138.86	14.74	621.052			
700.00	700.00	767.94	767.92	2.40	14.57	-95.95	-949.01	-9,104.29	9,153.61	9,136.64	16.97	539.394			
800.00	800.00	866.31	866.28	2.76	16.44	-95.95	-949.31	-9,104.29	9,153.65	9,134.44	19.20	476.714			
900.00	900.00	970.05	970.00	3.12	18.42	-95.95	-949.42	-9,104.29	9,153.66	9,132.12	21.54	425.052			
1,000.00	1,000.00	1,070.05	1,070.00	3.48	20.32	-95.95	-949.42	-9,104.29	9,153.66	9,129.86	23.80	384.641			
1,100.00	1,099.98	1,169.35	1,169.30	3.82	22.21	70.49	-948.61	-9,104.29	9,152.99	9,126.96	26.03	351.643			
1,200.00	1,199.84	1,266.81	1,266.75	4.15	24.07	70.55	-948.80	-9,104.29	9,151.26	9,123.05	28.21	324.373			
1,300.00	1,299.45	1,364.08	1,364.02	4.48	25.92	70.65	-949.25	-9,104.29	9,148.40	9,118.01	30.40	300.955			
1,400.00	1,398.70	1,468.78	1,468.70	4.82	27.82	70.80	-949.42	-9,104.29	9,144.37	9,111.73	32.64	280.138			
1,500.00	1,497.47	1,564.28	1,564.20	5.17	29.53	70.99	-949.35	-9,104.29	9,139.19	9,104.49	34.70	263.381			
1,569.36	1,565.62	1,635.71	1,635.62	5.43	30.87	71.15	-949.42	-9,104.29	9,134.95	9,098.66	36.29	251.718			
1,600.00	1,595.66	1,665.74	1,665.66	5.54	31.44	71.18	-949.42	-9,104.29	9,132.97	9,095.99	36.97	247.006			
1,700.00	1,693.69	1,763.77	1,763.69	5.92	33.31	71.30	-949.42	-9,104.29	9,126.50	9,087.29	39.21	232.731			
1,800.00	1,791.72	1,861.39	1,861.31	6.30	35.16	71.42	-949.18	-9,104.29	9,120.06	9,078.60	41.46	219.996			
1,900.00	1,889.75	1,958.66	1,958.58	6.70	37.02	71.53	-949.27	-9,104.29	9,113.68	9,069.98	43.70	208.567			
2,000.00	1,987.78	2,057.90	2,057.78	7.10	38.93	71.65	-949.42	-9,104.29	9,107.34	9,061.34	46.00	197.974			
2,100.00	2,085.81	2,155.93	2,155.81	7.50	40.91	71.76	-949.42	-9,104.29	9,101.03	9,052.64	48.39	188.085			
2,200.00	2,183.85	2,252.62	2,252.50	7.91	42.87	71.88	-948.67	-9,104.29	9,094.70	9,043.95	50.75	179.205			
2,300.00	2,281.88	2,347.19	2,347.06	8.32	44.78	71.99	-949.06	-9,104.29	9,088.50	9,035.43	53.07	171.245			
2,400.00	2,379.91	2,450.06	2,449.91	8.74	46.80	72.11	-949.42	-9,104.29	9,082.33	9,026.83	55.50	163.643			
2,500.00	2,477.94	2,548.10	2,547.94	9.16	48.67	72.23	-949.42	-9,104.29	9,076.18	9,018.40	57.78	157.077			
2,600.00	2,575.97	2,646.13	2,645.97	9.58	50.53	72.34	-949.42	-9,104.29	9,070.06	9,010.00	60.06	151.005			
2,700.00	2,674.00	2,742.49	2,742.33	10.00	52.37	72.46	-948.71	-9,104.29	9,063.93	9,001.61	62.32	145.445			
2,800.00	2,772.03	2,838.93	2,838.77	10.43	54.21	72.58	-949.07	-9,104.29	9,057.92	8,993.34	64.58	140.269			
2,900.00	2,870.07	2,940.25	2,940.07	10.86	56.09	72.69	-949.42	-9,104.29	9,051.95	8,985.07	66.88	135.350			
3,000.00	2,968.10	3,038.28	3,038.10	11.28	57.83	72.81	-949.42	-9,104.29	9,045.98	8,976.94	69.05	131.007			
3,100.00	3,066.13	3,134.75	3,134.56	11.71	59.55	72.93	-949.21	-9,104.29	9,040.05	8,968.86	71.19	126.977			
3,200.00	3,164.16	3,234.35	3,234.16	12.14	61.33	73.05	-949.42	-9,104.29	9,034.18	8,960.78	73.40	123.085			
3,300.00	3,262.19	3,332.38	3,332.19	12.58	63.08	73.16	-949.42	-9,104.29	9,028.34	8,952.76	75.58	119.458			
3,400.00	3,360.22	3,430.42	3,430.22	13.01	64.83	73.28	-949.42	-9,104.29	9,022.53	8,944.78	77.76	116.033			
3,500.00	3,458.25	3,528.04	3,527.85	13.44	66.58	73.40	-949.18	-9,104.29	9,016.76	8,936.82	79.93	112.805			
3,600.00	3,556.29	3,625.65	3,625.46	13.88	68.32	73.52	-949.30	-9,104.29	9,011.04	8,928.93	82.11	109.747			
3,700.00	3,654.32	3,724.52	3,724.32	14.31	70.13	73.64	-949.42	-9,104.29	9,005.36	8,921.01	84.35	106.765			
3,800.00	3,752.35	3,822.55	3,822.35	14.75	72.00	73.76	-949.42	-9,104.29	8,999.72	8,913.07	86.65	103.868			
3,900.00	3,850.38	3,920.58	3,920.38	15.18	73.86	73.87	-949.42	-9,104.29	8,994.11	8,905.17	88.94	101.121			
4,000.00	3,948.41	4,017.97	4,017.76	15.62	75.72	73.99	-948.95	-9,104.29	8,988.52	8,897.29	91.23	98.525			
4,100.00	4,046.44	4,115.32	4,115.11	16.05	77.57	74.11	-949.18	-9,104.29	8,983.01	8,889.49	93.52	96.056			
4,200.00	4,144.48	4,214.71	4,214.48	16.49	79.48	74.23	-949.42	-9,104.29	8,977.54	8,881.67	95.87	93.647			
4,300.00	4,242.51	4,312.74	4,312.51	16.93	81.41	74.35	-949.42	-9,104.29	8,972.09	8,873.87	98.22	91.343			
4,400.00	4,340.54	4,410.77	4,410.54	17.37	83.33	74.47	-949.42	-9,104.29	8,966.68	8,866.10	100.58	89.147			
4,500.00	4,438.57	4,508.12	4,507.88	17.81	85.24	74.59	-948.68	-9,104.29	8,961.29	8,858.36	102.93	87.062			
4,600.00	4,536.60	4,605.40	4,605.16	18.25	87.15	74.71	-949.00	-9,104.29	8,955.98	8,850.71	105.27	85.072			
4,700.00	4,634.63	4,704.91	4,704.63	18.68	89.09	74.83	-949.42	-9,104.29	8,950.71	8,843.06	107.65	83.147			
4,800.00	4,732.66	4,802.94	4,802.66	19.12	90.95	74.95	-949.42	-9,104.29	8,945.47	8,835.51	109.95	81.357			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100 - OH - OH												Offset Site Error:	0.00 usft	
Survey Program:		90-A027Ua_INC-ONLY				Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
4,900.00	4,830.70	4,900.97	4,900.70	19.56	92.82	75.07	-949.42	-9,104.29	8,940.26	8,828.01	112.26	79.641		
5,000.00	4,928.73	4,998.58	4,998.29	20.00	94.68	75.19	-948.66	-9,104.29	8,935.08	8,820.53	114.55	77.999		
5,100.00	5,026.76	5,096.10	5,095.81	20.44	96.54	75.31	-948.97	-9,104.29	8,929.97	8,813.12	116.85	76.423		
5,200.00	5,124.79	5,195.10	5,194.79	20.88	98.39	75.43	-949.42	-9,104.29	8,924.90	8,805.75	119.14	74.908		
5,300.00	5,222.82	5,293.13	5,292.82	21.32	100.09	75.55	-949.42	-9,104.29	8,919.86	8,798.58	121.28	73.548		
5,400.00	5,320.85	5,391.16	5,390.85	21.77	101.79	75.67	-949.42	-9,104.29	8,914.86	8,791.44	123.41	72.235		
5,500.00	5,418.88	5,489.04	5,488.73	22.21	103.48	75.79	-948.91	-9,104.29	8,909.89	8,784.34	125.55	70.969		
5,600.00	5,516.92	5,586.89	5,586.58	22.65	105.17	75.91	-949.10	-9,104.29	8,904.98	8,777.30	127.68	69.745		
5,700.00	5,614.95	5,685.26	5,684.95	23.09	106.87	76.03	-949.42	-9,104.29	8,900.11	8,770.28	129.82	68.556		
5,800.00	5,712.98	5,783.29	5,782.98	23.53	108.58	76.15	-949.42	-9,104.29	8,895.27	8,763.31	131.96	67.407		
5,900.00	5,811.01	5,881.32	5,881.01	23.97	110.28	76.27	-949.42	-9,104.29	8,890.48	8,756.37	134.11	66.294		
6,000.00	5,909.04	5,979.35	5,979.04	24.41	111.98	76.40	-949.42	-9,104.29	8,885.72	8,749.47	136.25	65.216		
6,100.00	6,007.07	6,077.39	6,077.07	24.85	113.68	76.52	-949.42	-9,104.29	8,881.01	8,742.62	138.39	64.172		
6,200.00	6,105.10	6,175.42	6,175.10	25.30	115.38	76.64	-949.42	-9,104.29	8,876.34	8,735.81	140.54	63.160		
6,300.00	6,203.14	6,273.45	6,273.14	25.74	117.14	76.76	-949.42	-9,104.29	8,871.71	8,728.98	142.74	62.154		
6,393.02	6,294.33	6,364.64	6,364.33	26.15	118.78	76.87	-949.42	-9,104.29	8,867.45	8,722.66	144.78	61.246		
6,400.00	6,301.17	6,371.48	6,371.17	26.18	118.90	73.85	-949.42	-9,104.29	8,867.09	8,722.15	144.94	61.179		
6,450.00	6,350.01	6,420.33	6,420.01	26.40	119.78	55.06	-949.42	-9,104.29	8,862.31	8,716.27	146.03	60.687		
6,500.00	6,398.37	6,468.70	6,468.39	26.63	120.65	41.88	-949.15	-9,104.29	8,853.65	8,706.53	147.12	60.180		
6,550.00	6,445.94	6,516.30	6,515.98	26.86	121.50	33.04	-949.18	-9,104.29	8,841.17	8,692.98	148.19	59.662		
6,600.00	6,492.42	6,562.82	6,562.50	27.08	122.33	27.00	-949.23	-9,104.29	8,824.94	8,675.71	149.23	59.136		
6,650.00	6,537.54	6,607.98	6,607.66	27.30	123.15	22.71	-949.29	-9,104.29	8,805.07	8,654.82	150.24	58.606		
6,700.00	6,581.01	6,651.49	6,651.18	27.52	123.93	19.55	-949.37	-9,104.29	8,781.66	8,630.45	151.21	58.075		
6,750.00	6,622.57	6,692.90	6,692.57	27.74	124.70	17.14	-949.42	-9,104.29	8,754.87	8,602.71	152.16	57.536		
6,800.00	6,661.96	6,732.28	6,731.96	27.96	125.47	15.25	-949.42	-9,104.29	8,724.86	8,571.76	153.10	56.988		
6,850.00	6,698.93	6,769.25	6,768.93	28.17	126.19	13.71	-949.42	-9,104.29	8,691.81	8,537.83	153.98	56.448		
6,900.00	6,733.26	6,803.58	6,803.26	28.39	126.86	12.44	-949.42	-9,104.29	8,655.93	8,501.13	154.79	55.919		
6,950.00	6,764.73	6,835.06	6,834.73	28.60	127.48	11.33	-949.42	-9,104.29	8,617.43	8,461.89	155.54	55.405		
7,000.00	6,793.16	6,863.49	6,863.16	28.82	128.03	10.33	-949.42	-9,104.29	8,576.55	8,420.35	156.20	54.906		
7,050.00	6,818.37	6,888.70	6,888.37	29.04	128.53	9.37	-949.42	-9,104.29	8,533.55	8,376.76	156.79	54.426		
7,100.00	6,840.20	6,910.52	6,910.20	29.27	128.95	8.38	-949.42	-9,104.29	8,488.69	8,331.39	157.30	53.965		
7,150.00	6,858.51	6,928.84	6,928.51	29.50	129.31	7.21	-949.42	-9,104.29	8,442.24	8,284.51	157.72	53.526		
7,200.00	6,873.20	6,943.53	6,943.20	29.74	129.60	5.62	-949.42	-9,104.29	8,394.48	8,236.43	158.06	53.110		
7,250.00	6,884.18	6,954.50	6,954.18	30.00	129.81	2.96	-949.42	-9,104.29	8,345.72	8,187.42	158.30	52.719		
7,300.00	6,891.37	6,961.70	6,961.37	30.26	129.95	-3.33	-949.42	-9,104.29	8,296.26	8,137.79	158.46	52.354		
7,350.00	6,894.73	6,965.06	6,964.73	30.54	130.02	-36.81	-949.42	-9,104.29	8,246.39	8,087.85	158.54	52.016		
7,370.19	6,895.00	6,965.32	6,965.00	30.65	130.03	-94.77	-949.42	-9,104.29	8,226.21	8,067.67	158.54	51.887		
7,400.00	6,894.93	6,965.26	6,964.93	30.83	130.02	-94.75	-949.42	-9,104.29	8,196.41	8,037.87	158.53	51.701		
7,500.00	6,894.70	6,965.02	6,964.70	31.45	130.02	-94.69	-949.42	-9,104.29	8,096.45	7,937.93	158.52	51.076		
7,600.00	6,894.47	6,964.79	6,964.47	32.15	130.02	-94.63	-949.42	-9,104.29	7,996.49	7,837.98	158.50	50.450		
7,700.00	6,894.24	6,964.56	6,964.24	32.92	130.01	-94.58	-949.42	-9,104.29	7,896.53	7,738.04	158.49	49.824		
7,800.00	6,894.00	6,964.33	6,964.00	33.75	130.01	-94.52	-949.42	-9,104.29	7,796.57	7,638.10	158.47	49.198		
7,900.00	6,893.77	6,964.10	6,963.77	34.63	130.00	-94.46	-949.42	-9,104.29	7,696.61	7,538.16	158.46	48.572		
8,000.00	6,893.54	6,963.87	6,963.54	35.57	130.00	-94.40	-949.42	-9,104.29	7,596.66	7,438.21	158.45	47.945		
8,100.00	6,893.31	6,963.64	6,963.31	36.55	129.99	-94.35	-949.42	-9,104.29	7,496.71	7,338.27	158.43	47.318		
8,200.00	6,893.08	6,963.40	6,963.08	37.58	129.99	-94.29	-949.42	-9,104.29	7,396.75	7,238.33	158.42	46.691		
8,300.00	6,892.85	6,963.17	6,962.85	38.65	129.98	-94.23	-949.42	-9,104.29	7,296.80	7,138.40	158.41	46.064		
8,400.00	6,892.62	6,962.94	6,962.62	39.76	129.98	-94.17	-949.42	-9,104.29	7,196.85	7,038.46	158.39	45.437		
8,500.00	6,892.38	6,962.71	6,962.38	40.90	129.97	-94.11	-949.42	-9,104.29	7,096.90	6,938.52	158.38	44.809		
8,600.00	6,892.15	6,962.48	6,962.15	42.07	129.97	-94.06	-949.42	-9,104.29	6,996.96	6,838.59	158.37	44.182		
8,700.00	6,891.92	6,962.25	6,961.92	43.27	129.97	-94.00	-949.42	-9,104.29	6,897.01	6,738.65	158.36	43.554		
8,800.00	6,891.69	6,962.01	6,961.69	44.50	129.96	-93.94	-949.42	-9,104.29	6,797.07	6,638.72	158.34	42.926		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		90-A027Ua_INC-ONLY					Rule Assigned:		Offset Well Error:		0.00 usft			
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,900.00	6,891.46	6,961.78	6,961.46	45.75	129.96	-93.88	-949.42	-9,104.29	6,697.12	6,538.79	158.33	42.298		
9,000.00	6,891.23	6,961.55	6,961.23	47.02	129.95	-93.83	-949.42	-9,104.29	6,597.18	6,438.86	158.32	41.669		
9,100.00	6,890.99	6,961.32	6,960.99	48.31	129.95	-93.77	-949.42	-9,104.29	6,497.24	6,338.93	158.31	41.041		
9,200.00	6,890.76	6,961.09	6,960.76	49.62	129.94	-93.71	-949.42	-9,104.29	6,397.31	6,239.01	158.30	40.412		
9,300.00	6,890.53	6,960.86	6,960.53	50.94	129.94	-93.65	-949.42	-9,104.29	6,297.37	6,139.08	158.29	39.784		
9,400.00	6,890.30	6,960.63	6,960.30	52.29	129.93	-93.59	-949.42	-9,104.29	6,197.44	6,039.16	158.28	39.155		
9,500.00	6,890.07	6,960.39	6,960.07	53.64	129.93	-93.54	-949.42	-9,104.29	6,097.51	5,939.24	158.27	38.526		
9,600.00	6,889.84	6,960.16	6,959.84	55.02	129.92	-93.48	-949.42	-9,104.29	5,997.58	5,839.32	158.26	37.897		
9,700.00	6,889.61	6,959.93	6,959.61	56.40	129.92	-93.42	-949.42	-9,104.29	5,897.65	5,739.40	158.25	37.268		
9,800.00	6,889.37	6,959.70	6,959.37	57.79	129.92	-93.36	-949.42	-9,104.29	5,797.73	5,639.49	158.24	36.639		
9,900.00	6,889.14	6,959.47	6,959.14	59.20	129.91	-93.30	-949.42	-9,104.29	5,697.81	5,539.58	158.23	36.010		
10,000.00	6,888.91	6,959.24	6,958.91	60.61	129.91	-93.25	-949.42	-9,104.29	5,597.89	5,439.67	158.22	35.381		
10,100.00	6,888.68	6,959.01	6,958.68	62.04	129.90	-93.19	-949.42	-9,104.29	5,497.97	5,339.77	158.21	34.752		
10,200.00	6,888.45	6,958.77	6,958.45	63.47	129.90	-93.13	-949.42	-9,104.29	5,398.06	5,239.87	158.20	34.123		
10,300.00	6,888.22	6,958.54	6,958.22	64.91	129.89	-93.07	-949.42	-9,104.29	5,298.15	5,139.97	158.18	33.493		
10,400.00	6,887.99	6,958.31	6,957.99	66.36	129.89	-93.02	-949.42	-9,104.29	5,198.25	5,040.08	158.17	32.864		
10,500.00	6,887.75	6,958.08	6,957.75	67.82	129.88	-92.96	-949.42	-9,104.29	5,098.35	4,940.19	158.16	32.235		
10,600.00	6,887.52	6,957.85	6,957.52	69.28	129.88	-92.90	-949.42	-9,104.29	4,998.45	4,840.30	158.15	31.605		
10,700.00	6,887.29	6,957.62	6,957.29	70.75	129.88	-92.84	-949.42	-9,104.29	4,898.56	4,740.42	158.14	30.976		
10,800.00	6,887.06	6,957.39	6,957.06	72.22	129.87	-92.78	-949.42	-9,104.29	4,798.67	4,640.54	158.13	30.347		
10,900.00	6,886.83	6,957.15	6,956.83	73.70	129.87	-92.73	-949.42	-9,104.29	4,698.78	4,540.67	158.12	29.717		
11,000.00	6,886.60	6,956.92	6,956.60	75.19	129.86	-92.67	-949.42	-9,104.29	4,598.90	4,440.80	158.10	29.088		
11,100.00	6,886.37	6,956.69	6,956.37	76.68	129.86	-92.61	-949.42	-9,104.29	4,499.03	4,340.94	158.09	28.458		
11,200.00	6,886.13	6,956.46	6,956.13	78.17	129.85	-92.55	-949.42	-9,104.29	4,399.16	4,241.08	158.08	27.829		
11,300.00	6,885.90	6,956.23	6,955.90	79.67	129.85	-92.49	-949.42	-9,104.29	4,299.30	4,141.24	158.06	27.200		
11,400.00	6,885.67	6,956.00	6,955.67	81.17	129.84	-92.44	-949.42	-9,104.29	4,199.45	4,041.39	158.05	26.570		
11,500.00	6,885.44	6,955.77	6,955.44	82.68	129.84	-92.38	-949.42	-9,104.29	4,099.60	3,941.56	158.04	25.941		
11,600.00	6,885.21	6,955.53	6,955.21	84.19	129.83	-92.32	-949.42	-9,104.29	3,999.76	3,841.73	158.02	25.311		
11,700.00	6,884.98	6,955.30	6,954.98	85.71	129.83	-92.26	-949.42	-9,104.29	3,899.92	3,741.92	158.01	24.682		
11,800.00	6,884.74	6,955.07	6,954.74	87.22	129.83	-92.20	-949.42	-9,104.29	3,800.10	3,642.11	157.99	24.052		
11,900.00	6,884.51	6,954.84	6,954.51	88.74	129.82	-92.15	-949.42	-9,104.29	3,700.29	3,542.31	157.98	23.423		
12,000.00	6,884.28	6,954.61	6,954.28	90.27	129.82	-92.09	-949.42	-9,104.29	3,600.48	3,442.52	157.96	22.793		
12,100.00	6,884.05	6,954.38	6,954.05	91.79	129.81	-92.03	-949.42	-9,104.29	3,500.69	3,342.74	157.95	22.164		
12,200.00	6,883.82	6,954.14	6,953.82	93.32	129.81	-91.97	-949.42	-9,104.29	3,400.91	3,242.98	157.93	21.534		
12,300.00	6,883.59	6,953.91	6,953.59	94.85	129.80	-91.91	-949.42	-9,104.29	3,301.14	3,143.23	157.91	20.905		
12,400.00	6,883.36	6,953.68	6,953.36	96.38	129.80	-91.86	-949.42	-9,104.29	3,201.39	3,043.49	157.90	20.275		
12,500.00	6,883.12	6,953.45	6,953.12	97.92	129.79	-91.80	-949.42	-9,104.29	3,101.65	2,943.77	157.88	19.645		
12,600.00	6,882.89	6,953.22	6,952.89	99.46	129.79	-91.74	-949.42	-9,104.29	3,001.93	2,844.06	157.87	19.015		
12,700.00	6,882.66	6,952.99	6,952.66	101.00	129.78	-91.68	-949.42	-9,104.29	2,902.23	2,744.37	157.86	18.385		
12,800.00	6,882.43	6,952.76	6,952.43	102.54	129.78	-91.62	-949.42	-9,104.29	2,802.55	2,644.70	157.85	17.755		
12,900.00	6,882.20	6,952.52	6,952.20	104.08	129.78	-91.56	-949.42	-9,104.29	2,702.90	2,545.05	157.84	17.124		
13,000.00	6,881.97	6,952.29	6,951.97	105.63	129.77	-91.51	-949.42	-9,104.29	2,603.27	2,445.43	157.84	16.493		
13,100.00	6,881.74	6,952.06	6,951.74	107.18	129.77	-91.45	-949.42	-9,104.29	2,503.67	2,345.82	157.84	15.862		
13,200.00	6,881.50	6,951.83	6,951.50	108.73	129.76	-91.39	-949.42	-9,104.29	2,404.10	2,246.25	157.85	15.230		
13,300.00	6,881.27	6,951.60	6,951.27	110.28	129.76	-91.33	-949.42	-9,104.29	2,304.57	2,146.70	157.87	14.598		
13,400.00	6,881.04	6,951.37	6,951.04	111.83	129.75	-91.27	-949.42	-9,104.29	2,205.09	2,047.19	157.90	13.965		
13,500.00	6,880.81	6,951.14	6,950.81	113.38	129.75	-91.22	-949.42	-9,104.29	2,105.65	1,947.70	157.95	13.331		
13,600.00	6,880.58	6,950.90	6,950.58	114.94	129.74	-91.16	-949.42	-9,104.29	2,006.27	1,848.25	158.01	12.697		
13,700.00	6,880.35	6,950.67	6,950.35	116.49	129.74	-91.10	-949.42	-9,104.29	1,906.95	1,748.84	158.11	12.061		
13,800.00	6,880.12	6,950.44	6,950.12	118.05	129.73	-91.04	-949.42	-9,104.29	1,807.71	1,649.48	158.23	11.424		
13,900.00	6,879.88	6,950.21	6,949.88	119.61	129.73	-90.98	-949.42	-9,104.29	1,708.56	1,550.15	158.41	10.786		
14,000.00	6,879.65	6,949.98	6,949.65	121.17	129.73	-90.93	-949.42	-9,104.29	1,609.51	1,450.87	158.64	10.146		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100 - OH - OH											Offset Site Error: 0.00 usft		
Survey Program: 90-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft		
Reference	Offset	Rule Assigned:											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,100.00	6,879.42	6,949.75	6,949.42	122.73	129.72	-90.87	-949.42	-9,104.29	1,510.59	1,351.63	158.95	9.503	
14,200.00	6,879.19	6,949.52	6,949.19	124.29	129.72	-90.81	-949.42	-9,104.29	1,411.82	1,252.44	159.38	8.858	
14,300.00	6,878.96	6,949.28	6,948.96	125.86	129.71	-90.75	-949.42	-9,104.29	1,313.23	1,153.29	159.94	8.211	
14,400.00	6,878.73	6,949.05	6,948.73	127.42	129.71	-90.69	-949.42	-9,104.29	1,214.88	1,054.18	160.70	7.560	
14,500.00	6,878.50	6,948.82	6,948.50	128.99	129.70	-90.64	-949.42	-9,104.29	1,116.82	955.09	161.73	6.905	
14,600.00	6,878.26	6,948.59	6,948.26	130.55	129.70	-90.58	-949.42	-9,104.29	1,019.13	856.00	163.13	6.247	
14,700.00	6,878.03	6,948.36	6,948.03	132.12	129.69	-90.52	-949.42	-9,104.29	921.94	756.90	165.04	5.586	
14,800.00	6,877.80	6,948.13	6,947.80	133.69	129.69	-90.46	-949.42	-9,104.29	825.43	657.74	167.69	4.922	
14,900.00	6,877.57	6,947.89	6,947.57	135.26	129.68	-90.40	-949.42	-9,104.29	729.85	558.47	171.38	4.259	
15,000.00	6,877.34	6,947.66	6,947.34	136.83	129.68	-90.34	-949.42	-9,104.29	635.64	459.05	176.58	3.600	
15,100.00	6,877.11	6,947.43	6,947.11	138.40	129.68	-90.29	-949.42	-9,104.29	543.49	359.47	184.02	2.953	
15,200.00	6,876.87	6,947.20	6,946.87	139.97	129.67	-90.23	-949.42	-9,104.29	454.68	259.87	194.81	2.334	
15,300.00	6,876.64	6,946.97	6,946.64	141.54	129.67	-90.17	-949.42	-9,104.29	371.60	161.05	210.55	1.765	
15,400.00	6,876.41	6,946.74	6,946.41	143.12	129.66	-90.11	-949.42	-9,104.29	299.05	66.27	232.79	1.285	Level 3
15,500.00	6,876.18	6,946.51	6,946.18	144.69	129.66	-90.05	-949.42	-9,104.29	246.54	-12.69	259.24	0.951	Level 3
15,593.25	6,875.96	6,946.29	6,945.96	146.16	129.65	-90.00	-949.42	-9,104.29	228.23	-47.10	275.33	0.829	Level 3, CC
15,600.00	6,875.95	6,946.27	6,945.95	146.26	129.65	-90.00	-949.42	-9,104.29	228.33	-47.39	275.72	0.828	Level 3, ES, SF
15,700.00	6,875.72	6,946.04	6,945.72	147.84	129.65	-89.94	-949.42	-9,104.29	251.96	-16.67	268.63	0.938	Level 3
15,800.00	6,875.49	6,945.81	6,945.49	149.41	129.64	-89.88	-949.42	-9,104.29	307.95	58.43	249.52	1.234	Level 3
15,900.00	6,875.25	6,945.58	6,945.25	150.99	129.64	-89.82	-949.42	-9,104.29	382.34	150.66	231.68	1.650	
16,000.00	6,875.02	6,945.35	6,945.02	152.57	129.63	-89.76	-949.42	-9,104.29	466.40	248.24	218.16	2.138	
16,100.00	6,874.79	6,945.12	6,944.79	154.14	129.63	-89.71	-949.42	-9,104.29	555.77	347.49	208.28	2.668	
16,200.00	6,874.56	6,944.89	6,944.56	155.72	129.63	-89.65	-949.42	-9,104.29	648.25	447.26	200.99	3.225	
16,300.00	6,874.33	6,944.65	6,944.33	157.30	129.62	-89.59	-949.42	-9,104.29	742.68	547.18	195.50	3.799	
16,400.00	6,874.10	6,944.42	6,944.10	158.88	129.62	-89.53	-949.42	-9,104.29	838.41	647.14	191.27	4.383	
16,500.00	6,873.87	6,944.19	6,943.87	160.46	129.61	-89.47	-949.42	-9,104.29	935.03	747.09	187.94	4.975	
16,600.00	6,873.63	6,943.96	6,943.63	162.04	129.61	-89.41	-949.42	-9,104.29	1,032.29	847.02	185.27	5.572	
16,700.00	6,873.40	6,943.73	6,943.40	163.62	129.60	-89.36	-949.42	-9,104.29	1,130.03	946.93	183.10	6.172	
16,800.00	6,873.17	6,943.50	6,943.17	165.20	129.60	-89.30	-949.42	-9,104.29	1,228.14	1,046.83	181.31	6.774	
16,900.00	6,872.94	6,943.27	6,942.94	166.78	129.59	-89.24	-949.42	-9,104.29	1,326.53	1,146.72	179.81	7.378	
17,000.00	6,872.71	6,943.03	6,942.71	168.36	129.59	-89.18	-949.42	-9,104.29	1,425.14	1,246.60	178.54	7.982	
17,100.00	6,872.48	6,942.80	6,942.48	169.95	129.59	-89.12	-949.42	-9,104.29	1,523.93	1,346.47	177.46	8.587	
17,133.01	6,872.40	6,942.73	6,942.40	170.47	129.58	-89.11	-949.42	-9,104.29	1,556.58	1,379.44	177.14	8.787	
17,200.00	6,872.25	6,942.57	6,942.25	171.53	129.58	-89.07	-949.42	-9,104.29	1,622.87	1,446.34	176.54	9.193	
17,304.21	6,872.00	6,942.33	6,942.00	173.18	129.58	-89.01	-949.42	-9,104.29	1,726.11	1,550.40	175.70	9.824	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100B - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-NS-GYRO-MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	43.26	43.26	0.00	0.06	-97.49	-1,011.68	-7,699.42	7,765.61				
100.00	100.00	116.59	116.59	0.25	0.15	-97.48	-1,011.54	-7,699.71	7,765.99	7,765.58	0.41	N/A	
200.00	200.00	200.00	200.00	0.61	0.27	-97.48	-1,011.25	-7,700.37	7,766.71	7,765.84	0.88	8,874.496	
300.00	300.00	277.51	277.50	0.97	0.46	-97.48	-1,011.03	-7,701.18	7,767.69	7,766.26	1.43	5,438.448	
400.00	400.00	367.37	367.36	1.33	0.69	-97.48	-1,011.11	-7,702.18	7,768.80	7,766.79	2.01	3,860.570	
500.00	500.00	490.01	489.99	1.68	0.99	-97.48	-1,011.60	-7,703.47	7,769.91	7,767.24	2.67	2,908.094	
600.00	600.00	631.32	631.30	2.04	1.33	-97.48	-1,012.12	-7,704.29	7,770.53	7,767.16	3.37	2,302.862	
700.00	700.00	721.00	720.98	2.40	1.56	-97.48	-1,012.26	-7,704.73	7,771.03	7,767.07	3.96	1,963.691	
800.00	800.00	819.93	819.91	2.76	1.80	-97.48	-1,012.19	-7,705.23	7,771.53	7,766.96	4.56	1,703.102	
900.00	900.00	918.40	918.37	3.12	2.05	-97.48	-1,012.04	-7,705.76	7,772.04	7,766.87	5.17	1,502.391	
1,000.00	1,000.00	1,018.72	1,018.68	3.48	2.31	-97.48	-1,011.87	-7,706.32	7,772.57	7,766.78	5.79	1,343.322	
1,100.00	1,099.98	1,128.03	1,127.99	3.82	2.58	68.96	-1,011.63	-7,706.85	7,772.40	7,766.01	6.40	1,215.268	
1,200.00	1,199.84	1,235.79	1,235.76	4.15	2.84	69.03	-1,011.33	-7,707.27	7,770.86	7,763.88	6.99	1,111.975	
1,300.00	1,299.45	1,340.61	1,340.57	4.48	3.10	69.14	-1,011.09	-7,707.58	7,768.01	7,760.43	7.58	1,024.727	
1,400.00	1,398.70	1,443.18	1,443.15	4.82	3.33	69.31	-1,010.97	-7,707.80	7,763.86	7,755.71	8.15	952.177	
1,500.00	1,497.47	1,542.87	1,542.83	5.17	3.53	69.52	-1,011.11	-7,707.96	7,758.48	7,749.78	8.70	891.585	
1,569.36	1,565.62	1,600.00	1,599.96	5.43	3.64	69.67	-1,011.31	-7,708.04	7,754.06	7,744.99	9.07	855.353	
1,600.00	1,595.66	1,633.27	1,633.23	5.54	3.71	69.72	-1,011.45	-7,708.10	7,751.99	7,742.74	9.25	838.322	
1,700.00	1,693.69	1,711.59	1,711.56	5.92	3.88	69.82	-1,011.69	-7,708.39	7,745.45	7,735.67	9.78	791.691	
1,800.00	1,791.72	1,800.00	1,799.96	6.30	4.06	69.94	-1,011.81	-7,708.97	7,739.21	7,728.86	10.35	747.802	
1,900.00	1,889.75	1,896.90	1,896.86	6.70	4.32	70.08	-1,011.85	-7,709.69	7,733.10	7,722.10	10.99	703.408	
2,000.00	1,987.78	2,008.12	2,008.08	7.10	4.61	70.23	-1,011.83	-7,710.35	7,726.87	7,715.19	11.68	661.445	
2,100.00	2,085.81	2,086.82	2,086.78	7.50	4.82	70.34	-1,011.81	-7,710.87	7,720.74	7,708.45	12.29	628.227	
2,200.00	2,183.85	2,167.76	2,167.71	7.91	5.03	70.45	-1,011.82	-7,711.57	7,714.88	7,701.97	12.91	597.689	
2,300.00	2,281.88	2,256.16	2,256.10	8.32	5.26	70.58	-1,011.89	-7,712.50	7,709.25	7,695.70	13.55	569.119	
2,400.00	2,379.91	2,349.54	2,349.48	8.74	5.50	70.70	-1,012.16	-7,713.53	7,703.73	7,689.54	14.20	542.586	
2,500.00	2,477.94	2,450.67	2,450.60	9.16	5.76	70.84	-1,012.66	-7,714.67	7,698.30	7,683.44	14.87	517.861	
2,600.00	2,575.97	2,560.86	2,560.78	9.58	6.03	70.99	-1,013.36	-7,715.75	7,692.79	7,677.24	15.55	494.719	
2,700.00	2,674.00	2,660.51	2,660.43	10.00	6.26	71.13	-1,014.09	-7,716.61	7,687.21	7,671.01	16.21	474.309	
2,800.00	2,772.03	2,754.37	2,754.28	10.43	6.49	71.25	-1,014.82	-7,717.46	7,681.72	7,664.87	16.85	455.874	
2,900.00	2,870.07	2,850.82	2,850.72	10.86	6.71	71.38	-1,015.66	-7,718.37	7,676.32	7,658.82	17.49	438.790	
3,000.00	2,968.10	2,949.83	2,949.72	11.28	6.93	71.51	-1,016.92	-7,719.26	7,670.95	7,652.81	18.14	422.909	
3,100.00	3,066.13	3,052.77	3,052.64	11.71	7.15	71.64	-1,018.61	-7,720.13	7,665.60	7,646.82	18.79	408.041	
3,200.00	3,164.16	3,159.54	3,159.40	12.14	7.38	71.78	-1,020.24	-7,720.94	7,660.20	7,640.76	19.44	394.100	
3,300.00	3,262.19	3,250.25	3,250.10	12.58	7.58	71.90	-1,021.48	-7,721.60	7,654.79	7,634.73	20.07	381.473	
3,400.00	3,360.22	3,331.19	3,331.02	13.01	7.77	72.01	-1,022.53	-7,722.36	7,649.62	7,628.94	20.68	369.856	
3,500.00	3,458.25	3,400.00	3,399.83	13.44	7.93	72.10	-1,023.38	-7,723.16	7,644.73	7,623.46	21.27	359.376	
3,600.00	3,556.29	3,486.82	3,486.63	13.88	8.15	72.21	-1,024.53	-7,724.38	7,640.12	7,618.20	21.92	348.542	
3,700.00	3,654.32	3,562.40	3,562.19	14.31	8.34	72.31	-1,025.70	-7,725.69	7,635.86	7,613.32	22.54	338.753	
3,800.00	3,752.35	3,642.56	3,642.32	14.75	8.54	72.42	-1,027.12	-7,727.28	7,631.92	7,608.74	23.17	329.337	
3,900.00	3,850.38	3,727.29	3,727.02	15.18	8.75	72.52	-1,028.94	-7,729.11	7,628.20	7,604.39	23.82	320.273	
4,000.00	3,948.41	3,828.43	3,828.09	15.62	9.00	72.65	-1,031.53	-7,731.43	7,624.69	7,600.19	24.50	311.197	
4,100.00	4,046.44	4,026.64	4,026.23	16.05	9.48	72.90	-1,035.73	-7,734.52	7,620.46	7,595.05	25.41	299.890	
4,200.00	4,144.48	4,124.00	4,123.57	16.49	9.70	73.02	-1,037.67	-7,735.50	7,615.72	7,589.65	26.06	292.191	
4,300.00	4,242.51	4,230.35	4,229.88	16.93	9.94	73.16	-1,040.02	-7,736.40	7,610.87	7,584.13	26.74	284.618	
4,400.00	4,340.54	4,329.75	4,329.26	17.37	10.16	73.29	-1,042.15	-7,737.20	7,606.01	7,578.61	27.40	277.591	
4,500.00	4,438.57	4,428.84	4,428.34	17.81	10.39	73.41	-1,044.08	-7,738.00	7,601.18	7,573.12	28.06	270.862	
4,600.00	4,536.60	4,527.25	4,526.73	18.25	10.63	73.54	-1,045.75	-7,738.80	7,596.39	7,567.66	28.73	264.376	
4,700.00	4,634.63	4,629.69	4,629.14	18.68	10.87	73.68	-1,047.21	-7,739.65	7,591.63	7,562.21	29.41	258.103	
4,800.00	4,732.66	4,743.78	4,743.23	19.12	11.14	73.83	-1,048.76	-7,740.42	7,586.76	7,556.64	30.12	251.884	
4,900.00	4,830.70	4,845.97	4,845.40	19.56	11.38	73.97	-1,050.15	-7,740.94	7,581.76	7,550.96	30.80	246.162	
5,000.00	4,928.73	4,936.59	4,936.02	20.00	11.60	74.09	-1,051.36	-7,741.46	7,576.87	7,545.42	31.45	240.890	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100B - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		200-NS-GYRO-MS						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Maior Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,026.76	5,032.29	5,031.70	20.44	11.83	74.22	-1,052.59	-7,742.09	7,572.12	7,539.99	32.12	235.726		
5,200.00	5,124.79	5,139.75	5,139.16	20.88	12.09	74.36	-1,053.78	-7,742.75	7,567.33	7,534.51	32.83	230.532		
5,300.00	5,222.82	5,240.66	5,240.07	21.32	12.35	74.50	-1,054.70	-7,743.26	7,562.49	7,528.98	33.52	225.641		
5,400.00	5,320.85	5,333.30	5,332.70	21.77	12.58	74.63	-1,055.49	-7,743.78	7,557.74	7,523.55	34.19	221.056		
5,500.00	5,418.88	5,425.14	5,424.53	22.21	12.81	74.76	-1,056.28	-7,744.36	7,553.10	7,518.24	34.86	216.658		
5,600.00	5,516.92	5,514.95	5,514.34	22.65	13.04	74.88	-1,057.21	-7,745.02	7,548.61	7,513.08	35.53	212.450		
5,700.00	5,614.95	5,605.24	5,604.61	23.09	13.27	75.00	-1,058.38	-7,745.77	7,544.27	7,508.07	36.20	208.394		
5,800.00	5,712.98	5,702.12	5,701.48	23.53	13.52	75.13	-1,059.78	-7,746.63	7,540.03	7,503.14	36.89	204.406		
5,900.00	5,811.01	5,800.00	5,799.34	23.97	13.77	75.26	-1,061.24	-7,747.52	7,535.85	7,498.27	37.58	200.550		
6,000.00	5,909.04	5,921.71	5,921.04	24.41	14.06	75.43	-1,063.01	-7,748.43	7,531.56	7,493.25	38.31	196.578		
6,100.00	6,007.07	6,036.29	6,035.60	24.85	14.34	75.58	-1,064.52	-7,748.96	7,527.02	7,487.99	39.03	192.848		
6,200.00	6,105.10	6,136.31	6,135.61	25.30	14.58	75.72	-1,065.81	-7,749.33	7,522.43	7,482.72	39.71	189.439		
6,300.00	6,203.14	6,240.50	6,239.79	25.74	14.82	75.86	-1,067.15	-7,749.68	7,517.85	7,477.46	40.39	186.119		
6,393.02	6,294.33	6,344.17	6,343.46	26.15	15.06	76.00	-1,068.36	-7,749.88	7,513.51	7,472.47	41.04	183.088		
6,400.00	6,301.17	6,351.94	6,351.23	26.18	15.08	72.99	-1,068.45	-7,749.89	7,513.14	7,472.05	41.09	182.864		
6,450.00	6,350.01	6,407.44	6,406.72	26.40	15.20	54.20	-1,069.03	-7,749.93	7,508.25	7,466.82	41.43	181.220		
6,500.00	6,398.37	6,451.12	6,450.40	26.63	15.30	41.00	-1,069.45	-7,749.96	7,499.49	7,457.74	41.75	179.621		
6,550.00	6,445.94	6,495.41	6,494.69	26.86	15.40	32.15	-1,069.86	-7,750.00	7,486.94	7,444.87	42.07	177.973		
6,600.00	6,492.42	6,538.70	6,537.98	27.08	15.50	26.08	-1,070.23	-7,750.07	7,470.65	7,428.28	42.37	176.299		
6,650.00	6,537.54	6,580.72	6,580.00	27.30	15.60	21.76	-1,070.56	-7,750.15	7,450.75	7,408.08	42.67	174.609		
6,700.00	6,581.01	6,622.62	6,621.90	27.52	15.70	18.57	-1,070.88	-7,750.25	7,427.33	7,384.37	42.96	172.882		
6,750.00	6,622.57	6,663.89	6,663.17	27.74	15.81	16.11	-1,071.16	-7,750.35	7,400.54	7,357.30	43.24	171.134		
6,800.00	6,661.96	6,703.01	6,702.28	27.96	15.91	14.16	-1,071.40	-7,750.45	7,370.53	7,327.02	43.51	169.403		
6,850.00	6,698.93	6,739.73	6,739.01	28.17	16.00	12.55	-1,071.60	-7,750.54	7,337.49	7,293.74	43.75	167.696		
6,900.00	6,733.26	6,773.85	6,773.12	28.39	16.08	11.18	-1,071.77	-7,750.63	7,301.62	7,257.64	43.98	166.022		
6,950.00	6,764.73	6,800.00	6,799.28	28.60	16.15	9.94	-1,071.89	-7,750.70	7,263.14	7,218.97	44.17	164.433		
7,000.00	6,793.16	6,831.89	6,831.16	28.82	16.23	8.78	-1,072.02	-7,750.79	7,222.28	7,177.92	44.36	162.808		
7,050.00	6,818.37	6,855.84	6,855.12	29.04	16.29	7.60	-1,072.11	-7,750.86	7,179.31	7,134.79	44.52	161.278		
7,100.00	6,840.20	6,876.62	6,875.90	29.27	16.35	6.30	-1,072.18	-7,750.92	7,134.47	7,089.83	44.64	159.805		
7,150.00	6,858.51	6,894.10	6,893.37	29.50	16.39	4.67	-1,072.24	-7,750.98	7,088.05	7,043.30	44.75	158.393		
7,200.00	6,873.20	6,908.15	6,907.43	29.74	16.43	2.36	-1,072.28	-7,751.03	7,040.33	6,995.50	44.83	157.045		
7,250.00	6,884.18	6,918.71	6,917.98	30.00	16.45	-1.63	-1,072.31	-7,751.07	6,991.60	6,946.72	44.89	155.765		
7,300.00	6,891.37	6,925.68	6,924.96	30.26	16.47	-10.84	-1,072.32	-7,751.09	6,942.17	6,897.25	44.92	154.554		
7,350.00	6,894.73	6,929.04	6,928.31	30.54	16.48	-48.30	-1,072.33	-7,751.11	6,892.33	6,847.40	44.93	153.413		
7,370.19	6,895.00	6,929.36	6,928.63	30.65	16.48	-88.15	-1,072.33	-7,751.11	6,872.16	6,827.24	44.92	152.972		
7,400.00	6,894.93	6,929.39	6,928.67	30.83	16.48	-88.16	-1,072.33	-7,751.11	6,842.37	6,797.46	44.92	152.331		
7,500.00	6,894.70	6,929.51	6,928.79	31.45	16.48	-88.18	-1,072.33	-7,751.11	6,742.47	6,697.57	44.90	150.179		
7,600.00	6,894.47	6,929.63	6,928.91	32.15	16.48	-88.20	-1,072.33	-7,751.11	6,642.56	6,597.69	44.87	148.025		
7,700.00	6,894.24	6,929.75	6,929.03	32.92	16.48	-88.23	-1,072.33	-7,751.11	6,542.66	6,497.81	44.85	145.869		
7,800.00	6,894.00	6,929.87	6,929.15	33.75	16.48	-88.25	-1,072.34	-7,751.11	6,442.76	6,397.93	44.83	143.710		
7,900.00	6,893.77	6,930.00	6,929.27	34.63	16.48	-88.27	-1,072.34	-7,751.11	6,342.87	6,298.06	44.81	141.550		
8,000.00	6,893.54	6,930.12	6,929.39	35.57	16.48	-88.30	-1,072.34	-7,751.11	6,242.98	6,198.19	44.79	139.387		
8,100.00	6,893.31	6,930.24	6,929.51	36.55	16.48	-88.32	-1,072.34	-7,751.11	6,143.09	6,098.32	44.77	137.223		
8,200.00	6,893.08	6,930.36	6,929.63	37.58	16.48	-88.35	-1,072.34	-7,751.11	6,043.21	5,998.46	44.75	135.056		
8,300.00	6,892.85	6,930.48	6,929.76	38.65	16.48	-88.37	-1,072.34	-7,751.11	5,943.33	5,898.60	44.72	132.888		
8,400.00	6,892.62	6,930.60	6,929.88	39.76	16.48	-88.39	-1,072.34	-7,751.11	5,843.45	5,798.75	44.70	130.718		
8,500.00	6,892.38	6,930.72	6,930.00	40.90	16.48	-88.42	-1,072.34	-7,751.11	5,743.58	5,698.90	44.68	128.547		
8,600.00	6,892.15	6,930.85	6,930.12	42.07	16.48	-88.44	-1,072.34	-7,751.11	5,643.71	5,599.05	44.66	126.373		
8,700.00	6,891.92	6,930.97	6,930.24	43.27	16.48	-88.46	-1,072.34	-7,751.11	5,543.85	5,499.21	44.64	124.199		
8,800.00	6,891.69	6,931.09	6,930.37	44.50	16.49	-88.49	-1,072.34	-7,751.11	5,443.99	5,399.38	44.61	122.023		
8,900.00	6,891.46	6,931.21	6,930.49	45.75	16.49	-88.51	-1,072.34	-7,751.11	5,344.14	5,299.55	44.59	119.845		
9,000.00	6,891.23	6,931.34	6,930.61	47.02	16.49	-88.54	-1,072.34	-7,751.11	5,244.29	5,199.73	44.57	117.666		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100B - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		200-NS-GYRO-MS						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Maior Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,100.00	6,890.99	6,931.46	6,930.74	48.31	16.49	-88.56	-1,072.34	-7,751.12	5,144.45	5,099.91	44.55	115.486		
9,200.00	6,890.76	6,931.58	6,930.86	49.62	16.49	-88.58	-1,072.34	-7,751.12	5,044.62	5,000.10	44.52	113.304		
9,300.00	6,890.53	6,931.71	6,930.98	50.94	16.49	-88.61	-1,072.34	-7,751.12	4,944.79	4,900.29	44.50	111.122		
9,400.00	6,890.30	6,931.83	6,931.11	52.29	16.49	-88.63	-1,072.34	-7,751.12	4,844.97	4,800.50	44.47	108.938		
9,500.00	6,890.07	6,931.96	6,931.23	53.64	16.49	-88.66	-1,072.34	-7,751.12	4,745.16	4,700.71	44.45	106.752		
9,600.00	6,889.84	6,932.08	6,931.35	55.02	16.49	-88.68	-1,072.34	-7,751.12	4,645.36	4,600.93	44.43	104.566		
9,700.00	6,889.61	6,932.20	6,931.48	56.40	16.49	-88.71	-1,072.34	-7,751.12	4,545.56	4,501.16	44.40	102.379		
9,800.00	6,889.37	6,932.33	6,931.60	57.79	16.49	-88.73	-1,072.34	-7,751.12	4,445.77	4,401.40	44.37	100.190		
9,900.00	6,889.14	6,932.45	6,931.73	59.20	16.49	-88.75	-1,072.34	-7,751.12	4,346.00	4,301.65	44.35	98.000		
10,000.00	6,888.91	6,932.58	6,931.85	60.61	16.49	-88.78	-1,072.34	-7,751.12	4,246.23	4,201.91	44.32	95.808		
10,100.00	6,888.68	6,932.70	6,931.98	62.04	16.49	-88.80	-1,072.34	-7,751.12	4,146.47	4,102.18	44.29	93.616		
10,200.00	6,888.45	6,932.83	6,932.10	63.47	16.49	-88.83	-1,072.34	-7,751.12	4,046.73	4,002.47	44.26	91.422		
10,300.00	6,888.22	6,932.96	6,932.23	64.91	16.49	-88.85	-1,072.34	-7,751.12	3,947.00	3,902.76	44.24	89.226		
10,400.00	6,887.99	6,933.08	6,932.36	66.36	16.49	-88.88	-1,072.34	-7,751.12	3,847.28	3,803.08	44.21	87.029		
10,500.00	6,887.75	6,933.21	6,932.48	67.82	16.49	-88.90	-1,072.34	-7,751.12	3,747.58	3,703.41	44.18	84.830		
10,600.00	6,887.52	6,933.33	6,932.61	69.28	16.49	-88.93	-1,072.34	-7,751.12	3,647.90	3,603.75	44.15	82.629		
10,700.00	6,887.29	6,933.46	6,932.74	70.75	16.49	-88.95	-1,072.34	-7,751.12	3,548.23	3,504.11	44.12	80.425		
10,800.00	6,887.06	6,933.59	6,932.86	72.22	16.49	-88.98	-1,072.34	-7,751.12	3,448.58	3,404.50	44.09	78.219		
10,900.00	6,886.83	6,933.71	6,932.99	73.70	16.49	-89.00	-1,072.34	-7,751.12	3,348.96	3,304.90	44.06	76.011		
11,000.00	6,886.60	6,933.84	6,933.12	75.19	16.49	-89.03	-1,072.34	-7,751.12	3,249.35	3,205.32	44.03	73.799		
11,100.00	6,886.37	6,933.97	6,933.24	76.68	16.49	-89.05	-1,072.35	-7,751.12	3,149.77	3,105.77	44.00	71.583		
11,200.00	6,886.13	6,934.10	6,933.37	78.17	16.49	-89.08	-1,072.35	-7,751.13	3,050.22	3,006.25	43.97	69.364		
11,300.00	6,885.90	6,934.22	6,933.50	79.67	16.49	-89.10	-1,072.35	-7,751.13	2,950.70	2,906.75	43.95	67.139		
11,400.00	6,885.67	6,934.35	6,933.63	81.17	16.49	-89.13	-1,072.35	-7,751.13	2,851.22	2,807.29	43.93	64.909		
11,500.00	6,885.44	6,934.48	6,933.76	82.68	16.49	-89.15	-1,072.35	-7,751.13	2,751.77	2,707.86	43.91	62.673		
11,600.00	6,885.21	6,934.61	6,933.88	84.19	16.49	-89.18	-1,072.35	-7,751.13	2,652.36	2,608.46	43.89	60.429		
11,700.00	6,884.98	6,934.74	6,934.01	85.71	16.49	-89.20	-1,072.35	-7,751.13	2,552.99	2,509.11	43.88	58.177		
11,800.00	6,884.74	6,934.87	6,934.14	87.22	16.49	-89.23	-1,072.35	-7,751.13	2,453.68	2,409.80	43.88	55.915		
11,900.00	6,884.51	6,935.00	6,934.27	88.74	16.50	-89.25	-1,072.35	-7,751.13	2,354.43	2,310.54	43.89	53.641		
12,000.00	6,884.28	6,935.13	6,934.40	90.27	16.50	-89.28	-1,072.35	-7,751.13	2,255.24	2,211.33	43.92	51.355		
12,100.00	6,884.05	6,935.25	6,934.53	91.79	16.50	-89.30	-1,072.35	-7,751.13	2,156.13	2,112.18	43.96	49.053		
12,200.00	6,883.82	6,935.38	6,934.66	93.32	16.50	-89.33	-1,072.35	-7,751.13	2,057.11	2,013.09	44.02	46.733		
12,300.00	6,883.59	6,935.51	6,934.79	94.85	16.50	-89.35	-1,072.35	-7,751.13	1,958.18	1,914.07	44.11	44.392		
12,400.00	6,883.36	6,935.64	6,934.92	96.38	16.50	-89.38	-1,072.35	-7,751.13	1,859.37	1,815.13	44.24	42.027		
12,500.00	6,883.12	6,935.78	6,935.05	97.92	16.50	-89.40	-1,072.35	-7,751.13	1,760.69	1,716.27	44.42	39.635		
12,600.00	6,882.89	6,935.91	6,935.18	99.46	16.50	-89.43	-1,072.35	-7,751.13	1,662.17	1,617.51	44.67	37.212		
12,700.00	6,882.66	6,936.04	6,935.31	101.00	16.50	-89.45	-1,072.35	-7,751.13	1,563.84	1,518.84	45.00	34.753		
12,800.00	6,882.43	6,936.17	6,935.44	102.54	16.50	-89.48	-1,072.35	-7,751.13	1,465.74	1,420.30	45.44	32.255		
12,900.00	6,882.20	6,936.30	6,935.57	104.08	16.50	-89.51	-1,072.35	-7,751.13	1,367.91	1,321.87	46.04	29.714		
13,000.00	6,881.97	6,936.43	6,935.71	105.63	16.50	-89.53	-1,072.35	-7,751.13	1,270.41	1,223.59	46.83	27.129		
13,100.00	6,881.74	6,936.56	6,935.84	107.18	16.50	-89.56	-1,072.35	-7,751.13	1,173.34	1,125.46	47.89	24.503		
13,200.00	6,881.50	6,936.70	6,935.97	108.73	16.50	-89.58	-1,072.35	-7,751.13	1,076.81	1,027.51	49.30	21.840		
13,300.00	6,881.27	6,936.83	6,936.10	110.28	16.50	-89.61	-1,072.35	-7,751.14	980.97	929.76	51.21	19.157		
13,400.00	6,881.04	6,936.96	6,936.23	111.83	16.50	-89.63	-1,072.35	-7,751.14	886.05	832.28	53.77	16.477		
13,500.00	6,880.81	6,937.09	6,936.37	113.38	16.50	-89.66	-1,072.35	-7,751.14	792.38	735.13	57.25	13.841		
13,600.00	6,880.58	6,937.23	6,936.50	114.94	16.50	-89.69	-1,072.35	-7,751.14	700.46	638.49	61.98	11.302		
13,700.00	6,880.35	6,937.36	6,936.63	116.49	16.50	-89.71	-1,072.35	-7,751.14	611.09	542.64	68.44	8.928		
13,800.00	6,880.12	6,937.49	6,936.77	118.05	16.50	-89.74	-1,072.35	-7,751.14	525.56	448.25	77.31	6.798		
13,900.00	6,879.88	6,937.63	6,936.90	119.61	16.50	-89.76	-1,072.35	-7,751.14	446.09	356.74	89.35	4.993		
14,000.00	6,879.65	6,937.76	6,937.03	121.17	16.50	-89.79	-1,072.35	-7,751.14	376.53	271.47	105.06	3.584		
14,100.00	6,879.42	6,937.89	6,937.17	122.73	16.50	-89.82	-1,072.35	-7,751.14	323.36	200.21	123.15	2.626		
14,200.00	6,879.19	6,938.03	6,937.30	124.29	16.50	-89.84	-1,072.36	-7,751.14	295.53	157.59	137.95	2.142		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100B - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 200-NS-GYRO-MS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,236.09	6,879.11	6,938.08	6,937.35	124.86	16.50	-89.85	-1,072.36	-7,751.14	293.32	152.52	140.80	2.083	CC, ES, SF
14,300.00	6,878.96	6,938.16	6,937.44	125.86	16.50	-89.87	-1,072.36	-7,751.14	300.20	158.66	141.54	2.121	
14,400.00	6,878.73	6,938.30	6,937.57	127.42	16.50	-89.90	-1,072.36	-7,751.14	336.01	202.27	133.74	2.512	
14,500.00	6,878.50	6,938.43	6,937.71	128.99	16.50	-89.92	-1,072.36	-7,751.14	394.57	273.05	121.52	3.247	
14,600.00	6,878.26	6,938.57	6,937.84	130.55	16.50	-89.95	-1,072.36	-7,751.14	467.41	357.53	109.88	4.254	
14,700.00	6,878.03	6,938.70	6,937.98	132.12	16.50	-89.98	-1,072.36	-7,751.14	548.86	448.57	100.30	5.472	
14,800.00	6,877.80	6,938.84	6,938.11	133.69	16.51	-90.00	-1,072.36	-7,751.14	635.64	542.89	92.75	6.853	
14,900.00	6,877.57	6,938.98	6,938.25	135.26	16.51	-90.03	-1,072.36	-7,751.14	725.82	638.99	86.83	8.359	
15,000.00	6,877.34	6,939.11	6,938.39	136.83	16.51	-90.05	-1,072.36	-7,751.14	818.29	736.14	82.15	9.961	
15,100.00	6,877.11	6,939.25	6,938.52	138.40	16.51	-90.08	-1,072.36	-7,751.14	912.35	833.94	78.41	11.636	
15,200.00	6,876.87	6,939.38	6,938.66	139.97	16.51	-90.11	-1,072.36	-7,751.15	1,007.55	932.18	75.37	13.368	
15,300.00	6,876.64	6,939.52	6,938.80	141.54	16.51	-90.13	-1,072.36	-7,751.15	1,103.60	1,030.73	72.87	15.144	
15,400.00	6,876.41	6,939.66	6,938.93	143.12	16.51	-90.16	-1,072.36	-7,751.15	1,200.30	1,129.50	70.80	16.954	
15,500.00	6,876.18	6,939.80	6,939.07	144.69	16.51	-90.19	-1,072.36	-7,751.15	1,297.50	1,228.45	69.05	18.790	
15,600.00	6,875.95	6,939.93	6,939.21	146.26	16.51	-90.22	-1,072.36	-7,751.15	1,395.09	1,327.52	67.57	20.646	
15,700.00	6,875.72	6,940.07	6,939.35	147.84	16.51	-90.24	-1,072.36	-7,751.15	1,493.01	1,426.70	66.30	22.517	
15,800.00	6,875.49	6,940.21	6,939.48	149.41	16.51	-90.27	-1,072.36	-7,751.15	1,591.18	1,525.97	65.21	24.400	
15,900.00	6,875.25	6,940.35	6,939.62	150.99	16.51	-90.30	-1,072.36	-7,751.15	1,689.57	1,625.30	64.26	26.292	
16,000.00	6,875.02	6,940.49	6,939.76	152.57	16.51	-90.32	-1,072.36	-7,751.15	1,788.13	1,724.70	63.43	28.190	
16,100.00	6,874.79	6,940.63	6,939.90	154.14	16.51	-90.35	-1,072.36	-7,751.15	1,886.85	1,824.14	62.70	30.091	
16,200.00	6,874.56	6,940.77	6,940.04	155.72	16.51	-90.38	-1,072.36	-7,751.15	1,985.69	1,923.63	62.06	31.996	
16,300.00	6,874.33	6,940.90	6,940.18	157.30	16.51	-90.41	-1,072.36	-7,751.15	2,084.65	2,023.16	61.49	33.901	
16,400.00	6,874.10	6,941.04	6,940.32	158.88	16.51	-90.43	-1,072.36	-7,751.15	2,183.70	2,122.71	60.99	35.807	
16,500.00	6,873.87	6,941.18	6,940.46	160.46	16.51	-90.46	-1,072.36	-7,751.15	2,282.83	2,222.30	60.53	37.712	
16,600.00	6,873.63	6,941.32	6,940.60	162.04	16.51	-90.49	-1,072.36	-7,751.15	2,382.04	2,321.91	60.13	39.616	
16,700.00	6,873.40	6,941.46	6,940.74	163.62	16.51	-90.51	-1,072.36	-7,751.15	2,481.31	2,421.54	59.77	41.517	
16,800.00	6,873.17	6,941.61	6,940.88	165.20	16.51	-90.54	-1,072.36	-7,751.15	2,580.63	2,521.19	59.44	43.416	
16,900.00	6,872.94	6,941.75	6,941.02	166.78	16.51	-90.57	-1,072.36	-7,751.15	2,680.01	2,620.86	59.15	45.311	
17,000.00	6,872.71	6,941.89	6,941.16	168.36	16.51	-90.60	-1,072.36	-7,751.15	2,779.43	2,720.55	58.88	47.204	
17,100.00	6,872.48	6,942.03	6,941.30	169.95	16.51	-90.62	-1,072.36	-7,751.16	2,878.89	2,820.25	58.64	49.092	
17,133.01	6,872.40	6,942.08	6,941.35	170.47	16.51	-90.63	-1,072.36	-7,751.16	2,911.73	2,853.16	58.57	49.714	
17,200.00	6,872.25	6,942.17	6,941.45	171.53	16.51	-90.65	-1,072.37	-7,751.16	2,978.39	2,919.96	58.43	50.976	
17,304.21	6,872.00	6,942.32	6,941.59	173.18	16.51	-90.68	-1,072.37	-7,751.16	3,082.10	3,023.88	58.22	52.935	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 335-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	24.00	24.00	0.00	0.05	-92.11	-354.18	-9,620.35	9,626.86				
100.00	100.00	124.00	124.00	0.25	0.28	-92.11	-354.18	-9,620.35	9,626.86	9,626.33	0.53	N/A	
200.00	200.00	224.00	224.00	0.61	0.50	-92.11	-354.18	-9,620.35	9,626.86	9,625.75	1.11	8,649.908	
300.00	300.00	324.00	324.00	0.97	0.73	-92.11	-354.18	-9,620.35	9,626.86	9,625.17	1.70	5,675.809	
400.00	400.00	382.00	382.00	1.33	0.85	-92.11	-354.31	-9,620.50	9,627.12	9,624.94	2.17	4,428.111	
500.00	500.00	409.84	409.84	1.68	0.90	-92.11	-354.29	-9,620.76	9,627.96	9,625.37	2.59	3,718.158	
600.00	600.00	444.00	443.99	2.04	0.98	-92.11	-353.79	-9,621.29	9,629.48	9,626.46	3.02	3,191.383	
700.00	700.00	444.00	443.99	2.40	0.98	-92.11	-353.79	-9,621.29	9,631.87	9,628.49	3.38	2,852.891	
800.00	800.00	506.00	505.92	2.76	1.12	-92.09	-351.76	-9,623.23	9,634.91	9,631.03	3.87	2,488.681	
900.00	900.00	506.00	505.92	3.12	1.12	-92.09	-351.76	-9,623.23	9,638.73	9,634.50	4.23	2,279.006	
1,000.00	1,000.00	530.54	530.41	3.48	1.18	-92.09	-350.61	-9,624.41	9,643.44	9,638.79	4.64	2,077.353	
1,100.00	1,099.98	568.00	567.74	3.82	1.26	74.25	-348.51	-9,626.67	9,648.55	9,643.48	5.06	1,905.064	
1,200.00	1,199.84	568.00	567.74	4.15	1.26	74.16	-348.51	-9,626.67	9,653.41	9,648.03	5.39	1,791.330	
1,300.00	1,299.45	597.34	596.95	4.48	1.33	74.09	-346.68	-9,628.79	9,658.17	9,652.38	5.79	1,669.000	
1,400.00	1,398.70	631.00	630.42	4.82	1.41	74.04	-344.51	-9,631.58	9,662.80	9,656.60	6.20	1,558.050	
1,500.00	1,497.47	631.00	630.42	5.17	1.41	73.96	-344.51	-9,631.58	9,667.26	9,660.71	6.55	1,476.050	
1,569.36	1,565.62	670.30	669.45	5.43	1.51	73.96	-341.76	-9,635.23	9,670.14	9,663.25	6.89	1,403.162	
1,600.00	1,595.66	693.00	691.97	5.54	1.57	73.99	-339.98	-9,637.49	9,671.48	9,664.42	7.06	1,370.326	
1,700.00	1,693.69	717.88	716.63	5.92	1.64	74.03	-337.94	-9,640.07	9,676.15	9,668.66	7.49	1,291.757	
1,800.00	1,791.72	756.00	754.40	6.30	1.75	74.10	-334.79	-9,644.18	9,681.48	9,673.52	7.96	1,215.519	
1,900.00	1,889.75	798.32	796.30	6.70	1.87	74.16	-331.36	-9,648.99	9,687.44	9,678.98	8.45	1,145.870	
2,000.00	1,987.78	867.54	864.83	7.10	2.06	74.27	-326.03	-9,657.24	9,693.97	9,684.96	9.01	1,075.949	
2,100.00	2,085.81	941.00	937.54	7.50	2.27	74.39	-320.43	-9,666.07	9,700.71	9,691.12	9.58	1,012.109	
2,200.00	2,183.85	1,004.00	999.86	7.91	2.47	74.49	-315.72	-9,673.94	9,707.92	9,697.78	10.15	956.714	
2,300.00	2,281.88	1,056.83	1,052.13	8.32	2.63	74.57	-312.08	-9,680.76	9,715.59	9,704.91	10.68	909.763	
2,400.00	2,379.91	1,128.00	1,122.53	8.74	2.85	74.68	-307.44	-9,690.09	9,723.59	9,712.33	11.26	863.308	
2,500.00	2,477.94	1,270.36	1,263.42	9.16	3.28	74.89	-298.80	-9,708.52	9,731.48	9,719.46	12.02	809.410	
2,600.00	2,575.97	1,377.74	1,369.75	9.58	3.60	75.05	-292.32	-9,722.06	9,739.12	9,726.42	12.70	766.747	
2,700.00	2,674.00	1,508.62	1,499.36	10.00	4.01	75.25	-284.11	-9,738.35	9,746.68	9,733.23	13.45	724.816	
2,800.00	2,772.03	1,581.70	1,571.70	10.43	4.24	75.36	-279.32	-9,747.45	9,754.30	9,740.25	14.05	694.202	
2,900.00	2,870.07	1,666.95	1,656.11	10.86	4.51	75.49	-273.82	-9,758.14	9,762.08	9,747.40	14.68	664.824	
3,000.00	2,968.10	1,749.00	1,737.35	11.28	4.76	75.60	-269.22	-9,768.59	9,770.11	9,754.81	15.30	638.560	
3,100.00	3,066.13	1,823.95	1,811.56	11.71	5.00	75.71	-265.03	-9,778.25	9,778.35	9,762.45	15.90	614.797	
3,200.00	3,164.16	1,886.55	1,873.53	12.14	5.20	75.80	-261.88	-9,786.53	9,786.95	9,770.47	16.48	593.954	
3,300.00	3,262.19	1,977.99	1,964.03	12.58	5.49	75.93	-257.42	-9,798.81	9,795.82	9,778.70	17.12	572.085	
3,400.00	3,360.22	2,113.05	2,097.77	13.01	5.91	76.12	-251.02	-9,816.59	9,804.48	9,786.60	17.87	548.609	
3,500.00	3,458.25	2,250.74	2,234.09	13.44	6.35	76.31	-243.78	-9,834.47	9,813.11	9,794.47	18.65	526.312	
3,600.00	3,556.29	2,388.20	2,370.22	13.88	6.79	76.52	-235.08	-9,851.48	9,821.17	9,801.75	19.42	505.678	
3,700.00	3,654.32	2,457.40	2,438.72	14.31	7.02	76.62	-230.26	-9,860.03	9,829.27	9,809.25	20.02	490.877	
3,800.00	3,752.35	2,558.56	2,538.87	14.75	7.33	76.77	-223.46	-9,872.60	9,837.52	9,816.82	20.70	475.198	
3,900.00	3,850.38	2,673.62	2,652.80	15.18	7.69	76.95	-215.81	-9,886.71	9,845.68	9,824.26	21.42	459.681	
4,000.00	3,948.41	2,730.95	2,709.56	15.62	7.88	77.03	-211.98	-9,893.78	9,853.99	9,832.00	21.99	448.182	
4,100.00	4,046.44	2,790.28	2,768.28	16.05	8.07	77.12	-208.14	-9,901.38	9,862.79	9,840.23	22.56	437.187	
4,200.00	4,144.48	3,021.43	2,997.16	16.49	8.80	77.46	-193.57	-9,930.19	9,871.56	9,847.98	23.58	418.685	
4,300.00	4,242.51	3,949.90	3,921.77	16.93	11.10	78.68	-158.94	-9,997.27	9,872.38	9,846.26	26.13	377.882	
4,400.00	4,340.54	4,056.76	4,028.57	17.37	11.31	78.81	-157.62	-10,000.90	9,871.97	9,845.19	26.78	368.657	
4,500.00	4,438.57	4,163.64	4,135.38	17.81	11.52	78.94	-156.34	-10,004.44	9,871.51	9,844.08	27.43	359.863	
4,600.00	4,536.60	4,270.53	4,242.20	18.25	11.73	79.06	-155.10	-10,007.88	9,871.00	9,842.92	28.08	351.470	
4,700.00	4,634.63	4,377.42	4,349.04	18.68	11.94	79.19	-153.88	-10,011.22	9,870.45	9,841.71	28.74	343.452	
4,800.00	4,732.66	4,484.34	4,455.90	19.12	12.15	79.32	-152.71	-10,014.47	9,869.85	9,840.45	29.39	335.785	
4,900.00	4,830.70	4,591.26	4,562.77	19.56	12.36	79.44	-151.56	-10,017.62	9,869.20	9,839.15	30.05	328.446	
5,000.00	4,928.73	4,698.19	4,669.65	20.00	12.58	79.57	-150.45	-10,020.68	9,868.50	9,837.80	30.70	321.414	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100C - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		335-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference	Offset	Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,026.76	4,805.13	4,776.55	20.44	12.79	79.69	-149.38	-10,023.64	9,867.76	9,836.40	31.36	314.672		
5,200.00	5,124.79	4,912.09	4,883.46	20.88	13.00	79.82	-148.34	-10,026.51	9,866.96	9,834.95	32.01	308.201		
5,300.00	5,222.82	5,019.05	4,990.38	21.32	13.21	79.94	-147.33	-10,029.28	9,866.12	9,833.45	32.67	301.986		
5,400.00	5,320.85	5,126.02	5,097.31	21.77	13.43	80.07	-146.36	-10,031.96	9,865.23	9,831.91	33.33	296.011		
5,500.00	5,418.88	5,233.01	5,204.26	22.21	13.64	80.20	-145.42	-10,034.54	9,864.30	9,830.31	33.98	290.264		
5,600.00	5,516.92	5,340.00	5,311.22	22.65	13.85	80.32	-144.52	-10,037.02	9,863.31	9,828.67	34.64	284.730		
5,700.00	5,614.95	5,447.00	5,418.20	23.09	14.07	80.45	-143.65	-10,039.41	9,862.27	9,826.98	35.30	279.400		
5,800.00	5,712.98	5,554.01	5,525.18	23.53	14.28	80.57	-142.82	-10,041.70	9,861.19	9,825.24	35.96	274.261		
5,900.00	5,811.01	5,661.03	5,632.17	23.97	14.49	80.70	-142.02	-10,043.90	9,860.06	9,823.44	36.61	269.304		
6,000.00	5,909.04	5,768.06	5,739.18	24.41	14.71	80.82	-141.26	-10,046.00	9,858.88	9,821.60	37.27	264.519		
6,100.00	6,007.07	5,875.10	5,846.20	24.85	14.92	80.94	-140.53	-10,048.00	9,857.64	9,819.71	37.93	259.898		
6,200.00	6,105.10	5,982.15	5,953.22	25.30	15.13	81.07	-139.83	-10,049.91	9,856.36	9,817.77	38.59	255.431		
6,300.00	6,203.14	6,089.20	6,060.26	25.74	15.35	81.19	-139.17	-10,051.73	9,855.03	9,815.79	39.25	251.112		
6,393.02	6,294.33	6,188.80	6,159.84	26.15	15.55	81.31	-138.59	-10,053.33	9,853.75	9,813.89	39.86	247.221		
6,400.00	6,301.17	6,196.27	6,167.31	26.18	15.56	78.29	-138.55	-10,053.44	9,853.61	9,813.71	39.90	246.932		
6,450.00	6,350.01	6,130.00	6,101.05	26.40	15.43	59.39	-138.93	-10,052.39	9,851.07	9,811.07	39.99	246.330		
6,500.00	6,398.37	6,130.00	6,101.05	26.63	15.43	46.19	-138.93	-10,052.39	9,844.66	9,804.44	40.21	244.819		
6,550.00	6,445.94	6,130.00	6,101.05	26.86	15.43	37.37	-138.93	-10,052.39	9,834.63	9,794.20	40.43	243.256		
6,600.00	6,492.42	6,130.00	6,101.05	27.08	15.43	31.38	-138.93	-10,052.39	9,821.02	9,780.38	40.64	241.651		
6,650.00	6,537.54	6,130.00	6,101.05	27.30	15.43	27.17	-138.93	-10,052.39	9,803.92	9,763.07	40.85	240.013		
6,700.00	6,581.01	6,130.00	6,101.05	27.52	15.43	24.13	-138.93	-10,052.39	9,783.40	9,742.36	41.05	238.350		
6,750.00	6,622.57	6,130.00	6,101.05	27.74	15.43	21.88	-138.93	-10,052.39	9,759.58	9,718.34	41.24	236.673		
6,800.00	6,661.96	6,130.00	6,101.05	27.96	15.43	20.20	-138.93	-10,052.39	9,732.56	9,691.14	41.42	234.988		
6,850.00	6,698.93	6,130.00	6,101.05	28.17	15.43	18.93	-138.93	-10,052.39	9,702.50	9,660.92	41.59	233.303		
6,900.00	6,733.26	6,130.00	6,101.05	28.39	15.43	18.00	-138.93	-10,052.39	9,669.56	9,627.81	41.75	231.626		
6,950.00	6,764.73	6,130.00	6,101.05	28.60	15.43	17.34	-138.93	-10,052.39	9,633.90	9,592.01	41.89	229.964		
7,000.00	6,793.16	6,130.00	6,101.05	28.82	15.43	16.93	-138.93	-10,052.39	9,595.72	9,553.69	42.03	228.323		
7,050.00	6,818.37	6,130.00	6,101.05	29.04	15.43	16.76	-138.93	-10,052.39	9,555.22	9,513.08	42.15	226.709		
7,100.00	6,840.20	6,130.00	6,101.05	29.27	15.43	16.84	-138.93	-10,052.39	9,512.63	9,470.38	42.25	225.129		
7,150.00	6,858.51	6,130.00	6,101.05	29.50	15.43	17.24	-138.93	-10,052.39	9,468.19	9,425.84	42.35	223.587		
7,200.00	6,873.20	6,130.00	6,101.05	29.74	15.43	18.06	-138.93	-10,052.39	9,422.13	9,379.71	42.43	222.086		
7,250.00	6,884.18	6,130.00	6,101.05	30.00	15.43	19.58	-138.93	-10,052.39	9,374.73	9,332.24	42.49	220.631		
7,300.00	6,891.37	6,130.00	6,101.05	30.26	15.43	22.46	-138.93	-10,052.39	9,326.26	9,283.72	42.54	219.223		
7,350.00	6,894.73	6,130.00	6,101.05	30.54	15.43	28.90	-138.93	-10,052.39	9,277.01	9,234.43	42.58	217.865		
7,370.19	6,895.00	6,130.00	6,101.05	30.65	15.43	34.18	-138.93	-10,052.39	9,256.96	9,214.37	42.59	217.327		
7,400.00	6,894.93	6,130.00	6,101.05	30.83	15.43	34.18	-138.93	-10,052.39	9,227.31	9,184.70	42.61	216.548		
7,500.00	6,894.70	6,130.00	6,101.05	31.45	15.43	34.18	-138.93	-10,052.39	9,127.86	9,085.20	42.67	213.936		
7,600.00	6,894.47	6,130.00	6,101.05	32.15	15.43	34.18	-138.93	-10,052.39	9,028.43	8,985.70	42.72	211.321		
7,700.00	6,894.24	6,130.00	6,101.05	32.92	15.43	34.18	-138.93	-10,052.39	8,929.01	8,886.22	42.78	208.702		
7,800.00	6,894.00	6,130.00	6,101.05	33.75	15.43	34.18	-138.93	-10,052.39	8,829.60	8,786.75	42.85	206.079		
7,900.00	6,893.77	6,130.00	6,101.05	34.63	15.43	34.18	-138.93	-10,052.39	8,730.20	8,687.29	42.91	203.453		
8,000.00	6,893.54	6,130.00	6,101.05	35.57	15.43	34.18	-138.93	-10,052.39	8,630.82	8,587.84	42.98	200.824		
8,100.00	6,893.31	6,130.00	6,101.05	36.55	15.43	34.18	-138.93	-10,052.39	8,531.45	8,488.40	43.05	198.191		
8,200.00	6,893.08	6,130.00	6,101.05	37.58	15.43	34.18	-138.93	-10,052.39	8,432.09	8,388.98	43.12	195.556		
8,300.00	6,892.85	6,130.00	6,101.05	38.65	15.43	34.18	-138.93	-10,052.39	8,332.76	8,289.56	43.19	192.918		
8,400.00	6,892.62	6,130.00	6,101.05	39.76	15.43	34.18	-138.93	-10,052.39	8,233.43	8,190.16	43.27	190.278		
8,500.00	6,892.38	6,130.00	6,101.05	40.90	15.43	34.18	-138.93	-10,052.39	8,134.13	8,090.78	43.35	187.635		
8,600.00	6,892.15	6,130.00	6,101.05	42.07	15.43	34.18	-138.93	-10,052.39	8,034.84	7,991.41	43.43	184.990		
8,700.00	6,891.92	6,130.00	6,101.05	43.27	15.43	34.18	-138.93	-10,052.39	7,935.57	7,892.05	43.52	182.343		
8,800.00	6,891.69	6,130.00	6,101.05	44.50	15.43	34.18	-138.93	-10,052.39	7,836.32	7,792.71	43.61	179.694		
8,900.00	6,891.46	6,130.00	6,101.05	45.75	15.43	34.18	-138.93	-10,052.39	7,737.09	7,693.39	43.70	177.043		
9,000.00	6,891.23	6,130.00	6,101.05	47.02	15.43	34.18	-138.93	-10,052.39	7,637.88	7,594.08	43.80	174.391		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100C - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		335-APC_ISCWSA REV 2 MWD					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
9,100.00	6,890.99	6,130.00	6,101.05	48.31	15.43	34.18	-138.93	-10,052.39	7,538.68	7,494.79	43.90	171.738		
9,200.00	6,890.76	6,130.00	6,101.05	49.62	15.43	34.18	-138.93	-10,052.39	7,439.51	7,395.52	44.00	169.084		
9,300.00	6,890.53	6,130.00	6,101.05	50.94	15.43	34.18	-138.93	-10,052.39	7,340.37	7,296.26	44.11	166.429		
9,400.00	6,890.30	6,130.00	6,101.05	52.29	15.43	34.18	-138.93	-10,052.39	7,241.24	7,197.03	44.22	163.773		
9,500.00	6,890.07	6,130.00	6,101.05	53.64	15.43	34.18	-138.93	-10,052.39	7,142.14	7,097.81	44.33	161.116		
9,600.00	6,889.84	6,130.00	6,101.05	55.02	15.43	34.18	-138.93	-10,052.39	7,043.07	6,998.62	44.45	158.459		
9,700.00	6,889.61	6,130.00	6,101.05	56.40	15.43	34.18	-138.93	-10,052.39	6,944.02	6,899.45	44.57	155.803		
9,800.00	6,889.37	6,130.00	6,101.05	57.79	15.43	34.18	-138.93	-10,052.39	6,845.00	6,800.31	44.70	153.146		
9,900.00	6,889.14	6,130.00	6,101.05	59.20	15.43	34.18	-138.93	-10,052.39	6,746.01	6,701.18	44.83	150.489		
10,000.00	6,888.91	6,130.00	6,101.05	60.61	15.43	34.18	-138.93	-10,052.39	6,647.05	6,602.09	44.96	147.832		
10,100.00	6,888.68	6,130.00	6,101.05	62.04	15.43	34.18	-138.93	-10,052.39	6,548.12	6,503.02	45.10	145.177		
10,200.00	6,888.45	6,130.00	6,101.05	63.47	15.43	34.18	-138.93	-10,052.39	6,449.23	6,403.98	45.25	142.522		
10,300.00	6,888.22	6,130.00	6,101.05	64.91	15.43	34.18	-138.93	-10,052.39	6,350.37	6,304.96	45.40	139.868		
10,400.00	6,887.99	6,130.00	6,101.05	66.36	15.43	34.18	-138.93	-10,052.39	6,251.54	6,205.98	45.56	137.215		
10,500.00	6,887.75	6,130.00	6,101.05	67.82	15.43	34.18	-138.93	-10,052.39	6,152.75	6,107.03	45.72	134.564		
10,600.00	6,887.52	6,130.00	6,101.05	69.28	15.43	34.18	-138.93	-10,052.39	6,054.01	6,008.11	45.89	131.915		
10,700.00	6,887.29	6,130.00	6,101.05	70.75	15.43	34.18	-138.93	-10,052.39	5,955.30	5,909.23	46.07	129.267		
10,800.00	6,887.06	6,130.00	6,101.05	72.22	15.43	34.18	-138.93	-10,052.39	5,856.64	5,810.39	46.25	126.622		
10,900.00	6,886.83	6,130.00	6,101.05	73.70	15.43	34.18	-138.93	-10,052.39	5,758.02	5,711.58	46.44	123.979		
11,000.00	6,886.60	6,130.00	6,101.05	75.19	15.43	34.18	-138.93	-10,052.39	5,659.46	5,612.81	46.64	121.338		
11,100.00	6,886.37	6,130.00	6,101.05	76.68	15.43	34.18	-138.93	-10,052.39	5,560.94	5,514.09	46.85	118.701		
11,200.00	6,886.13	6,130.00	6,101.05	78.17	15.43	34.18	-138.93	-10,052.39	5,462.48	5,415.42	47.06	116.066		
11,300.00	6,885.90	6,130.00	6,101.05	79.67	15.43	34.18	-138.93	-10,052.39	5,364.07	5,316.79	47.29	113.435		
11,400.00	6,885.67	6,130.00	6,101.05	81.17	15.43	34.18	-138.93	-10,052.39	5,265.73	5,218.21	47.52	110.808		
11,500.00	6,885.44	6,130.00	6,101.05	82.68	15.43	34.18	-138.93	-10,052.39	5,167.45	5,119.68	47.76	108.185		
11,600.00	6,885.21	6,130.00	6,101.05	84.19	15.43	34.18	-138.93	-10,052.39	5,069.23	5,021.22	48.02	105.566		
11,700.00	6,884.98	6,130.00	6,101.05	85.71	15.43	34.18	-138.93	-10,052.39	4,971.09	4,922.81	48.29	102.952		
11,800.00	6,884.74	6,130.00	6,101.05	87.22	15.43	34.18	-138.93	-10,052.39	4,873.03	4,824.46	48.56	100.343		
11,900.00	6,884.51	6,130.00	6,101.05	88.74	15.43	34.18	-138.93	-10,052.39	4,775.04	4,726.18	48.85	97.740		
12,000.00	6,884.28	6,130.00	6,101.05	90.27	15.43	34.18	-138.93	-10,052.39	4,677.14	4,627.98	49.16	95.142		
12,100.00	6,884.05	6,130.00	6,101.05	91.79	15.43	34.18	-138.93	-10,052.39	4,579.33	4,529.85	49.48	92.551		
12,200.00	6,883.82	6,130.00	6,101.05	93.32	15.43	34.18	-138.93	-10,052.39	4,481.61	4,431.80	49.81	89.967		
12,300.00	6,883.59	6,130.00	6,101.05	94.85	15.43	34.18	-138.93	-10,052.39	4,384.00	4,333.83	50.17	87.390		
12,400.00	6,883.36	6,130.00	6,101.05	96.38	15.43	34.18	-138.93	-10,052.39	4,286.50	4,235.96	50.54	84.820		
12,500.00	6,883.12	6,130.00	6,101.05	97.92	15.43	34.18	-138.93	-10,052.39	4,189.11	4,138.19	50.93	82.260		
12,600.00	6,882.89	6,130.00	6,101.05	99.46	15.43	34.18	-138.93	-10,052.39	4,091.86	4,040.52	51.34	79.708		
12,700.00	6,882.66	6,130.00	6,101.05	101.00	15.43	34.18	-138.93	-10,052.39	3,994.74	3,942.97	51.77	77.166		
12,800.00	6,882.43	6,130.00	6,101.05	102.54	15.43	34.18	-138.93	-10,052.39	3,897.76	3,845.54	52.22	74.635		
12,900.00	6,882.20	6,130.00	6,101.05	104.08	15.43	34.18	-138.93	-10,052.39	3,800.94	3,748.23	52.71	72.115		
13,000.00	6,881.97	6,130.00	6,101.05	105.63	15.43	34.18	-138.93	-10,052.39	3,704.29	3,651.07	53.22	69.608		
13,100.00	6,881.74	6,130.00	6,101.05	107.18	15.43	34.18	-138.93	-10,052.39	3,607.82	3,554.06	53.76	67.114		
13,200.00	6,881.50	6,130.00	6,101.05	108.73	15.43	34.18	-138.93	-10,052.39	3,511.55	3,457.22	54.33	64.634		
13,300.00	6,881.27	6,130.00	6,101.05	110.28	15.43	34.18	-138.93	-10,052.39	3,415.50	3,360.56	54.94	62.169		
13,400.00	6,881.04	6,130.00	6,101.05	111.83	15.43	34.18	-138.93	-10,052.39	3,319.67	3,264.09	55.59	59.722		
13,500.00	6,880.81	6,130.00	6,101.05	113.38	15.43	34.18	-138.93	-10,052.39	3,224.10	3,167.83	56.28	57.292		
13,600.00	6,880.58	6,130.00	6,101.05	114.94	15.43	34.18	-138.93	-10,052.39	3,128.81	3,071.80	57.01	54.882		
13,700.00	6,880.35	6,130.00	6,101.05	116.49	15.43	34.18	-138.93	-10,052.39	3,033.82	2,976.03	57.79	52.493		
13,800.00	6,880.12	6,130.00	6,101.05	118.05	15.43	34.18	-138.93	-10,052.39	2,939.16	2,880.53	58.63	50.128		
13,900.00	6,879.88	6,130.00	6,101.05	119.61	15.43	34.18	-138.93	-10,052.39	2,844.87	2,785.34	59.53	47.787		
14,000.00	6,879.65	6,130.00	6,101.05	121.17	15.43	34.18	-138.93	-10,052.39	2,750.98	2,690.49	60.50	45.474		
14,100.00	6,879.42	6,130.00	6,101.05	122.73	15.43	34.18	-138.93	-10,052.39	2,657.54	2,596.01	61.53	43.190		
14,200.00	6,879.19	6,130.00	6,101.05	124.29	15.43	34.18	-138.93	-10,052.39	2,564.59	2,501.95	62.65	40.938		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100C - OH - OH											Offset Site Error: 0.00 usft		
Survey Program: 335-APC_ISCWSA REV 2 MWD											Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,300.00	6,878.96	6,130.00	6,101.05	125.86	15.43	34.18	-138.93	-10,052.39	2,472.20	2,408.35	63.85	38.721	
14,400.00	6,878.73	6,130.00	6,101.05	127.42	15.43	34.18	-138.93	-10,052.39	2,380.42	2,315.27	65.14	36.543	
14,500.00	6,878.50	6,130.00	6,101.05	128.99	15.43	34.18	-138.93	-10,052.39	2,289.32	2,222.78	66.54	34.405	
14,600.00	6,878.26	6,130.00	6,101.05	130.55	15.43	34.18	-138.93	-10,052.39	2,199.00	2,130.95	68.05	32.312	
14,700.00	6,878.03	6,130.00	6,101.05	132.12	15.43	34.18	-138.93	-10,052.39	2,109.56	2,039.86	69.69	30.268	
14,800.00	6,877.80	6,130.00	6,101.05	133.69	15.43	34.18	-138.93	-10,052.39	2,021.10	1,949.62	71.47	28.278	
14,900.00	6,877.57	6,130.00	6,101.05	135.26	15.43	34.18	-138.93	-10,052.39	1,933.77	1,860.36	73.40	26.344	
15,000.00	6,877.34	6,130.00	6,101.05	136.83	15.43	34.18	-138.93	-10,052.39	1,847.72	1,772.22	75.50	24.473	
15,100.00	6,877.11	6,130.00	6,101.05	138.40	15.43	34.18	-138.93	-10,052.39	1,763.15	1,685.37	77.78	22.670	
15,200.00	6,876.87	6,130.00	6,101.05	139.97	15.43	34.18	-138.93	-10,052.39	1,680.27	1,600.02	80.24	20.940	
15,300.00	6,876.64	6,130.00	6,101.05	141.54	15.43	34.18	-138.93	-10,052.39	1,599.35	1,516.43	82.92	19.288	
15,400.00	6,876.41	6,130.00	6,101.05	143.12	15.43	34.18	-138.93	-10,052.39	1,520.70	1,434.89	85.81	17.722	
15,500.00	6,876.18	6,130.00	6,101.05	144.69	15.43	34.18	-138.93	-10,052.39	1,444.70	1,355.78	88.92	16.248	
15,600.00	6,875.95	6,130.00	6,101.05	146.26	15.43	34.18	-138.93	-10,052.39	1,371.77	1,279.54	92.24	14.872	
15,700.00	6,875.72	6,130.00	6,101.05	147.84	15.43	34.18	-138.93	-10,052.39	1,302.45	1,206.69	95.76	13.602	
15,800.00	6,875.49	6,130.00	6,101.05	149.41	15.43	34.18	-138.93	-10,052.39	1,237.33	1,137.90	99.44	12.444	
15,900.00	6,875.25	6,130.00	6,101.05	150.99	15.43	34.18	-138.93	-10,052.39	1,177.12	1,073.91	103.21	11.405	
16,000.00	6,875.02	6,130.00	6,101.05	152.57	15.43	34.18	-138.93	-10,052.39	1,122.60	1,015.61	106.99	10.492	
16,100.00	6,874.79	6,130.00	6,101.05	154.14	15.43	34.18	-138.93	-10,052.39	1,074.64	963.99	110.64	9.713	
16,200.00	6,874.56	6,130.00	6,101.05	155.72	15.43	34.18	-138.93	-10,052.39	1,034.15	920.15	114.00	9.072	
16,300.00	6,874.33	6,130.00	6,101.05	157.30	15.43	34.18	-138.93	-10,052.39	1,002.03	885.18	116.85	8.575	
16,400.00	6,874.10	6,130.00	6,101.05	158.88	15.43	34.18	-138.93	-10,052.39	979.13	860.12	119.01	8.227	
16,500.00	6,873.87	6,130.00	6,101.05	160.46	15.43	34.18	-138.93	-10,052.39	966.08	845.79	120.29	8.031	
16,576.92	6,873.69	6,130.00	6,101.05	161.67	15.43	34.18	-138.93	-10,052.39	963.01	842.41	120.60	7.985 CC, ES, SF	
16,600.00	6,873.63	6,130.00	6,101.05	162.04	15.43	34.18	-138.93	-10,052.39	963.29	842.71	120.57	7.989	
16,700.00	6,873.40	6,130.00	6,101.05	163.62	15.43	34.18	-138.93	-10,052.39	970.84	851.01	119.84	8.101	
16,800.00	6,873.17	6,130.00	6,101.05	165.20	15.43	34.18	-138.93	-10,052.39	988.51	870.36	118.15	8.367	
16,900.00	6,872.94	6,130.00	6,101.05	166.78	15.43	34.18	-138.93	-10,052.39	1,015.76	900.11	115.65	8.783	
17,000.00	6,872.71	6,130.00	6,101.05	168.36	15.43	34.18	-138.93	-10,052.39	1,051.85	939.30	112.55	9.346	
17,100.00	6,872.48	6,130.00	6,101.05	169.95	15.43	34.18	-138.93	-10,052.39	1,095.90	986.85	109.05	10.050	
17,133.01	6,872.40	6,130.00	6,101.05	170.47	15.43	34.18	-138.93	-10,052.39	1,112.03	1,004.20	107.83	10.313	
17,200.00	6,872.25	6,130.00	6,101.05	171.53	15.43	34.18	-138.93	-10,052.39	1,147.00	1,041.67	105.33	10.890	
17,304.21	6,872.00	6,130.00	6,101.05	173.18	15.43	34.18	-138.93	-10,052.39	1,206.79	1,105.39	101.39	11.902	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100E - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 200-Standard Keeper 104, 5800-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,026.76	5,038.88	5,037.79	20.44	6.24	81.81	-164.76	-6,515.81	6,364.51	6,340.12	24.39	260.971	
5,200.00	5,124.79	5,137.69	5,136.58	20.88	6.37	81.99	-163.24	-6,514.73	6,360.71	6,335.80	24.91	255.364	
5,300.00	5,222.82	5,236.29	5,235.17	21.32	6.49	82.18	-161.83	-6,513.64	6,356.96	6,331.53	25.43	249.981	
5,400.00	5,320.85	5,334.49	5,333.36	21.77	6.62	82.37	-160.49	-6,512.55	6,353.26	6,327.31	25.95	244.803	
5,500.00	5,418.88	5,430.90	5,429.75	22.21	6.75	82.55	-159.25	-6,511.49	6,349.64	6,323.16	26.47	239.845	
5,600.00	5,516.92	5,519.11	5,517.94	22.65	6.86	82.72	-157.89	-6,510.36	6,345.95	6,318.96	26.99	235.135	
5,700.00	5,614.95	5,600.00	5,598.83	23.09	6.96	82.87	-157.22	-6,509.80	6,342.81	6,315.31	27.50	230.672	
5,800.00	5,712.98	5,665.15	5,663.98	23.53	7.38	82.98	-157.22	-6,509.80	6,340.23	6,311.72	28.51	222.414	
5,900.00	5,811.01	5,750.60	5,749.43	23.97	7.93	83.14	-157.01	-6,509.63	6,337.67	6,307.98	29.69	213.496	
6,000.00	5,909.04	5,861.22	5,860.04	24.41	9.10	83.33	-157.22	-6,509.80	6,335.43	6,303.82	31.61	200.421	
6,100.00	6,007.07	5,963.51	5,962.32	24.85	10.55	83.51	-156.96	-6,509.80	6,333.16	6,299.35	33.81	187.334	
6,200.00	6,105.10	6,057.31	6,056.10	25.30	12.07	83.68	-157.22	-6,509.80	6,330.88	6,294.88	36.00	175.877	
6,300.00	6,203.14	6,159.53	6,158.32	25.74	13.88	83.86	-156.94	-6,509.80	6,328.73	6,290.29	38.44	164.653	
6,393.02	6,294.33	6,246.57	6,245.33	26.15	15.49	84.02	-157.22	-6,509.80	6,326.71	6,286.12	40.59	155.877	
6,400.00	6,301.17	6,253.40	6,252.17	26.18	15.62	81.00	-157.22	-6,509.80	6,326.53	6,285.77	40.76	155.221	
6,450.00	6,350.01	6,302.43	6,301.19	26.40	16.56	82.29	-156.78	-6,509.80	6,323.05	6,281.07	41.98	150.623	
6,500.00	6,398.37	6,354.63	6,353.39	26.63	17.56	49.23	-156.91	-6,509.80	6,315.62	6,272.36	43.26	145.976	
6,550.00	6,445.94	6,406.08	6,404.83	26.86	18.56	40.57	-157.27	-6,509.80	6,304.35	6,259.82	44.53	141.569	
6,600.00	6,492.42	6,444.69	6,443.42	27.08	19.33	34.75	-157.22	-6,509.80	6,289.37	6,243.82	45.55	138.069	
6,650.00	6,537.54	6,489.81	6,488.54	27.30	20.23	30.76	-157.22	-6,509.80	6,270.73	6,224.03	46.70	134.278	
6,700.00	6,581.01	6,536.04	6,534.77	27.52	21.15	27.99	-156.84	-6,509.80	6,248.59	6,200.73	47.86	130.552	
6,750.00	6,622.57	6,581.10	6,579.82	27.74	22.05	26.06	-157.07	-6,509.80	6,222.97	6,173.97	48.99	127.016	
6,800.00	6,661.96	6,614.25	6,612.96	27.96	22.72	24.72	-157.22	-6,509.80	6,194.10	6,144.23	49.87	124.198	
6,850.00	6,698.93	6,651.22	6,649.93	28.17	23.47	23.91	-157.22	-6,509.80	6,162.18	6,111.36	50.83	121.242	
6,900.00	6,733.26	6,685.55	6,684.26	28.39	24.17	23.52	-157.22	-6,509.80	6,127.39	6,075.68	51.71	118.489	
6,950.00	6,764.73	6,718.50	6,717.19	28.60	24.84	23.57	-156.80	-6,509.80	6,090.00	6,037.44	52.56	115.870	
7,000.00	6,793.16	6,749.39	6,748.08	28.82	25.47	24.04	-156.89	-6,509.80	6,050.10	5,996.75	53.35	113.404	
7,050.00	6,818.37	6,776.79	6,775.49	29.04	26.03	25.03	-157.04	-6,509.80	6,008.00	5,953.95	54.06	111.144	
7,100.00	6,840.20	6,800.54	6,799.23	29.27	26.51	26.68	-157.22	-6,509.80	5,963.97	5,909.30	54.67	109.086	
7,150.00	6,858.51	6,810.84	6,809.51	29.50	26.73	29.20	-157.22	-6,509.80	5,918.29	5,863.30	55.00	107.609	
7,200.00	6,873.20	6,825.53	6,824.20	29.74	27.03	33.32	-157.22	-6,509.80	5,871.24	5,815.84	55.40	105.975	
7,250.00	6,884.18	6,836.51	6,835.18	30.00	27.25	40.23	-157.22	-6,509.80	5,823.10	5,767.38	55.72	104.514	
7,300.00	6,891.37	6,843.70	6,842.37	30.26	27.40	52.80	-157.22	-6,509.80	5,774.15	5,718.21	55.94	103.224	
7,350.00	6,894.73	6,847.06	6,845.73	30.54	27.47	77.01	-157.22	-6,509.80	5,724.71	5,668.64	56.07	102.101	
7,370.19	6,895.00	6,847.33	6,846.00	30.65	27.48	91.11	-157.22	-6,509.80	5,704.67	5,648.57	56.10	101.694	
7,400.00	6,894.93	6,847.26	6,845.93	30.83	27.48	91.11	-157.22	-6,509.80	5,675.07	5,618.94	56.13	101.114	
7,500.00	6,894.70	6,847.03	6,845.70	31.45	27.47	91.09	-157.22	-6,509.80	5,575.79	5,519.56	56.23	99.169	
7,600.00	6,894.47	6,846.80	6,845.47	32.15	27.47	91.07	-157.22	-6,509.80	5,476.53	5,420.20	56.33	97.221	
7,700.00	6,894.24	6,846.56	6,845.24	32.92	27.46	91.05	-157.22	-6,509.80	5,377.31	5,320.87	56.44	95.271	
7,800.00	6,894.00	6,846.33	6,845.00	33.75	27.46	91.03	-157.22	-6,509.80	5,278.11	5,221.55	56.56	93.319	
7,900.00	6,893.77	6,846.10	6,844.77	34.63	27.45	91.01	-157.22	-6,509.80	5,178.95	5,122.26	56.68	91.365	
8,000.00	6,893.54	6,845.87	6,844.54	35.57	27.45	90.99	-157.22	-6,509.80	5,079.81	5,023.00	56.82	89.409	
8,100.00	6,893.31	6,845.64	6,844.31	36.55	27.44	90.97	-157.22	-6,509.80	4,980.72	4,923.76	56.95	87.452	
8,200.00	6,893.08	6,845.41	6,844.08	37.58	27.44	90.95	-157.22	-6,509.80	4,881.65	4,824.55	57.10	85.493	
8,300.00	6,892.85	6,845.17	6,843.85	38.65	27.43	90.93	-157.22	-6,509.80	4,782.63	4,725.38	57.25	83.533	
8,400.00	6,892.62	6,844.94	6,843.62	39.76	27.43	90.91	-157.22	-6,509.80	4,683.65	4,626.23	57.42	81.571	
8,500.00	6,892.38	6,844.71	6,843.38	40.90	27.42	90.89	-157.22	-6,509.80	4,584.72	4,527.12	57.59	79.608	
8,600.00	6,892.15	6,844.48	6,843.15	42.07	27.42	90.87	-157.22	-6,509.80	4,485.83	4,428.05	57.77	77.644	
8,700.00	6,891.92	6,844.25	6,842.92	43.27	27.41	90.85	-157.22	-6,509.80	4,386.99	4,329.02	57.97	75.680	
8,800.00	6,891.69	6,844.02	6,842.69	44.50	27.41	90.83	-157.22	-6,509.80	4,288.20	4,230.03	58.17	73.714	
8,900.00	6,891.46	6,843.79	6,842.46	45.75	27.40	90.81	-157.22	-6,509.80	4,189.47	4,131.08	58.39	71.747	
9,000.00	6,891.23	6,843.55	6,842.23	47.02	27.40	90.79	-157.22	-6,509.80	4,090.81	4,032.18	58.62	69.780	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100E - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-Standard Keeper 104, 5800-A027Ua_INC-ONLY							Rule Assigned:						Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,100.00	6,890.99	6,843.32	6,841.99	48.31	27.39	90.77	-157.22	-6,509.80	3,992.21	3,933.34	58.87	67.813	
9,200.00	6,890.76	6,843.09	6,841.76	49.62	27.39	90.75	-157.22	-6,509.80	3,893.68	3,834.55	59.13	65.846	
9,300.00	6,890.53	6,842.86	6,841.53	50.94	27.38	90.73	-157.22	-6,509.80	3,795.23	3,735.82	59.41	63.879	
9,400.00	6,890.30	6,842.63	6,841.30	52.29	27.38	90.72	-157.22	-6,509.80	3,696.86	3,637.15	59.71	61.913	
9,500.00	6,890.07	6,842.40	6,841.07	53.64	27.38	90.70	-157.22	-6,509.80	3,598.58	3,538.55	60.03	59.947	
9,600.00	6,889.84	6,842.17	6,840.84	55.02	27.37	90.68	-157.22	-6,509.80	3,500.40	3,440.03	60.37	57.982	
9,700.00	6,889.61	6,841.93	6,840.61	56.40	27.37	90.66	-157.22	-6,509.80	3,402.33	3,341.59	60.74	56.019	
9,800.00	6,889.37	6,841.70	6,840.37	57.79	27.36	90.64	-157.22	-6,509.80	3,304.37	3,243.24	61.13	54.057	
9,900.00	6,889.14	6,841.47	6,840.14	59.20	27.36	90.62	-157.22	-6,509.80	3,206.54	3,144.99	61.55	52.098	
10,000.00	6,888.91	6,841.24	6,839.91	60.61	27.35	90.60	-157.22	-6,509.80	3,108.84	3,046.84	62.00	50.141	
10,100.00	6,888.68	6,841.01	6,839.68	62.04	27.35	90.58	-157.22	-6,509.80	3,011.30	2,948.81	62.49	48.189	
10,200.00	6,888.45	6,840.78	6,839.45	63.47	27.34	90.56	-157.22	-6,509.80	2,913.92	2,850.90	63.02	46.240	
10,300.00	6,888.22	6,840.55	6,839.22	64.91	27.34	90.54	-157.22	-6,509.80	2,816.73	2,753.14	63.59	44.296	
10,400.00	6,887.99	6,840.31	6,838.99	66.36	27.33	90.52	-157.22	-6,509.80	2,719.74	2,655.53	64.21	42.358	
10,500.00	6,887.75	6,840.08	6,838.75	67.82	27.33	90.50	-157.22	-6,509.80	2,622.98	2,558.09	64.88	40.427	
10,600.00	6,887.52	6,839.85	6,838.52	69.28	27.32	90.48	-157.22	-6,509.80	2,526.46	2,460.85	65.61	38.504	
10,700.00	6,887.29	6,839.62	6,838.29	70.75	27.32	90.46	-157.22	-6,509.80	2,430.23	2,363.82	66.42	36.591	
10,800.00	6,887.06	6,839.39	6,838.06	72.22	27.31	90.44	-157.22	-6,509.80	2,334.32	2,267.03	67.29	34.689	
10,900.00	6,886.83	6,839.16	6,837.83	73.70	27.31	90.42	-157.22	-6,509.80	2,238.77	2,170.51	68.25	32.800	
11,000.00	6,886.60	6,838.93	6,837.60	75.19	27.30	90.40	-157.22	-6,509.80	2,143.62	2,074.30	69.31	30.927	
11,100.00	6,886.37	6,838.69	6,837.37	76.68	27.30	90.38	-157.22	-6,509.80	2,048.93	1,978.45	70.48	29.071	
11,200.00	6,886.13	6,838.46	6,837.13	78.17	27.29	90.36	-157.22	-6,509.80	1,954.77	1,883.00	71.77	27.235	
11,300.00	6,885.90	6,838.23	6,836.90	79.67	27.29	90.34	-157.22	-6,509.80	1,861.22	1,788.01	73.21	25.424	
11,400.00	6,885.67	6,838.00	6,836.67	81.17	27.28	90.32	-157.22	-6,509.80	1,768.38	1,693.57	74.80	23.640	
11,500.00	6,885.44	6,837.77	6,836.44	82.68	27.28	90.30	-157.22	-6,509.80	1,676.36	1,599.77	76.59	21.888	
11,600.00	6,885.21	6,837.54	6,836.21	84.19	27.27	90.28	-157.22	-6,509.80	1,585.31	1,506.72	78.58	20.174	
11,700.00	6,884.98	6,837.30	6,835.98	85.71	27.27	90.26	-157.22	-6,509.80	1,495.40	1,414.58	80.82	18.503	
11,800.00	6,884.74	6,837.07	6,835.74	87.22	27.27	90.24	-157.22	-6,509.80	1,406.85	1,323.51	83.34	16.882	
11,900.00	6,884.51	6,836.84	6,835.51	88.74	27.26	90.22	-157.22	-6,509.80	1,319.94	1,233.77	86.17	15.318	
12,000.00	6,884.28	6,836.61	6,835.28	90.27	27.26	90.20	-157.22	-6,509.80	1,235.01	1,145.65	89.36	13.820	
12,100.00	6,884.05	6,836.38	6,835.05	91.79	27.25	90.18	-157.22	-6,509.80	1,152.51	1,059.55	92.96	12.398	
12,200.00	6,883.82	6,836.15	6,834.82	93.32	27.25	90.16	-157.22	-6,509.80	1,072.98	975.99	96.99	11.063	
12,300.00	6,883.59	6,835.92	6,834.59	94.85	27.24	90.14	-157.22	-6,509.80	997.15	895.67	101.48	9.826	
12,400.00	6,883.36	6,835.68	6,834.36	96.38	27.24	90.12	-157.22	-6,509.80	925.92	819.51	106.41	8.701	
12,500.00	6,883.12	6,835.45	6,834.12	97.92	27.23	90.11	-157.22	-6,509.80	860.43	748.73	111.70	7.703	
12,600.00	6,882.89	6,835.22	6,833.89	99.46	27.23	90.09	-157.22	-6,509.80	802.10	684.91	117.19	6.845	
12,700.00	6,882.66	6,834.99	6,833.66	101.00	27.22	90.07	-157.22	-6,509.80	752.58	630.05	122.53	6.142	
12,800.00	6,882.43	6,834.76	6,833.43	102.54	27.22	90.05	-157.22	-6,509.80	713.72	586.46	127.26	5.609	
12,900.00	6,882.20	6,834.53	6,833.20	104.08	27.21	90.03	-157.22	-6,509.80	687.32	556.55	130.76	5.256	
13,000.00	6,881.97	6,834.30	6,832.97	105.63	27.21	90.01	-157.22	-6,509.80	674.85	542.37	132.48	5.094	
13,034.00	6,881.89	6,834.22	6,832.89	106.16	27.21	90.00	-157.22	-6,509.80	673.95	541.36	132.59	5.083 CC, ES, SF	
13,100.00	6,881.74	6,834.06	6,832.74	107.18	27.20	89.99	-157.22	-6,509.80	677.08	545.00	132.08	5.126	
13,200.00	6,881.50	6,833.83	6,832.50	108.73	27.20	89.97	-157.22	-6,509.80	693.87	564.23	129.63	5.353	
13,300.00	6,881.27	6,833.60	6,832.27	110.28	27.19	89.95	-157.22	-6,509.80	724.20	598.64	125.56	5.768	
13,400.00	6,881.04	6,833.37	6,832.04	111.83	27.19	89.93	-157.22	-6,509.80	766.47	646.01	120.47	6.363	
13,500.00	6,880.81	6,833.14	6,831.81	113.38	27.18	89.91	-157.22	-6,509.80	818.84	703.91	114.93	7.124	
13,600.00	6,880.58	6,832.91	6,831.58	114.94	27.18	89.89	-157.22	-6,509.80	879.50	770.09	109.40	8.039	
13,700.00	6,880.35	6,832.68	6,831.35	116.49	27.17	89.87	-157.22	-6,509.80	946.85	842.71	104.14	9.092	
13,800.00	6,880.12	6,832.44	6,831.12	118.05	27.17	89.85	-157.22	-6,509.80	1,019.58	920.27	99.31	10.267	
13,900.00	6,879.88	6,832.21	6,830.88	119.61	27.17	89.83	-157.22	-6,509.80	1,096.61	1,001.67	94.94	11.550	
14,000.00	6,879.65	6,831.98	6,830.65	121.17	27.16	89.81	-157.22	-6,509.80	1,177.10	1,086.05	91.05	12.928	
14,100.00	6,879.42	6,831.75	6,830.42	122.73	27.16	89.79	-157.22	-6,509.80	1,260.39	1,172.79	87.60	14.388	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 100E - OH - OH											Offset Site Error: 0.00 usft	
Survey Program: 200-Standard Keeper 104, 5800-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
14,200.00	6,879.19	6,831.52	6,830.19	124.29	27.15	89.77	-157.22	-6,509.80	1,345.96	1,261.40	84.56	15.918
14,300.00	6,878.96	6,831.29	6,829.96	125.86	27.15	89.75	-157.22	-6,509.80	1,433.39	1,351.52	81.88	17.507
14,400.00	6,878.73	6,831.05	6,829.73	127.42	27.14	89.73	-157.22	-6,509.80	1,522.38	1,442.87	79.51	19.147
14,500.00	6,878.50	6,830.82	6,829.50	128.99	27.14	89.71	-157.22	-6,509.80	1,612.65	1,535.23	77.42	20.829
14,600.00	6,878.26	6,830.59	6,829.26	130.55	27.13	89.69	-157.22	-6,509.80	1,704.01	1,628.43	75.58	22.547
14,700.00	6,878.03	6,830.36	6,829.03	132.12	27.13	89.67	-157.22	-6,509.80	1,796.29	1,722.35	73.94	24.293
14,800.00	6,877.80	6,830.13	6,828.80	133.69	27.12	89.65	-157.22	-6,509.80	1,889.36	1,816.87	72.49	26.062
14,900.00	6,877.57	6,829.90	6,828.57	135.26	27.12	89.63	-157.22	-6,509.80	1,983.10	1,911.90	71.21	27.850
15,000.00	6,877.34	6,829.67	6,828.34	136.83	27.11	89.61	-157.22	-6,509.80	2,077.43	2,007.37	70.06	29.652
15,100.00	6,877.11	6,829.43	6,828.11	138.40	27.11	89.59	-157.22	-6,509.80	2,172.26	2,103.23	69.04	31.465
15,200.00	6,876.87	6,829.20	6,827.87	139.97	27.10	89.57	-157.22	-6,509.80	2,267.54	2,199.42	68.12	33.287
15,300.00	6,876.64	6,828.97	6,827.64	141.54	27.10	89.55	-157.22	-6,509.80	2,363.21	2,295.91	67.30	35.113
15,400.00	6,876.41	6,828.74	6,827.41	143.12	27.09	89.53	-157.22	-6,509.80	2,459.22	2,392.65	66.57	36.943
15,500.00	6,876.18	6,828.51	6,827.18	144.69	27.09	89.51	-157.22	-6,509.80	2,555.54	2,489.63	65.91	38.774
15,600.00	6,875.95	6,828.28	6,826.95	146.26	27.08	89.50	-157.22	-6,509.80	2,652.13	2,586.81	65.32	40.605
15,700.00	6,875.72	6,828.05	6,826.72	147.84	27.08	89.48	-157.22	-6,509.80	2,748.96	2,684.18	64.78	42.434
15,800.00	6,875.49	6,827.81	6,826.49	149.41	27.07	89.46	-157.22	-6,509.80	2,846.02	2,781.72	64.30	44.261
15,900.00	6,875.25	6,827.58	6,826.25	150.99	27.07	89.44	-157.22	-6,509.80	2,943.27	2,879.40	63.87	46.084
16,000.00	6,875.02	6,827.35	6,826.02	152.57	27.07	89.42	-157.22	-6,509.80	3,040.70	2,977.22	63.48	47.903
16,100.00	6,874.79	6,827.12	6,825.79	154.14	27.06	89.40	-157.22	-6,509.80	3,138.29	3,075.16	63.12	49.717
16,200.00	6,874.56	6,826.89	6,825.56	155.72	27.06	89.38	-157.22	-6,509.80	3,236.03	3,173.22	62.80	51.525
16,300.00	6,874.33	6,826.66	6,825.33	157.30	27.05	89.36	-157.22	-6,509.80	3,333.90	3,271.38	62.52	53.328
16,400.00	6,874.10	6,826.43	6,825.10	158.88	27.05	89.34	-157.22	-6,509.80	3,431.89	3,369.64	62.26	55.124
16,500.00	6,873.87	6,826.19	6,824.87	160.46	27.04	89.32	-157.22	-6,509.80	3,530.00	3,467.98	62.02	56.914
16,600.00	6,873.63	6,825.96	6,824.63	162.04	27.04	89.30	-157.22	-6,509.80	3,628.21	3,566.40	61.81	58.696
16,700.00	6,873.40	6,825.73	6,824.40	163.62	27.03	89.28	-157.22	-6,509.80	3,726.52	3,664.89	61.62	60.472
16,800.00	6,873.17	6,825.50	6,824.17	165.20	27.03	89.26	-157.22	-6,509.80	3,824.91	3,763.46	61.45	62.241
16,900.00	6,872.94	6,825.27	6,823.94	166.78	27.02	89.24	-157.22	-6,509.80	3,923.38	3,862.08	61.30	64.002
17,000.00	6,872.71	6,825.04	6,823.71	168.36	27.02	89.22	-157.22	-6,509.80	4,021.93	3,960.77	61.16	65.757
17,100.00	6,872.48	6,824.80	6,823.48	169.95	27.01	89.20	-157.22	-6,509.80	4,120.55	4,059.51	61.04	67.503
17,133.01	6,872.40	6,824.73	6,823.40	170.47	27.01	89.19	-157.22	-6,509.80	4,153.12	4,092.12	61.01	68.078
17,200.00	6,872.25	6,824.57	6,823.25	171.53	27.01	89.18	-157.22	-6,509.80	4,219.24	4,158.31	60.93	69.243
17,304.21	6,872.00	6,824.33	6,823.00	173.18	27.00	89.16	-157.22	-6,509.80	4,322.14	4,261.31	60.83	71.047

