

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.
NMSF078768
6. If Indian, Allottee or Tribe Name**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

LOGOS OPERATING, LLC

3a. Address 2010 AFTON PLACE
FARMINGTON, NM 874013b. Phone No. (include area code)
(505) 278-8720

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SEC 36 T31N R05W NWNW (D) 562 FNL 466 FWL

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

NMNM78407E

8. Well Name and No.

ROSA UNIT 834H

9. API Well No.

30-039-31421

10. Field and Pool or Exploratory Area

BASIN MANCOS

11. 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 surface location from 617' FNL & 440' FWL to new **surface location 562' FNL & 466' FWL**Original TD @ 17,130' MD 7,130' TVD to new **TD @ 17,155' MD 7,151' TVD**

Geology tops have been updated per changes.

Original KOP @ 6,566' MD 6,465' TVD to new **KOP @ 6,588' MD 6,476' TVD**Original Landing point @ 7,611' MD 7,136' TVD to new **Landing point @ 7,635' MD 7,149' TVD**Original 9.625" Intermediate casing @ 6,500' MD to new **Intermediate casing @ 6,565' MD D**Original 5.5" Production casing @ 17,130' MD to new **Production 5.5" casing @ 17,155' MD**

Original 9.625" and 5.5" production cementing bbls and sacks have been update per casing depth change.

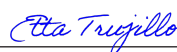
Attached: New C102, Operation and Directional Drill plans.

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

Etta Trujillo

Title Regulatory Specialist

Signature



Date 9/07/2023

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 any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 36 / NWNW /	County or Parish/State:
Well Number: 834H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF78768	Unit or CA Name: ROSA UNIT	Unit or CA Number: NMNM78407E
US Well Number: 3003931421	Well Status: Approved Application for Permit to Drill	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2750135

Type of Submission: Notice of Intent

Type of Action: Drilling Operations

Date Sundry Submitted: 09/07/2023

Time Sundry Submitted: 03:00

Date proposed operation will begin: 09/07/2023

Procedure Description: LOGOS Operating request a change in plans for the following: Original surface location from 617' FNL & 440' FWL to new surface location 562' FNL & 466' FWL Original TD @ 17,130' MD 7,130' TVD to new TD @ 17,155' MD 7,151' TVD Geology tops have been updated per changes. Original KOP @ 6,566' MD 6,465' TVD to new KOP @ 6,588' MD 6,476' TVD Original Landing point @ 7,611' MD 7,136' TVD to new Landing point @ 7,635' MD 7,149' TVD Original 9.625" Intermediate casing @ 6,500' MD to new Intermediate casing @ 6,565' MDVD Original 5.5" Production casing @ 17,130' MD to new Production 5.5" casing @ 17,155' MD Original 9.625" and 5.5" production cementing bbls and sacks have been update per casing depth change. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_5_Rosa_Unit_834H_Plan_3_Change_in_Plans_20230907_20230907150007.pdf

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 36 /
NWNW /

County or Parish/State:

Well Number: 834H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMSF78768

Unit or CA Name: ROSA UNIT

Unit or CA Number:
NMNM78407E

US Well Number: 3003931421

Well Status: Approved Application for
Permit to DrillOperator: LOGOS OPERATING
LLC**Operator**

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: ETTA TRUJILLO

Signed on: SEP 07, 2023 03:00 PM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: Farmington

State: NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 09/08/2023

Signature: Kenneth Rennick

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

☒ AMENDED REPORT

17 OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Etta Trujillo Date 9/7/2023
Printed Name Etta Trujillo
E-mail Address etrujillo@logosresourcesllc.com

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-039-31421		2 Pool Code 97232		3 Pool Name BASIN MANCOS	
4 Property Code 320608		5 Property Name ROSA UNIT			6 Well Number 834H
7 OGRID No. 289408		8 Operator Name LOGOS OPERATING, LLC			9 Elevation 6563'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	36	31N	5W		562	NORTH	466	WEST	RIO ARriba

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	31	31N	4W		1881	NORTH	162	EAST	RIO ARriba