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 140 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 120-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-89.30	48.56	-3,988.44	3,988.87				
100.00	100.00	68.00	68.00	0.25	1.20	-89.30	48.56	-3,988.44	3,988.74	3,987.28	1.46	2,739.950	
200.00	200.00	168.00	168.00	0.61	2.99	-89.30	48.56	-3,988.44	3,988.74	3,985.14	3.60	1,108.036	
300.00	300.00	268.00	268.00	0.97	4.85	-89.30	48.56	-3,988.44	3,988.74	3,982.92	5.82	685.551	
400.00	400.00	368.02	368.02	1.33	6.79	-89.30	48.84	-3,988.44	3,988.74	3,980.63	8.12	491.495	
500.00	500.00	468.19	468.19	1.68	8.73	-89.30	48.63	-3,988.44	3,988.74	3,978.32	10.42	382.958	
551.68	551.68	519.71	519.68	1.87	9.74	-89.30	48.56	-3,988.44	3,988.74	3,977.13	11.61	343.643	
600.00	600.00	568.03	568.00	2.04	10.68	-89.30	48.56	-3,988.44	3,988.74	3,976.01	12.73	313.387	
700.00	700.00	668.26	668.23	2.40	12.65	-89.30	48.93	-3,988.44	3,988.74	3,973.69	15.05	265.002	
800.00	800.00	768.05	768.00	2.76	14.58	-89.30	48.56	-3,988.44	3,988.74	3,971.40	17.34	230.007	
900.00	900.00	868.05	868.00	3.12	16.49	-89.30	48.56	-3,988.44	3,988.74	3,969.13	19.60	203.461	
1,000.00	1,000.00	968.05	968.00	3.48	18.39	-89.30	48.56	-3,988.44	3,988.74	3,966.87	21.87	182.410	
1,100.00	1,099.98	1,068.11	1,068.06	3.82	20.30	77.15	49.03	-3,988.44	3,988.36	3,964.24	24.11	165.404	
1,200.00	1,199.84	1,168.08	1,168.03	4.15	22.20	77.25	48.78	-3,988.44	3,987.19	3,960.85	26.34	151.355	
1,300.00	1,299.45	1,267.53	1,267.45	4.48	24.07	77.40	48.56	-3,988.44	3,985.27	3,956.72	28.55	139.611	
1,400.00	1,398.70	1,366.78	1,366.70	4.82	25.90	77.62	48.56	-3,988.44	3,982.61	3,951.90	30.72	129.648	
1,500.00	1,497.47	1,465.54	1,465.47	5.17	27.72	77.91	48.56	-3,988.44	3,979.26	3,946.37	32.89	120.975	
1,569.36	1,565.62	1,533.87	1,533.78	5.43	28.98	78.15	49.33	-3,988.44	3,976.56	3,942.16	34.41	115.579	
1,600.00	1,595.66	1,564.00	1,563.91	5.54	29.54	78.23	49.27	-3,988.44	3,975.30	3,940.23	35.07	113.338	
1,700.00	1,693.69	1,662.42	1,662.33	5.92	31.35	78.50	48.91	-3,988.44	3,971.23	3,933.97	37.27	106.562	
1,800.00	1,791.72	1,759.82	1,759.72	6.30	33.17	78.77	48.56	-3,988.44	3,967.25	3,927.78	39.47	100.513	
1,900.00	1,889.75	1,857.85	1,857.75	6.70	35.04	79.05	48.56	-3,988.44	3,963.38	3,921.65	41.73	94.980	
2,000.00	1,987.78	1,955.88	1,955.78	7.10	36.90	79.32	48.56	-3,988.44	3,959.61	3,915.61	43.99	90.005	
2,100.00	2,085.81	2,054.06	2,053.96	7.50	38.77	79.60	48.81	-3,988.44	3,955.94	3,909.67	46.27	85.504	
2,200.00	2,183.85	2,152.30	2,152.20	7.91	40.64	79.88	48.69	-3,988.44	3,952.34	3,903.80	48.54	81.418	
2,300.00	2,281.88	2,250.01	2,249.88	8.32	42.54	80.15	48.56	-3,988.44	3,948.84	3,898.00	50.85	77.658	
2,400.00	2,379.91	2,348.04	2,347.91	8.74	44.52	80.43	48.56	-3,988.44	3,945.45	3,892.20	53.25	74.094	
2,500.00	2,477.94	2,446.07	2,445.94	9.16	46.51	80.70	48.56	-3,988.44	3,942.15	3,886.50	55.65	70.835	
2,600.00	2,575.97	2,544.84	2,544.69	9.58	48.51	81.00	49.58	-3,988.44	3,939.02	3,880.95	58.07	67.828	
2,700.00	2,674.00	2,644.03	2,643.89	10.00	50.52	81.27	49.17	-3,988.44	3,935.89	3,875.38	60.50	65.051	
2,800.00	2,772.03	2,740.22	2,740.03	10.43	52.46	81.54	48.56	-3,988.44	3,932.83	3,869.95	62.88	62.547	
2,900.00	2,870.07	2,838.26	2,838.07	10.86	54.46	81.82	48.56	-3,988.44	3,929.91	3,864.62	65.30	60.186	
3,000.00	2,968.10	2,936.29	2,936.10	11.28	56.45	82.10	48.56	-3,988.44	3,927.10	3,859.38	67.72	57.993	
3,100.00	3,066.13	3,034.92	3,034.72	11.71	58.45	82.39	49.34	-3,988.44	3,924.46	3,854.31	70.15	55.944	
3,200.00	3,164.16	3,134.07	3,133.87	12.14	60.47	82.67	49.06	-3,988.44	3,921.81	3,849.21	72.59	54.024	
3,300.00	3,262.19	3,230.44	3,230.19	12.58	62.43	82.94	48.56	-3,988.44	3,919.23	3,844.25	74.99	52.266	
3,400.00	3,360.22	3,328.47	3,328.22	13.01	64.49	83.22	48.56	-3,988.44	3,916.81	3,839.33	77.48	50.553	
3,500.00	3,458.25	3,426.50	3,426.25	13.44	66.55	83.50	48.56	-3,988.44	3,914.48	3,834.50	79.97	48.947	
3,600.00	3,556.29	3,524.54	3,524.29	13.88	68.61	83.78	48.56	-3,988.44	3,912.25	3,829.78	82.47	47.439	
3,700.00	3,654.32	3,555.00	3,554.70	14.31	69.25	83.87	48.56	-3,988.44	3,910.70	3,827.16	83.54	46.815	
3,715.13	3,669.15	3,555.00	3,554.70	14.38	69.25	83.87	48.56	-3,988.44	3,910.67	3,827.07	83.60	46.781	
3,800.00	3,752.35	3,555.00	3,554.70	14.75	69.25	83.87	48.56	-3,988.44	3,911.59	3,827.68	83.92	46.614	
3,900.00	3,850.38	3,555.00	3,554.70	15.18	69.25	83.87	48.56	-3,988.44	3,915.04	3,830.79	84.24	46.472	
4,000.00	3,948.41	3,555.00	3,554.70	15.62	69.25	83.87	48.56	-3,988.44	3,921.03	3,836.51	84.52	46.390	
4,100.00	4,046.44	3,555.00	3,554.70	16.05	69.25	83.87	48.56	-3,988.44	3,929.56	3,844.81	84.75	46.366 SF	
4,200.00	4,144.48	3,555.00	3,554.70	16.49	69.25	83.87	48.56	-3,988.44	3,940.62	3,855.69	84.93	46.399	
4,300.00	4,242.51	3,555.00	3,554.70	16.93	69.25	83.87	48.56	-3,988.44	3,954.17	3,869.11	85.06	46.489	
4,400.00	4,340.54	3,555.00	3,554.70	17.37	69.25	83.87	48.56	-3,988.44	3,970.19	3,885.05	85.13	46.634	
4,500.00	4,438.57	3,555.00	3,554.70	17.81	69.25	83.87	48.56	-3,988.44	3,988.66	3,903.49	85.17	46.834	
4,600.00	4,536.60	3,555.00	3,554.70	18.25	69.25	83.87	48.56	-3,988.44	4,009.53	3,924.38	85.15	47.088	
4,700.00	4,634.63	3,555.00	3,554.70	18.68	69.25	83.87	48.56	-3,988.44	4,032.78	3,947.69	85.09	47.394	
4,800.00	4,732.66	3,555.00	3,554.70	19.12	69.25	83.87	48.56	-3,988.44	4,058.36	3,973.37	84.99	47.753	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 140 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		120-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
4,900.00	4,830.70	3,555.00	3,554.70	19.56	69.25	83.87	48.56	-3,988.44	4,086.23	4,001.39	84.84	48.162		
5,000.00	4,928.73	3,555.00	3,554.70	20.00	69.25	83.87	48.56	-3,988.44	4,116.34	4,031.68	84.66	48.621		
5,100.00	5,026.76	3,555.00	3,554.70	20.44	69.25	83.87	48.56	-3,988.44	4,148.64	4,064.20	84.44	49.130		
5,200.00	5,124.79	3,555.00	3,554.70	20.88	69.25	83.87	48.56	-3,988.44	4,183.08	4,098.89	84.19	49.687		
5,300.00	5,222.82	3,555.00	3,554.70	21.32	69.25	83.87	48.56	-3,988.44	4,219.62	4,135.71	83.90	50.291		
5,400.00	5,320.85	3,555.00	3,554.70	21.77	69.25	83.87	48.56	-3,988.44	4,258.18	4,174.59	83.59	50.941		
5,500.00	5,418.88	3,555.00	3,554.70	22.21	69.25	83.87	48.56	-3,988.44	4,298.73	4,215.48	83.25	51.637		
5,600.00	5,516.92	3,555.00	3,554.70	22.65	69.25	83.87	48.56	-3,988.44	4,341.21	4,258.32	82.88	52.376		
5,700.00	5,614.95	3,555.00	3,554.70	23.09	69.25	83.87	48.56	-3,988.44	4,385.55	4,303.05	82.50	53.160		
5,800.00	5,712.98	3,555.00	3,554.70	23.53	69.25	83.87	48.56	-3,988.44	4,431.71	4,349.62	82.09	53.985		
5,900.00	5,811.01	3,555.00	3,554.70	23.97	69.25	83.87	48.56	-3,988.44	4,479.62	4,397.95	81.67	54.852		
6,000.00	5,909.04	3,555.00	3,554.70	24.41	69.25	83.87	48.56	-3,988.44	4,529.24	4,448.01	81.23	55.759		
6,100.00	6,007.07	3,555.00	3,554.70	24.85	69.25	83.87	48.56	-3,988.44	4,580.50	4,499.72	80.78	56.706		
6,200.00	6,105.10	3,555.00	3,554.70	25.30	69.25	83.87	48.56	-3,988.44	4,633.35	4,553.04	80.31	57.690		
6,300.00	6,203.14	3,555.00	3,554.70	25.74	69.25	83.87	48.56	-3,988.44	4,687.74	4,607.90	79.84	58.712		
6,393.02	6,294.33	3,555.00	3,554.70	26.15	69.25	83.87	48.56	-3,988.44	4,739.67	4,660.27	79.40	59.696		
6,400.00	6,301.17	3,555.00	3,554.70	26.18	69.25	80.81	48.56	-3,988.44	4,743.58	4,664.22	79.36	59.771		
6,450.00	6,350.01	3,555.00	3,554.70	26.40	69.25	61.75	48.56	-3,988.44	4,769.97	4,690.86	79.11	60.297		
6,500.00	6,398.37	3,555.00	3,554.70	26.63	69.25	48.34	48.56	-3,988.44	4,793.35	4,714.52	78.84	60.802		
6,550.00	6,445.94	3,555.00	3,554.70	26.86	69.25	39.34	48.56	-3,988.44	4,813.64	4,735.09	78.55	61.282		
6,600.00	6,492.42	3,555.00	3,554.70	27.08	69.25	33.17	48.56	-3,988.44	4,830.75	4,752.50	78.25	61.737		
6,650.00	6,537.54	3,555.00	3,554.70	27.30	69.25	28.81	48.56	-3,988.44	4,844.59	4,766.66	77.93	62.164		
6,700.00	6,581.01	3,555.00	3,554.70	27.52	69.25	25.61	48.56	-3,988.44	4,855.13	4,777.52	77.61	62.562		
6,750.00	6,622.57	3,555.00	3,554.70	27.74	69.25	23.21	48.56	-3,988.44	4,862.31	4,785.04	77.27	62.929		
6,800.00	6,661.96	3,555.00	3,554.70	27.96	69.25	21.37	48.56	-3,988.44	4,866.10	4,789.19	76.92	63.264		
6,850.00	6,698.93	3,555.00	3,554.70	28.17	69.25	19.94	48.56	-3,988.44	4,866.50	4,789.94	76.56	63.565		
6,900.00	6,733.26	3,555.00	3,554.70	28.39	69.25	18.82	48.56	-3,988.44	4,863.49	4,787.29	76.20	63.829		
6,950.00	6,764.73	3,555.00	3,554.70	28.60	69.25	17.95	48.56	-3,988.44	4,857.09	4,781.27	75.82	64.057		
7,000.00	6,793.16	3,555.00	3,554.70	28.82	69.25	17.28	48.56	-3,988.44	4,847.33	4,771.88	75.45	64.245		
7,050.00	6,818.37	3,555.00	3,554.70	29.04	69.25	16.77	48.56	-3,988.44	4,834.24	4,759.17	75.08	64.391		
7,100.00	6,840.20	3,555.00	3,554.70	29.27	69.25	16.41	48.56	-3,988.44	4,817.89	4,743.19	74.70	64.496		
7,150.00	6,858.51	3,555.00	3,554.70	29.50	69.25	16.18	48.56	-3,988.44	4,798.33	4,724.00	74.33	64.555		
7,200.00	6,873.20	3,555.00	3,554.70	29.74	69.25	16.08	48.56	-3,988.44	4,775.66	4,701.69	73.96	64.570		
7,250.00	6,884.18	3,555.00	3,554.70	30.00	69.25	16.10	48.56	-3,988.44	4,749.96	4,676.35	73.60	64.537		
7,300.00	6,891.37	3,555.00	3,554.70	30.26	69.25	16.23	48.56	-3,988.44	4,721.34	4,648.09	73.25	64.455		
7,350.00	6,894.73	3,555.00	3,554.70	30.54	69.25	16.50	48.56	-3,988.44	4,689.94	4,617.03	72.91	64.325		
7,370.19	6,895.00	3,555.00	3,554.70	30.65	69.25	16.65	48.56	-3,988.44	4,676.50	4,603.73	72.78	64.256		
7,400.00	6,894.93	3,555.00	3,554.70	30.83	69.25	16.65	48.56	-3,988.44	4,656.40	4,583.82	72.58	64.155		
7,500.00	6,894.70	3,555.00	3,554.70	31.45	69.25	16.65	48.56	-3,988.44	4,589.73	4,517.83	71.90	63.835		
7,600.00	6,894.47	3,555.00	3,554.70	32.15	69.25	16.65	48.56	-3,988.44	4,524.28	4,453.07	71.21	63.537		
7,700.00	6,894.24	3,555.00	3,554.70	32.92	69.25	16.65	48.56	-3,988.44	4,460.12	4,389.62	70.50	63.260		
7,800.00	6,894.00	3,555.00	3,554.70	33.75	69.25	16.65	48.56	-3,988.44	4,397.30	4,327.51	69.79	63.007		
7,900.00	6,893.77	3,555.00	3,554.70	34.63	69.25	16.65	48.56	-3,988.44	4,335.87	4,266.80	69.07	62.777		
8,000.00	6,893.54	3,555.00	3,554.70	35.57	69.25	16.65	48.56	-3,988.44	4,275.90	4,207.56	68.34	62.572		
8,100.00	6,893.31	3,555.00	3,554.70	36.55	69.25	16.65	48.56	-3,988.44	4,217.45	4,149.85	67.60	62.391		
8,200.00	6,893.08	3,555.00	3,554.70	37.58	69.25	16.65	48.56	-3,988.44	4,160.58	4,093.73	66.85	62.237		
8,300.00	6,892.85	3,555.00	3,554.70	38.65	69.25	16.65	48.56	-3,988.44	4,105.36	4,039.26	66.10	62.108		
8,400.00	6,892.62	3,555.00	3,554.70	39.76	69.25	16.65	48.56	-3,988.44	4,051.85	3,986.50	65.35	62.006		
8,500.00	6,892.38	3,555.00	3,554.70	40.90	69.25	16.65	48.56	-3,988.44	4,000.13	3,935.54	64.59	61.931		
8,600.00	6,892.15	3,555.00	3,554.70	42.07	69.25	16.65	48.56	-3,988.44	3,950.26	3,886.43	63.83	61.883		
8,700.00	6,891.92	3,555.00	3,554.70	43.27	69.25	16.65	48.56	-3,988.44	3,902.32	3,839.24	63.08	61.862		
8,800.00	6,891.69	3,555.00	3,554.70	44.50	69.25	16.65	48.56	-3,988.44	3,856.38	3,794.05	62.33	61.867		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 140 - OH - OH												Offset Site Error:	0.00 usft	
Survey Program:		120-A027Ua_INC-ONLY				Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
8,900.00	6,891.46	3,555.00	3,554.70	45.75	69.25	16.65	48.56	-3,988.44	3,812.51	3,750.91	61.59	61.898		
9,000.00	6,891.23	3,555.00	3,554.70	47.02	69.25	16.65	48.56	-3,988.44	3,770.78	3,709.91	60.87	61.953		
9,100.00	6,890.99	3,555.00	3,554.70	48.31	69.25	16.65	48.56	-3,988.44	3,731.26	3,671.11	60.15	62.028		
9,200.00	6,890.76	3,555.00	3,554.70	49.62	69.25	16.65	48.56	-3,988.44	3,694.03	3,634.57	59.46	62.122		
9,300.00	6,890.53	3,555.00	3,554.70	50.94	69.25	16.65	48.56	-3,988.44	3,659.15	3,600.35	58.80	62.229		
9,400.00	6,890.30	3,555.00	3,554.70	52.29	69.25	16.65	48.56	-3,988.44	3,626.70	3,568.53	58.17	62.344		
9,500.00	6,890.07	3,555.00	3,554.70	53.64	69.25	16.65	48.56	-3,988.44	3,596.73	3,539.15	57.59	62.459		
9,600.00	6,889.84	3,555.00	3,554.70	55.02	69.25	16.65	48.56	-3,988.44	3,569.32	3,512.27	57.05	62.565		
9,700.00	6,889.61	3,555.00	3,554.70	56.40	69.25	16.65	48.56	-3,988.44	3,544.51	3,487.94	56.58	62.651		
9,800.00	6,889.37	3,555.00	3,554.70	57.79	69.25	16.65	48.56	-3,988.44	3,522.38	3,466.20	56.17	62.704		
9,900.00	6,889.14	3,555.00	3,554.70	59.20	69.25	16.65	48.56	-3,988.44	3,502.95	3,447.09	55.86	62.709		
10,000.00	6,888.91	3,555.00	3,554.70	60.61	69.25	16.65	48.56	-3,988.44	3,486.29	3,430.65	55.64	62.652		
10,100.00	6,888.68	3,555.00	3,554.70	62.04	69.25	16.65	48.56	-3,988.44	3,472.43	3,416.89	55.54	62.518		
10,200.00	6,888.45	3,555.00	3,554.70	63.47	69.25	16.65	48.56	-3,988.44	3,461.40	3,405.83	55.57	62.291		
10,300.00	6,888.22	3,555.00	3,554.70	64.91	69.25	16.65	48.56	-3,988.44	3,453.24	3,397.51	55.73	61.961		
10,400.00	6,887.99	3,555.00	3,554.70	66.36	69.25	16.65	48.56	-3,988.44	3,447.96	3,391.91	56.04	61.523		
10,500.00	6,887.75	3,555.00	3,554.70	67.82	69.25	16.65	48.56	-3,988.44	3,445.57	3,389.06	56.51	60.974		
10,532.27	6,887.68	3,555.00	3,554.70	68.29	69.25	16.65	48.56	-3,988.44	3,445.42	3,388.73	56.69	60.774	CC, ES	
10,600.00	6,887.52	3,555.00	3,554.70	69.28	69.25	16.65	48.56	-3,988.44	3,446.08	3,388.95	57.13	60.322		
10,700.00	6,887.29	3,555.00	3,554.70	70.75	69.25	16.65	48.56	-3,988.44	3,449.50	3,391.60	57.90	59.578		
10,800.00	6,887.06	3,555.00	3,554.70	72.22	69.25	16.65	48.56	-3,988.44	3,455.80	3,396.99	58.81	58.760		
10,900.00	6,886.83	3,555.00	3,554.70	73.70	69.25	16.65	48.56	-3,988.44	3,464.99	3,405.13	59.86	57.889		
11,000.00	6,886.60	3,555.00	3,554.70	75.19	69.25	16.65	48.56	-3,988.44	3,477.02	3,416.01	61.01	56.987		
11,100.00	6,886.37	3,555.00	3,554.70	76.68	69.25	16.65	48.56	-3,988.44	3,491.88	3,429.61	62.27	56.076		
11,200.00	6,886.13	3,555.00	3,554.70	78.17	69.25	16.65	48.56	-3,988.44	3,509.52	3,445.92	63.61	55.175		
11,300.00	6,885.90	3,555.00	3,554.70	79.67	69.25	16.65	48.56	-3,988.44	3,529.92	3,464.91	65.01	54.302		
11,400.00	6,885.67	3,555.00	3,554.70	81.17	69.25	16.65	48.56	-3,988.44	3,553.01	3,486.56	66.45	53.468		
11,500.00	6,885.44	3,555.00	3,554.70	82.68	69.25	16.65	48.56	-3,988.44	3,578.74	3,510.82	67.93	52.686		
11,600.00	6,885.21	3,555.00	3,554.70	84.19	69.25	16.65	48.56	-3,988.44	3,607.07	3,537.65	69.42	51.962		
11,700.00	6,884.98	3,555.00	3,554.70	85.71	69.25	16.65	48.56	-3,988.44	3,637.92	3,567.01	70.91	51.300		
11,800.00	6,884.74	3,555.00	3,554.70	87.22	69.25	16.65	48.56	-3,988.44	3,671.24	3,598.84	72.40	50.704		
11,900.00	6,884.51	3,555.00	3,554.70	88.74	69.25	16.65	48.56	-3,988.44	3,706.96	3,633.08	73.88	50.175		
12,000.00	6,884.28	3,555.00	3,554.70	90.27	69.25	16.65	48.56	-3,988.44	3,745.01	3,669.68	75.33	49.712		
12,100.00	6,884.05	3,555.00	3,554.70	91.79	69.25	16.65	48.56	-3,988.44	3,785.32	3,708.56	76.76	49.313		
12,200.00	6,883.82	3,555.00	3,554.70	93.32	69.25	16.65	48.56	-3,988.44	3,827.82	3,749.67	78.15	48.978		
12,300.00	6,883.59	3,555.00	3,554.70	94.85	69.25	16.65	48.56	-3,988.44	3,872.44	3,792.93	79.51	48.704		
12,400.00	6,883.36	3,555.00	3,554.70	96.38	69.25	16.65	48.56	-3,988.44	3,919.10	3,838.27	80.83	48.488		
12,500.00	6,883.12	3,555.00	3,554.70	97.92	69.25	16.65	48.56	-3,988.44	3,967.73	3,885.63	82.10	48.328		
12,600.00	6,882.89	3,555.00	3,554.70	99.46	69.25	16.65	48.56	-3,988.44	4,018.26	3,934.93	83.33	48.220		
12,700.00	6,882.66	3,555.00	3,554.70	101.00	69.25	16.65	48.56	-3,988.44	4,070.62	3,986.10	84.52	48.163		
12,800.00	6,882.43	3,555.00	3,554.70	102.54	69.25	16.65	48.56	-3,988.44	4,124.74	4,039.08	85.66	48.152		
12,900.00	6,882.20	3,555.00	3,554.70	104.08	69.25	16.65	48.56	-3,988.44	4,180.55	4,093.80	86.76	48.187		
13,000.00	6,881.97	3,555.00	3,554.70	105.63	69.25	16.65	48.56	-3,988.44	4,237.99	4,150.18	87.81	48.263		
13,100.00	6,881.74	3,555.00	3,554.70	107.18	69.25	16.65	48.56	-3,988.44	4,296.99	4,208.17	88.82	48.378		
13,200.00	6,881.50	3,555.00	3,554.70	108.73	69.25	16.65	48.56	-3,988.44	4,357.48	4,267.70	89.79	48.531		
13,300.00	6,881.27	3,555.00	3,554.70	110.28	69.25	16.65	48.56	-3,988.44	4,419.41	4,328.70	90.71	48.718		
13,400.00	6,881.04	3,555.00	3,554.70	111.83	69.25	16.65	48.56	-3,988.44	4,482.72	4,391.12	91.60	48.938		
13,500.00	6,880.81	3,555.00	3,554.70	113.38	69.25	16.65	48.56	-3,988.44	4,547.34	4,454.90	92.44	49.190		
13,600.00	6,880.58	3,555.00	3,554.70	114.94	69.25	16.65	48.56	-3,988.44	4,613.23	4,519.97	93.25	49.470		
13,700.00	6,880.35	3,555.00	3,554.70	116.49	69.25	16.65	48.56	-3,988.44	4,680.32	4,586.30	94.02	49.777		
13,800.00	6,880.12	3,555.00	3,554.70	118.05	69.25	16.65	48.56	-3,988.44	4,748.57	4,653.81	94.76	50.111		
13,900.00	6,879.88	3,555.00	3,554.70	119.61	69.25	16.65	48.56	-3,988.44	4,817.93	4,722.47	95.47	50.468		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 140 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		120-A027Ua_INC-ONLY					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor	
14,000.00	6,879.65	3,555.00	3,554.70	121.17	69.25	16.65	48.56	-3,988.44	4,888.36	4,792.22	96.14	50.848		
14,100.00	6,879.42	3,555.00	3,554.70	122.73	69.25	16.65	48.56	-3,988.44	4,959.80	4,863.02	96.78	51.250		
14,200.00	6,879.19	3,555.00	3,554.70	124.29	69.25	16.65	48.56	-3,988.44	5,032.21	4,934.82	97.39	51.671		
14,300.00	6,878.96	3,555.00	3,554.70	125.86	69.25	16.65	48.56	-3,988.44	5,105.55	5,007.58	97.97	52.112		
14,400.00	6,878.73	3,555.00	3,554.70	127.42	69.25	16.65	48.56	-3,988.44	5,179.79	5,081.26	98.53	52.571		
14,500.00	6,878.50	3,555.00	3,554.70	128.99	69.25	16.65	48.56	-3,988.44	5,254.88	5,155.82	99.06	53.047		
14,600.00	6,878.26	3,555.00	3,554.70	130.55	69.25	16.65	48.56	-3,988.44	5,330.79	5,231.22	99.57	53.538		
14,700.00	6,878.03	3,555.00	3,554.70	132.12	69.25	16.65	48.56	-3,988.44	5,407.48	5,307.43	100.06	54.045		
14,800.00	6,877.80	3,555.00	3,554.70	133.69	69.25	16.65	48.56	-3,988.44	5,484.92	5,384.41	100.52	54.566		
14,900.00	6,877.57	3,555.00	3,554.70	135.26	69.25	16.65	48.56	-3,988.44	5,563.09	5,462.12	100.96	55.100		
15,000.00	6,877.34	3,555.00	3,554.70	136.83	69.25	16.65	48.56	-3,988.44	5,641.94	5,540.55	101.39	55.647		
15,100.00	6,877.11	3,555.00	3,554.70	138.40	69.25	16.65	48.56	-3,988.44	5,721.45	5,619.66	101.79	56.207		
15,200.00	6,876.87	3,555.00	3,554.70	139.97	69.25	16.65	48.56	-3,988.44	5,801.60	5,699.42	102.18	56.777		
15,300.00	6,876.64	3,555.00	3,554.70	141.54	69.25	16.65	48.56	-3,988.44	5,882.36	5,779.80	102.55	57.358		
15,400.00	6,876.41	3,555.00	3,554.70	143.12	69.25	16.65	48.56	-3,988.44	5,963.70	5,860.79	102.91	57.950		
15,500.00	6,876.18	3,555.00	3,554.70	144.69	69.25	16.65	48.56	-3,988.44	6,045.60	5,942.34	103.25	58.551		
15,600.00	6,875.95	3,555.00	3,554.70	146.26	69.25	16.65	48.56	-3,988.44	6,128.03	6,024.45	103.58	59.162		
15,700.00	6,875.72	3,555.00	3,554.70	147.84	69.25	16.65	48.56	-3,988.44	6,210.98	6,107.09	103.90	59.781		
15,800.00	6,875.49	3,555.00	3,554.70	149.41	69.25	16.65	48.56	-3,988.44	6,294.43	6,190.23	104.20	60.408		
15,900.00	6,875.25	3,555.00	3,554.70	150.99	69.25	16.65	48.56	-3,988.44	6,378.35	6,273.86	104.49	61.043		
16,000.00	6,875.02	3,555.00	3,554.70	152.57	69.25	16.65	48.56	-3,988.44	6,462.74	6,357.97	104.77	61.685		
16,100.00	6,874.79	3,555.00	3,554.70	154.14	69.25	16.65	48.56	-3,988.44	6,547.56	6,442.52	105.04	62.335		
16,200.00	6,874.56	3,555.00	3,554.70	155.72	69.25	16.65	48.56	-3,988.44	6,632.80	6,527.50	105.30	62.991		
16,300.00	6,874.33	3,555.00	3,554.70	157.30	69.25	16.65	48.56	-3,988.44	6,718.45	6,612.90	105.55	63.653		
16,400.00	6,874.10	3,555.00	3,554.70	158.88	69.25	16.65	48.56	-3,988.44	6,804.49	6,698.70	105.79	64.322		
16,500.00	6,873.87	3,555.00	3,554.70	160.46	69.25	16.65	48.56	-3,988.44	6,890.91	6,784.89	106.02	64.996		
16,600.00	6,873.63	3,555.00	3,554.70	162.04	69.25	16.65	48.56	-3,988.44	6,977.69	6,871.45	106.25	65.675		
16,700.00	6,873.40	3,555.00	3,554.70	163.62	69.25	16.65	48.56	-3,988.44	7,064.83	6,958.36	106.46	66.360		
16,800.00	6,873.17	3,555.00	3,554.70	165.20	69.25	16.65	48.56	-3,988.44	7,152.29	7,045.62	106.67	67.049		
16,900.00	6,872.94	3,555.00	3,554.70	166.78	69.25	16.65	48.56	-3,988.44	7,240.09	7,133.21	106.88	67.743		
17,000.00	6,872.71	3,555.00	3,554.70	168.36	69.25	16.65	48.56	-3,988.44	7,328.19	7,221.12	107.07	68.441		
17,100.00	6,872.48	3,555.00	3,554.70	169.95	69.25	16.65	48.56	-3,988.44	7,416.60	7,309.34	107.26	69.144		
17,133.01	6,872.40	3,555.00	3,554.70	170.47	69.25	16.65	48.56	-3,988.44	7,445.85	7,338.52	107.33	69.376		
17,200.00	6,872.25	3,555.00	3,554.70	171.53	69.25	16.65	48.56	-3,988.44	7,505.30	7,397.85	107.45	69.850		
17,304.21	6,872.00	3,555.00	3,554.70	173.18	69.25	16.65	48.56	-3,988.44	7,598.03	7,490.39	107.64	70.590		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 170 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 241-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	54.00	54.00	0.00	1.00	-94.95	-790.46	-9,127.37	9,161.53				
100.00	100.00	154.00	154.00	0.25	2.85	-94.95	-790.46	-9,127.37	9,161.53	9,158.43	3.10	2,957.475	
200.00	200.00	254.00	254.00	0.61	4.71	-94.95	-790.46	-9,127.37	9,161.53	9,156.21	5.32	1,722.355	
300.00	300.00	354.00	354.00	0.97	6.67	-94.95	-790.46	-9,127.37	9,161.53	9,153.90	7.64	1,199.588	
322.71	322.71	376.19	376.19	1.05	7.10	-94.95	-790.21	-9,127.37	9,161.51	9,153.36	8.15	1,123.638	
400.00	400.00	451.27	451.27	1.33	8.58	-94.95	-790.36	-9,127.37	9,161.52	9,151.62	9.90	925.237	
500.00	500.00	554.02	554.00	1.68	10.65	-94.95	-790.46	-9,127.37	9,161.53	9,149.20	12.33	742.930	
583.51	583.51	637.53	637.50	1.98	12.35	-94.95	-789.75	-9,127.37	9,161.47	9,147.14	14.33	639.353	
600.00	600.00	653.35	653.32	2.04	12.67	-94.95	-789.76	-9,127.37	9,161.47	9,146.76	14.71	622.802	
700.00	700.00	749.26	749.22	2.40	14.62	-94.95	-790.09	-9,127.37	9,161.50	9,144.48	17.02	538.305	
800.00	800.00	854.06	854.00	2.76	16.64	-94.95	-790.46	-9,127.37	9,161.53	9,142.13	19.40	472.205	
900.00	900.00	954.06	954.00	3.12	18.48	-94.95	-790.46	-9,127.37	9,161.53	9,139.93	21.60	424.173	
1,000.00	1,000.00	1,054.06	1,054.00	3.48	20.32	-94.95	-790.46	-9,127.37	9,161.53	9,137.74	23.80	385.011	
1,100.00	1,099.98	1,152.30	1,152.23	3.82	22.12	71.49	-789.69	-9,127.37	9,160.91	9,134.97	25.94	353.130	
1,200.00	1,199.84	1,250.27	1,250.20	4.15	23.93	71.55	-790.03	-9,127.37	9,159.28	9,131.21	28.07	326.296	
1,300.00	1,299.45	1,353.54	1,353.45	4.48	25.83	71.66	-790.46	-9,127.37	9,156.56	9,126.25	30.30	302.156	
1,400.00	1,398.70	1,452.79	1,452.70	4.82	27.66	71.80	-790.46	-9,127.37	9,152.71	9,120.23	32.48	281.832	
1,500.00	1,497.47	1,551.55	1,551.47	5.17	29.48	71.99	-790.46	-9,127.37	9,147.79	9,113.14	34.65	264.016	
1,569.36	1,565.62	1,619.41	1,619.33	5.43	30.73	72.14	-790.20	-9,127.37	9,143.74	9,107.59	36.15	252.932	
1,600.00	1,595.66	1,649.26	1,649.17	5.54	31.28	72.18	-790.21	-9,127.37	9,141.86	9,105.04	36.81	248.326	
1,700.00	1,693.69	1,746.69	1,746.61	5.92	33.08	72.29	-790.32	-9,127.37	9,135.73	9,096.75	38.98	234.341	
1,800.00	1,791.72	1,845.82	1,845.72	6.30	34.93	72.41	-790.46	-9,127.37	9,129.65	9,088.42	41.22	221.464	
1,900.00	1,889.75	1,943.85	1,943.75	6.70	36.86	72.52	-790.46	-9,127.37	9,123.59	9,080.05	43.54	209.547	
2,000.00	1,987.78	2,041.89	2,041.78	7.10	38.78	72.64	-790.46	-9,127.37	9,117.57	9,071.71	45.86	198.809	
2,100.00	2,085.81	2,139.07	2,138.95	7.50	40.69	72.76	-789.63	-9,127.37	9,111.53	9,063.36	48.17	189.151	
2,200.00	2,183.85	2,235.65	2,235.54	7.91	42.59	72.87	-789.88	-9,127.37	9,105.61	9,055.14	50.47	180.406	
2,300.00	2,281.88	2,332.33	2,332.21	8.32	44.49	72.98	-790.36	-9,127.37	9,099.74	9,046.96	52.78	172.406	
2,400.00	2,379.91	2,434.06	2,433.91	8.74	46.43	73.10	-790.46	-9,127.37	9,093.89	9,038.75	55.14	164.926	
2,500.00	2,477.94	2,532.09	2,531.94	9.16	48.30	73.22	-790.46	-9,127.37	9,088.06	9,030.64	57.42	158.272	
2,600.00	2,575.97	2,629.70	2,629.54	9.58	50.16	73.34	-789.65	-9,127.37	9,082.23	9,022.53	59.70	152.141	
2,700.00	2,674.00	2,726.44	2,726.29	10.00	52.00	73.46	-789.85	-9,127.37	9,076.50	9,014.54	61.96	146.495	
2,800.00	2,772.03	2,823.29	2,823.13	10.43	53.85	73.57	-790.29	-9,127.37	9,070.82	9,006.60	64.22	141.240	
2,900.00	2,870.07	2,924.24	2,924.07	10.86	55.72	73.69	-790.46	-9,127.37	9,065.16	8,998.64	66.52	136.270	
3,000.00	2,968.10	3,022.28	3,022.10	11.28	57.53	73.81	-790.46	-9,127.37	9,059.53	8,990.78	68.76	131.765	
3,100.00	3,066.13	3,120.13	3,119.95	11.71	59.34	73.93	-789.92	-9,127.37	9,053.92	8,982.93	70.99	127.547	
3,200.00	3,164.16	3,217.45	3,217.26	12.14	61.13	74.05	-790.05	-9,127.37	9,048.38	8,975.17	73.21	123.601	
3,300.00	3,262.19	3,314.83	3,314.64	12.58	62.92	74.16	-790.34	-9,127.37	9,042.88	8,967.45	75.43	119.885	
3,400.00	3,360.22	3,414.42	3,414.22	13.01	64.76	74.28	-790.46	-9,127.37	9,037.42	8,959.73	77.70	116.318	
3,500.00	3,458.25	3,512.45	3,512.25	13.44	66.57	74.40	-790.46	-9,127.37	9,031.99	8,952.06	79.93	112.993	
3,600.00	3,556.29	3,610.48	3,610.29	13.88	68.38	74.52	-790.46	-9,127.37	9,026.60	8,944.43	82.17	109.848	
3,700.00	3,654.32	3,708.18	3,707.98	14.31	70.18	74.64	-789.85	-9,127.37	9,021.23	8,936.83	84.41	106.877	
3,800.00	3,752.35	3,805.79	3,805.59	14.75	71.98	74.76	-790.02	-9,127.37	9,015.93	8,929.29	86.64	104.061	
3,900.00	3,850.38	3,903.46	3,903.25	15.18	73.78	74.87	-790.33	-9,127.37	9,010.67	8,921.80	88.88	101.385	
4,000.00	3,948.41	4,002.63	4,002.41	15.62	75.87	74.99	-790.46	-9,127.37	9,005.45	8,914.06	91.39	98.538	
4,100.00	4,046.44	4,100.66	4,100.44	16.05	78.03	75.11	-790.46	-9,127.37	9,000.26	8,906.27	93.99	95.755	
4,200.00	4,144.48	4,198.61	4,198.39	16.49	80.20	75.23	-789.93	-9,127.37	8,995.10	8,898.51	96.59	93.123	
4,300.00	4,242.51	4,296.28	4,296.06	16.93	82.36	75.35	-790.05	-9,127.37	8,990.00	8,890.81	99.19	90.635	
4,400.00	4,340.54	4,394.02	4,393.80	17.37	84.52	75.47	-790.34	-9,127.37	8,984.94	8,883.15	101.79	88.273	
4,500.00	4,438.57	4,492.92	4,492.57	17.81	87.15	75.59	-790.46	-9,127.37	8,979.91	8,875.06	104.85	85.645	
4,600.00	4,536.60	4,590.09	4,589.72	18.25	89.92	75.71	-789.48	-9,127.37	8,974.91	8,866.85	108.06	83.057	
4,700.00	4,634.63	4,689.20	4,688.63	18.68	92.75	75.83	-790.46	-9,127.37	8,969.98	8,858.66	111.33	80.572	
4,800.00	4,732.66	4,787.31	4,786.66	19.12	95.56	75.95	-790.46	-9,127.37	8,965.08	8,850.51	114.57	78.247	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 170 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		241-A027Ua_INC-ONLY					Rule Assigned:			Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
4,900.00	4,830.70	4,885.35	4,884.70	19.56	98.16	76.07	-790.46	-9,127.37	8,960.22	8,842.61	117.61	76.188		
5,000.00	4,928.73	4,982.46	4,981.77	20.00	100.73	76.19	-789.93	-9,127.37	8,955.39	8,834.77	120.62	74.246		
5,100.00	5,026.76	5,081.54	5,080.76	20.44	103.32	76.31	-790.46	-9,127.37	8,950.61	8,826.96	123.65	72.385		
5,200.00	5,124.79	5,179.57	5,178.79	20.88	105.88	76.43	-790.46	-9,127.37	8,945.87	8,819.23	126.65	70.637		
5,300.00	5,222.82	5,277.60	5,276.78	21.32	108.43	76.56	-788.55	-9,127.37	8,941.17	8,811.53	129.64	68.970		
5,400.00	5,320.85	5,375.68	5,374.85	21.77	110.99	76.68	-788.89	-9,127.37	8,936.51	8,803.88	132.63	67.377		
5,500.00	5,418.88	5,474.02	5,473.17	22.21	113.55	76.80	-789.82	-9,127.37	8,931.90	8,796.26	135.64	65.852		
5,600.00	5,516.92	5,571.93	5,570.92	22.65	116.16	76.91	-790.46	-9,127.37	8,927.32	8,788.64	138.69	64.371		
5,700.00	5,614.95	5,669.97	5,668.95	23.09	118.82	77.04	-790.46	-9,127.37	8,922.79	8,781.00	141.79	62.929		
5,800.00	5,712.98	5,768.62	5,767.57	23.53	121.51	77.16	-789.52	-9,127.37	8,918.30	8,773.39	144.91	61.542		
5,900.00	5,811.01	5,866.21	5,865.01	23.97	124.18	77.28	-790.46	-9,127.37	8,913.84	8,765.82	148.02	60.219		
6,000.00	5,909.04	5,964.24	5,963.04	24.41	126.95	77.40	-790.46	-9,127.37	8,909.43	8,758.20	151.24	58.910		
6,100.00	6,007.07	6,063.17	6,061.94	24.85	129.75	77.53	-789.30	-9,127.37	8,905.08	8,750.61	154.48	57.647		
6,200.00	6,105.10	6,160.49	6,159.10	25.30	132.50	77.64	-790.46	-9,127.37	8,900.74	8,743.07	157.67	56.451		
6,300.00	6,203.14	6,175.00	6,173.61	25.74	132.91	77.66	-790.46	-9,127.37	8,896.85	8,738.32	158.52	56.123		
6,393.02	6,294.33	6,175.00	6,173.61	26.15	132.91	77.66	-790.46	-9,127.37	8,894.22	8,735.30	158.92	55.967		
6,400.00	6,301.17	6,175.00	6,173.61	26.18	132.91	74.64	-790.46	-9,127.37	8,894.03	8,735.08	158.95	55.956		
6,450.00	6,350.01	6,175.00	6,173.61	26.40	132.91	55.79	-790.46	-9,127.37	8,890.55	8,731.40	159.15	55.862		
6,500.00	6,398.37	6,175.00	6,173.61	26.63	132.91	42.56	-790.46	-9,127.37	8,883.45	8,724.10	159.35	55.748		
6,550.00	6,445.94	6,175.00	6,173.61	26.86	132.91	33.68	-790.46	-9,127.37	8,872.76	8,713.22	159.54	55.614		
6,600.00	6,492.42	6,175.00	6,173.61	27.08	132.91	27.60	-790.46	-9,127.37	8,858.53	8,698.81	159.72	55.462		
6,650.00	6,537.54	6,175.00	6,173.61	27.30	132.91	23.28	-790.46	-9,127.37	8,840.84	8,680.95	159.89	55.292		
6,700.00	6,581.01	6,175.00	6,173.61	27.52	132.91	20.10	-790.46	-9,127.37	8,819.77	8,659.72	160.05	55.105		
6,750.00	6,622.57	6,175.00	6,173.61	27.74	132.91	17.67	-790.46	-9,127.37	8,795.43	8,635.23	160.20	54.902		
6,800.00	6,661.96	6,175.00	6,173.61	27.96	132.91	15.76	-790.46	-9,127.37	8,767.95	8,607.61	160.34	54.684		
6,850.00	6,698.93	6,175.00	6,173.61	28.17	132.91	14.23	-790.46	-9,127.37	8,737.46	8,576.99	160.46	54.452		
6,900.00	6,733.26	6,175.00	6,173.61	28.39	132.91	12.96	-790.46	-9,127.37	8,704.12	8,543.54	160.57	54.207		
6,950.00	6,764.73	6,175.00	6,173.61	28.60	132.91	11.88	-790.46	-9,127.37	8,668.10	8,507.43	160.67	53.950		
7,000.00	6,793.16	6,175.00	6,173.61	28.82	132.91	10.93	-790.46	-9,127.37	8,629.60	8,468.85	160.75	53.682		
7,050.00	6,818.37	6,175.00	6,173.61	29.04	132.91	10.06	-790.46	-9,127.37	8,588.82	8,428.00	160.83	53.405		
7,100.00	6,840.20	6,175.00	6,173.61	29.27	132.91	9.22	-790.46	-9,127.37	8,545.98	8,385.10	160.88	53.119		
7,150.00	6,858.51	6,175.00	6,173.61	29.50	132.91	8.35	-790.46	-9,127.37	8,501.32	8,340.39	160.93	52.826		
7,200.00	6,873.20	6,175.00	6,173.61	29.74	132.91	7.33	-790.46	-9,127.37	8,455.09	8,294.12	160.96	52.528		
7,250.00	6,884.18	6,175.00	6,173.61	30.00	132.91	5.96	-790.46	-9,127.37	8,407.54	8,246.55	160.99	52.224		
7,300.00	6,891.37	6,175.00	6,173.61	30.26	132.91	3.73	-790.46	-9,127.37	8,358.95	8,197.94	161.00	51.918		
7,350.00	6,894.73	6,175.00	6,173.61	30.54	132.91	-1.11	-790.46	-9,127.37	8,309.60	8,148.59	161.01	51.610		
7,370.19	6,895.00	6,175.00	6,173.61	30.65	132.91	-5.32	-790.46	-9,127.37	8,289.53	8,128.52	161.01	51.485		
7,400.00	6,894.93	6,175.00	6,173.61	30.83	132.91	-5.32	-790.46	-9,127.37	8,259.84	8,098.83	161.01	51.301		
7,500.00	6,894.70	6,175.00	6,173.61	31.45	132.91	-5.32	-790.46	-9,127.37	8,160.27	7,999.27	161.00	50.684		
7,600.00	6,894.47	6,175.00	6,173.61	32.15	132.91	-5.32	-790.46	-9,127.37	8,060.71	7,899.71	161.00	50.067		
7,700.00	6,894.24	6,175.00	6,173.61	32.92	132.91	-5.32	-790.46	-9,127.37	7,961.16	7,800.17	160.99	49.450		
7,800.00	6,894.00	6,175.00	6,173.61	33.75	132.91	-5.32	-790.46	-9,127.37	7,861.62	7,700.63	160.99	48.833		
7,900.00	6,893.77	6,175.00	6,173.61	34.63	132.91	-5.32	-790.46	-9,127.37	7,762.10	7,601.11	160.99	48.216		
8,000.00	6,893.54	6,175.00	6,173.61	35.57	132.91	-5.32	-790.46	-9,127.37	7,662.58	7,501.60	160.98	47.599		
8,100.00	6,893.31	6,175.00	6,173.61	36.55	132.91	-5.32	-790.46	-9,127.37	7,563.08	7,402.10	160.98	46.981		
8,200.00	6,893.08	6,175.00	6,173.61	37.58	132.91	-5.32	-790.46	-9,127.37	7,463.59	7,302.62	160.98	46.364		
8,300.00	6,892.85	6,175.00	6,173.61	38.65	132.91	-5.32	-790.46	-9,127.37	7,364.12	7,203.14	160.98	45.746		
8,400.00	6,892.62	6,175.00	6,173.61	39.76	132.91	-5.32	-790.46	-9,127.37	7,264.66	7,103.69	160.98	45.129		
8,500.00	6,892.38	6,175.00	6,173.61	40.90	132.91	-5.32	-790.46	-9,127.37	7,165.22	7,004.24	160.97	44.511		
8,600.00	6,892.15	6,175.00	6,173.61	42.07	132.91	-5.32	-790.46	-9,127.37	7,065.79	6,904.81	160.97	43.894		
8,700.00	6,891.92	6,175.00	6,173.61	43.27	132.91	-5.32	-790.46	-9,127.37	6,966.38	6,805.40	160.97	43.276		
8,800.00	6,891.69	6,175.00	6,173.61	44.50	132.91	-5.32	-790.46	-9,127.37	6,866.98	6,706.01	160.97	42.659		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 170 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		241-A027Ua_INC-ONLY					Offset		Semi Major Axis		Rule Assigned:		Offset Well Error:	0.00 usft
Reference	Vertical	Reference	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
8,900.00	6,891.46	6,175.00	6,173.61	45.75	132.91	-5.32	-790.46	-9,127.37	6,767.60	6,606.63	160.98	42.041		
9,000.00	6,891.23	6,175.00	6,173.61	47.02	132.91	-5.32	-790.46	-9,127.37	6,668.24	6,507.27	160.98	41.424		
9,100.00	6,890.99	6,175.00	6,173.61	48.31	132.91	-5.32	-790.46	-9,127.37	6,568.91	6,407.93	160.98	40.807		
9,200.00	6,890.76	6,175.00	6,173.61	49.62	132.91	-5.32	-790.46	-9,127.37	6,469.59	6,308.61	160.98	40.189		
9,300.00	6,890.53	6,175.00	6,173.61	50.94	132.91	-5.32	-790.46	-9,127.37	6,370.29	6,209.31	160.98	39.572		
9,400.00	6,890.30	6,175.00	6,173.61	52.29	132.91	-5.32	-790.46	-9,127.37	6,271.01	6,110.03	160.98	38.955		
9,500.00	6,890.07	6,175.00	6,173.61	53.64	132.91	-5.32	-790.46	-9,127.37	6,171.76	6,010.78	160.98	38.338		
9,600.00	6,889.84	6,175.00	6,173.61	55.02	132.91	-5.32	-790.46	-9,127.37	6,072.53	5,911.55	160.98	37.721		
9,700.00	6,889.61	6,175.00	6,173.61	56.40	132.91	-5.32	-790.46	-9,127.37	5,973.33	5,812.35	160.99	37.105		
9,800.00	6,889.37	6,175.00	6,173.61	57.79	132.91	-5.32	-790.46	-9,127.37	5,874.16	5,713.17	160.99	36.488		
9,900.00	6,889.14	6,175.00	6,173.61	59.20	132.91	-5.32	-790.46	-9,127.37	5,775.01	5,614.02	160.99	35.872		
10,000.00	6,888.91	6,175.00	6,173.61	60.61	132.91	-5.32	-790.46	-9,127.37	5,675.90	5,514.90	160.99	35.256		
10,100.00	6,888.68	6,175.00	6,173.61	62.04	132.91	-5.32	-790.46	-9,127.37	5,576.81	5,415.82	160.99	34.640		
10,200.00	6,888.45	6,175.00	6,173.61	63.47	132.91	-5.32	-790.46	-9,127.37	5,477.76	5,316.76	161.00	34.024		
10,300.00	6,888.22	6,175.00	6,173.61	64.91	132.91	-5.32	-790.46	-9,127.37	5,378.74	5,217.75	161.00	33.409		
10,400.00	6,887.99	6,175.00	6,173.61	66.36	132.91	-5.32	-790.46	-9,127.37	5,279.77	5,118.77	161.00	32.794		
10,500.00	6,887.75	6,175.00	6,173.61	67.82	132.91	-5.32	-790.46	-9,127.37	5,180.83	5,019.83	161.00	32.179		
10,600.00	6,887.52	6,175.00	6,173.61	69.28	132.91	-5.32	-790.46	-9,127.37	5,081.93	4,920.93	161.00	31.565		
10,700.00	6,887.29	6,175.00	6,173.61	70.75	132.91	-5.32	-790.46	-9,127.37	4,983.07	4,822.07	161.00	30.951		
10,800.00	6,887.06	6,175.00	6,173.61	72.22	132.91	-5.32	-790.46	-9,127.37	4,884.27	4,723.27	161.00	30.337		
10,900.00	6,886.83	6,175.00	6,173.61	73.70	132.91	-5.32	-790.46	-9,127.37	4,785.51	4,624.51	161.00	29.724		
11,000.00	6,886.60	6,175.00	6,173.61	75.19	132.91	-5.32	-790.46	-9,127.37	4,686.80	4,525.80	161.00	29.111		
11,100.00	6,886.37	6,175.00	6,173.61	76.68	132.91	-5.32	-790.46	-9,127.37	4,588.15	4,427.16	160.99	28.499		
11,200.00	6,886.13	6,175.00	6,173.61	78.17	132.91	-5.32	-790.46	-9,127.37	4,489.56	4,328.57	160.99	27.887		
11,300.00	6,885.90	6,175.00	6,173.61	79.67	132.91	-5.32	-790.46	-9,127.37	4,391.04	4,230.05	160.99	27.276		
11,400.00	6,885.67	6,175.00	6,173.61	81.17	132.91	-5.32	-790.46	-9,127.37	4,292.58	4,131.60	160.98	26.665		
11,500.00	6,885.44	6,175.00	6,173.61	82.68	132.91	-5.32	-790.46	-9,127.37	4,194.19	4,033.22	160.97	26.055		
11,600.00	6,885.21	6,175.00	6,173.61	84.19	132.91	-5.32	-790.46	-9,127.37	4,095.89	3,934.92	160.97	25.446		
11,700.00	6,884.98	6,175.00	6,173.61	85.71	132.91	-5.32	-790.46	-9,127.37	3,997.67	3,836.71	160.96	24.837		
11,800.00	6,884.74	6,175.00	6,173.61	87.22	132.91	-5.32	-790.46	-9,127.37	3,899.53	3,738.59	160.94	24.229		
11,900.00	6,884.51	6,175.00	6,173.61	88.74	132.91	-5.32	-790.46	-9,127.37	3,801.50	3,640.57	160.93	23.622		
12,000.00	6,884.28	6,175.00	6,173.61	90.27	132.91	-5.32	-790.46	-9,127.37	3,703.57	3,542.65	160.91	23.016		
12,100.00	6,884.05	6,175.00	6,173.61	91.79	132.91	-5.32	-790.46	-9,127.37	3,605.75	3,444.86	160.89	22.411		
12,200.00	6,883.82	6,175.00	6,173.61	93.32	132.91	-5.32	-790.46	-9,127.37	3,508.06	3,347.19	160.87	21.806		
12,300.00	6,883.59	6,175.00	6,173.61	94.85	132.91	-5.32	-790.46	-9,127.37	3,410.50	3,249.65	160.85	21.203		
12,400.00	6,883.36	6,175.00	6,173.61	96.38	132.91	-5.32	-790.46	-9,127.37	3,313.09	3,152.27	160.82	20.601		
12,500.00	6,883.12	6,175.00	6,173.61	97.92	132.91	-5.32	-790.46	-9,127.37	3,215.83	3,055.05	160.79	20.001		
12,600.00	6,882.89	6,175.00	6,173.61	99.46	132.91	-5.32	-790.46	-9,127.37	3,118.75	2,958.00	160.75	19.402		
12,700.00	6,882.66	6,175.00	6,173.61	101.00	132.91	-5.32	-790.46	-9,127.37	3,021.86	2,861.16	160.70	18.804		
12,800.00	6,882.43	6,175.00	6,173.61	102.54	132.91	-5.32	-790.46	-9,127.37	2,925.18	2,764.53	160.65	18.208		
12,900.00	6,882.20	6,175.00	6,173.61	104.08	132.91	-5.32	-790.46	-9,127.37	2,828.73	2,668.13	160.60	17.614		
13,000.00	6,881.97	6,175.00	6,173.61	105.63	132.91	-5.32	-790.46	-9,127.37	2,732.53	2,572.00	160.53	17.022		
13,100.00	6,881.74	6,175.00	6,173.61	107.18	132.91	-5.32	-790.46	-9,127.37	2,636.62	2,476.17	160.45	16.432		
13,200.00	6,881.50	6,175.00	6,173.61	108.73	132.91	-5.32	-790.46	-9,127.37	2,541.02	2,380.66	160.36	15.845		
13,300.00	6,881.27	6,175.00	6,173.61	110.28	132.91	-5.32	-790.46	-9,127.37	2,445.78	2,285.52	160.26	15.261		
13,400.00	6,881.04	6,175.00	6,173.61	111.83	132.91	-5.32	-790.46	-9,127.37	2,350.93	2,190.79	160.14	14.681		
13,500.00	6,880.81	6,175.00	6,173.61	113.38	132.91	-5.32	-790.46	-9,127.37	2,256.52	2,096.53	160.00	14.104		
13,600.00	6,880.58	6,175.00	6,173.61	114.94	132.91	-5.32	-790.46	-9,127.37	2,162.62	2,002.79	159.83	13.531		
13,700.00	6,880.35	6,175.00	6,173.61	116.49	132.91	-5.32	-790.46	-9,127.37	2,069.29	1,909.66	159.63	12.963		
13,800.00	6,880.12	6,175.00	6,173.61	118.05	132.91	-5.32	-790.46	-9,127.37	1,976.61	1,817.22	159.39	12.401		
13,900.00	6,879.88	6,175.00	6,173.61	119.61	132.91	-5.32	-790.46	-9,127.37	1,884.68	1,725.58	159.10	11.846		
14,000.00	6,879.65	6,175.00	6,173.61	121.17	132.91	-5.32	-790.46	-9,127.37	1,793.61	1,634.86	158.75	11.299		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 170 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 241-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,100.00	6,879.42	6,175.00	6,173.61	122.73	132.91	-5.32	-790.46	-9,127.37	1,703.55	1,545.23	158.31	10.761	
14,200.00	6,879.19	6,175.00	6,173.61	124.29	132.91	-5.32	-790.46	-9,127.37	1,614.65	1,456.88	157.78	10.234	
14,300.00	6,878.96	6,175.00	6,173.61	125.86	132.91	-5.32	-790.46	-9,127.37	1,527.13	1,370.03	157.11	9.720	
14,400.00	6,878.73	6,175.00	6,173.61	127.42	132.91	-5.32	-790.46	-9,127.37	1,441.24	1,284.98	156.26	9.223	
14,500.00	6,878.50	6,175.00	6,173.61	128.99	132.91	-5.32	-790.46	-9,127.37	1,357.28	1,202.10	155.17	8.747	
14,600.00	6,878.26	6,175.00	6,173.61	130.55	132.91	-5.32	-790.46	-9,127.37	1,275.63	1,121.85	153.78	8.295	
14,700.00	6,878.03	6,175.00	6,173.61	132.12	132.91	-5.32	-790.46	-9,127.37	1,196.77	1,044.80	151.97	7.875	
14,800.00	6,877.80	6,175.00	6,173.61	133.69	132.91	-5.32	-790.46	-9,127.37	1,121.29	971.68	149.61	7.495	
14,900.00	6,877.57	6,175.00	6,173.61	135.26	132.91	-5.32	-790.46	-9,127.37	1,049.92	903.40	146.52	7.166	
15,000.00	6,877.34	6,175.00	6,173.61	136.83	132.91	-5.32	-790.46	-9,127.37	983.54	841.07	142.47	6.903	
15,100.00	6,877.11	6,175.00	6,173.61	138.40	132.91	-5.32	-790.46	-9,127.37	923.25	786.03	137.22	6.728	
15,200.00	6,876.87	6,175.00	6,173.61	139.97	132.91	-5.32	-790.46	-9,127.37	870.30	739.79	130.50	6.669	
15,300.00	6,876.64	6,175.00	6,173.61	141.54	132.91	-5.32	-790.46	-9,127.37	826.10	703.93	122.17	6.762	
15,400.00	6,876.41	6,175.00	6,173.61	143.12	132.91	-5.32	-790.46	-9,127.37	792.14	679.73	112.41	7.047	
15,500.00	6,876.18	6,175.00	6,173.61	144.69	132.91	-5.32	-790.46	-9,127.37	769.75	667.36	102.39	7.518	
15,600.00	6,875.95	6,175.00	6,173.61	146.26	132.91	-5.32	-790.46	-9,127.37	759.96	663.83	96.13	7.905	
15,624.00	6,875.89	6,175.00	6,173.61	146.64	132.91	-5.32	-790.46	-9,127.37	759.56	663.55	96.00	7.912 CC	
15,700.00	6,875.72	6,175.00	6,173.61	147.84	132.91	-5.32	-790.46	-9,127.37	763.26	663.47	99.80	7.648 ES	
15,800.00	6,875.49	6,175.00	6,173.61	149.41	132.91	-5.32	-790.46	-9,127.37	779.49	669.14	110.35	7.064	
15,900.00	6,875.25	6,175.00	6,173.61	150.99	132.91	-5.32	-790.46	-9,127.37	807.86	686.01	121.85	6.630	
16,000.00	6,875.02	6,175.00	6,173.61	152.57	132.91	-5.32	-790.46	-9,127.37	847.15	715.07	132.09	6.414	
16,100.00	6,874.79	6,175.00	6,173.61	154.14	132.91	-5.32	-790.46	-9,127.37	895.93	755.41	140.52	6.376 SF	
16,200.00	6,874.56	6,175.00	6,173.61	155.72	132.91	-5.32	-790.46	-9,127.37	952.75	805.53	147.21	6.472	
16,300.00	6,874.33	6,175.00	6,173.61	157.30	132.91	-5.32	-790.46	-9,127.37	1,016.25	863.85	152.40	6.668	
16,400.00	6,874.10	6,175.00	6,173.61	158.88	132.91	-5.32	-790.46	-9,127.37	1,085.26	928.89	156.37	6.940	
16,500.00	6,873.87	6,175.00	6,173.61	160.46	132.91	-5.32	-790.46	-9,127.37	1,158.80	999.41	159.39	7.270	
16,600.00	6,873.63	6,175.00	6,173.61	162.04	132.91	-5.32	-790.46	-9,127.37	1,236.06	1,074.37	161.69	7.645	
16,700.00	6,873.40	6,175.00	6,173.61	163.62	132.91	-5.32	-790.46	-9,127.37	1,316.39	1,152.95	163.44	8.054	
16,800.00	6,873.17	6,175.00	6,173.61	165.20	132.91	-5.32	-790.46	-9,127.37	1,399.26	1,234.47	164.78	8.492	
16,900.00	6,872.94	6,175.00	6,173.61	166.78	132.91	-5.32	-790.46	-9,127.37	1,484.23	1,318.42	165.81	8.951	
17,000.00	6,872.71	6,175.00	6,173.61	168.36	132.91	-5.32	-790.46	-9,127.37	1,570.98	1,404.38	166.60	9.429	
17,100.00	6,872.48	6,175.00	6,173.61	169.95	132.91	-5.32	-790.46	-9,127.37	1,659.22	1,492.00	167.22	9.922	
17,133.01	6,872.40	6,175.00	6,173.61	170.47	132.91	-5.32	-790.46	-9,127.37	1,688.64	1,521.24	167.39	10.088	
17,200.00	6,872.25	6,175.00	6,173.61	171.53	132.91	-5.32	-790.46	-9,127.37	1,748.73	1,581.02	167.70	10.427	
17,304.21	6,872.00	6,175.00	6,173.61	173.18	132.91	-5.32	-790.46	-9,127.37	1,843.14	1,675.05	168.10	10.965	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18A - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 152-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-119.54	-696.07	-1,228.39	1,411.97				
100.00	100.00	86.00	86.00	0.25	1.69	-119.54	-696.07	-1,228.39	1,411.90	1,409.95	1.95	725.845	
200.00	200.00	186.00	186.00	0.61	3.74	-119.54	-696.07	-1,228.39	1,411.90	1,407.55	4.35	324.409	
240.09	240.09	226.09	226.08	0.75	4.63	-119.53	-695.83	-1,228.39	1,411.78	1,406.40	5.38	262.500	
300.00	300.00	282.53	282.52	0.97	5.87	-119.53	-695.97	-1,228.39	1,411.85	1,405.02	6.84	206.552	
400.00	400.00	386.03	386.00	1.33	8.56	-119.54	-696.07	-1,228.39	1,411.90	1,402.01	9.89	142.816	
500.00	500.00	486.12	486.00	1.68	11.25	-119.54	-696.07	-1,228.39	1,411.90	1,398.96	12.94	109.113	
556.85	556.85	542.97	542.84	1.89	12.86	-119.52	-695.51	-1,228.39	1,411.62	1,396.87	14.75	95.691	
600.00	600.00	579.26	579.12	2.04	13.89	-119.52	-695.69	-1,228.39	1,411.73	1,395.80	15.93	88.605	
700.00	700.00	686.19	686.00	2.40	16.76	-119.54	-696.07	-1,228.39	1,411.90	1,392.74	19.16	73.687	
743.88	743.88	729.90	729.70	2.56	17.91	-119.51	-695.15	-1,228.39	1,411.44	1,390.98	20.47	68.957	
800.00	800.00	781.51	781.31	2.76	19.27	-119.51	-695.33	-1,228.39	1,411.54	1,389.51	22.03	64.078	
900.00	900.00	886.28	886.00	3.12	21.99	-119.54	-696.07	-1,228.39	1,411.90	1,386.79	25.11	56.239	
1,000.00	1,000.00	986.28	986.00	3.48	24.51	-119.54	-696.07	-1,228.39	1,411.90	1,383.91	27.99	50.443	
1,100.00	1,099.98	1,080.32	1,080.02	3.82	26.89	46.96	-695.55	-1,228.39	1,410.46	1,379.76	30.71	45.934	
1,200.00	1,199.84	1,186.22	1,185.84	4.15	29.44	47.16	-696.07	-1,228.39	1,407.14	1,373.55	33.58	41.899	
1,300.00	1,299.45	1,285.83	1,285.45	4.48	31.74	47.51	-696.07	-1,228.39	1,401.22	1,365.00	36.22	38.686	
1,400.00	1,398.70	1,385.08	1,384.70	4.82	34.03	48.00	-696.07	-1,228.39	1,392.99	1,354.14	38.85	35.851	
1,500.00	1,497.47	1,481.12	1,480.71	5.17	36.25	48.67	-694.50	-1,228.39	1,381.78	1,340.36	41.42	33.359	
1,569.36	1,565.62	1,547.29	1,546.87	5.43	37.78	49.17	-694.89	-1,228.39	1,373.43	1,330.23	43.20	31.794	
1,600.00	1,595.66	1,576.47	1,576.05	5.54	38.46	49.35	-695.13	-1,228.39	1,369.55	1,325.57	43.98	31.139	
1,700.00	1,693.69	1,680.20	1,679.69	5.92	40.80	49.98	-696.07	-1,228.39	1,357.05	1,310.36	46.69	29.067	
1,800.00	1,791.72	1,778.23	1,777.72	6.30	42.77	50.61	-696.07	-1,228.39	1,344.29	1,295.26	49.02	27.421	
1,900.00	1,889.75	1,876.26	1,875.75	6.70	44.73	51.26	-696.07	-1,228.39	1,331.70	1,280.33	51.37	25.926	
2,000.00	1,987.78	1,973.12	1,972.60	7.10	46.67	51.95	-695.04	-1,228.39	1,318.85	1,265.15	53.69	24.563	
2,100.00	2,085.81	2,069.41	2,068.88	7.50	48.60	52.60	-695.40	-1,228.39	1,306.77	1,250.76	56.01	23.331	
2,200.00	2,183.85	2,170.41	2,169.85	7.91	50.62	53.28	-696.07	-1,228.39	1,294.99	1,236.57	58.42	22.166	
2,300.00	2,281.88	2,268.44	2,267.88	8.32	52.50	53.98	-696.07	-1,228.39	1,283.13	1,222.43	60.70	21.138	
2,400.00	2,379.91	2,366.48	2,365.91	8.74	54.39	54.69	-696.07	-1,228.39	1,271.47	1,208.48	62.99	20.186	
2,500.00	2,477.94	2,463.91	2,463.34	9.16	56.26	55.44	-695.28	-1,228.39	1,259.72	1,194.45	65.27	19.301	
2,600.00	2,575.97	2,560.86	2,560.28	9.58	58.12	56.16	-695.53	-1,228.39	1,248.56	1,181.02	67.54	18.487	
2,700.00	2,674.00	2,657.91	2,657.32	10.00	59.99	56.88	-696.02	-1,228.39	1,237.70	1,167.88	69.82	17.728	
2,800.00	2,772.03	2,758.64	2,758.03	10.43	61.85	57.66	-696.07	-1,228.39	1,226.89	1,154.80	72.09	17.019	
2,900.00	2,870.07	2,856.68	2,856.07	10.86	63.65	58.43	-696.07	-1,228.39	1,216.29	1,141.97	74.31	16.367	
3,000.00	2,968.10	2,954.10	2,953.48	11.28	65.45	59.25	-695.37	-1,228.39	1,205.70	1,129.17	76.53	15.755	
3,100.00	3,066.13	3,051.21	3,050.59	11.71	67.23	60.03	-695.66	-1,228.39	1,195.67	1,116.92	78.74	15.184	
3,200.00	3,164.16	3,150.80	3,150.16	12.14	69.07	60.83	-696.07	-1,228.39	1,185.89	1,104.89	81.01	14.640	
3,300.00	3,262.19	3,248.83	3,248.19	12.58	70.89	61.66	-696.07	-1,228.39	1,176.25	1,093.00	83.25	14.129	
3,400.00	3,360.22	3,346.75	3,346.11	13.01	72.71	62.52	-695.63	-1,228.39	1,166.75	1,081.25	85.50	13.646	
3,500.00	3,458.25	3,444.24	3,443.59	13.44	74.51	63.36	-695.76	-1,228.39	1,157.66	1,069.92	87.74	13.194	
3,600.00	3,556.29	3,542.95	3,542.29	13.88	76.35	64.22	-696.07	-1,228.39	1,148.87	1,058.86	90.01	12.764	
3,700.00	3,654.32	3,640.98	3,640.32	14.31	78.17	65.10	-696.07	-1,228.39	1,140.28	1,048.01	92.27	12.358	
3,800.00	3,752.35	3,738.78	3,738.11	14.75	80.00	66.02	-695.51	-1,228.39	1,131.87	1,037.33	94.53	11.973	
3,900.00	3,850.38	3,836.14	3,835.47	15.18	81.81	66.90	-695.80	-1,228.39	1,123.90	1,027.11	96.79	11.612	
4,000.00	3,948.41	3,935.10	3,934.41	15.62	83.66	67.81	-696.07	-1,228.39	1,116.22	1,017.14	99.08	11.266	
4,100.00	4,046.44	4,033.00	4,032.32	16.05	85.49	68.75	-695.80	-1,228.39	1,108.75	1,007.39	101.35	10.939	
4,200.00	4,144.48	4,130.60	4,129.91	16.49	87.31	69.68	-696.05	-1,228.39	1,101.65	998.03	103.62	10.631	
4,300.00	4,242.51	4,229.21	4,228.51	16.93	89.64	70.63	-696.07	-1,228.39	1,094.83	988.44	106.40	10.290	
4,400.00	4,340.54	4,327.07	4,326.37	17.37	91.97	71.62	-695.61	-1,228.39	1,088.28	979.10	109.18	9.968	
4,500.00	4,438.57	4,424.82	4,424.11	17.81	94.31	72.57	-695.98	-1,228.39	1,082.13	970.17	111.96	9.665	
4,600.00	4,536.60	4,523.39	4,522.60	18.25	97.04	73.55	-696.07	-1,228.39	1,076.28	961.14	115.15	9.347	
4,700.00	4,634.63	4,620.86	4,620.03	18.68	99.81	74.55	-695.95	-1,228.39	1,070.75	952.39	118.36	9.046	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18A - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 152-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,732.66	4,719.57	4,718.66	19.12	102.62	75.55	-696.07	-1,228.39	1,065.57	943.94	121.63	8.761	
4,900.00	4,830.70	4,817.65	4,816.71	19.56	105.42	76.59	-695.65	-1,228.39	1,060.72	935.84	124.88	8.494	
5,000.00	4,928.73	4,915.77	4,914.73	20.00	108.38	77.59	-696.07	-1,228.39	1,056.22	927.93	128.29	8.233	
5,100.00	5,026.76	5,013.80	5,012.76	20.44	111.39	78.62	-696.07	-1,228.39	1,052.08	920.32	131.76	7.985	
5,200.00	5,124.79	5,111.87	5,110.79	20.88	114.41	79.78	-693.83	-1,228.39	1,048.40	913.18	135.22	7.753	
5,300.00	5,222.82	5,210.50	5,209.40	21.32	117.44	80.81	-694.23	-1,228.39	1,044.98	906.28	138.71	7.534	
5,400.00	5,320.85	5,309.41	5,308.29	21.77	120.48	81.81	-695.29	-1,228.39	1,041.85	899.65	142.20	7.327	
5,500.00	5,418.88	5,406.32	5,404.88	22.21	123.61	82.81	-696.07	-1,228.39	1,039.08	893.29	145.79	7.127	
5,600.00	5,516.92	5,504.96	5,503.49	22.65	126.98	83.95	-694.80	-1,228.39	1,036.90	887.31	149.60	6.931	
5,700.00	5,614.95	5,602.64	5,600.95	23.09	130.30	84.94	-696.07	-1,228.39	1,034.78	881.41	153.37	6.747	
5,800.00	5,712.98	5,700.67	5,698.98	23.53	133.57	86.01	-696.07	-1,228.39	1,033.19	876.10	157.09	6.577	
5,900.00	5,811.01	5,799.45	5,797.70	23.97	136.87	87.19	-694.07	-1,228.39	1,032.34	871.51	160.83	6.419	
6,000.00	5,909.04	5,900.71	5,898.92	24.41	140.25	88.24	-695.17	-1,228.39	1,031.33	866.67	164.66	6.263	
6,063.56	5,971.35	5,955.00	5,952.97	24.69	142.04	88.79	-696.07	-1,228.39	1,030.81	864.08	166.73	6.182 ES, SF	
6,100.00	6,007.07	5,955.00	5,952.97	24.85	142.04	88.79	-696.07	-1,228.39	1,031.46	864.68	166.77	6.185	
6,200.00	6,105.10	5,955.00	5,952.97	25.30	142.04	88.79	-696.07	-1,228.39	1,039.81	873.90	165.91	6.267	
6,300.00	6,203.14	5,955.00	5,952.97	25.74	142.04	88.79	-696.07	-1,228.39	1,057.60	893.90	163.69	6.461	
6,393.02	6,294.33	5,955.00	5,952.97	26.15	142.04	88.79	-696.07	-1,228.39	1,082.20	921.62	160.59	6.739	
6,400.00	6,301.17	5,955.00	5,952.97	26.18	142.04	85.73	-696.07	-1,228.39	1,084.31	924.00	160.32	6.764	
6,450.00	6,350.01	5,955.00	5,952.97	26.40	142.04	66.67	-696.07	-1,228.39	1,098.52	940.27	158.24	6.942	
6,500.00	6,398.37	5,955.00	5,952.97	26.63	142.04	53.26	-696.07	-1,228.39	1,111.10	955.20	155.90	7.127	
6,550.00	6,445.94	5,955.00	5,952.97	26.86	142.04	44.25	-696.07	-1,228.39	1,122.04	968.73	153.31	7.319	
6,600.00	6,492.42	5,955.00	5,952.97	27.08	142.04	38.07	-696.07	-1,228.39	1,131.32	980.85	150.48	7.518	
6,650.00	6,537.54	5,955.00	5,952.97	27.30	142.04	33.69	-696.07	-1,228.39	1,138.93	991.52	147.41	7.726	
6,700.00	6,581.01	5,955.00	5,952.97	27.52	142.04	30.48	-696.07	-1,228.39	1,144.84	1,000.72	144.12	7.943	
6,750.00	6,622.57	5,955.00	5,952.97	27.74	142.04	28.06	-696.07	-1,228.39	1,149.06	1,008.43	140.63	8.171	
6,800.00	6,661.96	5,955.00	5,952.97	27.96	142.04	26.21	-696.07	-1,228.39	1,151.57	1,014.63	136.94	8.409	
6,850.00	6,698.93	5,955.00	5,952.97	28.17	142.04	24.77	-696.07	-1,228.39	1,152.37	1,019.30	133.07	8.660	
6,900.00	6,733.26	5,955.00	5,952.97	28.39	142.04	23.64	-696.07	-1,228.39	1,151.46	1,022.42	129.05	8.923	
6,950.00	6,764.73	5,955.00	5,952.97	28.60	142.04	22.77	-696.07	-1,228.39	1,148.84	1,023.97	124.87	9.200	
7,000.00	6,793.16	5,955.00	5,952.97	28.82	142.04	22.09	-696.07	-1,228.39	1,144.51	1,023.93	120.58	9.492	
7,050.00	6,818.37	5,955.00	5,952.97	29.04	142.04	21.59	-696.07	-1,228.39	1,138.48	1,022.29	116.19	9.798	
7,100.00	6,840.20	5,955.00	5,952.97	29.27	142.04	21.22	-696.07	-1,228.39	1,130.77	1,019.04	111.73	10.120	
7,150.00	6,858.51	5,955.00	5,952.97	29.50	142.04	20.99	-696.07	-1,228.39	1,121.38	1,014.15	107.23	10.457	
7,200.00	6,873.20	5,955.00	5,952.97	29.74	142.04	20.87	-696.07	-1,228.39	1,110.33	1,007.59	102.74	10.808	
7,250.00	6,884.18	5,955.00	5,952.97	30.00	142.04	20.86	-696.07	-1,228.39	1,097.64	999.36	98.28	11.168	
7,300.00	6,891.37	5,955.00	5,952.97	30.26	142.04	20.96	-696.07	-1,228.39	1,083.33	989.42	93.92	11.535	
7,350.00	6,894.73	5,955.00	5,952.97	30.54	142.04	21.16	-696.07	-1,228.39	1,067.44	977.73	89.71	11.899	
7,370.19	6,895.00	5,955.00	5,952.97	30.65	142.04	21.27	-696.07	-1,228.39	1,060.57	972.50	88.07	12.042	
7,400.00	6,894.93	5,955.00	5,952.97	30.83	142.04	21.27	-696.07	-1,228.39	1,050.62	964.93	85.69	12.261	
7,500.00	6,894.70	5,955.00	5,952.97	31.45	142.04	21.27	-696.07	-1,228.39	1,022.89	944.68	78.21	13.079	
7,600.00	6,894.47	5,955.00	5,952.97	32.15	142.04	21.27	-696.07	-1,228.39	1,004.40	932.10	72.29	13.893	
7,700.00	6,894.24	5,955.00	5,952.97	32.92	142.04	21.27	-696.07	-1,228.39	995.65	926.61	69.04	14.420	
7,737.50	6,894.15	5,955.00	5,952.97	33.23	142.04	21.27	-696.07	-1,228.39	994.95	926.25	68.69	14.484 CC	
7,800.00	6,894.00	5,955.00	5,952.97	33.75	142.04	21.27	-696.07	-1,228.39	996.91	927.71	69.20	14.405	
7,900.00	6,893.77	5,955.00	5,952.97	34.63	142.04	21.27	-696.07	-1,228.39	1,008.14	935.45	72.69	13.869	
8,000.00	6,893.54	5,955.00	5,952.97	35.57	142.04	21.27	-696.07	-1,228.39	1,029.00	950.34	78.67	13.080	
8,100.00	6,893.31	5,955.00	5,952.97	36.55	142.04	21.27	-696.07	-1,228.39	1,058.94	972.88	86.06	12.304	
8,200.00	6,893.08	5,955.00	5,952.97	37.58	142.04	21.27	-696.07	-1,228.39	1,097.21	1,003.25	93.96	11.677	
8,300.00	6,892.85	5,955.00	5,952.97	38.65	142.04	21.27	-696.07	-1,228.39	1,142.97	1,041.22	101.74	11.234	
8,400.00	6,892.62	5,955.00	5,952.97	39.76	142.04	21.27	-696.07	-1,228.39	1,195.36	1,086.31	109.05	10.962	
8,500.00	6,892.38	5,955.00	5,952.97	40.90	142.04	21.27	-696.07	-1,228.39	1,253.55	1,137.86	115.69	10.835	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18A - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		152-A027Ua_INC-ONLY					Rule Assigned:		Offset Well Error:		0.00 usft			
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,600.00	6,892.15	5,955.00	5,952.97	42.07	142.04	21.27	-696.07	-1,228.39	1,316.77	1,195.14	121.63	10.826		
8,700.00	6,891.92	5,955.00	5,952.97	43.27	142.04	21.27	-696.07	-1,228.39	1,384.34	1,257.47	126.87	10.912		
8,800.00	6,891.69	5,955.00	5,952.97	44.50	142.04	21.27	-696.07	-1,228.39	1,455.65	1,324.19	131.46	11.073		
8,900.00	6,891.46	5,955.00	5,952.97	45.75	142.04	21.27	-696.07	-1,228.39	1,530.17	1,394.70	135.46	11.296		
9,000.00	6,891.23	5,955.00	5,952.97	47.02	142.04	21.27	-696.07	-1,228.39	1,607.46	1,468.50	138.96	11.568		
9,100.00	6,890.99	5,955.00	5,952.97	48.31	142.04	21.27	-696.07	-1,228.39	1,687.14	1,545.13	142.01	11.881		
9,200.00	6,890.76	5,955.00	5,952.97	49.62	142.04	21.27	-696.07	-1,228.39	1,768.88	1,624.21	144.67	12.227		
9,300.00	6,890.53	5,955.00	5,952.97	50.94	142.04	21.27	-696.07	-1,228.39	1,852.42	1,705.41	147.01	12.601		
9,400.00	6,890.30	5,955.00	5,952.97	52.29	142.04	21.27	-696.07	-1,228.39	1,937.51	1,788.45	149.06	12.998		
9,500.00	6,890.07	5,955.00	5,952.97	53.64	142.04	21.27	-696.07	-1,228.39	2,023.97	1,873.10	150.87	13.416		
9,600.00	6,889.84	5,955.00	5,952.97	55.02	142.04	21.27	-696.07	-1,228.39	2,111.63	1,959.16	152.47	13.850		
9,700.00	6,889.61	5,955.00	5,952.97	56.40	142.04	21.27	-696.07	-1,228.39	2,200.34	2,046.45	153.89	14.298		
9,800.00	6,889.37	5,955.00	5,952.97	57.79	142.04	21.27	-696.07	-1,228.39	2,289.97	2,134.82	155.15	14.759		
9,900.00	6,889.14	5,955.00	5,952.97	59.20	142.04	21.27	-696.07	-1,228.39	2,380.44	2,224.15	156.29	15.231		
10,000.00	6,888.91	5,955.00	5,952.97	60.61	142.04	21.27	-696.07	-1,228.39	2,471.64	2,314.33	157.30	15.712		
10,100.00	6,888.68	5,955.00	5,952.97	62.04	142.04	21.27	-696.07	-1,228.39	2,563.49	2,405.27	158.22	16.202		
10,200.00	6,888.45	5,955.00	5,952.97	63.47	142.04	21.27	-696.07	-1,228.39	2,655.94	2,496.89	159.05	16.699		
10,300.00	6,888.22	5,955.00	5,952.97	64.91	142.04	21.27	-696.07	-1,228.39	2,748.91	2,589.11	159.80	17.202		
10,400.00	6,887.99	5,955.00	5,952.97	66.36	142.04	21.27	-696.07	-1,228.39	2,842.36	2,681.88	160.48	17.711		
10,500.00	6,887.75	5,955.00	5,952.97	67.82	142.04	21.27	-696.07	-1,228.39	2,936.25	2,775.14	161.11	18.225		
10,600.00	6,887.52	5,955.00	5,952.97	69.28	142.04	21.27	-696.07	-1,228.39	3,030.52	2,868.84	161.68	18.744		
10,700.00	6,887.29	5,955.00	5,952.97	70.75	142.04	21.27	-696.07	-1,228.39	3,125.15	2,962.94	162.21	19.266		
10,800.00	6,887.06	5,955.00	5,952.97	72.22	142.04	21.27	-696.07	-1,228.39	3,220.10	3,057.41	162.69	19.792		
10,900.00	6,886.83	5,955.00	5,952.97	73.70	142.04	21.27	-696.07	-1,228.39	3,315.35	3,152.21	163.14	20.322		
11,000.00	6,886.60	5,955.00	5,952.97	75.19	142.04	21.27	-696.07	-1,228.39	3,410.88	3,247.32	163.56	20.854		
11,100.00	6,886.37	5,955.00	5,952.97	76.68	142.04	21.27	-696.07	-1,228.39	3,506.65	3,342.70	163.95	21.389		
11,200.00	6,886.13	5,955.00	5,952.97	78.17	142.04	21.27	-696.07	-1,228.39	3,602.65	3,438.34	164.31	21.926		
11,300.00	6,885.90	5,955.00	5,952.97	79.67	142.04	21.27	-696.07	-1,228.39	3,698.86	3,534.22	164.64	22.466		
11,400.00	6,885.67	5,955.00	5,952.97	81.17	142.04	21.27	-696.07	-1,228.39	3,795.27	3,630.31	164.96	23.007		
11,500.00	6,885.44	5,955.00	5,952.97	82.68	142.04	21.27	-696.07	-1,228.39	3,891.86	3,726.61	165.26	23.550		
11,600.00	6,885.21	5,955.00	5,952.97	84.19	142.04	21.27	-696.07	-1,228.39	3,988.62	3,823.09	165.54	24.095		
11,700.00	6,884.98	5,955.00	5,952.97	85.71	142.04	21.27	-696.07	-1,228.39	4,085.54	3,919.74	165.80	24.641		
11,800.00	6,884.74	5,955.00	5,952.97	87.22	142.04	21.27	-696.07	-1,228.39	4,182.60	4,016.55	166.05	25.188		
11,900.00	6,884.51	5,955.00	5,952.97	88.74	142.04	21.27	-696.07	-1,228.39	4,279.79	4,113.50	166.29	25.737		
12,000.00	6,884.28	5,955.00	5,952.97	90.27	142.04	21.27	-696.07	-1,228.39	4,377.12	4,210.60	166.52	26.286		
12,100.00	6,884.05	5,955.00	5,952.97	91.79	142.04	21.27	-696.07	-1,228.39	4,474.56	4,307.82	166.73	26.837		
12,200.00	6,883.82	5,955.00	5,952.97	93.32	142.04	21.27	-696.07	-1,228.39	4,572.11	4,405.17	166.94	27.388		
12,300.00	6,883.59	5,955.00	5,952.97	94.85	142.04	21.27	-696.07	-1,228.39	4,669.76	4,502.63	167.13	27.940		
12,400.00	6,883.36	5,955.00	5,952.97	96.38	142.04	21.27	-696.07	-1,228.39	4,767.51	4,600.19	167.32	28.493		
12,500.00	6,883.12	5,955.00	5,952.97	97.92	142.04	21.27	-696.07	-1,228.39	4,865.36	4,697.85	167.50	29.046		
12,600.00	6,882.89	5,955.00	5,952.97	99.46	142.04	21.27	-696.07	-1,228.39	4,963.28	4,795.61	167.68	29.600		
12,700.00	6,882.66	5,955.00	5,952.97	101.00	142.04	21.27	-696.07	-1,228.39	5,061.29	4,893.45	167.85	30.154		
12,800.00	6,882.43	5,955.00	5,952.97	102.54	142.04	21.27	-696.07	-1,228.39	5,159.38	4,991.37	168.01	30.709		
12,900.00	6,882.20	5,955.00	5,952.97	104.08	142.04	21.27	-696.07	-1,228.39	5,257.54	5,089.37	168.16	31.264		
13,000.00	6,881.97	5,955.00	5,952.97	105.63	142.04	21.27	-696.07	-1,228.39	5,355.77	5,187.45	168.32	31.820		
13,100.00	6,881.74	5,955.00	5,952.97	107.18	142.04	21.27	-696.07	-1,228.39	5,454.06	5,285.59	168.46	32.375		
13,200.00	6,881.50	5,955.00	5,952.97	108.73	142.04	21.27	-696.07	-1,228.39	5,552.41	5,383.80	168.61	32.931		
13,300.00	6,881.27	5,955.00	5,952.97	110.28	142.04	21.27	-696.07	-1,228.39	5,650.82	5,482.07	168.75	33.487		
13,400.00	6,881.04	5,955.00	5,952.97	111.83	142.04	21.27	-696.07	-1,228.39	5,749.28	5,580.40	168.88	34.043		
13,500.00	6,880.81	5,955.00	5,952.97	113.38	142.04	21.27	-696.07	-1,228.39	5,847.80	5,678.78	169.02	34.599		
13,600.00	6,880.58	5,955.00	5,952.97	114.94	142.04	21.27	-696.07	-1,228.39	5,946.37	5,777.22	169.15	35.155		
13,700.00	6,880.35	5,955.00	5,952.97	116.49	142.04	21.27	-696.07	-1,228.39	6,044.98	5,875.71	169.27	35.711		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18A - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		152-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
13,800.00	6,880.12	5,955.00	5,952.97	118.05	142.04	21.27	-696.07	-1,228.39	6,143.64	5,974.24	169.40	36.267		
13,900.00	6,879.88	5,955.00	5,952.97	119.61	142.04	21.27	-696.07	-1,228.39	6,242.34	6,072.82	169.52	36.823		
14,000.00	6,879.65	5,955.00	5,952.97	121.17	142.04	21.27	-696.07	-1,228.39	6,341.08	6,171.44	169.64	37.379		
14,100.00	6,879.42	5,955.00	5,952.97	122.73	142.04	21.27	-696.07	-1,228.39	6,439.86	6,270.10	169.76	37.935		
14,200.00	6,879.19	5,955.00	5,952.97	124.29	142.04	21.27	-696.07	-1,228.39	6,538.68	6,368.80	169.88	38.491		
14,300.00	6,878.96	5,955.00	5,952.97	125.86	142.04	21.27	-696.07	-1,228.39	6,637.53	6,467.54	169.99	39.047		
14,400.00	6,878.73	5,955.00	5,952.97	127.42	142.04	21.27	-696.07	-1,228.39	6,736.42	6,566.32	170.10	39.602		
14,500.00	6,878.50	5,955.00	5,952.97	128.99	142.04	21.27	-696.07	-1,228.39	6,835.34	6,665.12	170.21	40.157		
14,600.00	6,878.26	5,955.00	5,952.97	130.55	142.04	21.27	-696.07	-1,228.39	6,934.29	6,763.96	170.32	40.712		
14,700.00	6,878.03	5,955.00	5,952.97	132.12	142.04	21.27	-696.07	-1,228.39	7,033.27	6,862.83	170.43	41.267		
14,800.00	6,877.80	5,955.00	5,952.97	133.69	142.04	21.27	-696.07	-1,228.39	7,132.28	6,961.73	170.54	41.821		
14,900.00	6,877.57	5,955.00	5,952.97	135.26	142.04	21.27	-696.07	-1,228.39	7,231.31	7,060.66	170.65	42.376		
15,000.00	6,877.34	5,955.00	5,952.97	136.83	142.04	21.27	-696.07	-1,228.39	7,330.37	7,159.62	170.75	42.929		
15,100.00	6,877.11	5,955.00	5,952.97	138.40	142.04	21.27	-696.07	-1,228.39	7,429.46	7,258.60	170.86	43.483		
15,200.00	6,876.87	5,955.00	5,952.97	139.97	142.04	21.27	-696.07	-1,228.39	7,528.57	7,357.61	170.96	44.036		
15,300.00	6,876.64	5,955.00	5,952.97	141.54	142.04	21.27	-696.07	-1,228.39	7,627.71	7,456.64	171.07	44.589		
15,400.00	6,876.41	5,955.00	5,952.97	143.12	142.04	21.27	-696.07	-1,228.39	7,726.86	7,555.69	171.17	45.142		
15,500.00	6,876.18	5,955.00	5,952.97	144.69	142.04	21.27	-696.07	-1,228.39	7,826.04	7,654.77	171.27	45.694		
15,600.00	6,875.95	5,955.00	5,952.97	146.26	142.04	21.27	-696.07	-1,228.39	7,925.24	7,753.87	171.37	46.246		
15,700.00	6,875.72	5,955.00	5,952.97	147.84	142.04	21.27	-696.07	-1,228.39	8,024.46	7,852.99	171.47	46.797		
15,800.00	6,875.49	5,955.00	5,952.97	149.41	142.04	21.27	-696.07	-1,228.39	8,123.70	7,952.12	171.57	47.348		
15,900.00	6,875.25	5,955.00	5,952.97	150.99	142.04	21.27	-696.07	-1,228.39	8,222.95	8,051.28	171.67	47.899		
16,000.00	6,875.02	5,955.00	5,952.97	152.57	142.04	21.27	-696.07	-1,228.39	8,322.23	8,150.45	171.77	48.449		
16,100.00	6,874.79	5,955.00	5,952.97	154.14	142.04	21.27	-696.07	-1,228.39	8,421.52	8,249.65	171.87	48.999		
16,200.00	6,874.56	5,955.00	5,952.97	155.72	142.04	21.27	-696.07	-1,228.39	8,520.83	8,348.85	171.97	49.548		
16,300.00	6,874.33	5,955.00	5,952.97	157.30	142.04	21.27	-696.07	-1,228.39	8,620.15	8,448.08	172.07	50.097		
16,400.00	6,874.10	5,955.00	5,952.97	158.88	142.04	21.27	-696.07	-1,228.39	8,719.49	8,547.32	172.17	50.645		
16,500.00	6,873.87	5,955.00	5,952.97	160.46	142.04	21.27	-696.07	-1,228.39	8,818.84	8,646.58	172.27	51.193		
16,600.00	6,873.63	5,955.00	5,952.97	162.04	142.04	21.27	-696.07	-1,228.39	8,918.21	8,745.85	172.36	51.740		
16,700.00	6,873.40	5,955.00	5,952.97	163.62	142.04	21.27	-696.07	-1,228.39	9,017.59	8,845.13	172.46	52.287		
16,800.00	6,873.17	5,955.00	5,952.97	165.20	142.04	21.27	-696.07	-1,228.39	9,116.99	8,944.43	172.56	52.834		
16,900.00	6,872.94	5,955.00	5,952.97	166.78	142.04	21.27	-696.07	-1,228.39	9,216.40	9,043.74	172.66	53.379		
17,000.00	6,872.71	5,955.00	5,952.97	168.36	142.04	21.27	-696.07	-1,228.39	9,315.82	9,143.07	172.76	53.925		
17,100.00	6,872.48	5,955.00	5,952.97	169.95	142.04	21.27	-696.07	-1,228.39	9,415.26	9,242.40	172.85	54.470		
17,133.01	6,872.40	5,955.00	5,952.97	170.47	142.04	21.27	-696.07	-1,228.39	9,448.08	9,275.20	172.89	54.649		
17,200.00	6,872.25	5,955.00	5,952.97	171.53	142.04	21.27	-696.07	-1,228.39	9,514.70	9,341.75	172.95	55.014		
17,304.21	6,872.00	5,955.00	5,952.97	173.18	142.04	21.27	-696.07	-1,228.39	9,618.34	9,445.29	173.05	55.580		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18B - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 213-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-110.59	-861.29	-2,292.75	2,450.53				
100.00	100.00	19.00	19.00	0.25	0.40	-110.59	-861.29	-2,292.75	2,449.19	2,448.53	0.66	3,736.401	
200.00	200.00	119.00	119.00	0.61	2.53	-110.59	-861.29	-2,292.75	2,449.19	2,446.05	3.14	779.451	
300.00	300.00	219.01	219.00	0.97	4.68	-110.59	-861.29	-2,292.75	2,449.19	2,443.54	5.65	433.338	
400.00	400.00	319.01	319.00	1.33	7.19	-110.59	-861.29	-2,292.75	2,449.19	2,440.67	8.52	287.542	
437.77	437.77	356.76	356.74	1.46	8.14	-110.58	-860.66	-2,292.75	2,448.97	2,439.37	9.60	255.114	
500.00	500.00	415.91	415.89	1.68	9.62	-110.58	-860.77	-2,292.75	2,449.01	2,437.70	11.31	216.619	
600.00	600.00	519.11	519.00	2.04	12.47	-110.59	-861.29	-2,292.75	2,449.19	2,434.67	14.51	168.746	
700.00	700.00	619.11	619.00	2.40	16.35	-110.59	-861.29	-2,292.75	2,449.19	2,430.44	18.75	130.607	
727.01	727.01	643.84	643.71	2.50	17.31	-110.57	-860.22	-2,292.75	2,448.82	2,429.01	19.81	123.624	
800.00	800.00	709.05	708.90	2.76	19.84	-110.58	-860.69	-2,292.75	2,449.00	2,426.40	22.60	108.363	
900.00	900.00	819.47	819.00	3.12	24.55	-110.59	-861.29	-2,292.75	2,449.19	2,421.52	27.67	88.529	
930.42	930.42	849.87	849.34	3.23	25.91	-110.55	-859.55	-2,292.75	2,448.58	2,419.44	29.14	84.032	
1,000.00	1,000.00	903.51	902.94	3.48	28.32	-110.56	-860.05	-2,292.75	2,448.81	2,417.01	31.80	77.019	
1,100.00	1,099.98	1,019.82	1,018.98	3.82	33.21	55.88	-861.29	-2,292.75	2,448.21	2,411.18	37.03	66.111	
1,200.00	1,199.84	1,115.60	1,114.70	4.15	37.07	56.06	-859.52	-2,292.75	2,444.66	2,403.45	41.21	59.319	
1,300.00	1,299.45	1,201.81	1,200.87	4.48	40.54	56.26	-860.63	-2,292.75	2,440.24	2,395.23	45.01	54.212	
1,400.00	1,398.70	1,318.93	1,317.70	4.82	45.26	56.63	-861.29	-2,292.75	2,433.64	2,383.56	50.08	48.599	
1,500.00	1,497.47	1,409.96	1,408.66	5.17	48.93	57.09	-859.79	-2,292.75	2,424.52	2,370.42	54.10	44.819	
1,569.36	1,565.62	1,468.94	1,467.62	5.43	51.31	57.40	-860.70	-2,292.75	2,417.83	2,361.11	56.72	42.625	
1,600.00	1,595.66	1,516.25	1,514.66	5.54	53.33	57.57	-861.29	-2,292.75	2,414.67	2,355.81	58.86	41.022	
1,700.00	1,693.69	1,614.28	1,612.69	5.92	57.82	57.96	-861.29	-2,292.75	2,403.99	2,340.28	63.71	37.733	
1,800.00	1,791.72	1,699.79	1,698.12	6.30	61.72	58.33	-860.31	-2,292.75	2,393.15	2,325.15	67.99	35.196	
1,900.00	1,889.75	1,810.81	1,808.75	6.70	66.98	58.76	-861.29	-2,292.75	2,382.98	2,309.34	73.63	32.363	
2,000.00	1,987.78	1,909.17	1,906.78	7.10	71.70	59.16	-861.29	-2,292.75	2,372.65	2,293.90	78.75	30.131	
2,100.00	2,085.81	2,007.20	2,004.81	7.50	76.07	59.56	-861.29	-2,292.75	2,362.44	2,278.93	83.50	28.292	
2,200.00	2,183.85	2,105.23	2,102.85	7.91	80.43	59.97	-861.29	-2,292.75	2,352.35	2,264.08	88.27	26.651	
2,300.00	2,281.88	2,195.31	2,192.78	8.32	84.44	60.41	-858.57	-2,292.75	2,341.62	2,248.95	92.68	25.266	
2,400.00	2,379.91	2,285.50	2,282.89	8.74	88.46	60.76	-860.26	-2,292.75	2,332.31	2,235.21	97.10	24.020	
2,500.00	2,477.94	2,400.07	2,396.94	9.16	93.04	61.22	-861.29	-2,292.75	2,322.82	2,220.74	102.09	22.754	
2,600.00	2,575.97	2,489.66	2,486.46	9.58	96.42	61.63	-860.10	-2,292.75	2,312.94	2,207.06	105.88	21.845	
2,700.00	2,674.00	2,596.39	2,593.00	10.00	100.11	62.07	-861.29	-2,292.75	2,303.78	2,193.80	109.98	20.947	
2,800.00	2,772.03	2,691.13	2,687.72	10.43	103.04	62.51	-860.29	-2,292.75	2,294.21	2,180.87	113.33	20.243	
2,900.00	2,870.07	2,792.61	2,789.07	10.86	105.98	62.93	-861.29	-2,292.75	2,285.26	2,168.57	116.69	19.585	
3,000.00	2,968.10	2,890.64	2,887.10	11.28	108.10	63.36	-861.29	-2,292.75	2,276.20	2,156.97	119.23	19.091	
3,100.00	3,066.13	2,988.52	2,984.95	11.71	110.22	63.85	-859.41	-2,292.75	2,266.85	2,145.08	121.77	18.615	
3,200.00	3,164.16	3,082.86	3,079.27	12.14	112.26	64.26	-859.80	-2,292.75	2,258.16	2,133.92	124.24	18.176	
3,300.00	3,262.19	3,177.51	3,173.89	12.58	114.31	64.67	-860.92	-2,292.75	2,249.77	2,123.05	126.72	17.754	
3,400.00	3,360.22	3,282.88	3,279.22	13.01	115.86	65.14	-861.29	-2,292.75	2,241.33	2,112.64	128.69	17.417	
3,500.00	3,458.25	3,380.90	3,377.24	13.44	117.10	65.60	-860.89	-2,292.75	2,232.89	2,102.52	130.36	17.128	
3,600.00	3,556.29	3,477.96	3,474.30	13.88	118.34	66.05	-861.01	-2,292.75	2,224.69	2,092.66	132.03	16.850	
3,700.00	3,654.32	3,576.98	3,573.32	14.31	119.61	66.51	-861.29	-2,292.75	2,216.66	2,082.94	133.73	16.576	
3,800.00	3,752.35	3,675.01	3,671.35	14.75	120.89	66.97	-861.29	-2,292.75	2,208.73	2,073.29	135.45	16.307	
3,900.00	3,850.38	3,773.04	3,769.38	15.18	122.18	67.43	-861.29	-2,292.75	2,200.95	2,063.79	137.17	16.046	
4,000.00	3,948.41	3,871.07	3,867.41	15.62	123.46	67.90	-861.29	-2,292.75	2,193.32	2,054.43	138.89	15.792	
4,100.00	4,046.44	3,969.11	3,965.44	16.05	124.75	68.37	-861.29	-2,292.75	2,185.84	2,045.23	140.61	15.545	
4,200.00	4,144.48	4,067.14	4,063.48	16.49	126.04	68.85	-861.29	-2,292.75	2,178.52	2,036.18	142.33	15.306	
4,300.00	4,242.51	4,165.17	4,161.51	16.93	127.32	69.32	-861.29	-2,292.75	2,171.34	2,027.29	144.06	15.073	
4,400.00	4,340.54	4,263.20	4,259.54	17.37	128.61	69.80	-861.29	-2,292.75	2,164.33	2,018.55	145.78	14.846	
4,500.00	4,438.57	4,361.23	4,357.57	17.81	129.89	70.29	-861.29	-2,292.75	2,157.47	2,009.96	147.51	14.626	
4,600.00	4,536.60	4,459.26	4,455.60	18.25	131.18	70.77	-861.29	-2,292.75	2,150.78	2,001.54	149.24	14.412	
4,700.00	4,634.63	4,557.29	4,553.63	18.68	132.47	71.26	-861.29	-2,292.75	2,144.24	1,993.27	150.96	14.204	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18B - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 213-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,732.66	4,655.33	4,651.66	19.12	133.75	71.76	-861.29	-2,292.75	2,137.86	1,985.17	152.69	14.001	
4,900.00	4,830.70	4,753.36	4,749.70	19.56	135.04	72.25	-861.29	-2,292.75	2,131.65	1,977.23	154.42	13.804	
5,000.00	4,928.73	4,851.39	4,847.73	20.00	136.32	72.75	-861.29	-2,292.75	2,125.61	1,969.46	156.15	13.612	
5,100.00	5,026.76	4,949.42	4,945.76	20.44	137.61	73.25	-861.29	-2,292.75	2,119.73	1,961.85	157.88	13.426	
5,200.00	5,124.79	5,047.45	5,043.79	20.88	138.89	73.75	-861.29	-2,292.75	2,114.02	1,954.41	159.61	13.245	
5,300.00	5,222.82	5,145.48	5,141.82	21.32	140.18	74.26	-861.29	-2,292.75	2,108.48	1,947.13	161.35	13.068	
5,400.00	5,320.85	5,243.52	5,239.85	21.77	141.47	74.77	-861.29	-2,292.75	2,103.11	1,940.03	163.08	12.896	
5,500.00	5,418.88	5,341.55	5,337.88	22.21	142.75	75.28	-861.29	-2,292.75	2,097.91	1,933.10	164.81	12.729	
5,600.00	5,516.92	5,439.58	5,435.92	22.65	144.04	75.79	-861.29	-2,292.75	2,092.88	1,926.34	166.54	12.567	
5,700.00	5,614.95	5,537.61	5,533.95	23.09	145.32	76.31	-861.29	-2,292.75	2,088.03	1,919.76	168.28	12.408	
5,800.00	5,712.98	5,635.64	5,631.98	23.53	146.61	76.82	-861.29	-2,292.75	2,083.36	1,913.35	170.01	12.254	
5,900.00	5,811.01	5,733.67	5,730.01	23.97	147.90	77.34	-861.29	-2,292.75	2,078.86	1,907.12	171.75	12.104	
6,000.00	5,909.04	5,831.70	5,828.04	24.41	149.18	77.87	-861.29	-2,292.75	2,074.54	1,901.06	173.48	11.958	
6,100.00	6,007.07	5,929.74	5,926.07	24.85	150.47	78.39	-861.29	-2,292.75	2,070.40	1,895.19	175.21	11.816	
6,200.00	6,105.10	5,985.00	5,981.31	25.30	151.19	78.69	-861.29	-2,292.75	2,066.89	1,890.52	176.36	11.719	
6,238.01	6,142.37	5,985.00	5,981.31	25.46	151.19	78.69	-861.29	-2,292.75	2,066.54	1,890.08	176.45	11.712	
6,300.00	6,203.14	5,985.00	5,981.31	25.74	151.19	78.69	-861.29	-2,292.75	2,067.47	1,890.99	176.48	11.715	
6,393.02	6,294.33	5,985.00	5,981.31	26.15	151.19	78.69	-861.29	-2,292.75	2,072.34	1,896.10	176.24	11.759	
6,400.00	6,301.17	5,985.00	5,981.31	26.18	151.19	75.66	-861.29	-2,292.75	2,072.84	1,896.63	176.21	11.764	
6,450.00	6,350.01	5,985.00	5,981.31	26.40	151.19	56.83	-861.29	-2,292.75	2,074.84	1,898.91	175.93	11.794	
6,500.00	6,398.37	5,985.00	5,981.31	26.63	151.19	43.61	-861.29	-2,292.75	2,074.12	1,898.56	175.55	11.815	
6,550.00	6,445.94	5,985.00	5,981.31	26.86	151.19	34.75	-861.29	-2,292.75	2,070.68	1,895.60	175.08	11.827	
6,600.00	6,492.42	5,985.00	5,981.31	27.08	151.19	28.70	-861.29	-2,292.75	2,064.53	1,890.01	174.52	11.830	
6,650.00	6,537.54	5,985.00	5,981.31	27.30	151.19	24.42	-861.29	-2,292.75	2,055.68	1,881.82	173.86	11.824	
6,700.00	6,581.01	5,985.00	5,981.31	27.52	151.19	21.29	-861.29	-2,292.75	2,044.15	1,871.04	173.11	11.808	
6,750.00	6,622.57	5,985.00	5,981.31	27.74	151.19	18.92	-861.29	-2,292.75	2,029.97	1,857.69	172.27	11.783	
6,800.00	6,661.96	5,985.00	5,981.31	27.96	151.19	17.09	-861.29	-2,292.75	2,013.17	1,841.81	171.36	11.748	
6,850.00	6,698.93	5,985.00	5,981.31	28.17	151.19	15.65	-861.29	-2,292.75	1,993.79	1,823.42	170.36	11.703	
6,900.00	6,733.26	5,985.00	5,981.31	28.39	151.19	14.50	-861.29	-2,292.75	1,971.87	1,802.57	169.30	11.647	
6,950.00	6,764.73	5,985.00	5,981.31	28.60	151.19	13.57	-861.29	-2,292.75	1,947.47	1,779.30	168.17	11.580	
7,000.00	6,793.16	5,985.00	5,981.31	28.82	151.19	12.81	-861.29	-2,292.75	1,920.64	1,753.66	166.99	11.502	
7,050.00	6,818.37	5,985.00	5,981.31	29.04	151.19	12.19	-861.29	-2,292.75	1,891.46	1,725.70	165.76	11.411	
7,100.00	6,840.20	5,985.00	5,981.31	29.27	151.19	11.69	-861.29	-2,292.75	1,859.99	1,695.50	164.49	11.307	
7,150.00	6,858.51	5,985.00	5,981.31	29.50	151.19	11.28	-861.29	-2,292.75	1,826.32	1,663.11	163.20	11.191	
7,200.00	6,873.20	5,985.00	5,981.31	29.74	151.19	10.95	-861.29	-2,292.75	1,790.53	1,628.63	161.90	11.060	
7,250.00	6,884.18	5,985.00	5,981.31	30.00	151.19	10.69	-861.29	-2,292.75	1,752.72	1,592.13	160.59	10.914	
7,300.00	6,891.37	5,985.00	5,981.31	30.26	151.19	10.48	-861.29	-2,292.75	1,713.00	1,553.70	159.30	10.753	
7,350.00	6,894.73	5,985.00	5,981.31	30.54	151.19	10.33	-861.29	-2,292.75	1,671.50	1,513.45	158.05	10.576	
7,370.19	6,895.00	5,985.00	5,981.31	30.65	151.19	10.28	-861.29	-2,292.75	1,654.26	1,496.70	157.56	10.499	
7,400.00	6,894.93	5,985.00	5,981.31	30.83	151.19	10.28	-861.29	-2,292.75	1,628.68	1,471.86	156.82	10.386	
7,500.00	6,894.70	5,985.00	5,981.31	31.45	151.19	10.28	-861.29	-2,292.75	1,543.98	1,389.93	154.05	10.023	
7,600.00	6,894.47	5,985.00	5,981.31	32.15	151.19	10.28	-861.29	-2,292.75	1,461.22	1,310.42	150.80	9.690	
7,700.00	6,894.24	5,985.00	5,981.31	32.92	151.19	10.28	-861.29	-2,292.75	1,380.74	1,233.77	146.97	9.395	
7,800.00	6,894.00	5,985.00	5,981.31	33.75	151.19	10.28	-861.29	-2,292.75	1,302.97	1,160.54	142.43	9.148	
7,900.00	6,893.77	5,985.00	5,981.31	34.63	151.19	10.28	-861.29	-2,292.75	1,228.42	1,091.38	137.04	8.964	
8,000.00	6,893.54	5,985.00	5,981.31	35.57	151.19	10.28	-861.29	-2,292.75	1,157.71	1,027.07	130.64	8.862 SF	
8,100.00	6,893.31	5,985.00	5,981.31	36.55	151.19	10.28	-861.29	-2,292.75	1,091.59	968.54	123.06	8.871	
8,200.00	6,893.08	5,985.00	5,981.31	37.58	151.19	10.28	-861.29	-2,292.75	1,030.95	916.81	114.14	9.032	
8,300.00	6,892.85	5,985.00	5,981.31	38.65	151.19	10.28	-861.29	-2,292.75	976.80	873.01	103.80	9.411	
8,400.00	6,892.62	5,985.00	5,981.31	39.76	151.19	10.28	-861.29	-2,292.75	930.28	838.20	92.08	10.103	
8,500.00	6,892.38	5,985.00	5,981.31	40.90	151.19	10.28	-861.29	-2,292.75	892.59	813.22	79.37	11.246	
8,600.00	6,892.15	5,985.00	5,981.31	42.07	151.19	10.28	-861.29	-2,292.75	864.87	798.20	66.66	12.974	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18B - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		213-A027Ua_INC-ONLY					Offset		Semi Major Axis		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
8,700.00	6,891.92	5,985.00	5,981.31	43.27	151.19	10.28	-861.29	-2,292.75	848.10	791.83	56.27	15.071	16.110 CC, ES	
8,793.58	6,891.70	5,985.00	5,981.31	44.42	151.19	10.28	-861.29	-2,292.75	842.92	790.60	52.32			
8,800.00	6,891.69	5,985.00	5,981.31	44.50	151.19	10.28	-861.29	-2,292.75	842.95	790.60	52.34	16.104		
8,900.00	6,891.46	5,985.00	5,981.31	45.75	151.19	10.28	-861.29	-2,292.75	849.62	792.28	57.34	14.817		
9,000.00	6,891.23	5,985.00	5,981.31	47.02	151.19	10.28	-861.29	-2,292.75	867.83	799.73	68.10	12.743		
9,100.00	6,890.99	5,985.00	5,981.31	48.31	151.19	10.28	-861.29	-2,292.75	896.89	816.14	80.75	11.107		
9,200.00	6,890.76	5,985.00	5,981.31	49.62	151.19	10.28	-861.29	-2,292.75	935.79	842.53	93.25	10.035		
9,300.00	6,890.53	5,985.00	5,981.31	50.94	151.19	10.28	-861.29	-2,292.75	983.35	878.62	104.73	9.389		
9,400.00	6,890.30	5,985.00	5,981.31	52.29	151.19	10.28	-861.29	-2,292.75	1,038.40	923.54	114.86	9.041		
9,500.00	6,890.07	5,985.00	5,981.31	53.64	151.19	10.28	-861.29	-2,292.75	1,099.80	976.20	123.60	8.898		
9,600.00	6,889.84	5,985.00	5,981.31	55.02	151.19	10.28	-861.29	-2,292.75	1,166.55	1,035.50	131.04	8.902		
9,700.00	6,889.61	5,985.00	5,981.31	56.40	151.19	10.28	-861.29	-2,292.75	1,237.79	1,100.44	137.35	9.012		
9,800.00	6,889.37	5,985.00	5,981.31	57.79	151.19	10.28	-861.29	-2,292.75	1,312.78	1,170.11	142.67	9.201		
9,900.00	6,889.14	5,985.00	5,981.31	59.20	151.19	10.28	-861.29	-2,292.75	1,390.93	1,243.76	147.17	9.451		
10,000.00	6,888.91	5,985.00	5,981.31	60.61	151.19	10.28	-861.29	-2,292.75	1,471.72	1,320.73	150.99	9.747		
10,100.00	6,888.68	5,985.00	5,981.31	62.04	151.19	10.28	-861.29	-2,292.75	1,554.75	1,400.52	154.24	10.080		
10,200.00	6,888.45	5,985.00	5,981.31	63.47	151.19	10.28	-861.29	-2,292.75	1,639.68	1,482.67	157.01	10.443		
10,300.00	6,888.22	5,985.00	5,981.31	64.91	151.19	10.28	-861.29	-2,292.75	1,726.22	1,566.82	159.39	10.830		
10,400.00	6,887.99	5,985.00	5,981.31	66.36	151.19	10.28	-861.29	-2,292.75	1,814.14	1,652.69	161.45	11.237		
10,500.00	6,887.75	5,985.00	5,981.31	67.82	151.19	10.28	-861.29	-2,292.75	1,903.26	1,740.02	163.24	11.660		
10,600.00	6,887.52	5,985.00	5,981.31	69.28	151.19	10.28	-861.29	-2,292.75	1,993.41	1,828.61	164.80	12.096		
10,700.00	6,887.29	5,985.00	5,981.31	70.75	151.19	10.28	-861.29	-2,292.75	2,084.46	1,918.29	166.16	12.545		
10,800.00	6,887.06	5,985.00	5,981.31	72.22	151.19	10.28	-861.29	-2,292.75	2,176.29	2,008.92	167.37	13.003		
10,900.00	6,886.83	5,985.00	5,981.31	73.70	151.19	10.28	-861.29	-2,292.75	2,268.82	2,100.38	168.44	13.470		
11,000.00	6,886.60	5,985.00	5,981.31	75.19	151.19	10.28	-861.29	-2,292.75	2,361.95	2,192.56	169.39	13.944		
11,100.00	6,886.37	5,985.00	5,981.31	76.68	151.19	10.28	-861.29	-2,292.75	2,455.62	2,285.39	170.24	14.425		
11,200.00	6,886.13	5,985.00	5,981.31	78.17	151.19	10.28	-861.29	-2,292.75	2,549.78	2,378.78	171.00	14.911		
11,300.00	6,885.90	5,985.00	5,981.31	79.67	151.19	10.28	-861.29	-2,292.75	2,644.36	2,472.68	171.69	15.402		
11,400.00	6,885.67	5,985.00	5,981.31	81.17	151.19	10.28	-861.29	-2,292.75	2,739.33	2,567.02	172.31	15.898		
11,500.00	6,885.44	5,985.00	5,981.31	82.68	151.19	10.28	-861.29	-2,292.75	2,834.65	2,661.77	172.88	16.397		
11,600.00	6,885.21	5,985.00	5,981.31	84.19	151.19	10.28	-861.29	-2,292.75	2,930.28	2,756.88	173.40	16.899		
11,700.00	6,884.98	5,985.00	5,981.31	85.71	151.19	10.28	-861.29	-2,292.75	3,026.19	2,852.31	173.87	17.405		
11,800.00	6,884.74	5,985.00	5,981.31	87.22	151.19	10.28	-861.29	-2,292.75	3,122.35	2,948.04	174.31	17.913		
11,900.00	6,884.51	5,985.00	5,981.31	88.74	151.19	10.28	-861.29	-2,292.75	3,218.75	3,044.04	174.71	18.423		
12,000.00	6,884.28	5,985.00	5,981.31	90.27	151.19	10.28	-861.29	-2,292.75	3,315.37	3,140.28	175.08	18.936		
12,100.00	6,884.05	5,985.00	5,981.31	91.79	151.19	10.28	-861.29	-2,292.75	3,412.17	3,236.74	175.43	19.450		
12,200.00	6,883.82	5,985.00	5,981.31	93.32	151.19	10.28	-861.29	-2,292.75	3,509.16	3,333.41	175.75	19.967		
12,300.00	6,883.59	5,985.00	5,981.31	94.85	151.19	10.28	-861.29	-2,292.75	3,606.31	3,430.26	176.05	20.484		
12,400.00	6,883.36	5,985.00	5,981.31	96.38	151.19	10.28	-861.29	-2,292.75	3,703.62	3,527.28	176.34	21.003		
12,500.00	6,883.12	5,985.00	5,981.31	97.92	151.19	10.28	-861.29	-2,292.75	3,801.06	3,624.46	176.60	21.523		
12,600.00	6,882.89	5,985.00	5,981.31	99.46	151.19	10.28	-861.29	-2,292.75	3,898.63	3,721.78	176.85	22.045		
12,700.00	6,882.66	5,985.00	5,981.31	101.00	151.19	10.28	-861.29	-2,292.75	3,996.33	3,819.24	177.09	22.567		
12,800.00	6,882.43	5,985.00	5,981.31	102.54	151.19	10.28	-861.29	-2,292.75	4,094.13	3,916.82	177.31	23.090		
12,900.00	6,882.20	5,985.00	5,981.31	104.08	151.19	10.28	-861.29	-2,292.75	4,192.04	4,014.52	177.53	23.614		
13,000.00	6,881.97	5,985.00	5,981.31	105.63	151.19	10.28	-861.29	-2,292.75	4,290.05	4,112.32	177.73	24.138		
13,100.00	6,881.74	5,985.00	5,981.31	107.18	151.19	10.28	-861.29	-2,292.75	4,388.14	4,210.22	177.92	24.663		
13,200.00	6,881.50	5,985.00	5,981.31	108.73	151.19	10.28	-861.29	-2,292.75	4,486.32	4,308.21	178.11	25.189		
13,300.00	6,881.27	5,985.00	5,981.31	110.28	151.19	10.28	-861.29	-2,292.75	4,584.58	4,406.29	178.28	25.715		
13,400.00	6,881.04	5,985.00	5,981.31	111.83	151.19	10.28	-861.29	-2,292.75	4,682.91	4,504.45	178.45	26.241		
13,500.00	6,880.81	5,985.00	5,981.31	113.38	151.19	10.28	-861.29	-2,292.75	4,781.31	4,602.69	178.62	26.768		
13,600.00	6,880.58	5,985.00	5,981.31	114.94	151.19	10.28	-861.29	-2,292.75	4,879.77	4,701.00	178.78	27.295		
13,700.00	6,880.35	5,985.00	5,981.31	116.49	151.19	10.28	-861.29	-2,292.75	4,978.30	4,799.37	178.93	27.822		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18B - OH - OH												Offset Site Error:	0.00 usft		
Survey Program:		213-A027Ua_INC-ONLY		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
13,800.00	6,880.12	5,985.00	5,981.31	118.05	151.19	10.28	-861.29	-2,292.75	5,076.88	4,897.81	179.08	28.350			
13,900.00	6,879.88	5,985.00	5,981.31	119.61	151.19	10.28	-861.29	-2,292.75	5,175.52	4,996.30	179.22	28.878			
14,000.00	6,879.65	5,985.00	5,981.31	121.17	151.19	10.28	-861.29	-2,292.75	5,274.21	5,094.85	179.36	29.405			
14,100.00	6,879.42	5,985.00	5,981.31	122.73	151.19	10.28	-861.29	-2,292.75	5,372.95	5,193.45	179.50	29.933			
14,200.00	6,879.19	5,985.00	5,981.31	124.29	151.19	10.28	-861.29	-2,292.75	5,471.74	5,292.10	179.63	30.461			
14,300.00	6,878.96	5,985.00	5,981.31	125.86	151.19	10.28	-861.29	-2,292.75	5,570.56	5,390.80	179.76	30.989			
14,400.00	6,878.73	5,985.00	5,981.31	127.42	151.19	10.28	-861.29	-2,292.75	5,669.43	5,489.54	179.89	31.517			
14,500.00	6,878.50	5,985.00	5,981.31	128.99	151.19	10.28	-861.29	-2,292.75	5,768.34	5,588.33	180.01	32.044			
14,600.00	6,878.26	5,985.00	5,981.31	130.55	151.19	10.28	-861.29	-2,292.75	5,867.28	5,687.15	180.13	32.572			
14,700.00	6,878.03	5,985.00	5,981.31	132.12	151.19	10.28	-861.29	-2,292.75	5,966.26	5,786.01	180.25	33.100			
14,800.00	6,877.80	5,985.00	5,981.31	133.69	151.19	10.28	-861.29	-2,292.75	6,065.28	5,884.91	180.37	33.627			
14,900.00	6,877.57	5,985.00	5,981.31	135.26	151.19	10.28	-861.29	-2,292.75	6,164.32	5,983.84	180.48	34.154			
15,000.00	6,877.34	5,985.00	5,981.31	136.83	151.19	10.28	-861.29	-2,292.75	6,263.40	6,082.80	180.60	34.681			
15,100.00	6,877.11	5,985.00	5,981.31	138.40	151.19	10.28	-861.29	-2,292.75	6,362.50	6,181.79	180.71	35.208			
15,200.00	6,876.87	5,985.00	5,981.31	139.97	151.19	10.28	-861.29	-2,292.75	6,461.64	6,280.82	180.82	35.735			
15,300.00	6,876.64	5,985.00	5,981.31	141.54	151.19	10.28	-861.29	-2,292.75	6,560.79	6,379.86	180.93	36.262			
15,400.00	6,876.41	5,985.00	5,981.31	143.12	151.19	10.28	-861.29	-2,292.75	6,659.98	6,478.94	181.04	36.788			
15,500.00	6,876.18	5,985.00	5,981.31	144.69	151.19	10.28	-861.29	-2,292.75	6,759.19	6,578.04	181.14	37.314			
15,600.00	6,875.95	5,985.00	5,981.31	146.26	151.19	10.28	-861.29	-2,292.75	6,858.42	6,677.17	181.25	37.840			
15,700.00	6,875.72	5,985.00	5,981.31	147.84	151.19	10.28	-861.29	-2,292.75	6,957.67	6,776.31	181.35	38.365			
15,800.00	6,875.49	5,985.00	5,981.31	149.41	151.19	10.28	-861.29	-2,292.75	7,056.94	6,875.48	181.46	38.890			
15,900.00	6,875.25	5,985.00	5,981.31	150.99	151.19	10.28	-861.29	-2,292.75	7,156.24	6,974.68	181.56	39.415			
16,000.00	6,875.02	5,985.00	5,981.31	152.57	151.19	10.28	-861.29	-2,292.75	7,255.55	7,073.89	181.66	39.940			
16,100.00	6,874.79	5,985.00	5,981.31	154.14	151.19	10.28	-861.29	-2,292.75	7,354.88	7,173.12	181.76	40.464			
16,200.00	6,874.56	5,985.00	5,981.31	155.72	151.19	10.28	-861.29	-2,292.75	7,454.23	7,272.37	181.87	40.988			
16,300.00	6,874.33	5,985.00	5,981.31	157.30	151.19	10.28	-861.29	-2,292.75	7,553.60	7,371.63	181.97	41.511			
16,400.00	6,874.10	5,985.00	5,981.31	158.88	151.19	10.28	-861.29	-2,292.75	7,652.98	7,470.92	182.07	42.034			
16,500.00	6,873.87	5,985.00	5,981.31	160.46	151.19	10.28	-861.29	-2,292.75	7,752.38	7,570.22	182.17	42.557			
16,600.00	6,873.63	5,985.00	5,981.31	162.04	151.19	10.28	-861.29	-2,292.75	7,851.80	7,669.53	182.26	43.079			
16,700.00	6,873.40	5,985.00	5,981.31	163.62	151.19	10.28	-861.29	-2,292.75	7,951.23	7,768.86	182.36	43.601			
16,800.00	6,873.17	5,985.00	5,981.31	165.20	151.19	10.28	-861.29	-2,292.75	8,050.67	7,868.21	182.46	44.123			
16,900.00	6,872.94	5,985.00	5,981.31	166.78	151.19	10.28	-861.29	-2,292.75	8,150.13	7,967.57	182.56	44.644			
17,000.00	6,872.71	5,985.00	5,981.31	168.36	151.19	10.28	-861.29	-2,292.75	8,249.60	8,066.94	182.66	45.164			
17,100.00	6,872.48	5,985.00	5,981.31	169.95	151.19	10.28	-861.29	-2,292.75	8,349.08	8,166.32	182.76	45.685			
17,133.01	6,872.40	5,985.00	5,981.31	170.47	151.19	10.28	-861.29	-2,292.75	8,381.92	8,199.13	182.79	45.856			
17,200.00	6,872.25	5,985.00	5,981.31	171.53	151.19	10.28	-861.29	-2,292.75	8,448.57	8,265.72	182.85	46.204			
17,304.21	6,872.00	5,985.00	5,981.31	173.18	151.19	10.28	-861.29	-2,292.75	8,552.27	8,369.31	182.95	46.745			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 395-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-35.39	2,002.37	-1,422.36	2,456.84				
100.00	100.00	42.59	42.59	0.25	0.05	-35.39	2,002.37	-1,422.33	2,456.12	2,455.82	0.30	8,211.614	
200.00	200.00	146.46	146.46	0.61	0.17	-35.38	2,002.42	-1,422.01	2,455.98	2,455.20	0.77	3,170.740	
300.00	300.00	250.34	250.33	0.97	0.28	-35.37	2,002.52	-1,421.34	2,455.68	2,454.43	1.25	1,964.469	
400.00	400.00	354.20	354.19	1.33	0.40	-35.34	2,002.66	-1,420.31	2,455.22	2,453.49	1.73	1,422.876	
500.00	500.00	480.36	480.34	1.68	0.62	-35.33	2,001.94	-1,419.27	2,454.31	2,452.01	2.30	1,068.700	
600.00	600.00	572.71	572.55	2.04	0.82	-35.44	1,998.30	-1,422.10	2,452.87	2,450.03	2.84	864.388	
700.00	700.00	685.71	684.25	2.40	1.14	-35.83	1,987.27	-1,434.59	2,451.36	2,447.86	3.49	701.816	
800.00	800.00	783.29	778.43	2.76	1.51	-36.42	1,971.18	-1,454.21	2,449.83	2,445.57	4.26	575.489	
900.00	900.00	903.72	890.74	3.12	2.25	-37.43	1,943.69	-1,487.70	2,448.19	2,442.83	5.36	456.616	
1,000.00	1,000.00	1,023.13	999.77	3.48	3.12	-38.57	1,912.08	-1,524.75	2,446.30	2,439.70	6.59	370.958	
1,100.00	1,099.98	1,127.05	1,093.73	3.82	3.96	126.86	1,882.38	-1,557.72	2,444.94	2,437.16	7.77	314.591	
1,104.45	1,104.43	1,129.92	1,096.31	3.83	3.98	126.83	1,881.53	-1,558.66	2,444.94	2,437.13	7.81	313.031	
1,200.00	1,199.84	1,210.84	1,168.34	4.15	4.70	126.02	1,856.83	-1,586.04	2,446.25	2,437.41	8.84	276.721	
1,300.00	1,299.45	1,273.23	1,222.98	4.48	5.28	125.33	1,837.27	-1,608.92	2,451.32	2,441.56	9.76	251.165	
1,400.00	1,398.70	1,357.40	1,295.39	4.82	6.13	124.36	1,809.66	-1,641.75	2,459.58	2,448.63	10.96	224.495	
1,500.00	1,497.47	1,443.77	1,368.96	5.17	7.04	123.35	1,780.71	-1,676.53	2,470.79	2,458.58	12.20	202.451	
1,569.36	1,565.62	1,503.65	1,419.73	5.43	7.62	122.64	1,760.37	-1,700.90	2,480.05	2,467.02	13.03	190.288	
1,600.00	1,595.66	1,518.00	1,431.92	5.54	7.76	122.52	1,755.54	-1,706.73	2,484.51	2,471.23	13.28	187.105	
1,700.00	1,693.69	1,590.21	1,493.71	5.92	8.39	121.90	1,732.15	-1,735.88	2,500.00	2,485.73	14.27	175.242	
1,800.00	1,791.72	1,672.08	1,564.16	6.30	9.16	121.23	1,706.64	-1,768.89	2,516.72	2,501.33	15.40	163.459	
1,900.00	1,889.75	1,804.83	1,679.18	6.70	10.39	120.19	1,666.13	-1,821.32	2,533.97	2,516.98	16.99	149.159	
2,000.00	1,987.78	1,908.16	1,769.33	7.10	11.31	119.42	1,633.84	-1,860.15	2,549.64	2,531.36	18.28	139.460	
2,100.00	2,085.81	2,016.91	1,863.94	7.50	12.33	118.60	1,599.62	-1,901.44	2,565.93	2,546.26	19.67	130.418	
2,200.00	2,183.85	2,129.28	1,961.14	7.91	13.42	117.74	1,562.67	-1,944.01	2,581.67	2,560.54	21.14	122.133	
2,300.00	2,281.88	2,223.64	2,042.27	8.32	14.38	117.00	1,530.76	-1,980.12	2,597.59	2,575.13	22.46	115.629	
2,400.00	2,379.91	2,314.67	2,120.63	8.74	15.25	116.30	1,499.85	-2,014.61	2,613.61	2,589.91	23.71	110.246	
2,500.00	2,477.94	2,384.30	2,181.03	9.16	15.90	115.79	1,477.48	-2,041.05	2,631.09	2,606.37	24.72	106.444	
2,600.00	2,575.97	2,605.96	2,379.09	9.58	17.73	114.44	1,410.32	-2,114.34	2,645.83	2,618.88	26.95	98.164	
2,700.00	2,674.00	2,669.48	2,436.87	10.00	18.21	114.11	1,392.11	-2,133.39	2,660.04	2,632.24	27.81	95.666	
2,800.00	2,772.03	2,716.11	2,479.51	10.43	18.55	113.88	1,379.67	-2,147.59	2,675.97	2,647.46	28.51	93.855	
2,900.00	2,870.07	2,980.86	2,730.44	10.86	20.08	113.12	1,322.69	-2,208.05	2,687.56	2,657.08	30.48	88.183	
3,000.00	2,968.10	3,026.00	2,774.13	11.28	20.29	113.05	1,314.66	-2,216.08	2,699.21	2,668.12	31.09	86.821	
3,100.00	3,066.13	3,087.00	2,833.29	11.71	20.57	112.98	1,305.18	-2,227.51	2,712.72	2,680.96	31.76	85.416	
3,200.00	3,164.16	3,243.00	2,985.40	12.14	21.22	112.87	1,283.46	-2,254.40	2,725.89	2,693.05	32.84	83.003	
3,300.00	3,262.19	3,321.92	3,063.02	12.58	21.50	112.88	1,274.87	-2,265.80	2,738.66	2,705.14	33.52	81.704	
3,400.00	3,360.22	3,451.83	3,191.62	13.01	21.87	113.01	1,264.38	-2,280.79	2,750.77	2,716.45	34.33	80.134	
3,500.00	3,458.25	3,630.71	3,368.35	13.44	22.42	113.13	1,246.20	-2,301.09	2,761.82	2,726.51	35.31	78.216	
3,600.00	3,556.29	3,758.65	3,496.19	13.88	22.57	113.53	1,243.46	-2,304.16	2,770.39	2,734.49	35.90	77.168	
3,700.00	3,654.32	3,871.28	3,608.81	14.31	22.68	113.93	1,242.21	-2,304.50	2,778.01	2,741.56	36.45	76.208	
3,800.00	3,752.35	3,969.69	3,707.22	14.75	22.79	114.28	1,241.08	-2,304.78	2,785.71	2,748.70	37.01	75.268	
3,900.00	3,850.38	4,068.10	3,805.62	15.18	22.91	114.62	1,239.93	-2,305.05	2,793.50	2,755.94	37.57	74.360	
4,000.00	3,948.41	4,166.52	3,904.04	15.62	23.02	114.96	1,238.78	-2,305.33	2,801.40	2,763.27	38.12	73.483	
4,100.00	4,046.44	4,264.95	4,002.45	16.05	23.14	115.30	1,237.61	-2,305.61	2,809.38	2,770.70	38.68	72.634	
4,200.00	4,144.48	4,363.37	4,100.87	16.49	23.25	115.63	1,236.43	-2,305.89	2,817.46	2,778.23	39.23	71.814	
4,300.00	4,242.51	4,461.81	4,199.30	16.93	23.37	115.97	1,235.23	-2,306.18	2,825.63	2,785.85	39.79	71.021	
4,400.00	4,340.54	4,560.25	4,297.73	17.37	23.48	116.30	1,234.03	-2,306.47	2,833.90	2,793.56	40.34	70.253	
4,500.00	4,438.57	4,658.69	4,396.17	17.81	23.60	116.63	1,232.81	-2,306.76	2,842.25	2,801.36	40.89	69.510	
4,600.00	4,536.60	4,757.14	4,494.61	18.25	23.72	116.96	1,231.57	-2,307.05	2,850.70	2,809.26	41.44	68.790	
4,700.00	4,634.63	4,855.59	4,593.05	18.68	23.83	117.28	1,230.33	-2,307.35	2,859.23	2,817.24	41.99	68.093	
4,800.00	4,732.66	4,954.05	4,691.50	19.12	23.95	117.61	1,229.07	-2,307.65	2,867.85	2,825.31	42.54	67.417	
4,900.00	4,830.70	5,052.51	4,789.96	19.56	24.07	117.93	1,227.80	-2,307.96	2,876.56	2,833.47	43.09	66.762	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 395-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,928.73	5,150.98	4,888.41	20.00	24.18	118.25	1,226.52	-2,308.27	2,885.35	2,841.72	43.63	66.127	
5,100.00	5,026.76	5,249.45	4,986.88	20.44	24.30	118.57	1,225.22	-2,308.58	2,894.23	2,850.05	44.18	65.510	
5,200.00	5,124.79	5,347.93	5,085.35	20.88	24.42	118.88	1,223.92	-2,308.89	2,903.19	2,858.47	44.72	64.912	
5,300.00	5,222.82	5,446.41	5,183.82	21.32	24.54	119.20	1,222.60	-2,309.21	2,912.23	2,866.96	45.27	64.332	
5,400.00	5,320.85	5,544.90	5,282.30	21.77	24.65	119.51	1,221.26	-2,309.53	2,921.36	2,875.54	45.81	63.768	
5,500.00	5,418.88	5,643.39	5,380.78	22.21	24.77	119.82	1,219.92	-2,309.85	2,930.56	2,884.21	46.35	63.221	
5,600.00	5,516.92	5,741.89	5,479.26	22.65	24.89	120.12	1,218.56	-2,310.17	2,939.84	2,892.95	46.90	62.689	
5,700.00	5,614.95	5,840.39	5,577.76	23.09	25.01	120.43	1,217.19	-2,310.50	2,949.21	2,901.77	47.44	62.173	
5,800.00	5,712.98	5,938.89	5,676.25	23.53	25.13	120.73	1,215.81	-2,310.84	2,958.65	2,910.67	47.98	61.670	
5,900.00	5,811.01	6,037.41	5,774.75	23.97	25.25	121.03	1,214.41	-2,311.17	2,968.16	2,919.65	48.51	61.182	
6,000.00	5,909.04	6,135.92	5,873.26	24.41	25.36	121.33	1,213.00	-2,311.51	2,977.75	2,928.70	49.05	60.707	
6,100.00	6,007.07	6,234.44	5,971.77	24.85	25.48	121.63	1,211.58	-2,311.85	2,987.42	2,937.83	49.59	60.245	
6,200.00	6,105.10	6,332.97	6,070.28	25.30	25.60	121.92	1,210.15	-2,312.19	2,997.16	2,947.03	50.12	59.795	
6,300.00	6,203.14	6,431.50	6,168.80	25.74	25.72	122.21	1,208.70	-2,312.54	3,006.97	2,956.31	50.66	59.357	
6,393.02	6,294.33	6,523.16	6,260.45	26.15	25.83	122.48	1,207.34	-2,312.86	3,016.16	2,965.01	51.16	58.960	
6,400.00	6,301.17	6,530.03	6,267.32	26.18	25.84	119.44	1,207.24	-2,312.89	3,016.83	2,965.63	51.19	58.930	
6,450.00	6,350.01	6,579.14	6,316.42	26.40	25.90	100.58	1,206.51	-2,313.06	3,019.98	2,968.51	51.47	58.680	
6,500.00	6,398.37	6,627.77	6,365.05	26.63	25.96	87.57	1,205.78	-2,313.24	3,020.32	2,968.57	51.74	58.370	
6,550.00	6,445.94	6,675.61	6,412.89	26.86	26.02	79.13	1,205.06	-2,313.41	3,017.87	2,965.84	52.03	58.004	
6,600.00	6,492.42	6,722.38	6,459.65	27.08	26.08	73.72	1,204.36	-2,313.58	3,012.69	2,960.38	52.32	57.587	
6,650.00	6,537.54	6,767.79	6,505.06	27.30	26.13	70.30	1,203.67	-2,313.75	3,004.86	2,952.25	52.61	57.121	
6,700.00	6,581.01	6,811.56	6,548.82	27.52	26.18	68.25	1,203.00	-2,313.90	2,994.46	2,941.57	52.90	56.611	
6,750.00	6,622.57	6,853.41	6,590.67	27.74	26.23	67.18	1,202.36	-2,314.06	2,981.62	2,928.43	53.19	56.061	
6,800.00	6,661.96	6,893.10	6,630.34	27.96	26.28	66.89	1,201.76	-2,314.20	2,966.46	2,912.99	53.48	55.473	
6,850.00	6,698.93	6,930.36	6,667.60	28.17	26.33	67.20	1,201.18	-2,314.34	2,949.15	2,895.38	53.77	54.852	
6,900.00	6,733.26	6,964.98	6,702.22	28.39	26.37	68.04	1,200.65	-2,314.47	2,929.84	2,875.78	54.05	54.202	
6,950.00	6,764.73	6,996.74	6,733.98	28.60	26.41	69.32	1,200.16	-2,314.59	2,908.71	2,854.37	54.34	53.525	
7,000.00	6,793.16	7,025.45	6,762.68	28.82	26.45	70.99	1,199.72	-2,314.69	2,885.95	2,831.32	54.63	52.826	
7,050.00	6,818.37	7,050.92	6,788.15	29.04	26.48	73.00	1,199.32	-2,314.79	2,861.77	2,806.85	54.92	52.109	
7,100.00	6,840.20	7,073.01	6,810.23	29.27	26.50	75.31	1,198.98	-2,314.87	2,836.35	2,781.14	55.21	51.377	
7,150.00	6,858.51	7,091.57	6,828.79	29.50	26.53	77.87	1,198.69	-2,314.94	2,809.92	2,754.42	55.49	50.635	
7,200.00	6,873.20	7,106.48	6,843.70	29.74	26.54	80.64	1,198.45	-2,315.00	2,782.67	2,726.89	55.78	49.887	
7,250.00	6,884.18	7,117.67	6,854.89	30.00	26.56	83.55	1,198.28	-2,315.04	2,754.81	2,698.75	56.07	49.136	
7,300.00	6,891.37	7,125.05	6,862.27	30.26	26.57	86.57	1,198.16	-2,315.06	2,726.55	2,670.21	56.35	48.387	
7,350.00	6,894.73	7,128.58	6,865.80	30.54	26.57	89.63	1,198.11	-2,315.08	2,698.09	2,641.46	56.63	47.643	
7,370.19	6,895.00	7,128.92	6,866.13	30.65	26.57	90.87	1,198.10	-2,315.08	2,686.58	2,629.83	56.74	47.346	
7,400.00	6,894.93	7,128.94	6,866.16	30.83	26.57	90.87	1,198.10	-2,315.08	2,669.69	2,612.78	56.91	46.910	
7,500.00	6,894.70	7,129.02	6,866.23	31.45	26.57	90.88	1,198.10	-2,315.08	2,614.75	2,557.25	57.50	45.478	
7,600.00	6,894.47	7,129.09	6,866.31	32.15	26.57	90.88	1,198.10	-2,315.08	2,562.53	2,504.42	58.11	44.096	
7,700.00	6,894.24	7,129.17	6,866.39	32.92	26.57	90.88	1,198.10	-2,315.08	2,513.21	2,454.45	58.76	42.771	
7,800.00	6,894.00	7,129.25	6,866.46	33.75	26.57	90.88	1,198.10	-2,315.08	2,466.95	2,407.52	59.43	41.509	
7,900.00	6,893.77	7,129.32	6,866.54	34.63	26.57	90.88	1,198.10	-2,315.08	2,423.94	2,363.82	60.12	40.316	
8,000.00	6,893.54	7,129.40	6,866.62	35.57	26.57	90.89	1,198.10	-2,315.08	2,384.36	2,323.53	60.83	39.198	
8,100.00	6,893.31	7,129.48	6,866.69	36.55	26.57	90.89	1,198.09	-2,315.08	2,348.36	2,286.82	61.54	38.161	
8,200.00	6,893.08	7,129.55	6,866.77	37.58	26.57	90.89	1,198.09	-2,315.08	2,316.13	2,253.88	62.24	37.210	
8,300.00	6,892.85	7,129.63	6,866.85	38.65	26.57	90.89	1,198.09	-2,315.08	2,287.81	2,224.87	62.94	36.349	
8,400.00	6,892.62	7,129.71	6,866.92	39.76	26.57	90.89	1,198.09	-2,315.08	2,263.57	2,199.95	63.62	35.582	
8,500.00	6,892.38	7,129.78	6,867.00	40.90	26.57	90.90	1,198.09	-2,315.08	2,243.52	2,179.26	64.26	34.911	
8,600.00	6,892.15	7,129.86	6,867.08	42.07	26.57	90.90	1,198.09	-2,315.08	2,227.79	2,162.92	64.87	34.340	
8,700.00	6,891.92	7,129.94	6,867.15	43.27	26.57	90.90	1,198.09	-2,315.08	2,216.46	2,151.02	65.44	33.870	
8,800.00	6,891.69	7,130.01	6,867.23	44.50	26.57	90.90	1,198.09	-2,315.08	2,209.60	2,143.65	65.95	33.502	
8,900.00	6,891.46	7,130.09	6,867.31	45.75	26.57	90.90	1,198.09	-2,315.08	2,207.26	2,140.84	66.41	33.235 CC	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 395-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,904.45	6,891.45	7,130.09	6,867.31	45.80	26.57	90.90	1,198.09	-2,315.08	2,207.26	2,140.83	66.43	33.225 ES	
9,000.00	6,891.23	7,130.17	6,867.39	47.02	26.57	90.91	1,198.08	-2,315.08	2,209.44	2,142.63	66.81	33.069	
9,100.00	6,890.99	7,130.24	6,867.46	48.31	26.57	90.91	1,198.08	-2,315.08	2,216.14	2,148.99	67.15	33.002 SF	
9,200.00	6,890.76	7,130.32	6,867.54	49.62	26.57	90.91	1,198.08	-2,315.08	2,227.32	2,159.89	67.43	33.033	
9,300.00	6,890.53	7,130.40	6,867.62	50.94	26.57	90.91	1,198.08	-2,315.09	2,242.90	2,175.25	67.64	33.157	
9,400.00	6,890.30	7,130.47	6,867.69	52.29	26.57	90.91	1,198.08	-2,315.09	2,262.79	2,194.99	67.80	33.373	
9,500.00	6,890.07	7,130.55	6,867.77	53.64	26.57	90.92	1,198.08	-2,315.09	2,286.89	2,218.99	67.91	33.677	
9,600.00	6,889.84	7,130.63	6,867.85	55.02	26.57	90.92	1,198.08	-2,315.09	2,315.07	2,247.10	67.96	34.064	
9,700.00	6,889.61	7,130.71	6,867.92	56.40	26.57	90.92	1,198.08	-2,315.09	2,347.16	2,279.19	67.97	34.531	
9,800.00	6,889.37	7,130.78	6,868.00	57.79	26.57	90.92	1,198.07	-2,315.09	2,383.03	2,315.08	67.95	35.072	
9,900.00	6,889.14	7,130.86	6,868.08	59.20	26.57	90.92	1,198.07	-2,315.09	2,422.49	2,354.61	67.89	35.684	
10,000.00	6,888.91	7,130.94	6,868.15	60.61	26.57	90.93	1,198.07	-2,315.09	2,465.39	2,397.58	67.80	36.362	
10,100.00	6,888.68	7,131.01	6,868.23	62.04	26.57	90.93	1,198.07	-2,315.09	2,511.53	2,443.84	67.69	37.102	
10,200.00	6,888.45	7,131.09	6,868.31	63.47	26.57	90.93	1,198.07	-2,315.09	2,560.75	2,493.18	67.57	37.899	
10,300.00	6,888.22	7,131.17	6,868.38	64.91	26.57	90.93	1,198.07	-2,315.09	2,612.87	2,545.44	67.43	38.749	
10,400.00	6,887.99	7,131.24	6,868.46	66.36	26.57	90.93	1,198.07	-2,315.09	2,667.72	2,600.43	67.28	39.648	
10,500.00	6,887.75	7,131.32	6,868.54	67.82	26.57	90.94	1,198.07	-2,315.09	2,725.14	2,658.00	67.13	40.594	
10,600.00	6,887.52	7,131.40	6,868.61	69.28	26.57	90.94	1,198.06	-2,315.09	2,784.96	2,717.99	66.98	41.581	
10,700.00	6,887.29	7,131.47	6,868.69	70.75	26.57	90.94	1,198.06	-2,315.09	2,847.05	2,780.23	66.82	42.608	
10,800.00	6,887.06	7,131.55	6,868.77	72.22	26.57	90.94	1,198.06	-2,315.09	2,911.24	2,844.58	66.66	43.671	
10,900.00	6,886.83	7,131.63	6,868.85	73.70	26.57	90.94	1,198.06	-2,315.09	2,977.41	2,910.90	66.51	44.768	
11,000.00	6,886.60	7,131.70	6,868.92	75.19	26.58	90.95	1,198.06	-2,315.09	3,045.42	2,979.07	66.36	45.895	
11,100.00	6,886.37	7,131.78	6,869.00	76.68	26.58	90.95	1,198.06	-2,315.09	3,115.17	3,048.96	66.21	47.052	
11,200.00	6,886.13	7,131.86	6,869.08	78.17	26.58	90.95	1,198.06	-2,315.09	3,186.52	3,120.46	66.06	48.235	
11,300.00	6,885.90	7,131.94	6,869.15	79.67	26.58	90.95	1,198.06	-2,315.09	3,259.38	3,193.46	65.92	49.443	
11,400.00	6,885.67	7,132.01	6,869.23	81.17	26.58	90.95	1,198.06	-2,315.09	3,333.65	3,267.86	65.79	50.674	
11,500.00	6,885.44	7,132.09	6,869.31	82.68	26.58	90.96	1,198.05	-2,315.09	3,409.23	3,343.58	65.66	51.926	
11,600.00	6,885.21	7,132.17	6,869.38	84.19	26.58	90.96	1,198.05	-2,315.09	3,486.04	3,420.51	65.53	53.198	
11,700.00	6,884.98	7,132.24	6,869.46	85.71	26.58	90.96	1,198.05	-2,315.09	3,564.01	3,498.60	65.41	54.489	
11,800.00	6,884.74	7,132.32	6,869.54	87.22	26.58	90.96	1,198.05	-2,315.09	3,643.05	3,577.76	65.29	55.797	
11,900.00	6,884.51	7,132.40	6,869.61	88.74	26.58	90.96	1,198.05	-2,315.09	3,723.10	3,657.92	65.18	57.121	
12,000.00	6,884.28	7,132.47	6,869.69	90.27	26.58	90.97	1,198.05	-2,315.09	3,804.09	3,739.02	65.07	58.459	
12,100.00	6,884.05	7,132.55	6,869.77	91.79	26.58	90.97	1,198.05	-2,315.09	3,885.97	3,821.00	64.97	59.812	
12,200.00	6,883.82	7,132.63	6,869.84	93.32	26.58	90.97	1,198.05	-2,315.09	3,968.68	3,903.80	64.87	61.177	
12,300.00	6,883.59	7,132.70	6,869.92	94.85	26.58	90.97	1,198.04	-2,315.09	4,052.17	3,987.39	64.78	62.554	
12,400.00	6,883.36	7,132.78	6,870.00	96.38	26.58	90.97	1,198.04	-2,315.09	4,136.39	4,071.70	64.69	63.942	
12,500.00	6,883.12	7,132.86	6,870.08	97.92	26.58	90.98	1,198.04	-2,315.09	4,221.30	4,156.69	64.60	65.341	
12,600.00	6,882.89	7,132.94	6,870.15	99.46	26.58	90.98	1,198.04	-2,315.09	4,306.85	4,242.33	64.52	66.749	
12,700.00	6,882.66	7,133.01	6,870.23	101.00	26.58	90.98	1,198.04	-2,315.09	4,393.02	4,328.58	64.45	68.166	
12,800.00	6,882.43	7,133.09	6,870.31	102.54	26.58	90.98	1,198.04	-2,315.10	4,479.76	4,415.39	64.37	69.591	
12,900.00	6,882.20	7,133.17	6,870.38	104.08	26.58	90.98	1,198.04	-2,315.10	4,567.05	4,502.75	64.30	71.024	
13,000.00	6,881.97	7,133.24	6,870.46	105.63	26.58	90.99	1,198.04	-2,315.10	4,654.84	4,590.61	64.24	72.463	
13,100.00	6,881.74	7,133.32	6,870.54	107.18	26.58	90.99	1,198.03	-2,315.10	4,743.12	4,678.95	64.17	73.910	
13,200.00	6,881.50	7,133.40	6,870.61	108.73	26.58	90.99	1,198.03	-2,315.10	4,831.86	4,767.75	64.12	75.362	
13,300.00	6,881.27	7,133.47	6,870.69	110.28	26.58	90.99	1,198.03	-2,315.10	4,921.03	4,856.97	64.06	76.819	
13,400.00	6,881.04	7,133.55	6,870.77	111.83	26.58	90.99	1,198.03	-2,315.10	5,010.61	4,946.60	64.01	78.282	
13,500.00	6,880.81	7,133.63	6,870.85	113.38	26.58	91.00	1,198.03	-2,315.10	5,100.57	5,036.61	63.96	79.749	
13,600.00	6,880.58	7,133.70	6,870.92	114.94	26.58	91.00	1,198.03	-2,315.10	5,190.90	5,126.99	63.91	81.220	
13,700.00	6,880.35	7,133.78	6,871.00	116.49	26.58	91.00	1,198.03	-2,315.10	5,281.58	5,217.72	63.87	82.695	
13,800.00	6,880.12	7,133.86	6,871.08	118.05	26.58	91.00	1,198.03	-2,315.10	5,372.59	5,308.77	63.83	84.174	
13,900.00	6,879.88	7,133.94	6,871.15	119.61	26.58	91.00	1,198.02	-2,315.10	5,463.92	5,400.13	63.79	85.655	
14,000.00	6,879.65	7,134.01	6,871.23	121.17	26.58	91.01	1,198.02	-2,315.10	5,555.54	5,491.79	63.75	87.140	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 18C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 395-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,100.00	6,879.42	7,134.09	6,871.31	122.73	26.58	91.01	1,198.02	-2,315.10	5,647.45	5,583.73	63.72	88.626	
14,200.00	6,879.19	7,134.17	6,871.38	124.29	26.58	91.01	1,198.02	-2,315.10	5,739.63	5,675.94	63.69	90.115	
14,300.00	6,878.96	7,134.24	6,871.46	125.86	26.58	91.01	1,198.02	-2,315.10	5,832.07	5,768.40	63.66	91.606	
14,400.00	6,878.73	7,134.32	6,871.54	127.42	26.58	91.01	1,198.02	-2,315.10	5,924.75	5,861.11	63.64	93.098	
14,500.00	6,878.50	7,134.40	6,871.62	128.99	26.58	91.02	1,198.02	-2,315.10	6,017.67	5,954.05	63.62	94.591	
14,600.00	6,878.26	7,134.47	6,871.69	130.55	26.58	91.02	1,198.02	-2,315.10	6,110.81	6,047.21	63.60	96.086	
14,700.00	6,878.03	7,134.55	6,871.77	132.12	26.58	91.02	1,198.02	-2,315.10	6,204.16	6,140.58	63.58	97.582	
14,800.00	6,877.80	7,134.63	6,871.85	133.69	26.58	91.02	1,198.01	-2,315.10	6,297.72	6,234.15	63.56	99.078	
14,900.00	6,877.57	7,134.71	6,871.92	135.26	26.58	91.02	1,198.01	-2,315.10	6,391.47	6,327.92	63.55	100.574	
15,000.00	6,877.34	7,134.78	6,872.00	136.83	26.58	91.03	1,198.01	-2,315.10	6,485.41	6,421.87	63.54	102.071	
15,100.00	6,877.11	7,134.86	6,872.08	138.40	26.58	91.03	1,198.01	-2,315.10	6,579.53	6,516.00	63.53	103.568	
15,200.00	6,876.87	7,134.94	6,872.15	139.97	26.58	91.03	1,198.01	-2,315.10	6,673.82	6,610.30	63.52	105.064	
15,300.00	6,876.64	7,135.01	6,872.23	141.54	26.58	91.03	1,198.01	-2,315.10	6,768.27	6,704.76	63.52	106.561	
15,400.00	6,876.41	7,135.09	6,872.31	143.12	26.58	91.03	1,198.01	-2,315.10	6,862.88	6,799.37	63.51	108.056	
15,500.00	6,876.18	7,135.17	6,872.39	144.69	26.58	91.04	1,198.01	-2,315.10	6,957.64	6,894.13	63.51	109.551	
15,600.00	6,875.95	7,135.25	6,872.46	146.26	26.58	91.04	1,198.00	-2,315.10	7,052.55	6,989.04	63.51	111.046	
15,700.00	6,875.72	7,135.32	6,872.54	147.84	26.58	91.04	1,198.00	-2,315.10	7,147.59	7,084.08	63.51	112.539	
15,800.00	6,875.49	7,135.40	6,872.62	149.41	26.58	91.04	1,198.00	-2,315.10	7,242.77	7,179.26	63.52	114.031	
15,900.00	6,875.25	7,135.48	6,872.69	150.99	26.58	91.04	1,198.00	-2,315.10	7,338.08	7,274.56	63.52	115.523	
16,000.00	6,875.02	7,135.55	6,872.77	152.57	26.58	91.05	1,198.00	-2,315.10	7,433.51	7,369.98	63.53	117.012	
16,100.00	6,874.79	7,135.63	6,872.85	154.14	26.58	91.05	1,198.00	-2,315.10	7,529.06	7,465.52	63.54	118.501	
16,200.00	6,874.56	7,135.71	6,872.92	155.72	26.58	91.05	1,198.00	-2,315.10	7,624.72	7,561.17	63.55	119.987	
16,300.00	6,874.33	7,135.78	6,873.00	157.30	26.58	91.05	1,198.00	-2,315.11	7,720.49	7,656.93	63.56	121.472	
16,400.00	6,874.10	7,135.86	6,873.08	158.88	26.58	91.05	1,197.99	-2,315.11	7,816.37	7,752.80	63.57	122.955	
16,500.00	6,873.87	7,135.94	6,873.16	160.46	26.58	91.06	1,197.99	-2,315.11	7,912.35	7,848.76	63.59	124.437	
16,600.00	6,873.63	7,136.02	6,873.23	162.04	26.58	91.06	1,197.99	-2,315.11	8,008.43	7,944.83	63.60	125.916	
16,700.00	6,873.40	7,136.09	6,873.31	163.62	26.58	91.06	1,197.99	-2,315.11	8,104.60	8,040.98	63.62	127.393	
16,800.00	6,873.17	7,136.17	6,873.39	165.20	26.58	91.06	1,197.99	-2,315.11	8,200.87	8,137.23	63.64	128.868	
16,900.00	6,872.94	7,136.25	6,873.46	166.78	26.58	91.06	1,197.99	-2,315.11	8,297.22	8,233.56	63.66	130.341	
17,000.00	6,872.71	7,136.32	6,873.54	168.36	26.58	91.07	1,197.99	-2,315.11	8,393.66	8,329.98	63.68	131.811	
17,100.00	6,872.48	7,136.40	6,873.62	169.95	26.58	91.07	1,197.99	-2,315.11	8,490.18	8,426.48	63.70	133.279	
17,133.01	6,872.40	7,136.43	6,873.64	170.47	26.58	91.07	1,197.99	-2,315.11	8,522.06	8,458.35	63.71	133.763	
17,200.00	6,872.25	7,136.48	6,873.70	171.53	26.58	91.07	1,197.99	-2,315.11	8,586.78	8,523.05	63.73	134.744	
17,304.21	6,872.00	7,136.56	6,873.78	173.18	26.58	91.07	1,197.98	-2,315.11	8,687.53	8,623.77	63.75	136.268	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 201A - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-111.62	-894.60	-2,257.04	2,429.26				
100.00	100.00	18.80	18.80	0.25	0.02	-111.62	-894.60	-2,257.04	2,427.87	2,427.60	0.27	8,918.063	
200.00	200.00	123.28	123.28	0.61	0.14	-111.62	-894.45	-2,256.96	2,427.74	2,427.00	0.75	3,245.662	
300.00	300.00	231.45	231.45	0.97	0.30	-111.61	-894.07	-2,256.72	2,427.41	2,426.15	1.26	1,921.820	
400.00	400.00	349.86	349.85	1.33	0.56	-111.60	-893.23	-2,255.86	2,426.48	2,424.59	1.89	1,286.146	
500.00	500.00	462.09	462.07	1.68	0.81	-111.59	-892.01	-2,254.40	2,424.86	2,422.37	2.50	971.320	
600.00	600.00	569.79	569.75	2.04	1.06	-111.57	-890.45	-2,252.73	2,422.89	2,419.79	3.10	782.542	
700.00	700.00	671.97	671.90	2.40	1.28	-111.54	-888.71	-2,250.99	2,420.67	2,416.99	3.68	657.632	
800.00	800.00	772.01	771.90	2.76	1.51	-111.52	-886.97	-2,249.28	2,418.44	2,414.19	4.26	567.743	
900.00	900.00	4,901.69	3,046.45	3.12	46.82	-49.06	600.49	-692.29	2,409.53	2,384.29	25.24	95.468	
1,000.00	1,000.00	4,901.91	3,046.45	3.48	46.82	-49.05	600.65	-692.14	2,317.36	2,291.51	25.86	89.625	
1,100.00	1,099.98	4,900.64	3,046.45	3.82	46.79	121.16	599.69	-692.98	2,226.21	2,199.69	26.52	83.936	
1,200.00	1,199.84	4,896.38	3,046.44	4.15	46.71	124.30	596.49	-695.79	2,136.66	2,109.42	27.24	78.435	
1,300.00	1,299.45	4,889.15	3,046.43	4.48	46.56	126.86	591.06	-700.56	2,049.00	2,020.97	28.03	73.107	
1,400.00	1,398.70	4,878.95	3,046.40	4.82	46.35	128.91	583.40	-707.29	1,963.57	1,934.68	28.89	67.966	
1,500.00	1,497.47	4,865.81	3,046.37	5.17	46.08	130.50	573.52	-715.97	1,880.74	1,850.90	29.84	63.032	
1,569.36	1,565.62	4,854.97	3,046.35	5.43	45.85	131.38	565.39	-723.13	1,825.02	1,794.48	30.54	59.749	
1,600.00	1,595.66	4,849.87	3,046.34	5.54	45.75	131.12	561.56	-726.50	1,800.84	1,769.97	30.87	58.331	
1,700.00	1,693.69	4,843.00	3,046.32	5.92	45.61	130.78	556.40	-731.04	1,723.26	1,691.09	32.17	53.569	
1,800.00	1,791.72	4,843.00	3,046.32	6.30	45.61	130.78	556.40	-731.04	1,648.08	1,614.39	33.69	48.921	
1,900.00	1,889.75	4,820.62	3,046.23	6.70	45.14	129.67	539.82	-746.07	1,575.34	1,540.35	35.00	45.014	
2,000.00	1,987.78	4,812.40	3,046.17	7.10	44.97	129.25	533.84	-751.70	1,505.77	1,469.14	36.64	41.100	
2,100.00	2,085.81	4,804.42	3,046.11	7.50	44.80	128.85	528.08	-757.23	1,439.70	1,401.30	38.40	37.495	
2,200.00	2,183.85	4,796.66	3,046.03	7.91	44.64	128.45	522.53	-762.66	1,377.63	1,337.37	40.26	34.215	
2,300.00	2,281.88	4,779.00	3,045.83	8.32	44.27	127.55	510.11	-775.20	1,320.22	1,278.17	42.05	31.399	
2,400.00	2,379.91	4,779.00	3,045.83	8.74	44.27	127.55	510.11	-775.20	1,267.84	1,223.67	44.18	28.700	
2,500.00	2,477.94	4,779.00	3,045.83	9.16	44.27	127.55	510.11	-775.20	1,221.43	1,175.11	46.31	26.373	
2,600.00	2,575.97	4,764.78	3,045.71	9.58	43.97	126.82	500.24	-785.45	1,181.52	1,133.38	48.14	24.546	
2,700.00	2,674.00	4,755.19	3,045.69	10.00	43.76	126.33	493.63	-792.38	1,148.84	1,098.93	49.91	23.017	
2,800.00	2,772.03	4,744.94	3,045.75	10.43	43.54	125.80	486.58	-799.82	1,123.99	1,072.51	51.48	21.835	
2,900.00	2,870.07	4,733.95	3,045.87	10.86	43.30	125.24	479.05	-807.83	1,107.48	1,054.73	52.75	20.996	
3,000.00	2,968.10	4,709.51	3,046.37	11.28	42.78	123.99	462.39	-825.70	1,099.68	1,046.27	53.41	20.591	
3,037.28	3,004.64	4,722.70	3,046.06	11.44	43.06	124.66	471.37	-816.05	1,099.00	1,044.98	54.01	20.348 CC, ES, SF	
3,100.00	3,066.13	4,698.71	3,046.67	11.71	42.54	123.44	455.08	-833.65	1,100.65	1,046.68	53.97	20.394	
3,200.00	3,164.16	4,663.02	3,047.30	12.14	41.78	121.61	430.51	-859.53	1,110.14	1,056.50	53.64	20.697	
3,300.00	3,262.19	4,640.96	3,047.56	12.58	41.30	120.48	415.14	-875.35	1,127.95	1,074.73	53.22	21.193	
3,400.00	3,360.22	4,623.56	3,047.88	13.01	40.93	119.59	403.03	-887.84	1,153.91	1,101.32	52.59	21.943	
3,500.00	3,458.25	4,604.84	3,048.35	13.44	40.53	118.64	390.03	-901.31	1,187.45	1,135.79	51.66	22.986	
3,600.00	3,556.29	4,587.00	3,048.93	13.88	40.15	117.73	377.68	-914.16	1,227.94	1,177.39	50.55	24.292	
3,700.00	3,654.32	4,567.12	3,049.60	14.31	39.71	116.73	363.93	-928.50	1,274.70	1,225.45	49.25	25.881	
3,800.00	3,752.35	4,550.03	3,050.10	14.75	39.33	115.87	352.10	-940.84	1,327.11	1,279.18	47.93	27.690	
3,900.00	3,850.38	4,533.61	3,050.51	15.18	38.97	115.04	340.74	-952.68	1,384.53	1,337.95	46.57	29.727	
4,000.00	3,948.41	4,517.48	3,050.86	15.62	38.61	114.23	329.58	-964.32	1,446.38	1,401.15	45.23	31.981	
4,100.00	4,046.44	4,501.27	3,051.14	16.05	38.26	113.43	318.35	-976.01	1,512.11	1,468.21	43.90	34.444	
4,200.00	4,144.48	4,485.70	3,051.36	16.49	37.92	112.65	307.56	-987.23	1,581.26	1,538.64	42.63	37.094	
4,300.00	4,242.51	4,470.72	3,051.51	16.93	37.59	111.91	297.16	-998.01	1,653.41	1,611.99	41.42	39.917	
4,400.00	4,340.54	4,455.42	3,051.60	17.37	37.26	111.16	286.53	-1,009.02	1,728.18	1,687.91	40.27	42.912	
4,500.00	4,438.57	4,436.62	3,051.69	17.81	36.86	110.24	273.44	-1,022.51	1,805.23	1,766.08	39.15	46.116	
4,600.00	4,536.60	4,417.96	3,051.77	18.25	36.46	109.33	260.43	-1,035.87	1,884.27	1,846.18	38.09	49.469	
4,700.00	4,634.63	4,400.54	3,051.83	18.68	36.09	108.48	248.25	-1,048.34	1,965.05	1,927.93	37.12	52.937	
4,800.00	4,732.66	4,376.34	3,051.97	19.12	35.58	107.32	231.36	-1,065.66	2,047.37	2,011.24	36.13	56.666	
4,900.00	4,830.70	4,348.27	3,052.57	19.56	34.98	106.00	212.01	-1,085.99	2,130.98	2,095.81	35.17	60.595	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 201A - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-APC_ISCWSA REV 2 MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,928.73	4,322.55	3,053.48	20.00	34.43	104.82	194.52	-1,104.83	2,215.70	2,181.39	34.30	64.588	
5,100.00	5,026.76	4,304.05	3,054.20	20.44	34.03	103.98	181.99	-1,118.42	2,301.46	2,267.88	33.58	68.528	
5,200.00	5,124.79	4,285.64	3,054.90	20.88	33.62	103.16	169.53	-1,131.95	2,388.18	2,355.26	32.92	72.550	
5,300.00	5,222.82	4,267.00	3,055.61	21.32	33.22	102.33	156.92	-1,145.66	2,475.75	2,443.45	32.30	76.654	
5,400.00	5,320.85	4,267.00	3,055.61	21.77	33.22	102.33	156.92	-1,145.66	2,564.15	2,532.22	31.93	80.310	
5,500.00	5,418.88	4,267.00	3,055.61	22.21	33.22	102.33	156.92	-1,145.66	2,653.38	2,621.78	31.59	83.986	
5,600.00	5,516.92	4,267.00	3,055.61	22.65	33.22	102.33	156.92	-1,145.66	2,743.35	2,712.06	31.29	87.676	
5,700.00	5,614.95	4,240.04	3,056.39	23.09	32.63	101.15	138.77	-1,165.57	2,833.61	2,802.87	30.74	92.184	
5,800.00	5,712.98	4,234.00	3,056.50	23.53	32.50	100.89	134.71	-1,170.06	2,924.68	2,894.24	30.44	96.088	
5,900.00	5,811.01	4,228.21	3,056.59	23.97	32.37	100.64	130.84	-1,174.36	3,016.28	2,986.11	30.17	99.986	
6,000.00	5,909.04	4,204.00	3,056.72	24.41	31.84	99.60	114.73	-1,192.43	3,108.54	3,078.80	29.74	104.517	
6,100.00	6,007.07	4,204.00	3,056.72	24.85	31.84	99.60	114.73	-1,192.43	3,200.98	3,171.40	29.58	108.211	
6,200.00	6,105.10	4,204.00	3,056.72	25.30	31.84	99.60	114.73	-1,192.43	3,293.87	3,264.43	29.44	111.877	
6,300.00	6,203.14	4,203.27	3,056.72	25.74	31.83	99.57	114.24	-1,192.97	3,387.16	3,357.84	29.32	115.539	
6,393.02	6,294.33	4,197.85	3,056.70	26.15	31.71	99.34	110.64	-1,197.03	3,474.27	3,445.10	29.17	119.095	
6,400.00	6,301.17	4,196.01	3,056.70	26.18	31.67	95.67	109.43	-1,198.40	3,480.80	3,451.66	29.15	119.419	
6,450.00	6,350.01	4,180.24	3,056.68	26.40	31.32	73.02	98.95	-1,210.19	3,526.85	3,497.91	28.94	121.865	
6,500.00	6,398.37	4,159.86	3,056.69	26.63	30.88	57.00	85.38	-1,225.40	3,571.37	3,542.70	28.67	124.552	
6,550.00	6,445.94	4,140.00	3,056.72	26.86	30.44	46.11	72.13	-1,240.19	3,614.11	3,585.71	28.40	127.259	
6,600.00	6,492.42	4,122.92	3,056.75	27.08	30.07	38.57	60.72	-1,252.90	3,654.86	3,626.72	28.14	129.882	
6,650.00	6,537.54	4,106.47	3,056.75	27.30	29.71	33.14	49.73	-1,265.14	3,693.42	3,665.55	27.88	132.498	
6,700.00	6,581.01	4,088.24	3,056.74	27.52	29.31	29.06	37.55	-1,278.71	3,729.61	3,702.02	27.59	135.201	
6,750.00	6,622.57	4,066.14	3,056.70	27.74	28.82	25.86	22.78	-1,295.15	3,763.23	3,735.97	27.26	138.071	
6,800.00	6,661.96	4,037.57	3,056.63	27.96	28.20	23.26	3.67	-1,316.38	3,794.08	3,767.21	26.87	141.216	
6,850.00	6,698.93	4,013.00	3,056.58	28.17	27.67	21.22	-12.79	-1,334.62	3,821.99	3,795.48	26.51	144.170	
6,900.00	6,733.26	3,988.80	3,056.49	28.39	27.15	19.56	-28.99	-1,352.60	3,846.87	3,820.72	26.16	147.061	
6,950.00	6,764.73	3,967.37	3,056.37	28.60	26.69	18.23	-43.30	-1,368.55	3,868.64	3,842.81	25.83	149.773	
7,000.00	6,793.16	3,885.00	3,056.09	28.82	24.92	16.46	-98.54	-1,429.65	3,887.07	3,862.04	25.03	155.315	
7,050.00	6,818.37	3,885.00	3,056.09	29.04	24.92	15.79	-98.54	-1,429.65	3,901.88	3,877.00	24.88	156.844	
7,100.00	6,840.20	3,861.29	3,056.01	29.27	24.41	15.01	-114.62	-1,447.08	3,913.26	3,888.71	24.55	159.401	
7,150.00	6,858.51	3,850.55	3,055.86	29.50	24.18	14.49	-121.90	-1,454.97	3,921.39	3,897.07	24.33	161.196	
7,200.00	6,873.20	3,822.00	3,055.12	29.74	23.57	13.90	-141.26	-1,475.94	3,926.30	3,902.32	23.98	163.740	
7,250.00	6,884.18	3,803.49	3,054.57	30.00	23.19	13.50	-154.08	-1,489.28	3,927.53	3,903.82	23.72	165.591	
7,300.00	6,891.37	3,645.48	3,051.22	30.26	19.99	11.70	-265.63	-1,601.09	3,924.96	3,902.45	22.51	174.370	
7,350.00	6,894.73	3,629.00	3,051.08	30.54	19.65	11.47	-277.49	-1,612.54	3,918.03	3,895.73	22.30	175.704	
7,370.19	6,895.00	3,603.38	3,051.00	30.65	19.14	11.18	-296.22	-1,630.02	3,913.93	3,891.83	22.10	177.128	
7,400.00	6,894.93	3,598.89	3,050.93	30.83	19.05	11.13	-299.48	-1,633.10	3,907.99	3,885.98	22.01	177.521	
7,500.00	6,894.70	3,565.00	3,049.91	31.45	18.38	10.75	-323.98	-1,656.49	3,889.72	3,868.06	21.66	179.577	
7,600.00	6,894.47	3,565.00	3,049.91	32.15	18.38	10.75	-323.98	-1,656.49	3,873.29	3,851.70	21.59	179.417	
7,700.00	6,894.24	3,476.71	3,047.72	32.92	16.61	9.81	-385.17	-1,720.07	3,858.26	3,837.18	21.08	182.996	
7,800.00	6,894.00	3,440.00	3,046.59	33.75	15.85	9.42	-410.31	-1,746.80	3,845.09	3,824.14	20.95	183.512	
7,900.00	6,893.77	3,440.00	3,046.59	34.63	15.85	9.42	-410.31	-1,746.80	3,834.04	3,812.95	21.09	181.817	
8,000.00	6,893.54	3,404.48	3,044.80	35.57	15.12	9.03	-434.83	-1,772.44	3,825.03	3,803.93	21.11	181.208	
8,100.00	6,893.31	3,375.00	3,042.70	36.55	14.52	8.71	-455.28	-1,793.57	3,818.37	3,797.15	21.23	179.897	
8,200.00	6,893.08	3,375.00	3,042.70	37.58	14.52	8.71	-455.28	-1,793.57	3,813.94	3,792.40	21.55	177.000	
8,300.00	6,892.85	3,357.86	3,041.11	38.65	14.18	8.52	-467.22	-1,805.76	3,811.89	3,790.05	21.85	174.493	
8,312.50	6,892.82	3,356.51	3,040.97	38.79	14.15	8.51	-468.16	-1,806.71	3,811.81	3,789.92	21.89	174.126	
8,400.00	6,892.62	3,343.00	3,039.40	39.76	13.88	8.36	-477.59	-1,816.26	3,812.32	3,790.11	22.21	171.687	
8,500.00	6,892.38	3,343.00	3,039.40	40.90	13.88	8.36	-477.59	-1,816.26	3,815.18	3,792.50	22.68	168.218	
8,600.00	6,892.15	3,343.00	3,039.40	42.07	13.88	8.36	-477.59	-1,816.26	3,820.67	3,797.47	23.20	164.706	
8,700.00	6,891.92	3,327.08	3,037.06	43.27	13.57	8.18	-488.75	-1,827.36	3,828.39	3,804.71	23.68	161.676	
8,800.00	6,891.69	3,311.00	3,034.02	44.50	13.26	8.00	-500.06	-1,838.39	3,838.88	3,814.69	24.19	158.682	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 201A - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		200-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
14,100.00	6,879.42	2,913.71	2,852.87	122.73	7.22	3.98	-744.99	-2,085.20	6,782.59	6,736.75	45.83	147.981		
14,200.00	6,879.19	2,896.00	2,840.72	124.29	7.05	3.83	-754.64	-2,093.73	6,863.92	6,817.92	46.00	149.220		
14,300.00	6,878.96	2,896.00	2,840.72	125.86	7.05	3.83	-754.64	-2,093.73	6,945.65	6,899.49	46.16	150.477		
14,400.00	6,878.73	2,896.00	2,840.72	127.42	7.05	3.83	-754.64	-2,093.73	7,027.86	6,981.54	46.31	151.751		
14,500.00	6,878.50	2,880.06	2,829.66	128.99	6.90	3.69	-763.28	-2,101.29	7,110.39	7,063.92	46.47	153.018		
14,600.00	6,878.26	2,864.00	2,818.31	130.55	6.76	3.55	-771.82	-2,108.78	7,193.42	7,146.81	46.61	154.322		
14,700.00	6,878.03	2,864.00	2,818.31	132.12	6.76	3.55	-771.82	-2,108.78	7,276.75	7,230.00	46.76	155.636		
14,800.00	6,877.80	2,864.00	2,818.31	133.69	6.76	3.55	-771.82	-2,108.78	7,360.50	7,313.60	46.89	156.962		
14,900.00	6,877.57	2,864.00	2,818.31	135.26	6.76	3.55	-771.82	-2,108.78	7,444.65	7,397.62	47.03	158.301		
15,000.00	6,877.34	2,864.00	2,818.31	136.83	6.76	3.55	-771.82	-2,108.78	7,529.18	7,482.02	47.16	159.652		
15,100.00	6,877.11	2,864.00	2,818.31	138.40	6.76	3.55	-771.82	-2,108.78	7,614.09	7,566.80	47.29	161.013		
15,200.00	6,876.87	2,849.06	2,807.50	139.97	6.64	3.43	-779.57	-2,115.58	7,699.18	7,651.75	47.43	162.338		
15,300.00	6,876.64	2,832.00	2,794.77	141.54	6.50	3.29	-788.12	-2,123.07	7,784.87	7,737.30	47.56	163.674		
15,400.00	6,876.41	2,832.00	2,794.77	143.12	6.50	3.29	-788.12	-2,123.07	7,870.66	7,822.97	47.68	165.061		
15,500.00	6,876.18	2,832.00	2,794.77	144.69	6.50	3.29	-788.12	-2,123.07	7,956.78	7,908.98	47.80	166.457		
15,600.00	6,875.95	2,832.00	2,794.77	146.26	6.50	3.29	-788.12	-2,123.07	8,043.22	7,995.31	47.92	167.862		
15,700.00	6,875.72	2,832.00	2,794.77	147.84	6.50	3.29	-788.12	-2,123.07	8,129.98	8,081.95	48.03	169.274		
15,800.00	6,875.49	2,832.00	2,794.77	149.41	6.50	3.29	-788.12	-2,123.07	8,217.03	8,168.89	48.14	170.693		
15,900.00	6,875.25	2,832.00	2,794.77	150.99	6.50	3.29	-788.12	-2,123.07	8,304.38	8,256.13	48.25	172.120		
16,000.00	6,875.02	2,832.00	2,794.77	152.57	6.50	3.29	-788.12	-2,123.07	8,392.01	8,343.65	48.35	173.553		
16,100.00	6,874.79	2,832.00	2,794.77	154.14	6.50	3.29	-788.12	-2,123.07	8,479.91	8,431.45	48.46	174.992		
16,200.00	6,874.56	2,815.48	2,782.12	155.72	6.38	3.16	-796.11	-2,130.07	8,567.90	8,519.31	48.59	176.345		
16,300.00	6,874.33	2,800.00	2,770.00	157.30	6.27	3.05	-803.34	-2,136.42	8,656.34	8,607.63	48.71	177.712		
16,400.00	6,874.10	2,800.00	2,770.00	158.88	6.27	3.05	-803.34	-2,136.42	8,744.87	8,696.06	48.81	179.163		
16,500.00	6,873.87	2,800.00	2,770.00	160.46	6.27	3.05	-803.34	-2,136.42	8,833.64	8,784.73	48.91	180.618		
16,600.00	6,873.63	2,800.00	2,770.00	162.04	6.27	3.05	-803.34	-2,136.42	8,922.65	8,873.65	49.00	182.077		
16,700.00	6,873.40	2,800.00	2,770.00	163.62	6.27	3.05	-803.34	-2,136.42	9,011.90	8,962.80	49.10	183.541		
16,800.00	6,873.17	2,800.00	2,770.00	165.20	6.27	3.05	-803.34	-2,136.42	9,101.36	9,052.17	49.19	185.008		
16,900.00	6,872.94	2,782.19	2,755.81	166.78	6.16	2.92	-811.40	-2,143.58	9,190.96	9,141.64	49.32	186.339		
17,000.00	6,872.71	2,750.78	2,730.46	168.36	5.97	2.70	-825.02	-2,156.15	9,280.76	9,231.27	49.49	187.541		
17,100.00	6,872.48	2,737.00	2,719.32	169.95	5.89	2.61	-830.94	-2,161.69	9,370.61	9,321.00	49.61	188.881		
17,133.01	6,872.40	2,737.00	2,719.32	170.47	5.89	2.61	-830.94	-2,161.69	9,400.31	9,350.67	49.64	189.365		
17,200.00	6,872.25	2,721.46	2,706.64	171.53	5.81	2.51	-837.34	-2,167.98	9,460.57	9,410.82	49.75	190.179		
17,304.21	6,872.00	2,705.00	2,692.92	173.18	5.72	2.41	-843.61	-2,174.58	9,554.58	9,504.70	49.88	191.533		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 260 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	33.00	33.00	0.00	0.65	-94.59	-774.99	-9,660.65	9,691.68				
100.00	100.00	133.00	133.00	0.25	2.62	-94.59	-774.99	-9,660.65	9,691.68	9,688.81	2.87	3,375.666	
200.00	200.00	233.01	233.00	0.61	4.63	-94.59	-774.99	-9,660.65	9,691.68	9,686.44	5.24	1,848.894	
300.00	300.00	333.01	333.00	0.97	6.84	-94.59	-774.99	-9,660.65	9,691.68	9,683.88	7.80	1,241.738	
336.26	336.26	369.23	369.21	1.10	7.64	-94.58	-774.49	-9,660.65	9,691.64	9,682.91	8.73	1,109.730	
400.00	400.00	430.92	430.91	1.33	9.00	-94.58	-774.57	-9,660.65	9,691.65	9,681.33	10.32	938.938	
500.00	500.00	533.07	533.00	1.68	11.26	-94.59	-774.99	-9,660.65	9,691.68	9,678.74	12.94	748.706	
600.00	600.00	633.07	633.00	2.04	13.57	-94.59	-774.99	-9,660.65	9,691.68	9,676.08	15.61	620.922	
639.44	639.44	672.51	672.42	2.18	14.47	-94.58	-774.00	-9,660.65	9,691.60	9,674.94	16.66	581.762	
700.00	700.00	729.28	729.19	2.40	15.78	-94.58	-774.14	-9,660.65	9,691.62	9,673.43	18.19	532.945	
800.00	800.00	833.15	833.00	2.76	18.17	-94.59	-774.99	-9,660.65	9,691.68	9,670.75	20.93	463.047	
900.00	900.00	933.15	933.00	3.12	20.39	-94.59	-774.99	-9,660.65	9,691.68	9,668.18	23.51	412.284	
1,000.00	1,000.00	1,033.14	1,033.00	3.48	22.61	-94.59	-774.99	-9,660.65	9,691.68	9,665.60	26.08	371.552	
1,100.00	1,099.98	1,131.64	1,131.48	3.82	24.79	71.86	-773.94	-9,660.65	9,691.06	9,662.45	28.61	338.730	
1,200.00	1,199.84	1,228.93	1,228.77	4.15	26.95	71.91	-774.29	-9,660.65	9,689.46	9,658.36	31.10	311.602	
1,300.00	1,299.45	1,332.70	1,332.45	4.48	29.26	72.01	-774.99	-9,660.65	9,686.80	9,653.07	33.74	287.137	