12 Dedicated Acres 627.31	N/2 - Section 36, T31N, R5W N/2 - Section 31, T31N, R4W			13 Joint or Infill	14 Consolidation Code	15 Order No. R-13457
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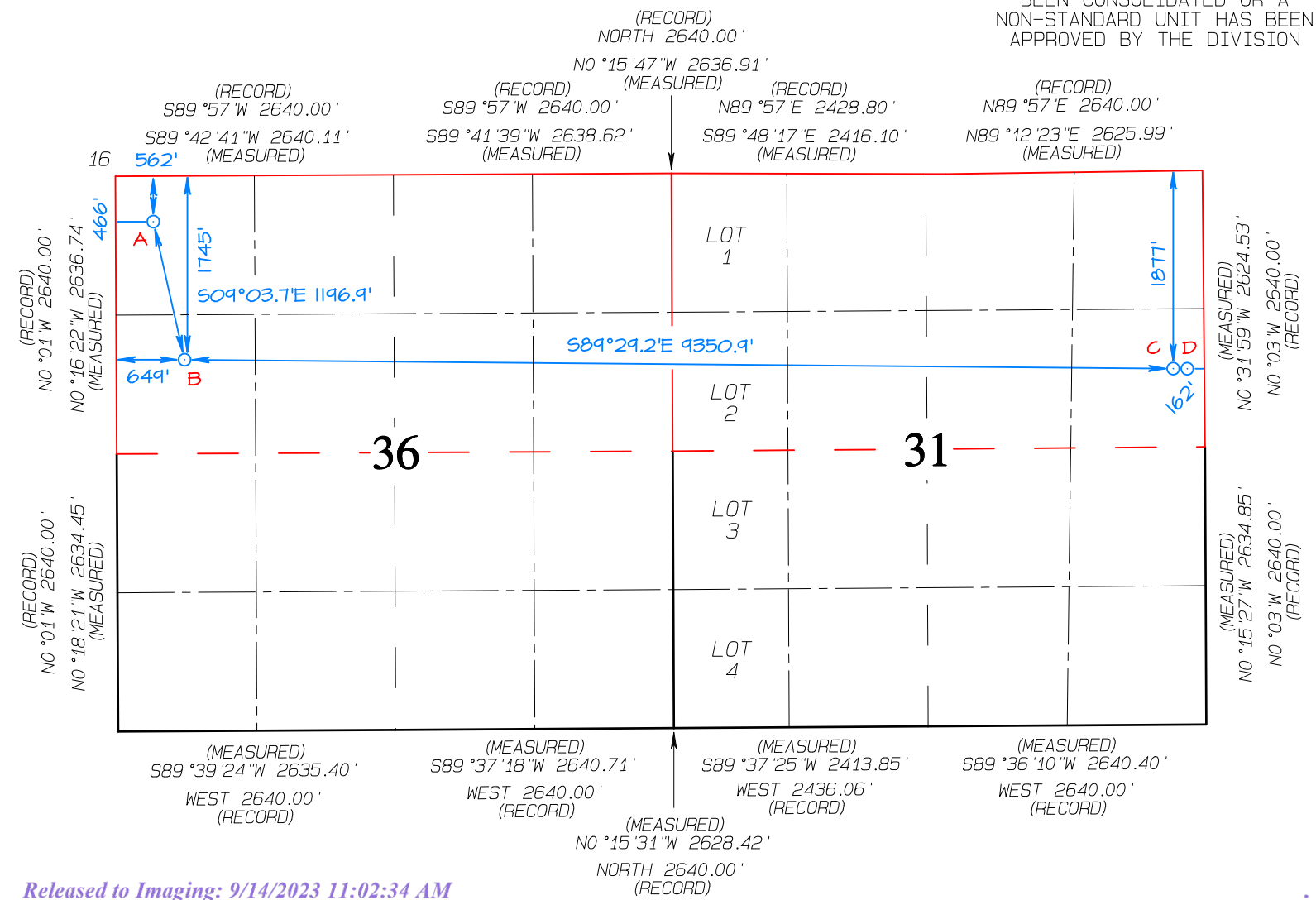
SURFACE LOCATION (A) 562' FNL 466' FWL SECTION 36, T31N, R5W LAT 36.861817°N LONG -107.320380°W DATUM: NAD1927 LAT 36.861823°N LONG -107.320981°W DATUM: NAD1983	FIRST TAKE POINT (B) 1745' FNL 649' FWL SECTION 36, T31N, R5W LAT 36.858567°N LONG -107.319757°W DATUM: NAD1927 LAT 36.858574°N LONG -107.320358°W DATUM: NAD1983	FIRST PERFORATION (C) 1877' FNL 330' FEL SECTION 31, T31N, R4W LAT 36.858195°N LONG -107.287799°W DATUM: NAD1927 LAT 36.858202°N LONG -107.288398°W DATUM: NAD1983	LAST TAKE POINT (D) 1881' FNL 162' FEL SECTION 31, T31N, R4W LAT 36.858188°N LONG -107.287223°W DATUM: NAD1927 LAT 36.858195°N LONG -107.287823°W DATUM: NAD1983
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18 SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
Date Revised: AUGUST 25, 2023
Date of Survey: APRIL 20, 2016

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
Certificate Number 15269

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION





LOGOS Operating, LLC Operations Plan

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

Date:	September 7, 2023	Pool:	Basin Mancos
Well Name:	Rosa Unit 834H	GL Elevation:	6,563'
Surface Location:	Sec 36, T31N, R5W 562 FNL, 466 FWL (36.861823° N, 107.320981° W – NAD83)	Measured Depth:	17,156' (RKB – 30')
Bottom Hole Location:	Sec 31, T31N, R4W 1881 FNL, 162 FEL (36.858195° N, 107.287823° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078768, CA Serial #NMNM78407E

I. GEOLOGY

A. Formation Tops (Based on 30'KB Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,787'	2,750'	*POINT LOOKOUT	5,935'	5,836'
KIRTLAND	2,913'	2,873'	*MANCOS	6,490'	6,380'
*FRUITLAND	3,294'	3,247'	KICKOFF POINT	6,588'	6,476'
*PICTURED CLIFFS	3,654'	3,600'	LANDING POINT	7,635'	7,149'
LEWIS	3,755'	3,699'			
CHACRA	4,890'	4,812'			
*CLIFF HOUSE	5,714'	5,620'			
MENEFEE	5,749'	5,654'	TD	17,155'	7,151'

* Indicates depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered.

B. MUD LOGGING PROGRAM: Mudlogger on location from KOP to TD.

C. LOGGING PROGRAM: LWD GR from surface casing to TD.

D. NATURAL GAUGES: Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4" directional vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 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 834H



- 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 strings to one-third of internal yield pressure not to exceed **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 on each tour. BOP equipment will be tested a minimum of 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 but not more than once daily. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of the BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when 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 the first full test.
- C. GeoHazards:** There are no anticipated geohazards
- D. Maximum Anticipated Pressure:** $7151' \text{ TVD} \times 0.43 = 3075 \text{ psi}$
- E. H2S Concerns:** – There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OHSIZE (IN)	GL DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	320' or greater	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,565'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	17,155'	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:** 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- 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., 2,000ft., 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. The operational use of an external casing packer may be utilized and placed below the DV tool(s), if a DV tool is utilized.
- 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. The centralizer program will be determined by wellbore conditions. Production casing to

ROSA UNIT 834H



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 ~ 331' BGL (361' RKB) and cemented to surface. TOC at Surface.
303 sks of 15.8 ppg Type Neat G, 1.15 cuft/sk yield or equivalent 250 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess.
2. INTERMEDIATE: Intermediate casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a 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.

	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	6,065	500	0.31321	1.3	221	39	1.15	192	15.8
Stage 1 Lead	4,940	1,125	0.31321	1.3	458	82	1.97	233	12.4
					679	121		425	
Stage 2 Tail	4,340	600	0.31321	1.3	244	44	1.65	148	13.2
Stage 2 Lead	3,344	996	0.31321	1.3	406	72	1.97	206	12.4
					650	116		354	
Stage 3 Tail	2,694	650	0.31321	1.3	265	47	1.65	160	13.2
Stage 3 Lead	361	2,333	0.31321	1.3	950	169	1.97	482	12.4
Stage 3 Lead	-	361	0.36268	1	131	23	1.97	67	12.4
					1,346	240		709	
					2,675	476		1,488	

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

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

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased hole Tail	6,465	100	0.2531	1	25	5	1.56	16	13.2
Open Hole Tail	6,565	10,590	0.2291	1.15	2,801	499	1.56	1,795	13.2
					2,826	503		1,811	

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 1573 psi - (0.22 psi/ft * 7,151' TVD) for 30 minutes. Increase pressure to Open Toe sleeves.