1,400.00	1,398.70	1,431.94	1,431.70	4.82	31.55	72.15	-774.99	-9,660.65	9,683.03	9,646.65	36.37	266.216	
1,500.00	1,497.47	1,530.71	1,530.47	5.17	33.84	72.33	-774.99	-9,660.65	9,678.20	9,639.19	39.01	248.105	
1,569.36	1,565.62	1,598.87	1,598.62	5.43	35.41	72.48	-774.99	-9,660.65	9,674.25	9,633.41	40.84	236.906	
1,600.00	1,595.66	1,628.76	1,628.50	5.54	36.10	72.52	-773.38	-9,660.65	9,672.28	9,630.64	41.64	232.285	
1,700.00	1,693.69	1,724.36	1,724.09	5.92	38.32	72.63	-773.57	-9,660.65	9,666.27	9,622.05	44.22	218.571	
1,800.00	1,791.72	1,820.10	1,819.82	6.30	40.53	72.73	-774.09	-9,660.65	9,660.32	9,613.50	46.82	206.320	
1,900.00	1,889.75	1,923.13	1,922.75	6.70	42.91	72.84	-774.99	-9,660.65	9,654.44	9,604.85	49.59	194.682	
2,000.00	1,987.78	2,021.17	2,020.78	7.10	45.08	72.95	-774.99	-9,660.65	9,648.52	9,596.36	52.16	184.973	
2,100.00	2,085.81	2,119.20	2,118.81	7.50	47.26	73.06	-774.99	-9,660.65	9,642.65	9,587.91	54.74	176.160	
2,200.00	2,183.85	2,215.96	2,215.56	7.91	49.41	73.18	-773.68	-9,660.65	9,636.73	9,579.44	57.29	168.208	
2,300.00	2,281.88	2,311.62	2,311.21	8.32	51.53	73.28	-774.09	-9,660.65	9,630.95	9,571.13	59.82	160.994	
2,400.00	2,379.91	2,407.44	2,407.02	8.74	53.65	73.39	-774.90	-9,660.65	9,625.24	9,562.88	62.36	154.349	
2,500.00	2,477.94	2,511.42	2,510.94	9.16	55.70	73.50	-774.99	-9,660.65	9,619.51	9,554.70	64.82	148.412	
2,600.00	2,575.97	2,609.45	2,608.97	9.58	57.60	73.61	-774.99	-9,660.65	9,613.82	9,546.69	67.14	143.199	
2,700.00	2,674.00	2,707.05	2,706.56	10.00	59.49	73.73	-773.84	-9,660.65	9,608.11	9,538.66	69.45	138.347	
2,800.00	2,772.03	2,803.57	2,803.08	10.43	61.37	73.84	-774.08	-9,660.65	9,602.50	9,530.76	71.74	133.845	
2,900.00	2,870.07	2,900.22	2,899.72	10.86	63.24	73.95	-774.62	-9,660.65	9,596.95	9,522.91	74.04	129.615	
3,000.00	2,968.10	3,001.62	3,001.10	11.28	65.11	74.06	-774.99	-9,660.65	9,591.43	9,515.09	76.34	125.643	
3,100.00	3,066.13	3,099.66	3,099.13	11.71	66.85	74.17	-774.99	-9,660.65	9,585.92	9,507.43	78.50	122.115	
3,200.00	3,164.16	3,197.69	3,197.16	12.14	68.58	74.28	-774.99	-9,660.65	9,580.46	9,499.80	80.66	118.774	
3,300.00	3,262.19	3,219.00	3,218.46	12.58	68.96	74.31	-774.99	-9,660.65	9,575.34	9,493.87	81.47	117.537	
3,400.00	3,360.22	3,219.00	3,218.46	13.01	68.96	74.31	-774.99	-9,660.65	9,571.23	9,489.34	81.89	116.881	
3,500.00	3,458.25	3,219.00	3,218.46	13.44	68.96	74.31	-774.99	-9,660.65	9,568.17	9,485.87	82.30	116.255	
3,600.00	3,556.29	3,219.00	3,218.46	13.88	68.96	74.31	-774.99	-9,660.65	9,566.16	9,483.45	82.71	115.658	
3,700.00	3,654.32	3,219.00	3,218.46	14.31	68.96	74.31	-774.99	-9,660.65	9,565.19	9,482.08	83.11	115.090	
3,742.84	3,696.31	3,219.00	3,218.46	14.50	68.96	74.31	-774.99	-9,660.65	9,565.09	9,481.81	83.28	114.855	
3,800.00	3,752.35	3,219.00	3,218.46	14.75	68.96	74.31	-774.99	-9,660.65	9,565.26	9,481.76	83.50	114.550	
3,900.00	3,850.38	3,219.00	3,218.46	15.18	68.96	74.31	-774.99	-9,660.65	9,566.38	9,482.49	83.89	114.039	
4,000.00	3,948.41	3,219.00	3,218.46	15.62	68.96	74.31	-774.99	-9,660.65	9,568.55	9,484.28	84.26	113.555	
4,100.00	4,046.44	3,219.00	3,218.46	16.05	68.96	74.31	-774.99	-9,660.65	9,571.76	9,487.13	84.63	113.100	
4,200.00	4,144.48	3,219.00	3,218.46	16.49	68.96	74.31	-774.99	-9,660.65	9,576.01	9,491.02	84.99	112.672	
4,300.00	4,242.51	3,219.00	3,218.46	16.93	68.96	74.31	-774.99	-9,660.65	9,581.30	9,495.96	85.34	112.270	
4,400.00	4,340.54	3,219.00	3,218.46	17.37	68.96	74.31	-774.99	-9,660.65	9,587.64	9,501.95	85.68	111.895	
4,500.00	4,438.57	3,219.00	3,218.46	17.81	68.96	74.31	-774.99	-9,660.65	9,595.01	9,508.99	86.02	111.547	
4,600.00	4,536.60	3,219.00	3,218.46	18.25	68.96	74.31	-774.99	-9,660.65	9,603.42	9,517.08	86.34	111.224	
4,700.00	4,634.63	3,219.00	3,218.46	18.68	68.96	74.31	-774.99	-9,660.65	9,612.86	9,526.20	86.66	110.928	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 260 - OH - OH													Offset Site Error:	0.00 usft	
Survey Program:		125-A027Ua_INC-ONLY		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
4,800.00	4,732.66	3,219.00	3,218.46	19.12	68.96	74.31	-774.99	-9,660.65	9,623.33	9,536.37	86.97	110.656			
4,900.00	4,830.70	3,219.00	3,218.46	19.56	68.96	74.31	-774.99	-9,660.65	9,634.83	9,547.57	87.26	110.409			
5,000.00	4,928.73	3,219.00	3,218.46	20.00	68.96	74.31	-774.99	-9,660.65	9,647.35	9,559.80	87.55	110.187			
5,100.00	5,026.76	3,219.00	3,218.46	20.44	68.96	74.31	-774.99	-9,660.65	9,660.89	9,573.06	87.84	109.989			
5,200.00	5,124.79	3,219.00	3,218.46	20.88	68.96	74.31	-774.99	-9,660.65	9,675.45	9,587.34	88.11	109.814			
5,300.00	5,222.82	3,219.00	3,218.46	21.32	68.96	74.31	-774.99	-9,660.65	9,691.01	9,602.64	88.37	109.664			
5,400.00	5,320.85	3,219.00	3,218.46	21.77	68.96	74.31	-774.99	-9,660.65	9,707.58	9,618.96	88.62	109.536			
5,500.00	5,418.88	3,219.00	3,218.46	22.21	68.96	74.31	-774.99	-9,660.65	9,725.15	9,636.28	88.87	109.431			
5,600.00	5,516.92	3,219.00	3,218.46	22.65	68.96	74.31	-774.99	-9,660.65	9,743.72	9,654.61	89.11	109.349			
5,700.00	5,614.95	3,219.00	3,218.46	23.09	68.96	74.31	-774.99	-9,660.65	9,763.27	9,673.94	89.33	109.289			
5,800.00	5,712.98	3,219.00	3,218.46	23.53	68.96	74.31	-774.99	-9,660.65	9,783.81	9,694.25	89.55	109.251			
5,900.00	5,811.01	3,219.00	3,218.46	23.97	68.96	74.31	-774.99	-9,660.65	9,805.32	9,715.56	89.76	109.234			
6,000.00	5,909.04	3,219.00	3,218.46	24.41	68.96	74.31	-774.99	-9,660.65	9,827.80	9,737.84	89.97	109.239			
6,100.00	6,007.07	3,219.00	3,218.46	24.85	68.96	74.31	-774.99	-9,660.65	9,851.25	9,761.09	90.16	109.264			
6,200.00	6,105.10	3,219.00	3,218.46	25.30	68.96	74.31	-774.99	-9,660.65	9,875.66	9,785.31	90.35	109.310			
6,300.00	6,203.14	3,219.00	3,218.46	25.74	68.96	74.31	-774.99	-9,660.65	9,901.01	9,810.49	90.52	109.376			
6,393.02	6,294.33	3,219.00	3,218.46	26.15	68.96	74.31	-774.99	-9,660.65	9,925.44	9,834.76	90.68	109.455			
6,400.00	6,301.17	3,219.00	3,218.46	26.18	68.96	71.29	-774.99	-9,660.65	9,927.27	9,836.58	90.69	109.461			
6,450.00	6,350.01	3,219.00	3,218.46	26.40	68.96	52.54	-774.99	-9,660.65	9,938.34	9,847.57	90.77	109.488			
6,500.00	6,398.37	3,219.00	3,218.46	26.63	68.96	39.38	-774.99	-9,660.65	9,945.82	9,854.97	90.85	109.480			
6,550.00	6,445.94	3,219.00	3,218.46	26.86	68.96	30.55	-774.99	-9,660.65	9,949.65	9,858.73	90.92	109.438			
6,600.00	6,492.42	3,219.00	3,218.46	27.08	68.96	24.51	-774.99	-9,660.65	9,949.82	9,858.84	90.98	109.361			
6,650.00	6,537.54	3,219.00	3,218.46	27.30	68.96	20.21	-774.99	-9,660.65	9,946.33	9,855.29	91.04	109.252			
6,700.00	6,581.01	3,219.00	3,218.46	27.52	68.96	17.03	-774.99	-9,660.65	9,939.20	9,848.11	91.09	109.110			
6,750.00	6,622.57	3,219.00	3,218.46	27.74	68.96	14.59	-774.99	-9,660.65	9,928.47	9,837.33	91.14	108.936			
6,800.00	6,661.96	3,219.00	3,218.46	27.96	68.96	12.66	-774.99	-9,660.65	9,914.18	9,823.00	91.18	108.732			
6,850.00	6,698.93	3,219.00	3,218.46	28.17	68.96	11.09	-774.99	-9,660.65	9,896.41	9,805.20	91.21	108.499			
6,900.00	6,733.26	3,219.00	3,218.46	28.39	68.96	9.76	-774.99	-9,660.65	9,875.26	9,784.02	91.24	108.238			
6,950.00	6,764.73	3,219.00	3,218.46	28.60	68.96	8.62	-774.99	-9,660.65	9,850.83	9,759.58	91.25	107.950			
7,000.00	6,793.16	3,219.00	3,218.46	28.82	68.96	7.60	-774.99	-9,660.65	9,823.25	9,731.98	91.26	107.636			
7,050.00	6,818.37	3,219.00	3,218.46	29.04	68.96	6.65	-774.99	-9,660.65	9,792.66	9,701.39	91.27	107.299			
7,100.00	6,840.20	3,219.00	3,218.46	29.27	68.96	5.74	-774.99	-9,660.65	9,759.22	9,667.96	91.26	106.939			
7,150.00	6,858.51	3,219.00	3,218.46	29.50	68.96	4.81	-774.99	-9,660.65	9,723.12	9,631.87	91.25	106.559			
7,200.00	6,873.20	3,219.00	3,218.46	29.74	68.96	3.83	-774.99	-9,660.65	9,684.54	9,593.31	91.23	106.159			
7,250.00	6,884.18	3,219.00	3,218.46	30.00	68.96	2.72	-774.99	-9,660.65	9,643.70	9,552.49	91.20	105.741			
7,300.00	6,891.37	3,219.00	3,218.46	30.26	68.96	1.38	-774.99	-9,660.65	9,600.81	9,509.64	91.17	105.307			
7,350.00	6,894.73	3,219.00	3,218.46	30.54	68.96	-0.34	-774.99	-9,660.65	9,556.13	9,464.99	91.13	104.859			
7,370.19	6,895.00	3,219.00	3,218.46	30.65	68.96	-1.21	-774.99	-9,660.65	9,537.63	9,446.52	91.12	104.672			
7,400.00	6,894.93	3,219.00	3,218.46	30.83	68.96	-1.21	-774.99	-9,660.65	9,510.15	9,419.06	91.09	104.399			
7,500.00	6,894.70	3,219.00	3,218.46	31.45	68.96	-1.21	-774.99	-9,660.65	9,418.06	9,327.06	91.01	103.489			
7,600.00	6,894.47	3,219.00	3,218.46	32.15	68.96	-1.21	-774.99	-9,660.65	9,326.14	9,235.22	90.92	102.578			
7,700.00	6,894.24	3,219.00	3,218.46	32.92	68.96	-1.21	-774.99	-9,660.65	9,234.39	9,143.55	90.83	101.665			
7,800.00	6,894.00	3,219.00	3,218.46	33.75	68.96	-1.21	-774.99	-9,660.65	9,142.80	9,052.06	90.75	100.750			
7,900.00	6,893.77	3,219.00	3,218.46	34.63	68.96	-1.21	-774.99	-9,660.65	9,051.40	8,960.74	90.66	99.834			
8,000.00	6,893.54	3,219.00	3,218.46	35.57	68.96	-1.21	-774.99	-9,660.65	8,960.18	8,869.60	90.58	98.916			
8,100.00	6,893.31	3,219.00	3,218.46	36.55	68.96	-1.21	-774.99	-9,660.65	8,869.15	8,778.65	90.50	97.997			
8,200.00	6,893.08	3,219.00	3,218.46	37.58	68.96	-1.21	-774.99	-9,660.65	8,778.31	8,687.89	90.43	97.077			
8,300.00	6,892.85	3,219.00	3,218.46	38.65	68.96	-1.21	-774.99	-9,660.65	8,687.68	8,597.33	90.35	96.155			
8,400.00	6,892.62	3,219.00	3,218.46	39.76	68.96	-1.21	-774.99	-9,660.65	8,597.25	8,506.98	90.28	95.231			
8,500.00	6,892.38	3,219.00	3,218.46	40.90	68.96	-1.21	-774.99	-9,660.65	8,507.04	8,416.83	90.21	94.306			
8,600.00	6,892.15	3,219.00	3,218.46	42.07	68.96	-1.21	-774.99	-9,660.65	8,417.05	8,326.91	90.14	93.380			
8,700.00	6,891.92	3,219.00	3,218.46	43.27	68.96	-1.21	-774.99	-9,660.65	8,327.29	8,237.22	90.07	92.452			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 260 - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		125-A027Ua_INC-ONLY					Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)		Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
8,800.00	6,891.69	3,219.00	3,218.46	44.50	68.96	-1.21	-774.99	-9,660.65	8,237.76	8,147.75	90.01	91.523	
8,900.00	6,891.46	3,219.00	3,218.46	45.75	68.96	-1.21	-774.99	-9,660.65	8,148.48	8,058.53	89.95	90.593	
9,000.00	6,891.23	3,219.00	3,218.46	47.02	68.96	-1.21	-774.99	-9,660.65	8,059.44	7,969.56	89.89	89.662	
9,100.00	6,890.99	3,219.00	3,218.46	48.31	68.96	-1.21	-774.99	-9,660.65	7,970.67	7,880.84	89.83	88.729	
9,200.00	6,890.76	3,219.00	3,218.46	49.62	68.96	-1.21	-774.99	-9,660.65	7,882.17	7,792.39	89.78	87.795	
9,300.00	6,890.53	3,219.00	3,218.46	50.94	68.96	-1.21	-774.99	-9,660.65	7,793.95	7,704.22	89.73	86.861	
9,400.00	6,890.30	3,219.00	3,218.46	52.29	68.96	-1.21	-774.99	-9,660.65	7,706.01	7,616.33	89.68	85.925	
9,500.00	6,890.07	3,219.00	3,218.46	53.64	68.96	-1.21	-774.99	-9,660.65	7,618.37	7,528.73	89.64	84.989	
9,600.00	6,889.84	3,219.00	3,218.46	55.02	68.96	-1.21	-774.99	-9,660.65	7,531.04	7,441.44	89.60	84.052	
9,700.00	6,889.61	3,219.00	3,218.46	56.40	68.96	-1.21	-774.99	-9,660.65	7,444.03	7,354.46	89.56	83.114	
9,800.00	6,889.37	3,219.00	3,218.46	57.79	68.96	-1.21	-774.99	-9,660.65	7,357.34	7,267.81	89.53	82.176	
9,900.00	6,889.14	3,219.00	3,218.46	59.20	68.96	-1.21	-774.99	-9,660.65	7,271.00	7,181.50	89.50	81.237	
10,000.00	6,888.91	3,219.00	3,218.46	60.61	68.96	-1.21	-774.99	-9,660.65	7,185.02	7,095.54	89.48	80.299	
10,100.00	6,888.68	3,219.00	3,218.46	62.04	68.96	-1.21	-774.99	-9,660.65	7,099.40	7,009.94	89.46	79.360	
10,200.00	6,888.45	3,219.00	3,218.46	63.47	68.96	-1.21	-774.99	-9,660.65	7,014.16	6,924.72	89.44	78.422	
10,300.00	6,888.22	3,219.00	3,218.46	64.91	68.96	-1.21	-774.99	-9,660.65	6,929.32	6,839.89	89.43	77.485	
10,400.00	6,887.99	3,219.00	3,218.46	66.36	68.96	-1.21	-774.99	-9,660.65	6,844.88	6,755.46	89.42	76.548	
10,500.00	6,887.75	3,219.00	3,218.46	67.82	68.96	-1.21	-774.99	-9,660.65	6,760.87	6,671.46	89.42	75.612	
10,600.00	6,887.52	3,219.00	3,218.46	69.28	68.96	-1.21	-774.99	-9,660.65	6,677.30	6,587.89	89.41	74.678	
10,700.00	6,887.29	3,219.00	3,218.46	70.75	68.96	-1.21	-774.99	-9,660.65	6,594.19	6,504.77	89.42	73.745	
10,800.00	6,887.06	3,219.00	3,218.46	72.22	68.96	-1.21	-774.99	-9,660.65	6,511.55	6,422.13	89.43	72.814	
10,900.00	6,886.83	3,219.00	3,218.46	73.70	68.96	-1.21	-774.99	-9,660.65	6,429.41	6,339.97	89.44	71.885	
11,000.00	6,886.60	3,219.00	3,218.46	75.19	68.96	-1.21	-774.99	-9,660.65	6,347.78	6,258.32	89.46	70.959	
11,100.00	6,886.37	3,219.00	3,218.46	76.68	68.96	-1.21	-774.99	-9,660.65	6,266.68	6,177.20	89.48	70.037	
11,200.00	6,886.13	3,219.00	3,218.46	78.17	68.96	-1.21	-774.99	-9,660.65	6,186.13	6,096.63	89.50	69.117	
11,300.00	6,885.90	3,219.00	3,218.46	79.67	68.96	-1.21	-774.99	-9,660.65	6,106.16	6,016.63	89.53	68.202	
11,400.00	6,885.67	3,219.00	3,218.46	81.17	68.96	-1.21	-774.99	-9,660.65	6,026.79	5,937.23	89.56	67.291	
11,500.00	6,885.44	3,219.00	3,218.46	82.68	68.96	-1.21	-774.99	-9,660.65	5,948.04	5,858.44	89.60	66.385	
11,600.00	6,885.21	3,219.00	3,218.46	84.19	68.96	-1.21	-774.99	-9,660.65	5,869.94	5,780.30	89.64	65.485	
11,700.00	6,884.98	3,219.00	3,218.46	85.71	68.96	-1.21	-774.99	-9,660.65	5,792.51	5,702.83	89.68	64.590	
11,800.00	6,884.74	3,219.00	3,218.46	87.22	68.96	-1.21	-774.99	-9,660.65	5,715.78	5,626.05	89.73	63.703	
11,900.00	6,884.51	3,219.00	3,218.46	88.74	68.96	-1.21	-774.99	-9,660.65	5,639.78	5,550.01	89.77	62.823	
12,000.00	6,884.28	3,219.00	3,218.46	90.27	68.96	-1.21	-774.99	-9,660.65	5,564.54	5,474.72	89.82	61.950	
12,100.00	6,884.05	3,219.00	3,218.46	91.79	68.96	-1.21	-774.99	-9,660.65	5,490.09	5,400.22	89.87	61.087	
12,200.00	6,883.82	3,219.00	3,218.46	93.32	68.96	-1.21	-774.99	-9,660.65	5,416.46	5,326.54	89.93	60.233	
12,300.00	6,883.59	3,219.00	3,218.46	94.85	68.96	-1.21	-774.99	-9,660.65	5,343.69	5,253.72	89.98	59.389	
12,400.00	6,883.36	3,219.00	3,218.46	96.38	68.96	-1.21	-774.99	-9,660.65	5,271.82	5,181.79	90.03	58.557	
12,500.00	6,883.12	3,219.00	3,218.46	97.92	68.96	-1.21	-774.99	-9,660.65	5,200.87	5,110.79	90.08	57.736	
12,600.00	6,882.89	3,219.00	3,218.46	99.46	68.96	-1.21	-774.99	-9,660.65	5,130.89	5,040.76	90.13	56.928	
12,700.00	6,882.66	3,219.00	3,218.46	101.00	68.96	-1.21	-774.99	-9,660.65	5,061.92	4,971.74	90.18	56.134	
12,800.00	6,882.43	3,219.00	3,218.46	102.54	68.96	-1.21	-774.99	-9,660.65	4,993.99	4,903.77	90.22	55.354	
12,900.00	6,882.20	3,219.00	3,218.46	104.08	68.96	-1.21	-774.99	-9,660.65	4,927.16	4,836.91	90.26	54.590	
13,000.00	6,881.97	3,219.00	3,218.46	105.63	68.96	-1.21	-774.99	-9,660.65	4,861.47	4,771.18	90.29	53.843	
13,100.00	6,881.74	3,219.00	3,218.46	107.18	68.96	-1.21	-774.99	-9,660.65	4,796.97	4,706.65	90.32	53.113	
13,200.00	6,881.50	3,219.00	3,218.46	108.73	68.96	-1.21	-774.99	-9,660.65	4,733.70	4,643.36	90.33	52.402	
13,300.00	6,881.27	3,219.00	3,218.46	110.28	68.96	-1.21	-774.99	-9,660.65	4,671.71	4,581.37	90.34	51.711	
13,400.00	6,881.04	3,219.00	3,218.46	111.83	68.96	-1.21	-774.99	-9,660.65	4,611.06	4,520.72	90.34	51.041	
13,500.00	6,880.81	3,219.00	3,218.46	113.38	68.96	-1.21	-774.99	-9,660.65	4,551.80	4,461.47	90.33	50.393	
13,600.00	6,880.58	3,219.00	3,218.46	114.94	68.96	-1.21	-774.99	-9,660.65	4,493.98	4,403.68	90.30	49.769	
13,700.00	6,880.35	3,219.00	3,218.46	116.49	68.96	-1.21	-774.99	-9,660.65	4,437.66	4,347.40	90.25	49.169	
13,800.00	6,880.12	3,219.00	3,218.46	118.05	68.96	-1.21	-774.99	-9,660.65	4,382.90	4,292.70	90.19	48.595	
13,900.00	6,879.88	3,219.00	3,218.46	119.61	68.96	-1.21	-774.99	-9,660.65	4,329.75	4,239.64	90.11	48.048	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 260 - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,000.00	6,879.65	3,219.00	3,218.46	121.17	68.96	-1.21	-774.99	-9,660.65	4,278.29	4,188.27	90.01	47.529	
14,100.00	6,879.42	3,219.00	3,218.46	122.73	68.96	-1.21	-774.99	-9,660.65	4,228.56	4,138.67	89.89	47.040	
14,200.00	6,879.19	3,219.00	3,218.46	124.29	68.96	-1.21	-774.99	-9,660.65	4,180.64	4,090.89	89.75	46.582	
14,300.00	6,878.96	3,219.00	3,218.46	125.86	68.96	-1.21	-774.99	-9,660.65	4,134.57	4,045.00	89.58	46.156	
14,400.00	6,878.73	3,219.00	3,218.46	127.42	68.96	-1.21	-774.99	-9,660.65	4,090.44	4,001.06	89.38	45.763	
14,500.00	6,878.50	3,219.00	3,218.46	128.99	68.96	-1.21	-774.99	-9,660.65	4,048.29	3,959.13	89.16	45.405	
14,600.00	6,878.26	3,219.00	3,218.46	130.55	68.96	-1.21	-774.99	-9,660.65	4,008.20	3,919.29	88.91	45.082	
14,700.00	6,878.03	3,219.00	3,218.46	132.12	68.96	-1.21	-774.99	-9,660.65	3,970.22	3,881.59	88.63	44.795	
14,800.00	6,877.80	3,219.00	3,218.46	133.69	68.96	-1.21	-774.99	-9,660.65	3,934.41	3,846.09	88.32	44.545	
14,900.00	6,877.57	3,219.00	3,218.46	135.26	68.96	-1.21	-774.99	-9,660.65	3,900.85	3,812.85	87.99	44.332	
15,000.00	6,877.34	3,219.00	3,218.46	136.83	68.96	-1.21	-774.99	-9,660.65	3,869.57	3,781.94	87.63	44.156	
15,100.00	6,877.11	3,219.00	3,218.46	138.40	68.96	-1.21	-774.99	-9,660.65	3,840.65	3,753.39	87.25	44.017	
15,200.00	6,876.87	3,219.00	3,218.46	139.97	68.96	-1.21	-774.99	-9,660.65	3,814.12	3,727.26	86.86	43.912	
15,300.00	6,876.64	3,219.00	3,218.46	141.54	68.96	-1.21	-774.99	-9,660.65	3,790.06	3,703.60	86.45	43.839	
15,400.00	6,876.41	3,219.00	3,218.46	143.12	68.96	-1.21	-774.99	-9,660.65	3,768.49	3,682.44	86.05	43.793	
15,500.00	6,876.18	3,219.00	3,218.46	144.69	68.96	-1.21	-774.99	-9,660.65	3,749.46	3,663.80	85.67	43.769	
15,600.00	6,875.95	3,219.00	3,218.46	146.26	68.96	-1.21	-774.99	-9,660.65	3,733.02	3,647.71	85.32	43.755	
15,700.00	6,875.72	3,219.00	3,218.46	147.84	68.96	-1.21	-774.99	-9,660.65	3,719.20	3,634.17	85.03	43.738	
15,800.00	6,875.49	3,219.00	3,218.46	149.41	68.96	-1.21	-774.99	-9,660.65	3,708.02	3,623.17	84.85	43.700	
15,900.00	6,875.25	3,219.00	3,218.46	150.99	68.96	-1.21	-774.99	-9,660.65	3,699.52	3,614.69	84.82	43.615	
16,000.00	6,875.02	3,219.00	3,218.46	152.57	68.96	-1.21	-774.99	-9,660.65	3,693.70	3,608.70	84.99	43.458	
16,100.00	6,874.79	3,219.00	3,218.46	154.14	68.96	-1.21	-774.99	-9,660.65	3,690.58	3,605.16	85.42	43.205	
16,165.09	6,874.64	3,219.00	3,218.46	155.17	68.96	-1.21	-774.99	-9,660.65	3,690.01	3,604.16	85.85	42.983 CC	
16,200.00	6,874.56	3,219.00	3,218.46	155.72	68.96	-1.21	-774.99	-9,660.65	3,690.17	3,604.04	86.13	42.845 ES	
16,300.00	6,874.33	3,219.00	3,218.46	157.30	68.96	-1.21	-774.99	-9,660.65	3,692.47	3,605.35	87.12	42.382	
16,400.00	6,874.10	3,219.00	3,218.46	158.88	68.96	-1.21	-774.99	-9,660.65	3,697.48	3,609.11	88.37	41.841	
16,500.00	6,873.87	3,219.00	3,218.46	160.46	68.96	-1.21	-774.99	-9,660.65	3,705.17	3,615.35	89.82	41.252	
16,600.00	6,873.63	3,219.00	3,218.46	162.04	68.96	-1.21	-774.99	-9,660.65	3,715.55	3,624.13	91.41	40.646	
16,700.00	6,873.40	3,219.00	3,218.46	163.62	68.96	-1.21	-774.99	-9,660.65	3,728.58	3,635.47	93.10	40.049	
16,800.00	6,873.17	3,219.00	3,218.46	165.20	68.96	-1.21	-774.99	-9,660.65	3,744.23	3,649.39	94.84	39.479	
16,900.00	6,872.94	3,219.00	3,218.46	166.78	68.96	-1.21	-774.99	-9,660.65	3,762.48	3,665.88	96.60	38.949	
17,000.00	6,872.71	3,219.00	3,218.46	168.36	68.96	-1.21	-774.99	-9,660.65	3,783.28	3,684.93	98.35	38.466	
17,100.00	6,872.48	3,219.00	3,218.46	169.95	68.96	-1.21	-774.99	-9,660.65	3,806.60	3,706.52	100.08	38.034	
17,133.01	6,872.40	3,219.00	3,218.46	170.47	68.96	-1.21	-774.99	-9,660.65	3,814.84	3,714.19	100.65	37.903	
17,200.00	6,872.25	3,219.00	3,218.46	171.53	68.96	-1.21	-774.99	-9,660.65	3,832.39	3,730.61	101.78	37.654	
17,304.21	6,872.00	3,219.00	3,218.46	173.18	68.96	-1.21	-774.99	-9,660.65	3,861.83	3,758.33	103.50	37.314 SF	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 10 - (O) Rosa Unit 260A - OH - OH											Offset Site Error:		0.00 usft
Survey Program:		200-APC_ISCWSA REV 2 MWD							Rule Assigned:				Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)				
5,000.00	4,928.73	5,150.00	3,223.84	20.00	48.87	84.95	519.42	-6,055.42	6,268.28	6,210.16	58.12	107.859			
5,100.00	5,026.76	5,150.00	3,223.84	20.44	48.87	84.95	519.42	-6,055.42	6,296.24	6,237.84	58.40	107.813			
5,200.00	5,124.79	5,150.00	3,223.84	20.88	48.87	84.95	519.42	-6,055.42	6,325.66	6,266.99	58.67	107.816			
5,300.00	5,222.82	5,150.00	3,223.84	21.32	48.87	84.95	519.42	-6,055.42	6,356.52	6,297.59	58.93	107.867			
5,400.00	5,320.85	5,150.00	3,223.84	21.77	48.87	84.95	519.42	-6,055.42	6,388.79	6,329.61	59.18	107.964			
5,500.00	5,418.88	5,150.00	3,223.84	22.21	48.87	84.95	519.42	-6,055.42	6,422.46	6,363.05	59.41	108.105			
5,600.00	5,516.92	5,150.00	3,223.84	22.65	48.87	84.95	519.42	-6,055.42	6,457.50	6,397.87	59.63	108.290			
5,700.00	5,614.95	5,150.00	3,223.84	23.09	48.87	84.95	519.42	-6,055.42	6,493.89	6,434.05	59.84	108.517			
5,800.00	5,712.98	5,150.00	3,223.84	23.53	48.87	84.95	519.42	-6,055.42	6,531.61	6,471.57	60.04	108.785			
5,900.00	5,811.01	5,150.00	3,223.84	23.97	48.87	84.95	519.42	-6,055.42	6,570.64	6,510.41	60.23	109.092			
6,000.00	5,909.04	5,150.00	3,223.84	24.41	48.87	84.95	519.42	-6,055.42	6,610.95	6,550.54	60.41	109.438			
6,100.00	6,007.07	5,150.00	3,223.84	24.85	48.87	84.95	519.42	-6,055.42	6,652.52	6,591.94	60.58	109.820			
6,200.00	6,105.10	5,150.00	3,223.84	25.30	48.87	84.95	519.42	-6,055.42	6,695.32	6,634.58	60.73	110.239			
6,300.00	6,203.14	5,150.00	3,223.84	25.74	48.87	84.95	519.42	-6,055.42	6,739.33	6,678.45	60.88	110.692			
6,393.02	6,294.33	5,150.00	3,223.84	26.15	48.87	84.95	519.42	-6,055.42	6,781.35	6,720.33	61.01	111.143			
6,400.00	6,301.17	5,150.00	3,223.84	26.18	48.87	81.89	519.42	-6,055.42	6,784.50	6,723.48	61.02	111.178			
6,450.00	6,350.01	5,150.00	3,223.84	26.40	48.87	62.85	519.42	-6,055.42	6,805.30	6,744.21	61.09	111.399			
6,500.00	6,398.37	5,150.00	3,223.84	26.63	48.87	49.47	519.42	-6,055.42	6,822.80	6,761.64	61.15	111.568			
6,550.00	6,445.94	5,150.00	3,223.84	26.86	48.87	40.49	519.42	-6,055.42	6,836.92	6,775.70	61.22	111.681			
6,600.00	6,492.42	5,150.00	3,223.84	27.08	48.87	34.35	519.42	-6,055.42	6,847.60	6,786.32	61.28	111.740			
6,650.00	6,537.54	5,150.00	3,223.84	27.30	48.87	30.02	519.42	-6,055.42	6,854.78	6,793.44	61.34	111.745			
6,700.00	6,581.01	5,150.00	3,223.84	27.52	48.87	26.86	519.42	-6,055.42	6,858.44	6,797.04	61.40	111.696			
6,750.00	6,622.57	5,150.00	3,223.84	27.74	48.87	24.50	519.42	-6,055.42	6,858.56	6,797.10	61.46	111.595			
6,800.00	6,661.96	5,150.00	3,223.84	27.96	48.87	22.71	519.42	-6,055.42	6,855.14	6,793.62	61.51	111.441			
6,850.00	6,698.93	5,150.00	3,223.84	28.17	48.87	21.34	519.42	-6,055.42	6,848.18	6,786.62	61.56	111.236			
6,900.00	6,733.26	5,150.00	3,223.84	28.39	48.87	20.29	519.42	-6,055.42	6,837.74	6,776.12	61.61	110.980			
6,950.00	6,764.73	5,150.00	3,223.84	28.60	48.87	19.51	519.42	-6,055.42	6,823.84	6,762.18	61.66	110.675			
7,000.00	6,793.16	5,150.00	3,223.84	28.82	48.87	18.93	519.42	-6,055.42	6,806.56	6,744.87	61.70	110.321			
7,050.00	6,818.37	5,150.00	3,223.84	29.04	48.87	18.54	519.42	-6,055.42	6,785.99	6,724.25	61.74	109.920			
7,100.00	6,840.20	5,150.00	3,223.84	29.27	48.87	18.33	519.42	-6,055.42	6,762.21	6,700.44	61.77	109.473			
7,150.00	6,858.51	5,150.00	3,223.84	29.50	48.87	18.27	519.42	-6,055.42	6,735.34	6,673.53	61.80	108.981			
7,200.00	6,873.20	5,150.00	3,223.84	29.74	48.87	18.37	519.42	-6,055.42	6,705.50	6,643.67	61.83	108.448			
7,250.00	6,884.18	5,150.00	3,223.84	30.00	48.87	18.65	519.42	-6,055.42	6,672.86	6,611.00	61.86	107.874			
7,300.00	6,891.37	5,150.00	3,223.84	30.26	48.87	19.11	519.42	-6,055.42	6,637.56	6,575.68	61.88	107.261			
7,350.00	6,894.73	5,150.00	3,223.84	30.54	48.87	19.80	519.42	-6,055.42	6,599.78	6,537.88	61.90	106.613			
7,370.19	6,895.00	5,150.00	3,223.84	30.65	48.87	20.15	519.42	-6,055.42	6,583.88	6,521.96	61.92	106.337			
7,400.00	6,894.93	5,150.00	3,223.84	30.83	48.87	20.15	519.42	-6,055.42	6,560.13	6,498.21	61.92	105.937			
7,500.00	6,894.70	5,150.00	3,223.84	31.45	48.87	20.15	519.42	-6,055.42	6,480.87	6,418.91	61.96	104.601			
7,600.00	6,894.47	5,150.00	3,223.84	32.15	48.87	20.15	519.42	-6,055.42	6,402.19	6,340.19	62.00	103.262			
7,700.00	6,894.24	5,150.00	3,223.84	32.92	48.87	20.15	519.42	-6,055.42	6,324.10	6,262.05	62.05	101.919			
7,800.00	6,894.00	5,150.00	3,223.84	33.75	48.87	20.15	519.42	-6,055.42	6,246.65	6,184.54	62.11	100.572			
7,900.00	6,893.77	5,150.00	3,223.84	34.63	48.87	20.15	519.42	-6,055.42	6,169.84	6,107.66	62.18	99.223			
8,000.00	6,893.54	5,150.00	3,223.84	35.57	48.87	20.15	519.42	-6,055.42	6,093.70	6,031.44	62.26	97.872			
8,100.00	6,893.31	5,150.00	3,223.84	36.55	48.87	20.15	519.42	-6,055.42	6,018.27	5,955.91	62.35	96.520			
8,200.00	6,893.08	5,150.00	3,223.84	37.58	48.87	20.15	519.42	-6,055.42	5,943.55	5,881.10	62.45	95.166			
8,300.00	6,892.85	5,150.00	3,223.84	38.65	48.87	20.15	519.42	-6,055.42	5,869.59	5,807.03	62.57	93.812			
8,400.00	6,892.62	5,150.00	3,223.84	39.76	48.87	20.15	519.42	-6,055.42	5,796.42	5,733.72	62.69	92.459			
8,500.00	6,892.38	5,150.00	3,223.84	40.90	48.87	20.15	519.42	-6,055.42	5,724.05	5,661.22	62.83	91.107			
8,600.00	6,892.15	5,150.00	3,223.84	42.07	48.87	20.15	519.42	-6,055.42	5,652.53	5,589.55	62.98	89.757			
8,700.00	6,891.92	5,150.00	3,223.84	43.27	48.87	20.15	519.42	-6,055.42	5,581.88	5,518.74	63.14	88.411			
8,800.00	6,891.69	5,150.00	3,223.84	44.50	48.87	20.15	519.42	-6,055.42	5,512.14	5,448.83	63.31	87.069			
8,900.00	6,891.46	5,150.00	3,223.84	45.75	48.87	20.15	519.42	-6,055.42	5,443.34	5,379.85	63.49	85.733			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 260A - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		200-APC_ISCWSA REV 2 MWD						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor	
14,100.00	6,879.42	3,554.00	3,210.02	122.73	14.65	3.96	-541.06	-7,244.60	3,767.39	3,702.79	64.60	58.323		
14,200.00	6,879.19	3,554.00	3,210.02	124.29	14.65	3.96	-541.06	-7,244.60	3,777.69	3,712.50	65.20	57.943		
14,300.00	6,878.96	3,554.00	3,210.02	125.86	14.65	3.96	-541.06	-7,244.60	3,790.61	3,724.83	65.78	57.628		
14,400.00	6,878.73	3,520.83	3,206.69	127.42	14.02	3.58	-565.00	-7,267.28	3,804.15	3,737.95	66.20	57.463		
14,500.00	6,878.50	3,492.00	3,200.84	128.99	13.47	3.25	-585.22	-7,286.97	3,822.62	3,755.98	66.64	57.365		
14,600.00	6,878.26	3,492.00	3,200.84	130.55	13.47	3.25	-585.22	-7,286.97	3,842.14	3,774.99	67.16	57.213		
14,700.00	6,878.03	3,492.00	3,200.84	132.12	13.47	3.25	-585.22	-7,286.97	3,864.16	3,796.51	67.65	57.122		
14,800.00	6,877.80	3,492.00	3,200.84	133.69	13.47	3.25	-585.22	-7,286.97	3,888.62	3,820.50	68.11	57.091	SF	
14,900.00	6,877.57	3,492.00	3,200.84	135.26	13.47	3.25	-585.22	-7,286.97	3,915.48	3,846.93	68.55	57.120		
15,000.00	6,877.34	3,492.00	3,200.84	136.83	13.47	3.25	-585.22	-7,286.97	3,944.69	3,875.74	68.96	57.205		
15,100.00	6,877.11	3,492.00	3,200.84	138.40	13.47	3.25	-585.22	-7,286.97	3,976.21	3,906.87	69.34	57.346		
15,200.00	6,876.87	3,492.00	3,200.84	139.97	13.47	3.25	-585.22	-7,286.97	4,009.97	3,940.29	69.69	57.542		
15,300.00	6,876.64	3,474.96	3,196.19	141.54	13.15	3.06	-596.82	-7,298.55	4,045.51	3,975.54	69.98	57.812		
15,400.00	6,876.41	3,460.00	3,191.46	143.12	12.88	2.90	-606.76	-7,308.68	4,083.41	4,013.16	70.25	58.129		
15,500.00	6,876.18	3,460.00	3,191.46	144.69	12.88	2.90	-606.76	-7,308.68	4,123.07	4,052.55	70.52	58.467		
15,600.00	6,875.95	3,460.00	3,191.46	146.26	12.88	2.90	-606.76	-7,308.68	4,164.76	4,093.99	70.76	58.854		
15,700.00	6,875.72	3,460.00	3,191.46	147.84	12.88	2.90	-606.76	-7,308.68	4,208.41	4,137.42	70.98	59.286		
15,800.00	6,875.49	3,444.06	3,185.84	149.41	12.59	2.73	-617.15	-7,319.38	4,253.67	4,182.51	71.16	59.774		
15,900.00	6,875.25	3,428.00	3,179.69	150.99	12.31	2.57	-627.49	-7,330.02	4,300.88	4,229.56	71.32	60.303		
16,000.00	6,875.02	3,428.00	3,179.69	152.57	12.31	2.57	-627.49	-7,330.02	4,349.59	4,278.12	71.47	60.857		
16,100.00	6,874.79	3,428.00	3,179.69	154.14	12.31	2.57	-627.49	-7,330.02	4,400.04	4,328.44	71.60	61.451		
16,200.00	6,874.56	3,412.36	3,173.30	155.72	12.04	2.40	-637.43	-7,340.26	4,451.99	4,380.28	71.71	62.086		
16,300.00	6,874.33	3,397.00	3,166.75	157.30	11.77	2.25	-647.11	-7,350.23	4,505.46	4,433.67	71.80	62.754		
16,400.00	6,874.10	3,397.00	3,166.75	158.88	11.77	2.25	-647.11	-7,350.23	4,560.34	4,488.47	71.87	63.454		
16,500.00	6,873.87	3,364.00	3,152.00	160.46	11.23	1.92	-667.63	-7,371.44	4,616.59	4,544.66	71.94	64.174		
16,600.00	6,873.63	3,364.00	3,152.00	162.04	11.23	1.92	-667.63	-7,371.44	4,674.01	4,602.03	71.98	64.934		
16,700.00	6,873.40	3,332.00	3,136.99	163.62	10.73	1.61	-686.99	-7,392.04	4,732.64	4,660.60	72.04	65.694		
16,800.00	6,873.17	3,332.00	3,136.99	165.20	10.73	1.61	-686.99	-7,392.04	4,792.43	4,720.38	72.06	66.510		
16,900.00	6,872.94	3,301.00	3,121.67	166.78	10.26	1.32	-704.93	-7,412.14	4,853.29	4,781.18	72.11	67.308		
17,000.00	6,872.71	3,301.00	3,121.67	168.36	10.26	1.32	-704.93	-7,412.14	4,915.29	4,843.19	72.10	68.176		
17,100.00	6,872.48	3,268.00	3,104.42	169.95	9.77	1.03	-723.26	-7,433.48	4,978.39	4,906.25	72.14	69.005		
17,133.01	6,872.40	3,268.00	3,104.42	170.47	9.77	1.03	-723.26	-7,433.48	4,999.39	4,927.26	72.14	69.305		
17,200.00	6,872.25	3,268.00	3,104.42	171.53	9.77	1.03	-723.26	-7,433.48	5,042.41	4,970.29	72.12	69.921		
17,304.21	6,872.00	3,252.35	3,095.97	173.18	9.54	0.89	-731.82	-7,443.49	5,110.24	5,038.12	72.11	70.863		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-Standard Keeper 104, 4800-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-90.18	-12.54	-3,914.84	3,915.35				
100.00	100.00	41.60	41.60	0.25	0.02	-90.18	-12.54	-3,914.82	3,914.84	3,914.56	0.28	N/A	
200.00	200.00	151.08	151.08	0.61	0.10	-90.18	-12.48	-3,914.59	3,914.63	3,913.92	0.71	5,536.232	
300.00	300.00	256.98	256.98	0.97	0.21	-90.18	-12.39	-3,914.13	3,914.20	3,913.03	1.17	3,341.722	
400.00	400.00	359.99	359.99	1.33	0.34	-90.18	-12.37	-3,913.59	3,913.68	3,912.01	1.66	2,352.123	
500.00	500.00	460.46	460.46	1.68	0.47	-90.18	-12.41	-3,913.01	3,913.10	3,910.94	2.15	1,817.129	
600.00	600.00	559.33	559.33	2.04	0.60	-90.18	-12.48	-3,912.46	3,912.54	3,909.89	2.64	1,481.394	
700.00	700.00	658.52	658.51	2.40	0.73	-90.18	-12.54	-3,911.93	3,912.00	3,908.87	3.13	1,250.561	
800.00	800.00	757.92	757.91	2.76	0.85	-90.18	-12.51	-3,911.42	3,911.49	3,907.87	3.61	1,082.058	
900.00	900.00	858.55	858.54	3.12	0.98	-90.18	-12.34	-3,910.90	3,910.98	3,906.88	4.10	954.308	
1,000.00	1,000.00	960.06	960.05	3.48	1.11	-90.18	-12.04	-3,910.35	3,910.43	3,905.85	4.58	853.955	
1,100.00	1,099.98	1,058.23	1,058.22	3.82	1.22	76.29	-11.62	-3,909.80	3,909.46	3,904.43	5.03	777.884	
1,200.00	1,199.84	1,154.11	1,154.09	4.15	1.33	76.40	-11.11	-3,909.36	3,907.75	3,902.31	5.45	717.270	
1,300.00	1,299.45	1,251.24	1,251.22	4.48	1.43	76.58	-10.51	-3,908.99	3,905.34	3,899.46	5.87	665.087	
1,400.00	1,398.70	1,349.40	1,349.38	4.82	1.54	76.82	-9.96	-3,908.66	3,902.17	3,895.87	6.30	619.499	
1,500.00	1,497.47	1,444.53	1,444.50	5.17	1.64	77.12	-9.49	-3,908.37	3,898.30	3,891.58	6.72	579.902	
1,569.36	1,565.62	1,508.26	1,508.24	5.43	1.70	77.35	-9.14	-3,908.26	3,895.29	3,888.27	7.01	555.428	
1,600.00	1,595.66	1,536.35	1,536.32	5.54	1.73	77.43	-8.98	-3,908.23	3,893.91	3,886.77	7.14	545.117	
1,700.00	1,693.69	1,629.33	1,629.30	5.92	1.81	77.70	-8.39	-3,908.23	3,889.59	3,882.02	7.57	514.004	
1,800.00	1,791.72	1,725.33	1,725.30	6.30	1.89	77.99	-7.74	-3,908.30	3,885.44	3,877.46	7.98	486.741	
1,900.00	1,889.75	1,821.44	1,821.41	6.70	1.96	78.27	-7.07	-3,908.42	3,881.44	3,873.04	8.40	461.933	
2,000.00	1,987.78	1,918.01	1,917.97	7.10	2.03	78.56	-6.46	-3,908.57	3,877.59	3,868.76	8.82	439.555	
2,100.00	2,085.81	2,014.61	2,014.58	7.50	2.11	78.84	-5.97	-3,908.77	3,873.87	3,864.62	9.24	419.052	
2,200.00	2,183.85	2,111.21	2,111.17	7.91	2.17	79.12	-5.56	-3,909.00	3,870.28	3,860.62	9.67	400.434	
2,300.00	2,281.88	2,208.01	2,207.97	8.32	2.24	79.41	-5.18	-3,909.27	3,866.83	3,856.74	10.09	383.251	
2,400.00	2,379.91	2,306.94	2,306.91	8.74	2.27	79.69	-4.92	-3,909.55	3,863.48	3,852.97	10.51	367.467	
2,500.00	2,477.94	2,405.78	2,405.74	9.16	2.30	79.98	-4.84	-3,909.81	3,860.21	3,849.27	10.94	352.783	
2,600.00	2,575.97	2,502.04	2,502.00	9.58	2.30	80.26	-4.90	-3,910.10	3,857.05	3,845.66	11.38	338.804	
2,700.00	2,674.00	2,600.00	2,599.96	10.00	2.30	80.54	-5.07	-3,910.43	3,854.03	3,842.20	11.83	325.798	
2,800.00	2,772.03	2,696.43	2,696.39	10.43	2.29	80.81	-5.33	-3,910.80	3,851.13	3,838.83	12.30	313.179	
2,900.00	2,870.07	2,794.59	2,794.55	10.86	2.29	81.09	-5.70	-3,911.17	3,848.32	3,835.56	12.77	301.434	
3,000.00	2,968.10	2,892.00	2,891.95	11.28	2.30	81.37	-6.06	-3,911.55	3,845.62	3,832.37	13.25	290.301	
3,100.00	3,066.13	2,989.32	2,989.27	11.71	2.31	81.65	-6.29	-3,911.94	3,843.03	3,829.30	13.73	279.923	
3,200.00	3,164.16	3,091.77	3,091.72	12.14	2.37	81.95	-6.36	-3,912.29	3,840.50	3,826.28	14.22	270.009	
3,300.00	3,262.19	3,194.74	3,194.70	12.58	2.45	82.25	-6.16	-3,912.49	3,837.94	3,823.22	14.72	260.717	
3,400.00	3,360.22	3,291.82	3,291.77	13.01	2.55	82.54	-5.82	-3,912.60	3,835.43	3,820.21	15.22	251.995	
3,500.00	3,458.25	3,388.56	3,388.52	13.44	2.66	82.83	-5.43	-3,912.74	3,833.06	3,817.34	15.72	243.818	
3,600.00	3,556.29	3,484.73	3,484.68	13.88	2.75	83.11	-5.07	-3,912.92	3,830.82	3,814.60	16.23	236.059	
3,700.00	3,654.32	3,580.86	3,580.82	14.31	2.85	83.40	-4.80	-3,913.15	3,828.74	3,812.01	16.73	228.826	
3,800.00	3,752.35	3,678.61	3,678.56	14.75	2.94	83.69	-4.62	-3,913.43	3,826.79	3,809.55	17.24	221.918	
3,900.00	3,850.38	3,776.76	3,776.71	15.18	3.03	83.98	-4.48	-3,913.72	3,824.94	3,807.18	17.76	215.328	
4,000.00	3,948.41	3,872.52	3,872.47	15.62	3.09	84.26	-4.48	-3,914.03	3,823.21	3,804.93	18.28	209.120	
4,100.00	4,046.44	3,967.67	3,967.62	16.05	3.14	84.53	-4.86	-3,914.47	3,821.66	3,802.86	18.80	203.262	
4,200.00	4,144.48	4,070.73	4,070.67	16.49	3.18	84.82	-5.73	-3,915.02	3,820.21	3,800.88	19.32	197.723	
4,300.00	4,242.51	4,177.96	4,177.89	16.93	3.20	85.12	-7.19	-3,915.45	3,818.63	3,798.79	19.84	192.468	
4,400.00	4,340.54	4,287.15	4,287.07	17.37	3.22	85.41	-9.19	-3,915.67	3,816.90	3,796.54	20.35	187.530	
4,500.00	4,438.57	4,396.91	4,396.80	17.81	3.25	85.70	-11.53	-3,915.63	3,814.95	3,794.09	20.87	182.837	
4,600.00	4,536.60	4,495.71	4,495.57	18.25	3.28	85.96	-13.72	-3,915.44	3,812.93	3,791.57	21.37	178.442	
4,700.00	4,634.63	4,595.04	4,594.88	18.68	3.30	86.20	-15.68	-3,915.23	3,810.97	3,789.10	21.87	174.294	
4,800.00	4,732.66	4,670.82	4,670.66	19.12	4.27	86.45	-15.84	-3,915.21	3,809.61	3,786.32	23.29	163.588	
4,900.00	4,830.70	4,762.03	4,761.86	19.56	5.50	86.72	-16.14	-3,915.17	3,808.33	3,783.34	24.98	152.438	
5,000.00	4,928.73	4,866.90	4,866.73	20.00	7.56	87.03	-15.84	-3,915.21	3,807.32	3,779.82	27.50	138.471	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79 - OH - OH													Offset Site Error:	0.00 usft	
Survey Program:		200-Standard Keeper 104, 4800-A027Ua_INC-ONLY										Rule Assigned:		Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor		
5,100.00	5,026.76	4,971.69	4,971.50	20.44	9.97	87.35	-15.52	-3,915.21	3,806.39	3,776.03	30.37	125.353			
5,200.00	5,124.79	5,063.03	5,062.79	20.88	12.16	87.61	-15.84	-3,915.21	3,805.44	3,772.43	33.01	115.292			
5,300.00	5,222.82	5,167.79	5,167.54	21.32	14.72	87.93	-15.48	-3,915.21	3,804.72	3,768.71	36.01	105.645			
5,400.00	5,320.85	5,259.16	5,258.85	21.77	16.98	88.20	-15.84	-3,915.21	3,803.96	3,765.25	38.72	98.253			
5,500.00	5,418.88	5,363.85	5,363.53	22.21	19.58	88.51	-15.45	-3,915.21	3,803.47	3,761.71	41.76	91.076			
5,600.00	5,516.92	5,455.29	5,454.92	22.65	21.86	88.78	-15.84	-3,915.21	3,802.90	3,758.41	44.49	85.486			
5,700.00	5,614.95	5,559.87	5,559.48	23.09	24.47	89.10	-15.42	-3,915.21	3,802.62	3,755.08	47.54	79.980			
5,800.00	5,712.98	5,651.42	5,650.98	23.53	26.77	89.36	-15.84	-3,915.21	3,802.25	3,751.97	50.28	75.619			
5,900.00	5,811.01	5,755.84	5,755.38	23.97	29.39	89.68	-15.39	-3,915.21	3,802.18	3,748.84	53.34	71.275			
6,000.00	5,909.04	5,847.56	5,847.04	24.41	31.69	89.95	-15.84	-3,915.21	3,802.00	3,745.91	56.09	67.782			
6,018.44	5,927.12	5,865.63	5,865.12	24.49	32.15	90.00	-15.84	-3,915.21	3,802.00	3,745.38	56.63	67.140			
6,100.00	6,007.07	5,951.77	5,951.24	24.85	34.31	90.26	-15.36	-3,915.21	3,802.16	3,743.00	59.15	64.275			
6,155.38	6,061.36	6,013.60	6,013.06	25.10	35.87	90.44	-16.03	-3,915.21	3,802.08	3,741.12	60.95	62.376			
6,200.00	6,105.10	6,043.69	6,043.10	25.30	36.62	90.53	-15.84	-3,915.21	3,802.17	3,740.26	61.91	61.415			
6,300.00	6,203.14	6,147.65	6,147.05	25.74	39.24	90.85	-15.33	-3,915.21	3,802.54	3,737.57	64.97	58.529			
6,393.02	6,294.33	6,232.98	6,232.33	26.15	41.39	91.09	-15.84	-3,915.21	3,802.72	3,735.19	67.53	56.313			
6,400.00	6,301.17	6,239.82	6,239.17	26.18	41.56	88.09	-15.84	-3,915.21	3,802.71	3,734.98	67.73	56.144			
6,450.00	6,350.01	6,288.66	6,288.01	26.40	42.79	69.45	-15.84	-3,915.21	3,800.47	3,731.28	69.19	54.931			
6,500.00	6,398.37	6,342.52	6,341.86	26.63	44.15	56.54	-15.30	-3,915.21	3,794.57	3,723.80	70.77	53.619			
6,550.00	6,445.94	6,397.30	6,396.62	26.86	45.53	48.08	-15.80	-3,915.21	3,784.68	3,712.30	72.38	52.292			
6,600.00	6,492.42	6,431.14	6,430.42	27.08	46.38	42.46	-15.84	-3,915.21	3,771.18	3,697.72	73.45	51.341			
6,650.00	6,537.54	6,476.26	6,475.54	27.30	47.52	38.78	-15.84	-3,915.21	3,754.12	3,679.31	74.81	50.179			
6,700.00	6,581.01	6,522.78	6,522.05	27.52	48.69	36.40	-15.22	-3,915.21	3,733.75	3,657.54	76.21	48.995			
6,750.00	6,622.57	6,570.83	6,570.09	27.74	49.90	34.96	-15.51	-3,915.21	3,709.80	3,632.16	77.63	47.786			
6,800.00	6,661.96	6,600.74	6,599.96	27.96	50.66	34.13	-15.84	-3,915.21	3,682.61	3,604.01	78.60	46.853			
6,850.00	6,698.93	6,637.71	6,636.93	28.17	51.59	33.99	-15.84	-3,915.21	3,652.50	3,572.77	79.74	45.807			
6,900.00	6,733.26	6,672.04	6,671.26	28.39	52.46	34.41	-15.84	-3,915.21	3,619.56	3,538.76	80.80	44.796			
6,950.00	6,764.73	6,704.09	6,703.29	28.60	53.26	35.42	-15.18	-3,915.21	3,584.19	3,502.39	81.80	43.816			
7,000.00	6,793.16	6,737.07	6,736.27	28.82	54.10	37.11	-15.27	-3,915.21	3,546.20	3,463.38	82.82	42.819			
7,050.00	6,818.37	6,766.35	6,765.54	29.04	54.83	39.54	-15.47	-3,915.21	3,506.00	3,422.27	83.73	41.871			
7,100.00	6,840.20	6,791.72	6,790.91	29.27	55.47	42.91	-15.73	-3,915.21	3,463.88	3,379.33	84.54	40.972			
7,150.00	6,858.51	6,813.02	6,812.21	29.50	56.01	47.49	-16.02	-3,915.21	3,420.08	3,334.83	85.24	40.122			
7,200.00	6,873.20	6,812.06	6,811.20	29.74	55.99	53.09	-15.84	-3,915.21	3,374.98	3,289.60	85.38	39.530			
7,250.00	6,884.18	6,823.04	6,822.18	30.00	56.26	61.10	-15.84	-3,915.21	3,328.75	3,242.94	85.80	38.795			
7,300.00	6,891.37	6,830.23	6,829.37	30.26	56.44	71.59	-15.84	-3,915.21	3,281.68	3,195.55	86.13	38.102			
7,350.00	6,894.73	6,833.59	6,832.73	30.54	56.53	84.62	-15.84	-3,915.21	3,234.06	3,147.71	86.35	37.453			
7,370.19	6,895.00	6,833.86	6,833.00	30.65	56.54	90.44	-15.84	-3,915.21	3,214.74	3,128.33	86.41	37.203			
7,400.00	6,894.93	6,833.79	6,832.93	30.83	56.53	90.44	-15.84	-3,915.21	3,186.21	3,099.72	86.49	36.839			
7,500.00	6,894.70	6,833.55	6,832.70	31.45	56.53	90.42	-15.84	-3,915.21	3,090.66	3,003.89	86.77	35.620			
7,600.00	6,894.47	6,833.32	6,832.47	32.15	56.52	90.41	-15.84	-3,915.21	2,995.40	2,908.33	87.07	34.403			
7,700.00	6,894.24	6,833.09	6,832.24	32.92	56.52	90.39	-15.84	-3,915.21	2,900.46	2,813.06	87.40	33.186			
7,800.00	6,894.00	6,832.86	6,832.00	33.75	56.51	90.38	-15.84	-3,915.21	2,805.88	2,718.12	87.76	31.972			
7,900.00	6,893.77	6,832.63	6,831.77	34.63	56.51	90.37	-15.84	-3,915.21	2,711.68	2,623.52	88.16	30.760			
8,000.00	6,893.54	6,832.40	6,831.54	35.57	56.50	90.35	-15.84	-3,915.21	2,617.91	2,529.32	88.59	29.550			
8,100.00	6,893.31	6,832.17	6,831.31	36.55	56.49	90.34	-15.84	-3,915.21	2,524.62	2,435.55	89.07	28.344			
8,200.00	6,893.08	6,831.93	6,831.08	37.58	56.49	90.32	-15.84	-3,915.21	2,431.87	2,342.27	89.60	27.142			
8,300.00	6,892.85	6,831.70	6,830.85	38.65	56.48	90.31	-15.84	-3,915.21	2,339.71	2,249.53	90.18	25.946			
8,400.00	6,892.62	6,831.47	6,830.62	39.76	56.48	90.29	-15.84	-3,915.21	2,248.22	2,157.40	90.82	24.755			
8,500.00	6,892.38	6,831.24	6,830.38	40.90	56.47	90.28	-15.84	-3,915.21	2,157.49	2,065.96	91.52	23.573			
8,600.00	6,892.15	6,831.01	6,830.15	42.07	56.46	90.26	-15.84	-3,915.21	2,067.61	1,975.30	92.31	22.399			
8,700.00	6,891.92	6,830.78	6,829.92	43.27	56.46	90.25	-15.84	-3,915.21	1,978.71	1,885.53	93.17	21.236			
8,800.00	6,891.69	6,830.55	6,829.69	44.50	56.45	90.24	-15.84	-3,915.21	1,890.91	1,796.77	94.14	20.087			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79 - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 200-Standard Keeper 104, 4800-A027Ua_INC-ONLY							Rule Assigned:						Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,900.00	6,891.46	6,830.31	6,829.46	45.75	56.45	90.22	-15.84	-3,915.21	1,804.38	1,709.18	95.20	18.953	
9,000.00	6,891.23	6,830.08	6,829.23	47.02	56.44	90.21	-15.84	-3,915.21	1,719.32	1,622.93	96.38	17.838	
9,100.00	6,890.99	6,829.85	6,828.99	48.31	56.44	90.19	-15.84	-3,915.21	1,635.94	1,538.25	97.69	16.746	
9,200.00	6,890.76	6,829.62	6,828.76	49.62	56.43	90.18	-15.84	-3,915.21	1,554.53	1,455.39	99.14	15.680	
9,300.00	6,890.53	6,829.39	6,828.53	50.94	56.42	90.16	-15.84	-3,915.21	1,475.41	1,374.67	100.74	14.646	
9,400.00	6,890.30	6,829.16	6,828.30	52.29	56.42	90.15	-15.84	-3,915.21	1,398.96	1,296.46	102.50	13.649	
9,500.00	6,890.07	6,828.93	6,828.07	53.64	56.41	90.14	-15.84	-3,915.21	1,325.65	1,221.23	104.41	12.696	
9,600.00	6,889.84	6,828.69	6,827.84	55.02	56.41	90.12	-15.84	-3,915.21	1,256.02	1,149.54	106.49	11.795	
9,700.00	6,889.61	6,828.46	6,827.61	56.40	56.40	90.11	-15.84	-3,915.21	1,190.74	1,082.04	108.70	10.954	
9,800.00	6,889.37	6,828.23	6,827.37	57.79	56.39	90.09	-15.84	-3,915.21	1,130.54	1,019.52	111.02	10.183	
9,900.00	6,889.14	6,828.00	6,827.14	59.20	56.39	90.08	-15.84	-3,915.21	1,076.28	962.90	113.38	9.493	
10,000.00	6,888.91	6,827.77	6,826.91	60.61	56.38	90.06	-15.84	-3,915.21	1,028.90	913.19	115.71	8.892	
10,100.00	6,888.68	6,827.54	6,826.68	62.04	56.38	90.05	-15.84	-3,915.21	989.39	871.51	117.88	8.393	
10,200.00	6,888.45	6,827.30	6,826.45	63.47	56.37	90.04	-15.84	-3,915.21	958.72	838.95	119.77	8.005	
10,300.00	6,888.22	6,827.07	6,826.22	64.91	56.37	90.02	-15.84	-3,915.21	937.76	816.54	121.23	7.736	
10,400.00	6,887.99	6,826.84	6,825.99	66.36	56.36	90.01	-15.84	-3,915.21	927.18	805.04	122.14	7.591	
10,448.72	6,887.87	6,826.73	6,825.87	67.07	56.36	90.00	-15.84	-3,915.21	925.90	803.54	122.36	7.567	CC, ES, SF
10,500.00	6,887.75	6,826.61	6,825.75	67.82	56.35	89.99	-15.84	-3,915.21	927.31	804.89	122.42	7.575	
10,600.00	6,887.52	6,826.38	6,825.52	69.28	56.35	89.98	-15.84	-3,915.21	938.17	816.10	122.08	7.685	
10,700.00	6,887.29	6,826.15	6,825.29	70.75	56.34	89.96	-15.84	-3,915.21	959.39	838.23	121.15	7.919	
10,800.00	6,887.06	6,825.92	6,825.06	72.22	56.34	89.95	-15.84	-3,915.21	990.29	870.53	119.76	8.269	
10,900.00	6,886.83	6,825.68	6,824.83	73.70	56.33	89.94	-15.84	-3,915.21	1,030.02	911.99	118.02	8.727	
11,000.00	6,886.60	6,825.45	6,824.60	75.19	56.32	89.92	-15.84	-3,915.21	1,077.59	961.50	116.08	9.283	
11,100.00	6,886.37	6,825.22	6,824.37	76.68	56.32	89.91	-15.84	-3,915.21	1,132.01	1,017.97	114.05	9.926	
11,200.00	6,886.13	6,824.99	6,824.13	78.17	56.31	89.89	-15.84	-3,915.21	1,192.35	1,080.35	112.01	10.646	
11,300.00	6,885.90	6,824.76	6,823.90	79.67	56.31	89.88	-15.84	-3,915.21	1,257.76	1,147.74	110.02	11.432	
11,400.00	6,885.67	6,824.53	6,823.67	81.17	56.30	89.86	-15.84	-3,915.21	1,327.49	1,219.35	108.14	12.276	
11,500.00	6,885.44	6,824.30	6,823.44	82.68	56.29	89.85	-15.84	-3,915.21	1,400.88	1,294.51	106.37	13.170	
11,600.00	6,885.21	6,824.06	6,823.21	84.19	56.29	89.84	-15.84	-3,915.21	1,477.41	1,372.67	104.74	14.106	
11,700.00	6,884.98	6,823.83	6,822.98	85.71	56.28	89.82	-15.84	-3,915.21	1,556.59	1,453.36	103.24	15.078	
11,800.00	6,884.74	6,823.60	6,822.74	87.22	56.28	89.81	-15.84	-3,915.21	1,638.06	1,536.19	101.87	16.080	
11,900.00	6,884.51	6,823.37	6,822.51	88.74	56.27	89.79	-15.84	-3,915.21	1,721.48	1,620.86	100.62	17.109	
12,000.00	6,884.28	6,823.14	6,822.28	90.27	56.27	89.78	-15.84	-3,915.21	1,806.59	1,707.10	99.49	18.159	
12,100.00	6,884.05	6,822.91	6,822.05	91.79	56.26	89.76	-15.84	-3,915.21	1,893.15	1,794.69	98.46	19.228	
12,200.00	6,883.82	6,822.68	6,821.82	93.32	56.25	89.75	-15.84	-3,915.21	1,980.97	1,883.45	97.53	20.312	
12,300.00	6,883.59	6,822.44	6,821.59	94.85	56.25	89.73	-15.84	-3,915.21	2,069.91	1,973.23	96.68	21.410	
12,400.00	6,883.36	6,822.21	6,821.36	96.38	56.24	89.72	-15.84	-3,915.21	2,159.81	2,063.89	95.91	22.518	
12,500.00	6,883.12	6,821.98	6,821.12	97.92	56.24	89.71	-15.84	-3,915.21	2,250.56	2,155.34	95.22	23.636	
12,600.00	6,882.89	6,821.75	6,820.89	99.46	56.23	89.69	-15.84	-3,915.21	2,342.07	2,247.48	94.59	24.761	
12,700.00	6,882.66	6,821.52	6,820.66	101.00	56.22	89.68	-15.84	-3,915.21	2,434.24	2,340.23	94.01	25.892	
12,800.00	6,882.43	6,821.29	6,820.43	102.54	56.22	89.66	-15.84	-3,915.21	2,527.01	2,433.52	93.49	27.029	
12,900.00	6,882.20	6,821.05	6,820.20	104.08	56.21	89.65	-15.84	-3,915.21	2,620.31	2,527.30	93.02	28.170	
13,000.00	6,881.97	6,820.82	6,819.97	105.63	56.21	89.63	-15.84	-3,915.21	2,714.09	2,621.51	92.59	29.314	
13,100.00	6,881.74	6,820.59	6,819.74	107.18	56.20	89.62	-15.84	-3,915.21	2,808.30	2,716.11	92.19	30.461	
13,200.00	6,881.50	6,820.36	6,819.50	108.73	56.20	89.61	-15.84	-3,915.21	2,902.90	2,811.06	91.83	31.610	
13,300.00	6,881.27	6,820.13	6,819.27	110.28	56.19	89.59	-15.84	-3,915.21	2,997.84	2,906.34	91.51	32.761	
13,400.00	6,881.04	6,819.90	6,819.04	111.83	56.18	89.58	-15.84	-3,915.21	3,093.11	3,001.90	91.21	33.913	
13,500.00	6,880.81	6,819.67	6,818.81	113.38	56.18	89.56	-15.84	-3,915.21	3,188.66	3,097.73	90.93	35.066	
13,600.00	6,880.58	6,819.43	6,818.58	114.94	56.17	89.55	-15.84	-3,915.21	3,284.48	3,193.80	90.69	36.219	
13,700.00	6,880.35	6,819.20	6,818.35	116.49	56.17	89.53	-15.84	-3,915.21	3,380.54	3,290.09	90.46	37.372	
13,800.00	6,880.12	6,818.97	6,818.12	118.05	56.16	89.52	-15.84	-3,915.21	3,476.83	3,386.58	90.25	38.524	
13,900.00	6,879.88	6,818.74	6,817.88	119.61	56.15	89.51	-15.84	-3,915.21	3,573.31	3,483.25	90.06	39.677	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79 - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		200-Standard Keeper 104, 4800-A027Ua_INC-ONLY					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
14,000.00	6,879.65	6,818.51	6,817.65	121.17	56.15	89.49	-15.84	-3,915.21	3,669.99	3,580.10	89.89	40.829		
14,100.00	6,879.42	6,818.28	6,817.42	122.73	56.14	89.48	-15.84	-3,915.21	3,766.84	3,677.11	89.73	41.980		
14,200.00	6,879.19	6,818.05	6,817.19	124.29	56.14	89.46	-15.84	-3,915.21	3,863.85	3,774.26	89.59	43.130		
14,300.00	6,878.96	6,817.81	6,816.96	125.86	56.13	89.45	-15.84	-3,915.21	3,961.01	3,871.55	89.46	44.279		
14,400.00	6,878.73	6,817.58	6,816.73	127.42	56.13	89.43	-15.84	-3,915.21	4,058.31	3,968.97	89.34	45.427		
14,500.00	6,878.50	6,817.35	6,816.50	128.99	56.12	89.42	-15.84	-3,915.21	4,155.73	4,066.50	89.23	46.573		
14,600.00	6,878.26	6,817.12	6,816.26	130.55	56.11	89.41	-15.84	-3,915.21	4,253.28	4,164.14	89.13	47.718		
14,700.00	6,878.03	6,816.89	6,816.03	132.12	56.11	89.39	-15.84	-3,915.21	4,350.93	4,261.88	89.05	48.862		
14,800.00	6,877.80	6,816.66	6,815.80	133.69	56.10	89.38	-15.84	-3,915.21	4,448.69	4,359.72	88.97	50.003		
14,900.00	6,877.57	6,816.43	6,815.57	135.26	56.10	89.36	-15.84	-3,915.21	4,546.55	4,457.65	88.90	51.144		
15,000.00	6,877.34	6,816.19	6,815.34	136.83	56.09	89.35	-15.84	-3,915.21	4,644.50	4,555.66	88.84	52.282		
15,100.00	6,877.11	6,815.96	6,815.11	138.40	56.08	89.33	-15.84	-3,915.21	4,742.53	4,653.75	88.78	53.419		
15,200.00	6,876.87	6,815.73	6,814.87	139.97	56.08	89.32	-15.84	-3,915.21	4,840.65	4,751.91	88.73	54.553		
15,300.00	6,876.64	6,815.50	6,814.64	141.54	56.07	89.31	-15.84	-3,915.21	4,938.84	4,850.15	88.69	55.686		
15,400.00	6,876.41	6,815.27	6,814.41	143.12	56.07	89.29	-15.84	-3,915.21	5,037.10	4,948.44	88.65	56.817		
15,500.00	6,876.18	6,815.04	6,814.18	144.69	56.06	89.28	-15.84	-3,915.21	5,135.43	5,046.80	88.62	57.946		
15,600.00	6,875.95	6,814.80	6,813.95	146.26	56.06	89.26	-15.84	-3,915.21	5,233.82	5,145.22	88.60	59.073		
15,700.00	6,875.72	6,814.57	6,813.72	147.84	56.05	89.25	-15.84	-3,915.21	5,332.27	5,243.69	88.58	60.198		
15,800.00	6,875.49	6,814.34	6,813.49	149.41	56.04	89.23	-15.84	-3,915.21	5,430.78	5,342.22	88.56	61.321		
15,900.00	6,875.25	6,814.11	6,813.25	150.99	56.04	89.22	-15.84	-3,915.21	5,529.34	5,440.79	88.55	62.441		
16,000.00	6,875.02	6,813.88	6,813.02	152.57	56.03	89.20	-15.84	-3,915.21	5,627.95	5,539.41	88.55	63.560		
16,100.00	6,874.79	6,813.65	6,812.79	154.14	56.03	89.19	-15.84	-3,915.21	5,726.62	5,638.07	88.54	64.676		
16,200.00	6,874.56	6,813.42	6,812.56	155.72	56.02	89.18	-15.84	-3,915.21	5,825.32	5,736.78	88.54	65.790		
16,300.00	6,874.33	6,813.18	6,812.33	157.30	56.01	89.16	-15.84	-3,915.21	5,924.07	5,835.52	88.55	66.902		
16,400.00	6,874.10	6,812.95	6,812.10	158.88	56.01	89.15	-15.84	-3,915.21	6,022.86	5,934.31	88.56	68.011		
16,500.00	6,873.87	6,812.72	6,811.87	160.46	56.00	89.13	-15.84	-3,915.21	6,121.69	6,033.13	88.57	69.119		
16,600.00	6,873.63	6,812.49	6,811.63	162.04	56.00	89.12	-15.84	-3,915.21	6,220.56	6,131.98	88.58	70.224		
16,700.00	6,873.40	6,812.26	6,811.40	163.62	55.99	89.10	-15.84	-3,915.21	6,319.46	6,230.86	88.60	71.326		
16,800.00	6,873.17	6,812.03	6,811.17	165.20	55.99	89.09	-15.84	-3,915.21	6,418.40	6,329.78	88.62	72.427		
16,900.00	6,872.94	6,811.80	6,810.94	166.78	55.98	89.08	-15.84	-3,915.21	6,517.37	6,428.73	88.64	73.525		
17,000.00	6,872.71	6,811.56	6,810.71	168.36	55.97	89.06	-15.84	-3,915.21	6,616.37	6,527.70	88.67	74.620		
17,100.00	6,872.48	6,811.33	6,810.48	169.95	55.97	89.05	-15.84	-3,915.21	6,715.40	6,626.71	88.69	75.713		
17,133.01	6,872.40	6,811.26	6,810.40	170.47	55.97	89.04	-15.84	-3,915.21	6,748.10	6,659.39	88.70	76.074		
17,200.00	6,872.25	6,811.10	6,810.25	171.53	55.96	89.03	-15.84	-3,915.21	6,814.46	6,725.74	88.72	76.804		
17,304.21	6,872.00	6,810.86	6,810.00	173.18	55.96	89.02	-15.84	-3,915.21	6,917.72	6,828.96	88.76	77.938		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79C - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 370-A026Ua_BLIND													Offset Well Error: 0.00 usft
Reference													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-97.38	-666.46	-5,144.37	5,188.01				
100.00	100.00	18.00	18.00	0.25	12.60	-97.38	-666.46	-5,144.37	5,187.36	5,174.51	12.85	403.651	
200.00	200.00	118.00	118.00	0.61	82.60	-97.38	-666.46	-5,144.37	5,187.36	5,104.15	83.21	62.341	
300.00	300.00	218.00	218.00	0.97	152.60	-97.38	-666.46	-5,144.37	5,187.36	5,033.80	153.57	33.779	
400.00	400.00	318.00	318.00	1.33	222.60	-97.38	-666.46	-5,144.37	5,187.36	4,963.44	223.93	23.165	
410.00	410.00	328.00	328.00	1.36	229.60	-97.38	-666.46	-5,144.37	5,187.36	4,956.40	230.96	22.460	CC
500.00	500.00	370.00	370.00	1.68	259.00	-97.38	-666.46	-5,144.37	5,187.59	4,926.91	260.67	19.901	ES
600.00	600.00	370.00	370.00	2.04	259.00	-97.38	-666.46	-5,144.37	5,189.47	4,928.54	260.94	19.888	SF
700.00	700.00	370.00	370.00	2.40	259.00	-97.38	-666.46	-5,144.37	5,193.29	4,932.18	261.11	19.890	
800.00	800.00	370.00	370.00	2.76	259.00	-97.38	-666.46	-5,144.37	5,199.02	4,937.85	261.18	19.906	
900.00	900.00	370.00	370.00	3.12	259.00	-97.38	-666.46	-5,144.37	5,206.67	4,945.52	261.15	19.937	
1,000.00	1,000.00	370.00	370.00	3.48	259.00	-97.38	-666.46	-5,144.37	5,216.23	4,955.19	261.04	19.983	
1,100.00	1,099.98	370.00	370.00	3.82	259.00	68.83	-666.46	-5,144.37	5,227.06	4,966.26	260.80	20.042	
1,200.00	1,199.84	370.00	370.00	4.15	259.00	68.62	-666.46	-5,144.37	5,238.53	4,978.06	260.47	20.112	
1,300.00	1,299.45	370.00	370.00	4.48	259.00	68.39	-666.46	-5,144.37	5,250.61	4,990.57	260.04	20.191	
1,400.00	1,398.70	370.00	370.00	4.82	259.00	68.15	-666.46	-5,144.37	5,263.30	5,003.75	259.54	20.279	
1,500.00	1,497.47	370.00	370.00	5.17	259.00	67.91	-666.46	-5,144.37	5,276.56	5,017.60	258.96	20.376	
1,569.36	1,565.62	370.00	370.00	5.43	259.00	67.73	-666.46	-5,144.37	5,286.09	5,027.57	258.52	20.447	
1,600.00	1,595.66	370.00	370.00	5.54	259.00	67.73	-666.46	-5,144.37	5,290.45	5,032.13	258.32	20.480	
1,700.00	1,693.69	370.00	370.00	5.92	259.00	67.73	-666.46	-5,144.37	5,305.87	5,048.27	257.60	20.597	
1,800.00	1,791.72	370.00	370.00	6.30	259.00	67.73	-666.46	-5,144.37	5,323.12	5,066.31	256.81	20.728	
1,900.00	1,889.75	370.00	370.00	6.70	259.00	67.73	-666.46	-5,144.37	5,342.19	5,086.24	255.95	20.872	
2,000.00	1,987.78	370.00	370.00	7.10	259.00	67.73	-666.46	-5,144.37	5,363.06	5,108.04	255.03	21.030	
2,100.00	2,085.81	370.00	370.00	7.50	259.00	67.73	-666.46	-5,144.37	5,385.71	5,131.68	254.03	21.201	
2,200.00	2,183.85	370.00	370.00	7.91	259.00	67.73	-666.46	-5,144.37	5,410.11	5,157.14	252.96	21.387	
2,300.00	2,281.88	370.00	370.00	8.32	259.00	67.73	-666.46	-5,144.37	5,436.24	5,184.40	251.84	21.586	
2,400.00	2,379.91	370.00	370.00	8.74	259.00	67.73	-666.46	-5,144.37	5,464.07	5,213.42	250.65	21.799	
2,500.00	2,477.94	370.00	370.00	9.16	259.00	67.73	-666.46	-5,144.37	5,493.59	5,244.18	249.41	22.027	
2,600.00	2,575.97	370.00	370.00	9.58	259.00	67.73	-666.46	-5,144.37	5,524.75	5,276.65	248.11	22.268	
2,700.00	2,674.00	370.00	370.00	10.00	259.00	67.73	-666.46	-5,144.37	5,557.55	5,310.79	246.76	22.522	
2,800.00	2,772.03	370.00	370.00	10.43	259.00	67.73	-666.46	-5,144.37	5,591.93	5,346.58	245.36	22.791	
2,900.00	2,870.07	370.00	370.00	10.86	259.00	67.73	-666.46	-5,144.37	5,627.89	5,383.98	243.91	23.073	
3,000.00	2,968.10	370.00	370.00	11.28	259.00	67.73	-666.46	-5,144.37	5,665.38	5,422.96	242.43	23.370	
3,100.00	3,066.13	370.00	370.00	11.71	259.00	67.73	-666.46	-5,144.37	5,704.38	5,463.48	240.90	23.679	
3,200.00	3,164.16	370.00	370.00	12.14	259.00	67.73	-666.46	-5,144.37	5,744.86	5,505.52	239.34	24.003	
3,300.00	3,262.19	370.00	370.00	12.58	259.00	67.73	-666.46	-5,144.37	5,786.78	5,549.03	237.75	24.340	
3,400.00	3,360.22	370.00	370.00	13.01	259.00	67.73	-666.46	-5,144.37	5,830.11	5,593.99	236.12	24.691	
3,500.00	3,458.25	370.00	370.00	13.44	259.00	67.73	-666.46	-5,144.37	5,874.83	5,640.35	234.48	25.055	
3,600.00	3,556.29	370.00	370.00	13.88	259.00	67.73	-666.46	-5,144.37	5,920.89	5,688.09	232.80	25.433	
3,700.00	3,654.32	370.00	370.00	14.31	259.00	67.73	-666.46	-5,144.37	5,968.28	5,737.17	231.11	25.824	
3,800.00	3,752.35	370.00	370.00	14.75	259.00	67.73	-666.46	-5,144.37	6,016.96	5,787.56	229.40	26.229	
3,900.00	3,850.38	370.00	370.00	15.18	259.00	67.73	-666.46	-5,144.37	6,066.90	5,839.21	227.68	26.647	
4,000.00	3,948.41	370.00	370.00	15.62	259.00	67.73	-666.46	-5,144.37	6,118.06	5,892.11	225.95	27.078	
4,100.00	4,046.44	370.00	370.00	16.05	259.00	67.73	-666.46	-5,144.37	6,170.42	5,946.22	224.20	27.522	
4,200.00	4,144.48	370.00	370.00	16.49	259.00	67.73	-666.46	-5,144.37	6,223.94	6,001.49	222.45	27.979	
4,300.00	4,242.51	370.00	370.00	16.93	259.00	67.73	-666.46	-5,144.37	6,278.60	6,057.91	220.69	28.450	
4,400.00	4,340.54	370.00	370.00	17.37	259.00	67.73	-666.46	-5,144.37	6,334.37	6,115.44	218.93	28.933	
4,500.00	4,438.57	370.00	370.00	17.81	259.00	67.73	-666.46	-5,144.37	6,391.22	6,174.05	217.17	29.429	
4,600.00	4,536.60	370.00	370.00	18.25	259.00	67.73	-666.46	-5,144.37	6,449.11	6,233.70	215.41	29.938	
4,700.00	4,634.63	370.00	370.00	18.68	259.00	67.73	-666.46	-5,144.37	6,508.03	6,294.38	213.66	30.460	
4,800.00	4,732.66	370.00	370.00	19.12	259.00	67.73	-666.46	-5,144.37	6,567.94	6,356.04	211.91	30.995	
4,900.00	4,830.70	370.00	370.00	19.56	259.00	67.73	-666.46	-5,144.37	6,628.82	6,418.66	210.16	31.542	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79C - OH - OH											Offset Site Error: 0.00 usft	
Survey Program: 370-A026Ua_BLIND											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
5,000.00	4,928.73	370.00	370.00	20.00	259.00	67.73	-666.46	-5,144.37	6,690.64	6,482.22	208.43	32.101
5,100.00	5,026.76	370.00	370.00	20.44	259.00	67.73	-666.46	-5,144.37	6,753.38	6,546.68	206.70	32.673
5,200.00	5,124.79	370.00	370.00	20.88	259.00	67.73	-666.46	-5,144.37	6,817.00	6,612.02	204.98	33.257
5,300.00	5,222.82	370.00	370.00	21.32	259.00	67.73	-666.46	-5,144.37	6,881.49	6,678.22	203.28	33.853
5,400.00	5,320.85	370.00	370.00	21.77	259.00	67.73	-666.46	-5,144.37	6,946.82	6,745.24	201.59	34.461
5,500.00	5,418.88	370.00	370.00	22.21	259.00	67.73	-666.46	-5,144.37	7,012.97	6,813.06	199.91	35.081
5,600.00	5,516.92	370.00	370.00	22.65	259.00	67.73	-666.46	-5,144.37	7,079.91	6,881.67	198.25	35.713
5,700.00	5,614.95	370.00	370.00	23.09	259.00	67.73	-666.46	-5,144.37	7,147.63	6,951.03	196.60	36.356
5,800.00	5,712.98	370.00	370.00	23.53	259.00	67.73	-666.46	-5,144.37	7,216.09	7,021.12	194.97	37.012
5,900.00	5,811.01	370.00	370.00	23.97	259.00	67.73	-666.46	-5,144.37	7,285.29	7,091.93	193.36	37.678
6,000.00	5,909.04	370.00	370.00	24.41	259.00	67.73	-666.46	-5,144.37	7,355.19	7,163.43	191.76	38.356
6,100.00	6,007.07	370.00	370.00	24.85	259.00	67.73	-666.46	-5,144.37	7,425.78	7,235.60	190.18	39.045
6,200.00	6,105.10	370.00	370.00	25.30	259.00	67.73	-666.46	-5,144.37	7,497.04	7,308.41	188.63	39.745
6,300.00	6,203.14	370.00	370.00	25.74	259.00	67.73	-666.46	-5,144.37	7,568.95	7,381.86	187.09	40.456
6,393.02	6,294.33	370.00	370.00	26.15	259.00	67.73	-666.46	-5,144.37	7,636.41	7,450.74	185.68	41.127
6,400.00	6,301.17	370.00	370.00	26.18	259.00	64.83	-666.46	-5,144.37	7,641.47	7,455.90	185.57	41.178
6,450.00	6,350.01	370.00	370.00	26.40	259.00	46.81	-666.46	-5,144.37	7,676.24	7,491.47	184.77	41.545
6,500.00	6,398.37	370.00	370.00	26.63	259.00	34.25	-666.46	-5,144.37	7,708.32	7,524.42	183.90	41.917
6,550.00	6,445.94	370.00	370.00	26.86	259.00	25.93	-666.46	-5,144.37	7,737.55	7,554.58	182.96	42.290
6,600.00	6,492.42	370.00	370.00	27.08	259.00	20.32	-666.46	-5,144.37	7,763.77	7,581.80	181.98	42.664
6,650.00	6,537.54	370.00	370.00	27.30	259.00	16.39	-666.46	-5,144.37	7,786.87	7,605.94	180.94	43.036
6,700.00	6,581.01	370.00	370.00	27.52	259.00	13.55	-666.46	-5,144.37	7,806.73	7,626.87	179.85	43.407
6,750.00	6,622.57	370.00	370.00	27.74	259.00	11.41	-666.46	-5,144.37	7,823.24	7,644.51	178.72	43.773
6,800.00	6,661.96	370.00	370.00	27.96	259.00	9.76	-666.46	-5,144.37	7,836.33	7,658.76	177.56	44.133
6,850.00	6,698.93	370.00	370.00	28.17	259.00	8.44	-666.46	-5,144.37	7,845.93	7,669.56	176.37	44.486
6,900.00	6,733.26	370.00	370.00	28.39	259.00	7.38	-666.46	-5,144.37	7,852.00	7,676.85	175.15	44.831
6,950.00	6,764.73	370.00	370.00	28.60	259.00	6.50	-666.46	-5,144.37	7,854.51	7,680.60	173.91	45.164
7,000.00	6,793.16	370.00	370.00	28.82	259.00	5.75	-666.46	-5,144.37	7,853.45	7,680.79	172.66	45.485
7,050.00	6,818.37	370.00	370.00	29.04	259.00	5.11	-666.46	-5,144.37	7,848.82	7,677.42	171.40	45.792
7,100.00	6,840.20	370.00	370.00	29.27	259.00	4.53	-666.46	-5,144.37	7,840.64	7,670.50	170.14	46.083
7,150.00	6,858.51	370.00	370.00	29.50	259.00	4.02	-666.46	-5,144.37	7,828.96	7,660.07	168.89	46.356
7,200.00	6,873.20	370.00	370.00	29.74	259.00	3.54	-666.46	-5,144.37	7,813.83	7,646.18	167.65	46.609
7,250.00	6,884.18	370.00	370.00	30.00	259.00	3.08	-666.46	-5,144.37	7,795.32	7,628.90	166.42	46.841
7,300.00	6,891.37	370.00	370.00	30.26	259.00	2.64	-666.46	-5,144.37	7,773.52	7,608.30	165.22	47.049
7,350.00	6,894.73	370.00	370.00	30.54	259.00	2.18	-666.46	-5,144.37	7,748.55	7,584.50	164.05	47.233
7,370.19	6,895.00	370.00	370.00	30.65	259.00	1.99	-666.46	-5,144.37	7,737.59	7,574.00	163.59	47.298
7,400.00	6,894.93	370.00	370.00	30.83	259.00	1.99	-666.46	-5,144.37	7,721.09	7,558.18	162.91	47.395
7,500.00	6,894.70	370.00	370.00	31.45	259.00	1.99	-666.46	-5,144.37	7,666.32	7,505.72	160.60	47.737
7,600.00	6,894.47	370.00	370.00	32.15	259.00	1.99	-666.46	-5,144.37	7,612.47	7,454.21	158.26	48.102
7,700.00	6,894.24	370.00	370.00	32.92	259.00	1.99	-666.46	-5,144.37	7,559.56	7,403.66	155.89	48.492
7,800.00	6,894.00	370.00	370.00	33.75	259.00	1.99	-666.46	-5,144.37	7,507.60	7,354.10	153.50	48.909
7,900.00	6,893.77	370.00	370.00	34.63	259.00	1.99	-666.46	-5,144.37	7,456.63	7,305.55	151.08	49.355
8,000.00	6,893.54	370.00	370.00	35.57	259.00	1.99	-666.46	-5,144.37	7,406.66	7,258.02	148.64	49.829
8,100.00	6,893.31	370.00	370.00	36.55	259.00	1.99	-666.46	-5,144.37	7,357.70	7,211.53	146.17	50.336
8,200.00	6,893.08	370.00	370.00	37.58	259.00	1.99	-666.46	-5,144.37	7,309.79	7,166.11	143.68	50.877
8,300.00	6,892.85	370.00	370.00	38.65	259.00	1.99	-666.46	-5,144.37	7,262.93	7,121.78	141.16	51.454
8,400.00	6,892.62	370.00	370.00	39.76	259.00	1.99	-666.46	-5,144.37	7,217.16	7,078.55	138.61	52.069
8,500.00	6,892.38	370.00	370.00	40.90	259.00	1.99	-666.46	-5,144.37	7,172.49	7,036.46	136.03	52.726
8,600.00	6,892.15	370.00	370.00	42.07	259.00	1.99	-666.46	-5,144.37	7,128.95	6,995.51	133.43	53.427
8,700.00	6,891.92	370.00	370.00	43.27	259.00	1.99	-666.46	-5,144.37	7,086.54	6,955.74	130.81	54.176
8,800.00	6,891.69	370.00	370.00	44.50	259.00	1.99	-666.46	-5,144.37	7,045.30	6,917.15	128.15	54.977
8,900.00	6,891.46	370.00	370.00	45.75	259.00	1.99	-666.46	-5,144.37	7,005.25	6,879.78	125.47	55.833