D. STIMULATION

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

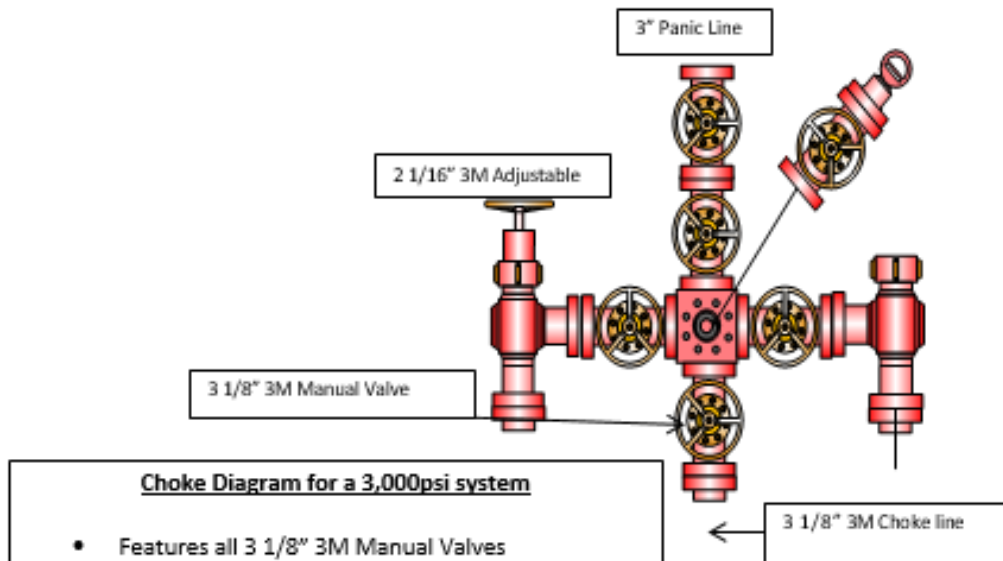
E. PRODUCTION TUBING

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.

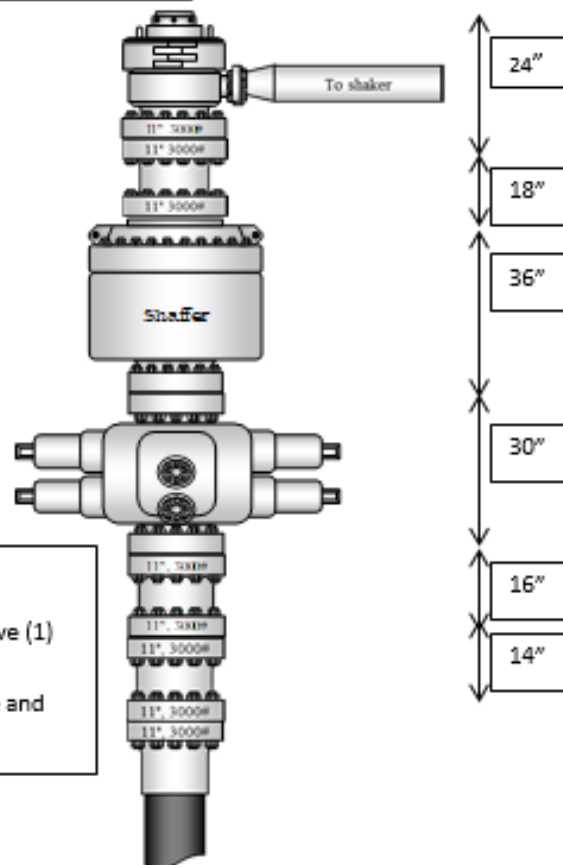


3M 11" B.O.P.E Diagram



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