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79C - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		370-A026Ua_BLIND						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
9,000.00	6,891.23	370.00	370.00	47.02	259.00	1.99	-666.46	-5,144.37	6,966.40	6,843.64	122.76	56.749	
9,100.00	6,890.99	370.00	370.00	48.31	259.00	1.99	-666.46	-5,144.37	6,928.78	6,808.76	120.02	57.731	
9,200.00	6,890.76	370.00	370.00	49.62	259.00	1.99	-666.46	-5,144.37	6,892.40	6,775.15	117.25	58.782	
9,300.00	6,890.53	370.00	370.00	50.94	259.00	1.99	-666.46	-5,144.37	6,857.29	6,742.83	114.46	59.910	
9,400.00	6,890.30	370.00	370.00	52.29	259.00	1.99	-666.46	-5,144.37	6,823.46	6,711.82	111.64	61.122	
9,500.00	6,890.07	370.00	370.00	53.64	259.00	1.99	-666.46	-5,144.37	6,790.94	6,682.15	108.79	62.424	
9,600.00	6,889.84	370.00	370.00	55.02	259.00	1.99	-666.46	-5,144.37	6,759.74	6,653.83	105.91	63.825	
9,700.00	6,889.61	370.00	370.00	56.40	259.00	1.99	-666.46	-5,144.37	6,729.88	6,626.87	103.01	65.335	
9,800.00	6,889.37	370.00	370.00	57.79	259.00	1.99	-666.46	-5,144.37	6,701.38	6,601.31	100.08	66.963	
9,900.00	6,889.14	370.00	370.00	59.20	259.00	1.99	-666.46	-5,144.37	6,674.26	6,577.14	97.12	68.722	
10,000.00	6,888.91	370.00	370.00	60.61	259.00	1.99	-666.46	-5,144.37	6,648.53	6,554.39	94.14	70.624	
10,100.00	6,888.68	370.00	370.00	62.04	259.00	1.99	-666.46	-5,144.37	6,624.21	6,533.07	91.14	72.684	
10,200.00	6,888.45	370.00	370.00	63.47	259.00	1.99	-666.46	-5,144.37	6,601.32	6,513.21	88.11	74.920	
10,300.00	6,888.22	370.00	370.00	64.91	259.00	1.99	-666.46	-5,144.37	6,579.86	6,494.80	85.07	77.348	
10,400.00	6,887.99	370.00	370.00	66.36	259.00	1.99	-666.46	-5,144.37	6,559.87	6,477.86	82.01	79.992	
10,500.00	6,887.75	370.00	370.00	67.82	259.00	1.99	-666.46	-5,144.37	6,541.33	6,462.40	78.93	82.873	
10,600.00	6,887.52	370.00	370.00	69.28	259.00	1.99	-666.46	-5,144.37	6,524.28	6,448.44	75.85	86.018	
10,700.00	6,887.29	370.00	370.00	70.75	259.00	1.99	-666.46	-5,144.37	6,508.72	6,435.97	72.76	89.456	
10,800.00	6,887.06	370.00	370.00	72.22	259.00	1.99	-666.46	-5,144.37	6,494.67	6,425.00	69.67	93.217	
10,900.00	6,886.83	370.00	370.00	73.70	259.00	1.99	-666.46	-5,144.37	6,482.12	6,415.53	66.60	97.330	
11,000.00	6,886.60	370.00	370.00	75.19	259.00	1.99	-666.46	-5,144.37	6,471.10	6,407.55	63.55	101.821	
11,100.00	6,886.37	370.00	370.00	76.68	259.00	1.99	-666.46	-5,144.37	6,461.61	6,401.05	60.56	106.699	
11,200.00	6,886.13	370.00	370.00	78.17	259.00	1.99	-666.46	-5,144.37	6,453.65	6,396.00	57.65	111.937	
11,300.00	6,885.90	370.00	370.00	79.67	259.00	1.99	-666.46	-5,144.37	6,447.23	6,392.32	54.91	117.417	
11,400.00	6,885.67	370.00	370.00	81.17	259.00	1.99	-666.46	-5,144.37	6,442.36	6,389.91	52.46	122.813	
11,500.00	6,885.44	370.00	370.00	82.68	259.00	1.99	-666.46	-5,144.37	6,439.04	6,388.48	50.56	127.347	
11,600.00	6,885.21	370.00	370.00	84.19	259.00	1.99	-666.46	-5,144.37	6,437.27	6,387.56	49.71	129.496	
11,663.90	6,885.06	370.00	370.00	85.16	259.00	1.99	-666.46	-5,144.37	6,436.96	6,386.98	49.97	128.812	
11,700.00	6,884.98	370.00	370.00	85.71	259.00	1.99	-666.46	-5,144.37	6,437.06	6,386.63	50.43	127.646	
11,800.00	6,884.74	370.00	370.00	87.22	259.00	1.99	-666.46	-5,144.37	6,438.39	6,385.68	52.71	122.145	
11,900.00	6,884.51	370.00	370.00	88.74	259.00	1.99	-666.46	-5,144.37	6,441.28	6,385.26	56.02	114.981	
12,000.00	6,884.28	370.00	370.00	90.27	259.00	1.99	-666.46	-5,144.37	6,445.72	6,385.85	59.88	107.647	
12,100.00	6,884.05	370.00	370.00	91.79	259.00	1.99	-666.46	-5,144.37	6,451.71	6,387.69	64.02	100.776	
12,200.00	6,883.82	370.00	370.00	93.32	259.00	1.99	-666.46	-5,144.37	6,459.24	6,390.93	68.31	94.554	
12,300.00	6,883.59	370.00	370.00	94.85	259.00	1.99	-666.46	-5,144.37	6,468.31	6,395.62	72.69	88.990	
12,400.00	6,883.36	370.00	370.00	96.38	259.00	1.99	-666.46	-5,144.37	6,478.91	6,401.81	77.10	84.034	
12,500.00	6,883.12	370.00	370.00	97.92	259.00	1.99	-666.46	-5,144.37	6,491.03	6,409.50	81.53	79.617	
12,600.00	6,882.89	370.00	370.00	99.46	259.00	1.99	-666.46	-5,144.37	6,504.67	6,418.71	85.96	75.674	
12,700.00	6,882.66	370.00	370.00	101.00	259.00	1.99	-666.46	-5,144.37	6,519.81	6,429.44	90.37	72.143	
12,800.00	6,882.43	370.00	370.00	102.54	259.00	1.99	-666.46	-5,144.37	6,536.45	6,441.68	94.77	68.972	
12,900.00	6,882.20	370.00	370.00	104.08	259.00	1.99	-666.46	-5,144.37	6,554.57	6,455.43	99.14	66.116	
13,000.00	6,881.97	370.00	370.00	105.63	259.00	1.99	-666.46	-5,144.37	6,574.16	6,470.69	103.47	63.535	
13,100.00	6,881.74	370.00	370.00	107.18	259.00	1.99	-666.46	-5,144.37	6,595.21	6,487.44	107.77	61.196	
13,200.00	6,881.50	370.00	370.00	108.73	259.00	1.99	-666.46	-5,144.37	6,617.70	6,505.68	112.03	59.072	
13,300.00	6,881.27	370.00	370.00	110.28	259.00	1.99	-666.46	-5,144.37	6,641.63	6,525.39	116.24	57.137	
13,400.00	6,881.04	370.00	370.00	111.83	259.00	1.99	-666.46	-5,144.37	6,666.97	6,546.56	120.40	55.372	
13,500.00	6,880.81	370.00	370.00	113.38	259.00	1.99	-666.46	-5,144.37	6,693.70	6,569.19	124.52	53.757	
13,600.00	6,880.58	370.00	370.00	114.94	259.00	1.99	-666.46	-5,144.37	6,721.82	6,593.24	128.58	52.278	
13,700.00	6,880.35	370.00	370.00	116.49	259.00	1.99	-666.46	-5,144.37	6,751.30	6,618.72	132.58	50.921	
13,800.00	6,880.12	370.00	370.00	118.05	259.00	1.99	-666.46	-5,144.37	6,782.13	6,645.60	136.53	49.674	
13,900.00	6,879.88	370.00	370.00	119.61	259.00	1.99	-666.46	-5,144.37	6,814.29	6,673.87	140.43	48.526	
14,000.00	6,879.65	370.00	370.00	121.17	259.00	1.99	-666.46	-5,144.37	6,847.76	6,703.50	144.26	47.469	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 79C - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		370-A026Ua_BLIND				Rule Assigned:						Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	6,879.42	370.00	370.00	122.73	259.00	1.99	-666.46	-5,144.37	6,882.51	6,734.49	148.03	46.494	
14,200.00	6,879.19	370.00	370.00	124.29	259.00	1.99	-666.46	-5,144.37	6,918.54	6,766.80	151.74	45.595	
14,300.00	6,878.96	370.00	370.00	125.86	259.00	1.99	-666.46	-5,144.37	6,955.82	6,800.43	155.39	44.765	
14,400.00	6,878.73	370.00	370.00	127.42	259.00	1.99	-666.46	-5,144.37	6,994.33	6,835.36	158.97	43.998	
14,500.00	6,878.50	370.00	370.00	128.99	259.00	1.99	-666.46	-5,144.37	7,034.05	6,871.56	162.49	43.289	
14,600.00	6,878.26	370.00	370.00	130.55	259.00	1.99	-666.46	-5,144.37	7,074.96	6,909.02	165.95	42.634	
14,700.00	6,878.03	370.00	370.00	132.12	259.00	1.99	-666.46	-5,144.37	7,117.04	6,947.71	169.34	42.029	
14,800.00	6,877.80	370.00	370.00	133.69	259.00	1.99	-666.46	-5,144.37	7,160.28	6,987.61	172.66	41.469	
14,900.00	6,877.57	370.00	370.00	135.26	259.00	1.99	-666.46	-5,144.37	7,204.63	7,028.71	175.93	40.952	
15,000.00	6,877.34	370.00	370.00	136.83	259.00	1.99	-666.46	-5,144.37	7,250.10	7,070.98	179.13	40.475	
15,100.00	6,877.11	370.00	370.00	138.40	259.00	1.99	-666.46	-5,144.37	7,296.66	7,114.40	182.26	40.034	
15,200.00	6,876.87	370.00	370.00	139.97	259.00	1.99	-666.46	-5,144.37	7,344.28	7,158.95	185.33	39.628	
15,300.00	6,876.64	370.00	370.00	141.54	259.00	1.99	-666.46	-5,144.37	7,392.95	7,204.61	188.34	39.254	
15,400.00	6,876.41	370.00	370.00	143.12	259.00	1.99	-666.46	-5,144.37	7,442.64	7,251.36	191.28	38.910	
15,500.00	6,876.18	370.00	370.00	144.69	259.00	1.99	-666.46	-5,144.37	7,493.34	7,299.18	194.16	38.594	
15,600.00	6,875.95	370.00	370.00	146.26	259.00	1.99	-666.46	-5,144.37	7,545.02	7,348.04	196.98	38.304	
15,700.00	6,875.72	370.00	370.00	147.84	259.00	1.99	-666.46	-5,144.37	7,597.67	7,397.93	199.73	38.039	
15,800.00	6,875.49	370.00	370.00	149.41	259.00	1.99	-666.46	-5,144.37	7,651.26	7,448.83	202.43	37.797	
15,900.00	6,875.25	370.00	370.00	150.99	259.00	1.99	-666.46	-5,144.37	7,705.78	7,500.71	205.07	37.577	
16,000.00	6,875.02	370.00	370.00	152.57	259.00	1.99	-666.46	-5,144.37	7,761.20	7,553.55	207.64	37.377	
16,100.00	6,874.79	370.00	370.00	154.14	259.00	1.99	-666.46	-5,144.37	7,817.51	7,607.34	210.16	37.197	
16,200.00	6,874.56	370.00	370.00	155.72	259.00	1.99	-666.46	-5,144.37	7,874.68	7,662.06	212.62	37.036	
16,300.00	6,874.33	370.00	370.00	157.30	259.00	1.99	-666.46	-5,144.37	7,932.71	7,717.68	215.03	36.891	
16,400.00	6,874.10	370.00	370.00	158.88	259.00	1.99	-666.46	-5,144.37	7,991.56	7,774.18	217.38	36.763	
16,500.00	6,873.87	370.00	370.00	160.46	259.00	1.99	-666.46	-5,144.37	8,051.23	7,831.56	219.67	36.651	
16,600.00	6,873.63	370.00	370.00	162.04	259.00	1.99	-666.46	-5,144.37	8,111.69	7,889.77	221.92	36.553	
16,700.00	6,873.40	370.00	370.00	163.62	259.00	1.99	-666.46	-5,144.37	8,172.93	7,948.82	224.10	36.469	
16,800.00	6,873.17	370.00	370.00	165.20	259.00	1.99	-666.46	-5,144.37	8,234.92	8,008.68	226.24	36.399	
16,900.00	6,872.94	370.00	370.00	166.78	259.00	1.99	-666.46	-5,144.37	8,297.66	8,069.33	228.33	36.341	
17,000.00	6,872.71	370.00	370.00	168.36	259.00	1.99	-666.46	-5,144.37	8,361.12	8,130.76	230.37	36.295	
17,100.00	6,872.48	370.00	370.00	169.95	259.00	1.99	-666.46	-5,144.37	8,425.30	8,192.94	232.35	36.261	
17,133.01	6,872.40	370.00	370.00	170.47	259.00	1.99	-666.46	-5,144.37	8,446.63	8,213.63	233.00	36.252	
17,200.00	6,872.25	370.00	370.00	171.53	259.00	1.99	-666.46	-5,144.37	8,490.16	8,255.87	234.30	36.237	
17,304.21	6,872.00	370.00	370.00	173.18	259.00	1.99	-666.46	-5,144.37	8,558.48	8,322.21	236.27	36.223	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 98 - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 170-A027Ua_INC-ONLY												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	83.56	39.94	353.64	359.39				
100.00	100.00	50.00	50.00	0.25	0.89	83.56	39.94	353.64	355.89	354.75	1.14	313.030	
200.00	200.00	150.00	150.00	0.61	2.66	83.56	39.94	353.64	355.89	352.62	3.27	108.936	
300.00	300.00	250.00	250.00	0.97	4.52	83.56	39.94	353.64	355.89	350.40	5.49	64.871	
400.00	400.00	350.04	350.04	1.33	6.40	83.54	40.05	353.64	355.90	348.17	7.73	46.052	
500.00	500.00	450.02	450.00	1.68	8.43	83.56	39.94	353.64	355.89	345.78	10.12	35.184	
600.00	600.00	550.02	550.00	2.04	10.76	83.56	39.94	353.64	355.89	343.09	12.80	27.807	
700.00	700.00	650.02	650.00	2.40	13.08	83.56	39.94	353.64	355.89	340.41	15.48	22.988	
800.00	800.00	750.16	750.13	2.76	15.41	83.41	40.88	353.64	356.00	337.83	18.17	19.594	
900.00	900.00	850.33	850.29	3.12	17.74	83.48	40.40	353.64	355.94	335.09	20.86	17.067	
1,000.00	1,000.00	950.16	950.00	3.48	20.08	83.56	39.94	353.64	355.89	332.33	23.56	15.105 CC	
1,100.00	1,099.98	1,050.35	1,050.17	3.82	22.48	-110.40	40.70	353.64	356.58	330.28	26.30	13.560	
1,200.00	1,199.84	1,150.06	1,149.84	4.15	24.86	-111.03	39.94	353.64	358.34	329.33	29.01	12.352 ES	
1,300.00	1,299.45	1,249.68	1,249.45	4.48	27.26	-112.25	39.94	353.64	361.57	329.83	31.74	11.393	
1,400.00	1,398.70	1,349.20	1,348.97	4.82	29.65	-114.00	40.48	353.64	366.47	332.01	34.47	10.633	
1,500.00	1,497.47	1,447.78	1,447.47	5.17	32.03	-115.97	39.94	353.64	373.04	335.84	37.20	10.029	
1,569.36	1,565.62	1,517.07	1,516.74	5.43	33.76	-117.64	40.09	353.64	378.96	339.78	39.18	9.673	
1,600.00	1,595.66	1,546.01	1,545.66	5.54	34.45	-118.39	39.94	353.64	381.81	341.83	39.98	9.550	
1,700.00	1,693.69	1,644.05	1,643.69	5.92	36.65	-120.89	39.94	353.64	391.72	349.18	42.54	9.207	
1,800.00	1,791.72	1,742.08	1,741.72	6.30	38.82	-123.27	39.94	353.64	402.36	357.27	45.09	8.923	
1,900.00	1,889.75	1,840.22	1,839.85	6.70	41.00	-125.71	41.33	353.64	414.20	366.55	47.64	8.694	
2,000.00	1,987.78	1,939.05	1,938.67	7.10	43.19	-127.82	41.05	353.64	426.05	375.84	50.21	8.485	
2,100.00	2,085.81	2,038.05	2,037.66	7.50	45.39	-129.77	40.35	353.64	438.27	385.48	52.79	8.302	
2,200.00	2,183.85	2,134.30	2,133.85	7.91	47.32	-131.59	39.94	353.64	451.09	395.99	55.10	8.187	
2,300.00	2,281.88	2,232.33	2,231.88	8.32	49.14	-133.40	39.94	353.64	464.57	407.28	57.29	8.109	
2,400.00	2,379.91	2,330.37	2,329.91	8.74	50.95	-135.10	39.94	353.64	478.49	419.00	59.49	8.044	
2,500.00	2,477.94	2,429.25	2,428.78	9.16	52.78	-136.81	40.93	353.64	493.36	431.66	61.70	7.997	
2,600.00	2,575.97	2,528.34	2,527.86	9.58	54.62	-138.30	40.47	353.64	507.79	443.88	63.91	7.945	
2,700.00	2,674.00	2,624.50	2,624.00	10.00	56.34	-139.65	39.94	353.64	522.50	456.50	66.00	7.916	
2,800.00	2,772.03	2,722.53	2,722.03	10.43	57.92	-141.00	39.94	353.64	537.82	469.85	67.97	7.913 SF	
2,900.00	2,870.07	2,820.56	2,820.07	10.86	59.51	-142.28	39.94	353.64	553.42	483.49	69.93	7.914	
3,000.00	2,968.10	2,918.78	2,918.29	11.28	61.10	-143.51	40.21	353.64	569.45	497.56	71.89	7.921	
3,100.00	3,066.13	3,017.14	3,016.65	11.71	62.69	-144.65	40.12	353.64	585.49	511.63	73.86	7.927	
3,200.00	3,164.16	3,115.54	3,115.05	12.14	64.28	-145.72	39.94	353.64	601.69	525.86	75.83	7.935	
3,300.00	3,262.19	3,212.69	3,212.19	12.58	65.89	-146.74	39.94	353.64	618.19	540.39	77.81	7.945	
3,400.00	3,360.22	3,310.72	3,310.22	13.01	67.51	-147.71	39.94	353.64	634.89	555.09	79.80	7.956	
3,500.00	3,458.25	3,408.87	3,408.37	13.44	69.13	-148.65	40.22	353.64	651.96	570.16	81.80	7.970	
3,600.00	3,556.29	3,507.31	3,506.81	13.88	70.76	-149.52	40.16	353.64	668.94	585.13	83.81	7.982	
3,700.00	3,654.32	3,605.78	3,605.28	14.31	72.39	-150.35	40.01	353.64	686.00	600.19	85.81	7.994	
3,800.00	3,752.35	3,702.85	3,702.35	14.75	74.02	-151.13	39.94	353.64	703.26	615.45	87.81	8.009	
3,900.00	3,850.38	3,800.88	3,800.38	15.18	75.66	-151.89	39.94	353.64	720.69	630.86	89.83	8.023	
4,000.00	3,948.41	3,898.97	3,898.47	15.62	77.31	-152.62	40.21	353.64	738.44	646.59	91.85	8.040	
4,100.00	4,046.44	3,997.51	3,997.00	16.05	78.97	-153.31	40.16	353.64	756.06	662.18	93.88	8.054	
4,200.00	4,144.48	4,096.08	4,095.57	16.49	80.62	-153.96	40.02	353.64	773.71	677.80	95.91	8.067	
4,300.00	4,242.51	4,193.01	4,192.51	16.93	82.26	-154.57	39.94	353.64	791.50	693.58	97.92	8.083	
4,400.00	4,340.54	4,291.05	4,290.54	17.37	83.93	-155.17	39.94	353.64	809.44	709.48	99.95	8.098	
4,500.00	4,438.57	4,389.12	4,388.61	17.81	85.59	-155.75	40.21	353.64	827.67	725.68	101.99	8.115	
4,600.00	4,536.60	4,487.75	4,487.24	18.25	87.26	-156.30	40.16	353.64	845.73	741.69	104.04	8.129	
4,700.00	4,634.63	4,586.41	4,585.90	18.68	88.94	-156.82	40.02	353.64	863.79	757.70	106.09	8.142	
4,800.00	4,732.66	4,683.18	4,682.66	19.12	90.59	-157.32	39.94	353.64	881.96	773.85	108.11	8.158	
4,900.00	4,830.70	4,781.21	4,780.70	19.56	92.27	-157.80	39.94	353.64	900.26	790.10	110.16	8.172	
5,000.00	4,928.73	4,879.24	4,878.73	20.00	93.95	-158.27	39.94	353.64	918.63	806.41	112.21	8.186	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 98 - OH - OH											Offset Site Error: 0.00 usft	
Survey Program: 170-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
5,100.00	5,026.76	4,977.62	4,977.11	20.44	95.63	-158.72	40.24	353.64	937.29	823.02	114.27	8.202
5,200.00	5,124.79	5,076.25	5,075.74	20.88	97.32	-159.15	40.16	353.64	955.70	839.36	116.34	8.215
5,300.00	5,222.82	5,174.91	5,174.40	21.32	99.01	-159.56	40.01	353.64	974.09	855.69	118.40	8.227
5,400.00	5,320.85	5,271.37	5,270.85	21.77	100.66	-159.95	39.94	353.64	992.60	872.17	120.43	8.242
5,500.00	5,418.88	5,369.59	5,369.07	22.21	102.35	-160.34	40.10	353.64	1,011.35	888.86	122.49	8.257
5,600.00	5,516.92	5,468.90	5,468.39	22.65	104.06	-160.71	40.00	353.64	1,029.92	905.35	124.58	8.267
5,700.00	5,614.95	5,565.47	5,564.95	23.09	105.76	-161.06	39.94	353.64	1,048.56	921.91	126.65	8.279
5,800.00	5,712.98	5,663.50	5,662.98	23.53	107.51	-161.40	39.94	353.64	1,067.29	938.52	128.77	8.288
5,900.00	5,811.01	5,761.72	5,761.19	23.97	109.26	-161.74	40.20	353.64	1,086.28	955.38	130.90	8.299
6,000.00	5,909.04	5,860.61	5,860.09	24.41	111.03	-162.06	40.13	353.64	1,105.03	971.98	133.04	8.306
6,100.00	6,007.07	5,959.54	5,959.02	24.85	112.79	-162.37	39.98	353.64	1,123.73	988.54	135.19	8.313
6,200.00	6,105.10	6,055.64	6,055.10	25.30	114.65	-162.66	39.94	353.64	1,142.56	1,005.15	137.41	8.315
6,300.00	6,203.14	6,153.67	6,153.14	25.74	116.57	-162.95	39.94	353.64	1,161.45	1,021.75	139.71	8.313
6,393.02	6,294.33	6,245.97	6,245.44	26.15	118.39	-163.23	40.38	353.64	1,179.43	1,037.56	141.87	8.313
6,400.00	6,301.17	6,252.96	6,252.42	26.18	118.52	-166.38	40.37	353.64	1,180.77	1,038.73	142.04	8.313
6,450.00	6,350.01	6,302.87	6,302.33	26.40	119.50	-173.90	40.28	353.64	1,191.29	1,048.09	143.21	8.319
6,500.00	6,398.37	6,352.29	6,351.76	26.63	120.47	-159.81	40.15	353.64	1,203.50	1,059.13	144.37	8.336
6,550.00	6,445.94	6,400.93	6,400.40	26.86	121.43	-150.11	39.97	353.64	1,217.33	1,071.83	145.51	8.366
6,600.00	6,492.42	6,442.99	6,442.42	27.08	122.30	-143.15	39.94	353.64	1,232.93	1,086.39	146.54	8.413
6,650.00	6,537.54	6,488.11	6,487.54	27.30	123.24	-137.97	39.94	353.64	1,250.18	1,102.52	147.66	8.467
6,700.00	6,581.01	6,531.58	6,531.01	27.52	124.15	-133.88	39.94	353.64	1,269.03	1,120.30	148.73	8.533
6,750.00	6,622.57	6,573.14	6,572.57	27.74	125.01	-130.49	39.94	353.64	1,289.48	1,139.73	149.75	8.611
6,800.00	6,661.96	6,612.52	6,611.96	27.96	125.84	-127.53	39.94	353.64	1,311.54	1,160.82	150.72	8.702
6,850.00	6,698.93	6,649.50	6,648.93	28.17	126.61	-124.81	39.94	353.64	1,335.18	1,183.55	151.63	8.805
6,900.00	6,733.26	6,685.22	6,684.64	28.39	127.35	-122.21	40.98	353.64	1,361.24	1,208.73	152.51	8.925
6,950.00	6,764.73	6,718.01	6,717.43	28.60	128.04	-119.65	40.92	353.64	1,387.93	1,234.61	153.32	9.053
7,000.00	6,793.16	6,747.63	6,747.05	28.82	128.65	-117.01	40.83	353.64	1,416.09	1,262.05	154.05	9.193
7,050.00	6,818.37	6,773.91	6,773.32	29.04	129.20	-114.22	40.72	353.64	1,445.66	1,290.97	154.69	9.345
7,100.00	6,840.20	6,796.66	6,796.07	29.27	129.68	-111.21	40.61	353.64	1,476.55	1,321.29	155.25	9.511
7,150.00	6,858.51	6,815.75	6,815.17	29.50	130.08	-107.95	40.51	353.64	1,508.64	1,352.92	155.72	9.688
7,200.00	6,873.20	6,831.07	6,830.48	29.74	130.40	-104.39	40.41	353.64	1,541.81	1,385.71	156.10	9.877
7,250.00	6,884.18	6,842.50	6,841.91	30.00	130.63	-100.55	40.33	353.64	1,575.90	1,419.51	156.39	10.077
7,300.00	6,891.37	6,849.99	6,849.40	30.26	130.79	-96.42	40.28	353.64	1,610.72	1,454.15	156.58	10.287
7,350.00	6,894.73	6,853.48	6,852.89	30.54	130.86	-92.07	40.26	353.64	1,646.08	1,489.41	156.67	10.507
7,370.19	6,895.00	6,853.76	6,853.17	30.65	130.87	-90.27	40.25	353.64	1,660.45	1,503.77	156.68	10.598
7,400.00	6,894.93	6,853.67	6,853.08	30.83	130.87	-90.26	40.26	353.64	1,681.84	1,525.16	156.68	10.734
7,500.00	6,894.70	6,853.40	6,852.81	31.45	130.86	-90.25	40.26	353.64	1,755.38	1,598.67	156.71	11.202
7,600.00	6,894.47	6,853.13	6,852.54	32.15	130.86	-90.24	40.26	353.64	1,831.43	1,674.70	156.73	11.685
7,700.00	6,894.24	6,852.85	6,852.26	32.92	130.85	-90.22	40.26	353.64	1,909.69	1,752.93	156.76	12.182
7,800.00	6,894.00	6,852.58	6,851.99	33.75	130.84	-90.21	40.26	353.64	1,989.90	1,833.10	156.80	12.691
7,900.00	6,893.77	6,852.31	6,851.72	34.63	130.84	-90.20	40.27	353.64	2,071.83	1,914.99	156.83	13.211
8,000.00	6,893.54	6,852.03	6,851.44	35.57	130.83	-90.18	40.27	353.64	2,155.28	1,998.41	156.87	13.740
8,100.00	6,893.31	6,851.76	6,851.17	36.55	130.83	-90.17	40.27	353.64	2,240.09	2,083.19	156.90	14.277
8,200.00	6,893.08	6,851.49	6,850.90	37.58	130.82	-90.16	40.27	353.64	2,326.11	2,169.17	156.94	14.822
8,300.00	6,892.85	6,851.21	6,850.63	38.65	130.82	-90.14	40.27	353.64	2,413.21	2,256.23	156.98	15.373
8,400.00	6,892.62	6,850.94	6,850.35	39.76	130.81	-90.13	40.28	353.64	2,501.27	2,344.25	157.02	15.930
8,500.00	6,892.38	6,850.67	6,850.08	40.90	130.80	-90.12	40.28	353.64	2,590.19	2,433.14	157.05	16.492
8,600.00	6,892.15	6,850.40	6,849.81	42.07	130.80	-90.10	40.28	353.64	2,679.90	2,522.81	157.09	17.059
8,700.00	6,891.92	6,850.12	6,849.53	43.27	130.79	-90.09	40.28	353.64	2,770.32	2,613.19	157.13	17.631
8,800.00	6,891.69	6,849.85	6,849.26	44.50	130.79	-90.07	40.28	353.64	2,861.37	2,704.20	157.17	18.206
8,900.00	6,891.46	6,849.58	6,848.99	45.75	130.78	-90.06	40.28	353.64	2,953.00	2,795.79	157.20	18.784
9,000.00	6,891.23	6,849.31	6,848.72	47.02	130.78	-90.05	40.29	353.64	3,045.16	2,887.91	157.24	19.366