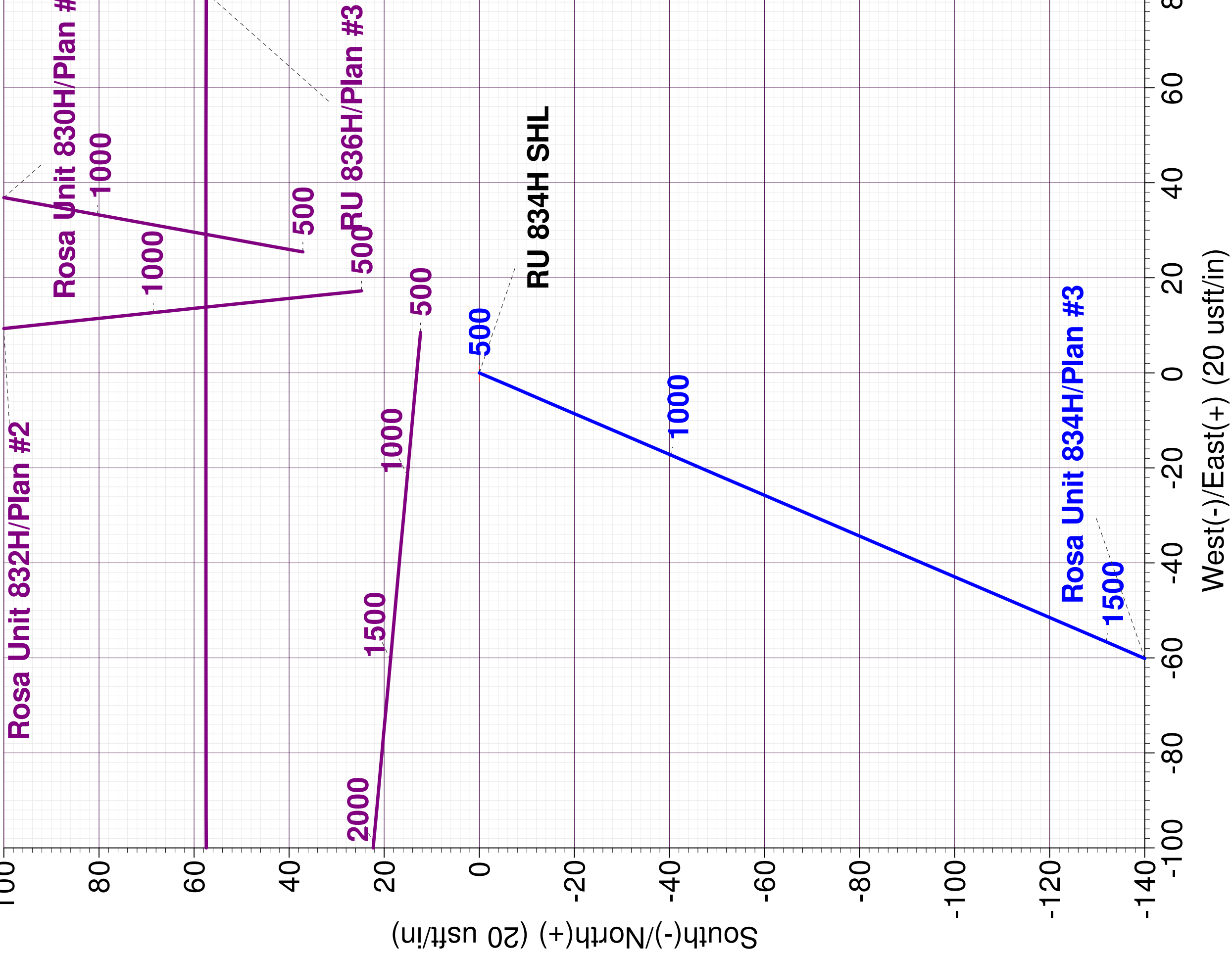
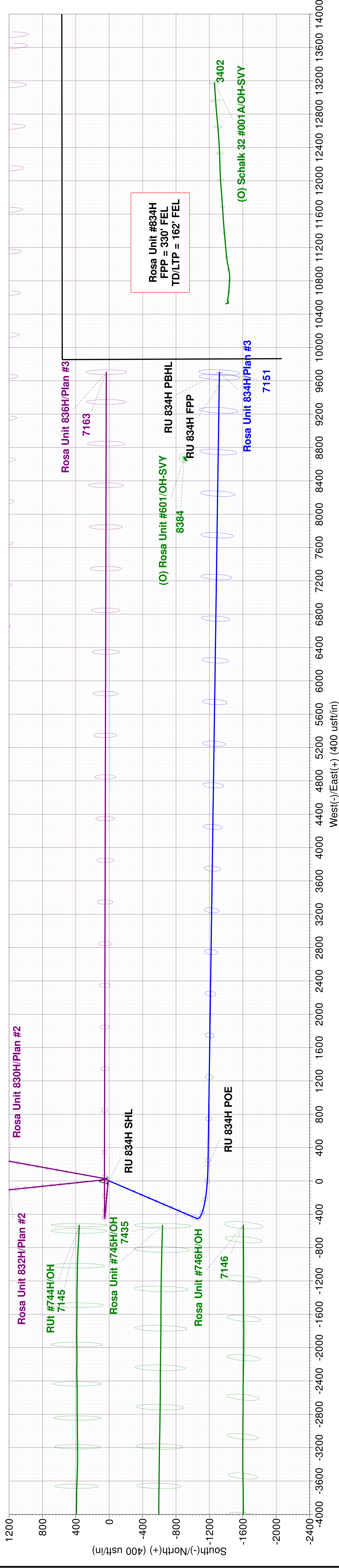
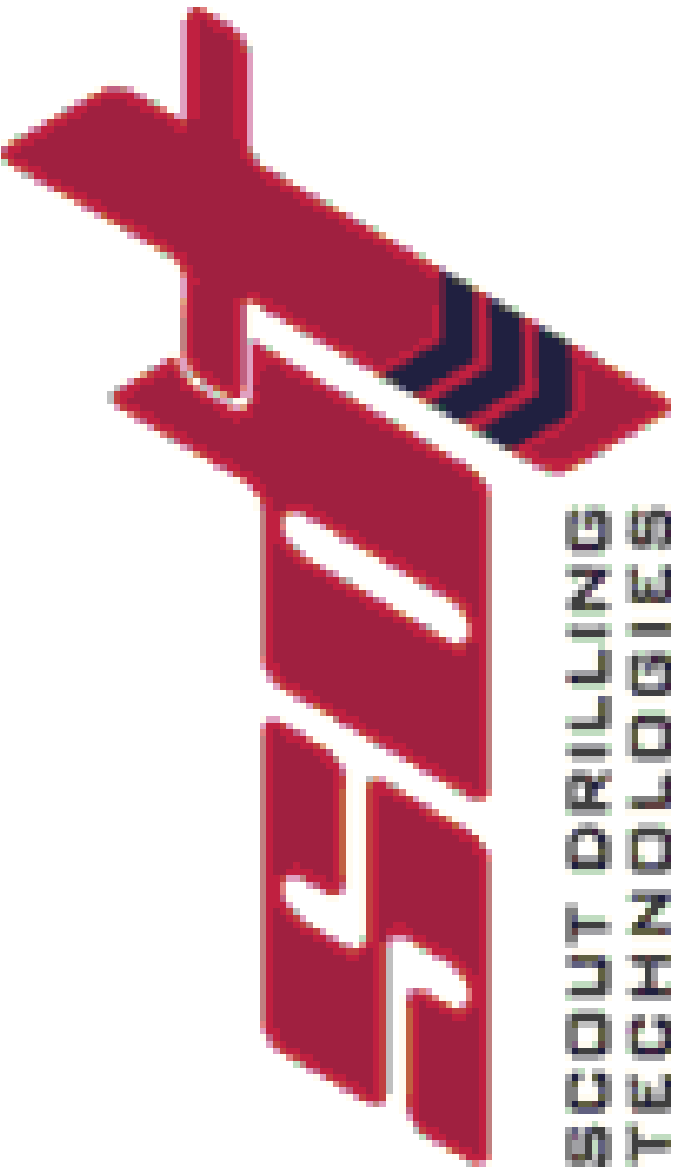
11" 3,000psi BOP

- 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 834H



County: Rio Arriba, NM (NAD83)
Site: Rosa Unit 42
Well: Rosa Unit 834H
Depth Reference: 6563+30 @ 6593.00usft (H&P 530)
Rig: H&P 530
Plan: Plan #3
Job #: Prelim

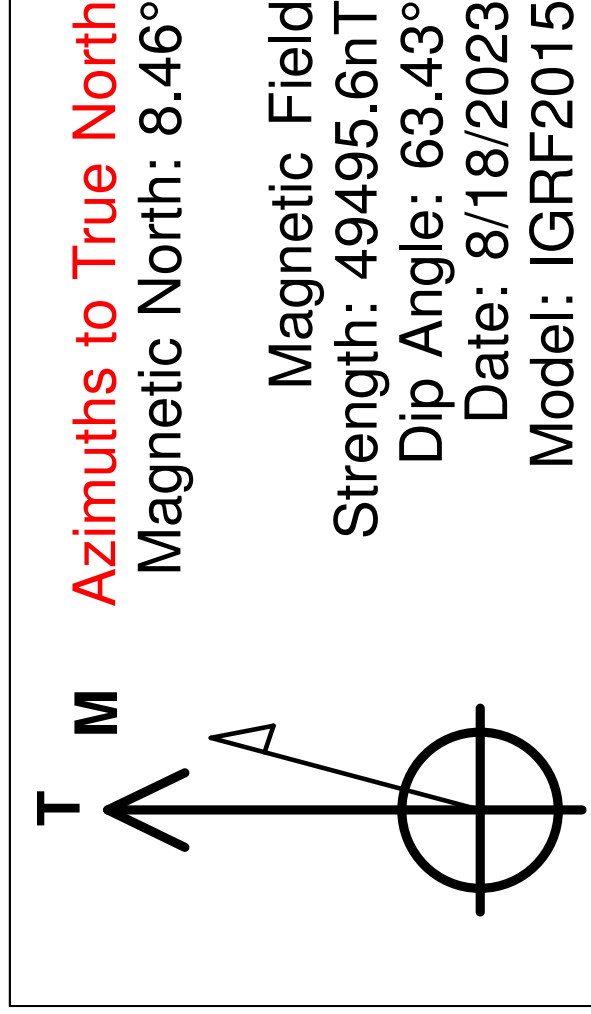


SECTION DETAILS

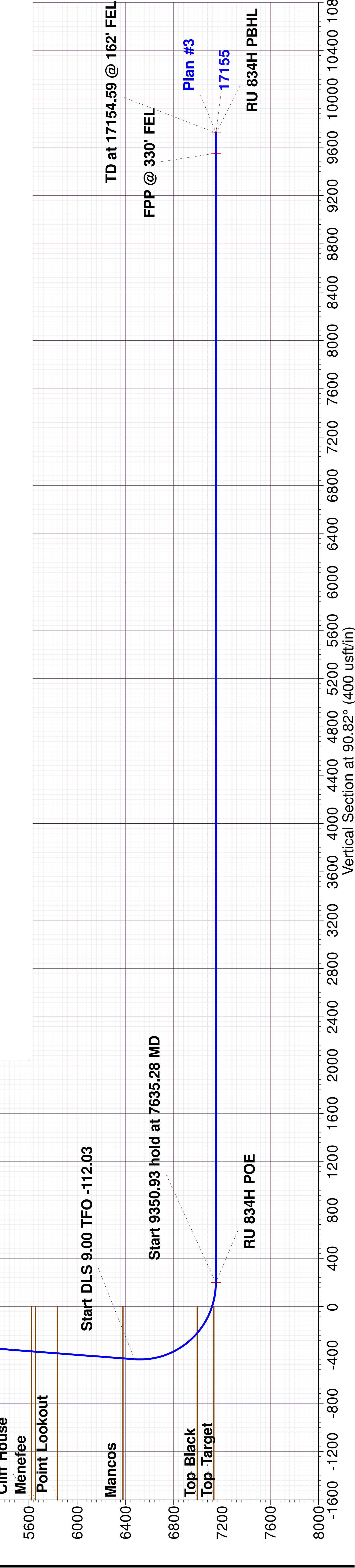
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
3	1067.13	11.34	203.24	1063.43	-51.41	-22.08	2.00	203.24	-21.34	Start 5520.48 hold at 1067.13 MD
4	6587.61	11.34	203.24	6476.09	-1049.03	-450.55	0.00	0.00	-435.49	Start DLS 9.00 TFO -112.03
5	7635.28	89.99	90.82	7149.00	-1182.86	182.29	9.00	-112.03	199.20	Start 9350.93 hold at 7635.28 MD
6	16986.21	89.99	90.82	7150.96	-1316.83	9532.26	0.00	0.00	9550.13	FPP @ 330' FEL
7	17154.59	89.99	90.82	7151.00	-1319.24	9700.62	0.00	0.00	9718.51	TD at 17154.59 @ 162' FEL

DESIGN TARGET DETAILS

Name	MD	Inc	Azi	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
RU 834H SHL	0.00	0.00	0.00	0.00	0.00	0.00	2133429.54	2872973.56	36.861823	-107.320981
RU 834H POE	7149.00	-1182.86	182.29	2132247.67	2873162.20	36.858574	-107.320358	36.858574	-107.320358	
RU 834H FPP	7150.96	-1316.83	9532.26	2132163.86	2882512.75	36.858202	-107.288398	36.858202	-107.288398	
RU 834H PBHL	7151.00	-1319.24	9700.62	2132162.36	2882681.12	36.858195	-107.287823	36.858195	-107.287823	



TOTAL CORRECTION: 8.46°



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
2750.00	2787.29	Ojo Alamo
2873.00	2912.74	Kirtland
3247.00	3294.19	Fruitland
3288.00	3336.01	Top of Coals
3376.00	3425.76	Base of Coals
3600.00	3654.23	Pictured Cliffs
3699.00	3755.20	Lewis
4812.00	4890.37	Chacra
5335.00	5423.79	Upper Cliff House
5620.00	5714.47	Cliff House
5654.00	5749.14	Menefee
5836.00	5934.77	Point Lookout
6380.00	6489.60	Mancos
6994.00	7177.60	Top Black
7133.00	7491.16	Top Target

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 42

Rosa Unit 834H

OH

Plan: Plan #3

Standard Planning Report

22 August, 2023

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Project	Rio Arriba, NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Rosa Unit 42				
Site Position:		Northing:	2,133,465.56 usft	Latitude:	36.861919
From:	Lat/Long	Easting:	2,873,174.65 usft	Longitude:	-107.320293
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Rosa Unit 834H					
Well Position	+N/-S	0.00 usft	Northing:	2,133,429.53 usft	Latitude:	36.861823
	+E/-W	0.00 usft	Easting:	2,872,973.57 usft	Longitude:	-107.320981
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,563.00 usft
Grid Convergence:		0.31 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/18/2023	8.46	63.43	49,495.60028633

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.82	

Plan Survey Tool Program	Date	8/22/2023			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,154.59 Plan #3 (OH)	B001Mb_MWD+HRGM		
			OWSG MWD + HRGM		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,067.13	11.34	203.24	1,063.43	-51.41	-22.08	2.00	2.00	0.00	203.24	
6,587.61	11.34	203.24	6,476.09	-1,049.03	-450.55	0.00	0.00	0.00	0.00	
7,635.28	89.99	90.82	7,149.00	-1,182.86	182.29	9.00	7.51	-10.73	-112.03	RU 834H POE
16,986.21	89.99	90.82	7,150.96	-1,316.83	9,532.26	0.00	0.00	0.00	0.00	RU 834H FPP
17,154.59	89.99	90.82	7,151.00	-1,319.24	9,700.62	0.00	0.00	0.00	0.00	RU 834H PBHL