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - (O) Rosa Unit 98 - OH - OH													Offset Site Error:	0.00 usft				
Survey Program:		170-A027Ua_INC-ONLY <th colspan="2">Offset</th> <th colspan="2">Semi Major Axis</th> <th colspan="2">Offset Wellbore Centre</th> <th colspan="2">Rule Assigned:</th> <th>Distance</th> <th>Warning</th> <td>Offset Well Error:</td> <td>0.00 usft</td>					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Distance	Warning	Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor						
14,300.00	6,878.96	6,835.00	6,834.41	125.86	130.48	89.34	40.39	353.64	8,196.94	8,037.22	159.71	51.323						
14,400.00	6,878.73	6,834.73	6,834.14	127.42	130.47	89.33	40.39	353.64	8,295.93	8,136.16	159.77	51.923						
14,500.00	6,878.50	6,834.46	6,833.87	128.99	130.47	89.32	40.39	353.64	8,394.96	8,235.12	159.84	52.522						
14,600.00	6,878.26	6,834.19	6,833.60	130.55	130.46	89.30	40.39	353.64	8,494.00	8,334.10	159.90	53.121						
14,700.00	6,878.03	6,833.92	6,833.34	132.12	130.45	89.29	40.39	353.64	8,593.07	8,433.11	159.96	53.720						
14,800.00	6,877.80	6,833.66	6,833.07	133.69	130.45	89.28	40.39	353.64	8,692.16	8,532.13	160.02	54.318						
14,900.00	6,877.57	6,833.39	6,832.80	135.26	130.44	89.26	40.40	353.64	8,791.27	8,631.18	160.09	54.915						
15,000.00	6,877.34	6,833.12	6,832.53	136.83	130.44	89.25	40.40	353.64	8,890.39	8,730.24	160.15	55.512						
15,100.00	6,877.11	6,832.86	6,832.27	138.40	130.43	89.24	40.40	353.64	8,989.54	8,829.33	160.22	56.109						
15,200.00	6,876.87	6,832.59	6,832.00	139.97	130.43	89.23	40.40	353.64	9,088.71	8,928.43	160.28	56.704						
15,300.00	6,876.64	6,832.32	6,831.73	141.54	130.42	89.21	40.40	353.64	9,187.90	9,027.55	160.35	57.299						
15,400.00	6,876.41	6,832.05	6,831.47	143.12	130.42	89.20	40.41	353.64	9,287.10	9,126.68	160.42	57.894						
15,500.00	6,876.18	6,831.79	6,831.20	144.69	130.41	89.19	40.41	353.64	9,386.32	9,225.83	160.48	58.488						
15,600.00	6,875.95	6,831.52	6,830.93	146.26	130.40	89.17	40.41	353.64	9,485.55	9,325.00	160.55	59.081						
15,700.00	6,875.72	6,831.25	6,830.67	147.84	130.40	89.16	40.41	353.64	9,584.80	9,424.19	160.62	59.674						
15,800.00	6,875.49	6,830.99	6,830.40	149.41	130.39	89.15	40.41	353.64	9,684.07	9,523.38	160.69	60.266						
15,900.00	6,875.25	6,830.72	6,830.13	150.99	130.39	89.13	40.41	353.64	9,783.35	9,622.60	160.76	60.858						
16,000.00	6,875.02	6,830.46	6,829.87	152.57	130.38	89.12	40.42	353.64	9,882.65	9,721.82	160.83	61.449						
16,100.00	6,874.79	6,830.19	6,829.60	154.14	130.38	89.11	40.42	353.64	9,981.96	9,821.06	160.90	62.039						
16,200.00	6,874.56	6,829.92	6,829.33	155.72	130.37	89.09	40.42	353.64	10,081.28	9,920.32	160.97	62.629						
16,300.00	6,874.33	6,829.66	6,829.07	157.30	130.37	89.08	40.42	353.64	10,180.62	10,019.58	161.04	63.218						
16,400.00	6,874.10	6,829.39	6,828.80	158.88	130.36	89.07	40.42	353.64	10,279.97	10,118.86	161.11	63.806						
16,500.00	6,873.87	6,829.12	6,828.54	160.46	130.35	89.06	40.42	353.64	10,379.33	10,218.15	161.19	64.394						
16,600.00	6,873.63	6,828.86	6,828.27	162.04	130.35	89.04	40.43	353.64	10,478.71	10,317.45	161.26	64.981						
16,700.00	6,873.40	6,828.59	6,828.01	163.62	130.34	89.03	40.43	353.64	10,578.10	10,416.76	161.33	65.567						
16,800.00	6,873.17	6,828.33	6,827.74	165.20	130.34	89.02	40.43	353.64	10,677.49	10,516.09	161.41	66.153						
16,900.00	6,872.94	6,828.06	6,827.47	166.78	130.33	89.00	40.43	353.64	10,776.90	10,615.42	161.48	66.738						
17,000.00	6,872.71	6,827.80	6,827.21	168.36	130.33	88.99	40.43	353.64	10,876.32	10,714.77	161.56	67.322						
17,100.00	6,872.48	6,827.53	6,826.94	169.95	130.32	88.98	40.43	353.64	10,975.75	10,814.12	161.63	67.906						
17,133.01	6,872.40	6,827.44	6,826.86	170.47	130.32	88.97	40.43	353.64	11,008.58	10,846.92	161.66	68.098						
17,200.00	6,872.25	6,827.27	6,826.68	171.53	130.32	88.96	40.44	353.64	11,075.19	10,913.49	161.71	68.489						
17,304.21	6,872.00	6,826.99	6,826.40	173.18	130.31	88.95	40.44	353.64	11,178.83	11,017.04	161.79	69.095						

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - Rosa Unit 612H - OH - Plan #1												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	78.95	2.91	14.92	15.20				
100.00	100.00	100.00	100.00	0.25	0.25	78.95	2.91	14.92	15.20	14.70	0.50	30.282	
200.00	200.00	200.00	200.00	0.61	0.61	78.95	2.91	14.92	15.20	13.98	1.22	12.469	
300.00	300.00	300.00	300.00	0.97	0.97	78.95	2.91	14.92	15.20	13.26	1.94	7.851	
400.00	400.00	400.00	400.00	1.33	1.33	78.95	2.91	14.92	15.20	12.54	2.65	5.729	
500.00	500.00	500.00	500.00	1.68	1.68	78.95	2.91	14.92	15.20	11.83	3.37	4.510	
600.00	600.00	600.00	600.00	2.04	2.04	78.95	2.91	14.92	15.20	11.11	4.09	3.719	
700.00	700.00	700.00	700.00	2.40	2.40	78.95	2.91	14.92	15.20	10.39	4.80	3.164	
800.00	800.00	800.00	800.00	2.76	2.76	78.95	2.91	14.92	15.20	9.68	5.52	2.753	
900.00	900.00	900.00	900.00	3.12	3.12	78.95	2.91	14.92	15.20	8.96	6.24	2.436	
1,000.00	1,000.00	1,000.00	1,000.00	3.48	3.48	78.95	2.91	14.92	15.20	8.24	6.95	2.185	
1,021.60	1,021.60	1,021.65	1,021.65	3.55	3.55	-115.19	2.98	14.87	15.20	8.09	7.11	2.139 CC	
1,100.00	1,099.98	1,100.13	1,100.11	3.82	3.83	-126.41	4.31	13.87	15.49	7.84	7.65	2.025 ES, SF	
1,200.00	1,199.84	1,199.66	1,199.50	4.15	4.19	-154.43	8.49	10.76	19.67	11.33	8.34	2.360	
1,300.00	1,299.45	1,298.65	1,298.24	4.48	4.54	-174.13	14.02	6.62	31.06	22.04	9.02	3.442	
1,400.00	1,398.70	1,397.11	1,396.47	4.82	4.90	177.37	19.53	2.51	47.55	37.84	9.71	4.895	
1,500.00	1,497.47	1,494.94	1,494.05	5.17	5.25	173.59	25.00	-1.57	67.94	57.54	10.41	6.529	
1,569.36	1,565.62	1,562.35	1,561.31	5.43	5.50	172.24	28.77	-4.38	84.16	73.28	10.89	7.730	
1,600.00	1,595.66	1,592.04	1,590.93	5.54	5.60	171.84	30.43	-5.62	91.70	80.59	11.10	8.260	
1,700.00	1,693.69	1,688.96	1,687.60	5.92	5.95	170.91	35.85	-9.67	116.30	104.51	11.79	9.863	
1,800.00	1,791.72	1,785.87	1,784.28	6.30	6.31	170.30	41.27	-13.71	140.92	128.43	12.49	11.286	
1,900.00	1,889.75	1,882.78	1,880.96	6.70	6.66	169.87	46.69	-17.76	165.55	152.36	13.18	12.557	
2,000.00	1,987.78	1,979.70	1,977.63	7.10	7.01	169.55	52.11	-21.81	190.19	176.30	13.89	13.696	
2,100.00	2,085.81	2,076.61	2,074.31	7.50	7.37	169.31	57.53	-25.85	214.83	200.24	14.59	14.723	
2,200.00	2,183.85	2,173.52	2,170.98	7.91	7.72	169.11	62.95	-29.90	239.47	224.17	15.30	15.653	
2,300.00	2,281.88	2,270.43	2,267.66	8.32	8.08	168.95	68.37	-33.94	264.12	248.11	16.01	16.498	
2,400.00	2,379.91	2,367.35	2,364.34	8.74	8.43	168.82	73.79	-37.99	288.77	272.05	16.72	17.270	
2,500.00	2,477.94	2,464.26	2,461.01	9.16	8.79	168.71	79.21	-42.03	313.42	295.98	17.43	17.977	
2,600.00	2,575.97	2,561.17	2,557.69	9.58	9.15	168.62	84.63	-46.08	338.07	319.92	18.15	18.627	
2,700.00	2,674.00	2,658.08	2,654.37	10.00	9.50	168.54	90.05	-50.12	362.72	343.85	18.87	19.226	
2,800.00	2,772.03	2,755.00	2,751.04	10.43	9.86	168.46	95.47	-54.17	387.37	367.79	19.58	19.780	
2,900.00	2,870.07	2,851.91	2,847.72	10.86	10.21	168.40	100.89	-58.21	412.02	391.72	20.30	20.295	
3,000.00	2,968.10	2,948.82	2,944.40	11.28	10.57	168.35	106.31	-62.26	436.68	415.65	21.02	20.773	
3,100.00	3,066.13	3,045.74	3,041.07	11.71	10.93	168.30	111.72	-66.30	461.33	439.59	21.74	21.218	
3,200.00	3,164.16	3,142.65	3,137.75	12.14	11.28	168.25	117.14	-70.35	485.98	463.52	22.46	21.634	
3,300.00	3,262.19	3,239.56	3,234.43	12.58	11.64	168.21	122.56	-74.39	510.64	487.45	23.19	22.024	
3,400.00	3,360.22	3,336.47	3,331.10	13.01	12.00	168.18	127.98	-78.44	535.29	511.38	23.91	22.389	
3,500.00	3,458.25	3,433.39	3,427.78	13.44	12.35	168.14	133.40	-82.49	559.94	535.31	24.63	22.733	
3,600.00	3,556.29	3,530.30	3,524.46	13.88	12.71	168.11	138.82	-86.53	584.60	559.24	25.36	23.056	
3,700.00	3,654.32	3,627.21	3,621.13	14.31	13.07	168.08	144.24	-90.58	609.25	583.17	26.08	23.361	
3,800.00	3,752.35	3,724.12	3,717.81	14.75	13.43	168.06	149.66	-94.62	633.91	607.10	26.80	23.649	
3,900.00	3,850.38	3,821.04	3,814.49	15.18	13.78	168.03	155.08	-98.67	658.56	631.03	27.53	23.922	
4,000.00	3,948.41	3,917.95	3,911.16	15.62	14.14	168.01	160.50	-102.71	683.22	654.96	28.26	24.180	
4,100.00	4,046.44	4,014.86	4,007.84	16.05	14.50	167.99	165.92	-106.76	707.87	678.89	28.98	24.425	
4,200.00	4,144.48	4,111.78	4,104.52	16.49	14.86	167.97	171.34	-110.80	732.52	702.82	29.71	24.658	
4,300.00	4,242.51	4,208.69	4,201.19	16.93	15.21	167.95	176.76	-114.85	757.18	726.75	30.43	24.879	
4,400.00	4,340.54	4,305.60	4,297.87	17.37	15.57	167.94	182.18	-118.89	781.83	750.67	31.16	25.090	
4,500.00	4,438.57	4,402.51	4,394.54	17.81	15.93	167.92	187.60	-122.94	806.49	774.60	31.89	25.291	
4,600.00	4,536.60	4,499.43	4,491.22	18.25	16.29	167.91	193.02	-126.98	831.14	798.53	32.62	25.483	
4,700.00	4,634.63	4,596.34	4,587.90	18.68	16.64	167.89	198.44	-131.03	855.80	822.46	33.34	25.666	
4,800.00	4,732.66	4,693.25	4,684.57	19.12	17.00	167.88	203.86	-135.08	880.45	846.38	34.07	25.841	
4,900.00	4,830.70	4,790.17	4,781.25	19.56	17.36	167.87	209.28	-139.12	905.11	870.31	34.80	26.008	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 10 - Rosa Unit 612H - OH - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM							Rule Assigned:						Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore 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	6,879.19	14,101.53	6,879.24	124.29	183.50	90.00	546.38	-7,663.57	1,327.80	1,020.45	307.35	4.320	
14,300.00	6,878.96	14,201.52	6,879.01	125.86	185.92	90.00	549.32	-7,763.51	1,326.47	1,015.13	311.34	4.261	
14,400.00	6,878.73	14,301.51	6,878.78	127.42	188.34	90.00	552.26	-7,863.46	1,325.14	1,009.81	315.33	4.202	
14,500.00	6,878.50	14,401.50	6,878.55	128.99	190.76	90.00	555.20	-7,963.41	1,323.81	1,004.49	319.32	4.146	
14,600.00	6,878.26	14,501.49	6,878.32	130.55	193.18	90.00	558.13	-8,063.36	1,322.48	999.16	323.32	4.090	
14,700.00	6,878.03	14,601.48	6,878.09	132.12	195.60	90.00	561.07	-8,163.30	1,321.15	993.84	327.31	4.036	
14,800.00	6,877.80	14,701.47	6,877.86	133.69	198.02	90.00	564.01	-8,263.25	1,319.82	988.51	331.31	3.984	
14,900.00	6,877.57	14,801.46	6,877.63	135.26	200.44	90.00	566.94	-8,363.20	1,318.49	983.18	335.30	3.932	
15,000.00	6,877.34	14,901.46	6,877.40	136.83	202.87	90.00	569.88	-8,463.15	1,317.16	977.85	339.30	3.882	
15,100.00	6,877.11	15,001.45	6,877.17	138.40	205.29	90.00	572.82	-8,563.10	1,315.83	972.52	343.30	3.833	
15,200.00	6,876.87	15,101.44	6,876.93	139.97	207.71	90.00	575.76	-8,663.04	1,314.50	967.19	347.30	3.785	
15,300.00	6,876.64	15,201.43	6,876.70	141.54	210.14	90.00	578.69	-8,762.99	1,313.17	961.86	351.31	3.738	
15,400.00	6,876.41	15,301.42	6,876.47	143.12	212.56	90.00	581.63	-8,862.94	1,311.84	956.53	355.31	3.692	
15,500.00	6,876.18	15,401.41	6,876.24	144.69	214.99	90.00	584.57	-8,962.89	1,310.51	951.20	359.31	3.647	
15,600.00	6,875.95	15,501.40	6,876.01	146.26	217.41	90.00	587.51	-9,062.83	1,309.18	945.86	363.32	3.603	
15,700.00	6,875.72	15,601.39	6,875.78	147.84	219.84	90.00	590.44	-9,162.78	1,307.85	940.53	367.32	3.560	
15,800.00	6,875.49	15,701.38	6,875.55	149.41	222.26	90.00	593.38	-9,262.73	1,306.52	935.19	371.33	3.518	
15,900.00	6,875.25	15,801.38	6,875.32	150.99	224.69	90.00	596.32	-9,362.68	1,305.19	929.85	375.34	3.477	
16,000.00	6,875.02	15,901.37	6,875.09	152.57	227.12	90.00	599.25	-9,462.63	1,303.86	924.51	379.35	3.437	
16,100.00	6,874.79	16,001.36	6,874.86	154.14	229.54	90.00	602.19	-9,562.57	1,302.53	919.17	383.36	3.398	
16,200.00	6,874.56	16,101.35	6,874.63	155.72	231.97	90.00	605.13	-9,662.52	1,301.20	913.83	387.37	3.359	
16,300.00	6,874.33	16,201.34	6,874.40	157.30	234.40	90.00	608.07	-9,762.47	1,299.87	908.49	391.38	3.321	
16,400.00	6,874.10	16,301.33	6,874.17	158.88	236.83	90.00	611.00	-9,862.42	1,298.54	903.15	395.39	3.284	
16,500.00	6,873.87	16,401.32	6,873.94	160.46	239.25	90.00	613.94	-9,962.36	1,297.21	897.81	399.40	3.248	
16,600.00	6,873.63	16,501.31	6,873.70	162.04	241.68	90.00	616.88	-10,062.31	1,295.88	892.47	403.41	3.212	
16,700.00	6,873.40	16,601.31	6,873.47	163.62	244.11	90.00	619.82	-10,162.26	1,294.55	887.12	407.43	3.177	
16,800.00	6,873.17	16,701.30	6,873.24	165.20	246.54	90.00	622.75	-10,262.21	1,293.22	881.78	411.44	3.143	
16,900.00	6,872.94	16,801.29	6,873.01	166.78	248.97	90.00	625.69	-10,362.16	1,291.89	876.44	415.46	3.110	
17,000.00	6,872.71	16,901.28	6,872.78	168.36	251.40	90.01	628.63	-10,462.10	1,290.56	871.09	419.47	3.077	
17,100.00	6,872.48	17,001.27	6,872.55	169.95	253.83	90.01	631.56	-10,562.05	1,289.23	865.74	423.49	3.044	
17,133.01	6,872.40	17,034.28	6,872.47	170.47	254.63	90.01	632.53	-10,595.04	1,288.79	863.98	424.81	3.034	
17,200.00	6,872.25	17,101.26	6,872.32	171.53	256.26	90.01	634.50	-10,662.00	1,287.90	860.40	427.50	3.013	
17,304.21	6,872.00	17,205.46	6,872.08	173.18	258.79	90.01	637.56	-10,766.15	1,286.52	854.83	431.69	2.980	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6287+30 @ 6317.00usft (H&P 530)

Offset Depths are relative to Offset Datum

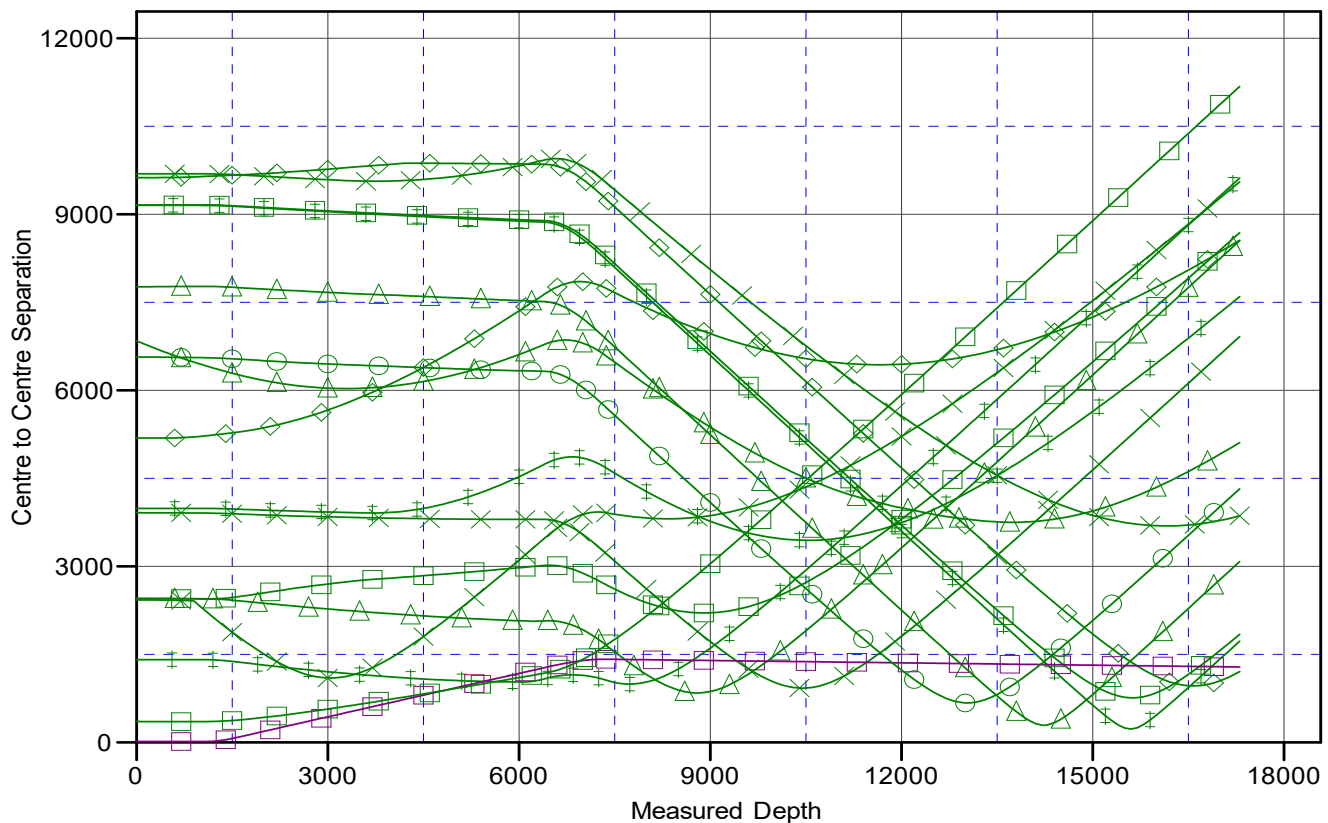
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 614H

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.24°

Ladder Plot



LEGEND

(O) Rosa Unit 100, OH, OH V0	(O) Rosa Unit 100C, OH, OH V0	(O) Rosa Unit 98, OH, OH V0
(O) Rosa Unit 170, OH, OH V0	(O) Rosa Unit 79, OH, OH V0	(O) Rosa Unit 100E, OH, OH V0
(O) Rosa Unit 201A, OH, OH V0	(O) Rosa Unit 260A, OH, OH V0	(O) Rosa Unit 79C, OH, OH V0
(O) Rosa Unit 18B, OH, OH V0	(O) Rosa Unit 100B, OH, OH V0	(O) Rosa Unit 260, OH, OH V0
(O) Rosa Unit 18A, OH, OH V0	(O) Rosa Unit 140, OH, OH V0	
(O) Rosa Unit 18C, OH, OH V0	Rosa Unit 612H, OH, Plan#1 V0	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 614H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6287+30 @ 6317.00usft (H&P 530)
Reference Site:	Rosa Unit 10	MD Reference:	6287+30 @ 6317.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 614H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6287+30 @ 6317.00usft (H&P 530)

Offset Depths are relative to Offset Datum

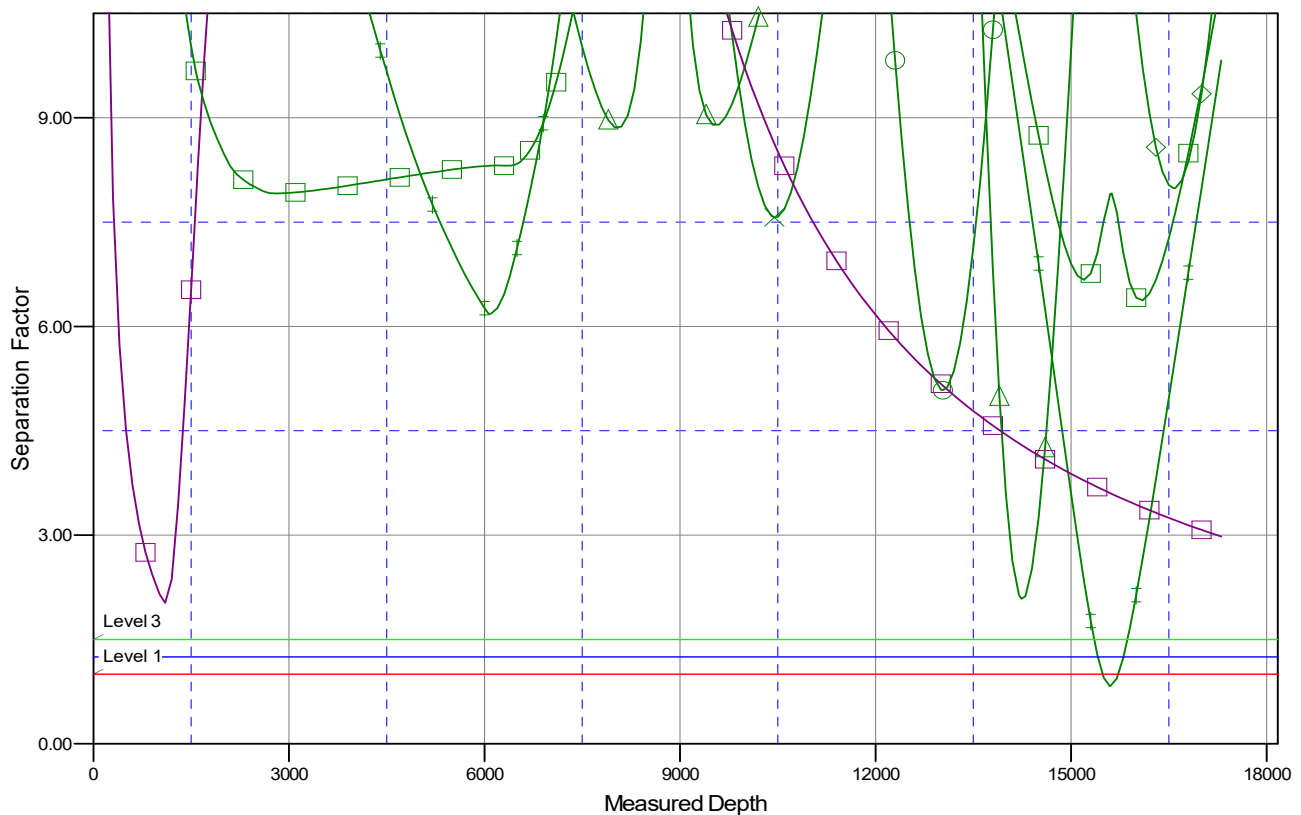
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 614H

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.24°

Separation Factor Plot



LEGEND

(C) Rosa Unit 100, OH, OH V0	(C) Rosa Unit 100C, OH, OH V0	(C) Rosa Unit 98, OH, OH V0
(C) Rosa Unit 170, OH, OH V0	(C) Rosa Unit 79, OH, OH V0	(C) Rosa Unit 100E, OH, OH V0
(C) Rosa Unit 201A, OH, OH V0	(C) Rosa Unit 260A, OH, OH V0	(C) Rosa Unit 79C, OH, OH V0
(C) Rosa Unit 18B, OH, OH V0	(C) Rosa Unit 100B, OH, OH V0	(C) Rosa Unit 260, OH, OH V0
(C) Rosa Unit 18A, OH, OH V0	(C) Rosa Unit 140, OH, OH V0	
(C) Rosa Unit 18C, OH, OH V0	Rosa Unit 612H, OH, Plan#1 V0	

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

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 270016

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 270016
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	If cement does not circulate to surface on the surface casing, any intermediate string, then a CBL is required to verify where the cement top is behind casing and if remedial work is required.	10/11/2023