SDT

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Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
600.00	2.00	203.24	599.98	-1.60	-0.69	-0.67	2.00	2.00	0.00
700.00	4.00	203.24	699.84	-6.41	-2.75	-2.66	2.00	2.00	0.00
800.00	6.00	203.24	799.45	-14.42	-6.19	-5.99	2.00	2.00	0.00
900.00	8.00	203.24	898.70	-25.62	-11.00	-10.63	2.00	2.00	0.00
1,000.00	10.00	203.24	997.47	-39.99	-17.18	-16.60	2.00	2.00	0.00
1,067.13	11.34	203.24	1,063.43	-51.41	-22.08	-21.34	2.00	2.00	0.00
Start 5520.48 hold at 1067.13 MD									
1,100.00	11.34	203.24	1,095.66	-57.35	-24.63	-23.81	0.00	0.00	0.00
1,200.00	11.34	203.24	1,193.71	-75.42	-32.39	-31.31	0.00	0.00	0.00
1,300.00	11.34	203.24	1,291.75	-93.49	-40.16	-38.81	0.00	0.00	0.00
1,400.00	11.34	203.24	1,389.80	-111.57	-47.92	-46.32	0.00	0.00	0.00
1,500.00	11.34	203.24	1,487.85	-129.64	-55.68	-53.82	0.00	0.00	0.00
1,600.00	11.34	203.24	1,585.90	-147.71	-63.44	-61.32	0.00	0.00	0.00
1,700.00	11.34	203.24	1,683.94	-165.78	-71.20	-68.82	0.00	0.00	0.00
1,800.00	11.34	203.24	1,781.99	-183.85	-78.96	-76.32	0.00	0.00	0.00
1,900.00	11.34	203.24	1,880.04	-201.92	-86.72	-83.83	0.00	0.00	0.00
2,000.00	11.34	203.24	1,978.08	-219.99	-94.49	-91.33	0.00	0.00	0.00
2,100.00	11.34	203.24	2,076.13	-238.06	-102.25	-98.83	0.00	0.00	0.00
2,200.00	11.34	203.24	2,174.18	-256.14	-110.01	-106.33	0.00	0.00	0.00
2,300.00	11.34	203.24	2,272.22	-274.21	-117.77	-113.83	0.00	0.00	0.00
2,400.00	11.34	203.24	2,370.27	-292.28	-125.53	-121.34	0.00	0.00	0.00
2,500.00	11.34	203.24	2,468.32	-310.35	-133.29	-128.84	0.00	0.00	0.00
2,600.00	11.34	203.24	2,566.36	-328.42	-141.05	-136.34	0.00	0.00	0.00
2,700.00	11.34	203.24	2,664.41	-346.49	-148.82	-143.84	0.00	0.00	0.00
2,787.29	11.34	203.24	2,750.00	-362.27	-155.59	-150.39	0.00	0.00	0.00
Ojo Alamo									
2,800.00	11.34	203.24	2,762.46	-364.56	-156.58	-151.34	0.00	0.00	0.00
2,900.00	11.34	203.24	2,860.50	-382.63	-164.34	-158.85	0.00	0.00	0.00
2,912.74	11.34	203.24	2,873.00	-384.94	-165.33	-159.80	0.00	0.00	0.00
Kirtland									
3,000.00	11.34	203.24	2,958.55	-400.71	-172.10	-166.35	0.00	0.00	0.00
3,100.00	11.34	203.24	3,056.60	-418.78	-179.86	-173.85	0.00	0.00	0.00
3,200.00	11.34	203.24	3,154.65	-436.85	-187.62	-181.35	0.00	0.00	0.00
3,294.19	11.34	203.24	3,247.00	-453.87	-194.93	-188.42	0.00	0.00	0.00
Fruitland									
3,300.00	11.34	203.24	3,252.69	-454.92	-195.38	-188.85	0.00	0.00	0.00
3,336.01	11.34	203.24	3,288.00	-461.43	-198.18	-191.56	0.00	0.00	0.00
Top of Coals									
3,400.00	11.34	203.24	3,350.74	-472.99	-203.15	-196.36	0.00	0.00	0.00
3,425.76	11.34	203.24	3,376.00	-477.65	-205.15	-198.29	0.00	0.00	0.00
Base of Coals									
3,500.00	11.34	203.24	3,448.79	-491.06	-210.91	-203.86	0.00	0.00	0.00
3,600.00	11.34	203.24	3,546.83	-509.13	-218.67	-211.36	0.00	0.00	0.00
3,654.23	11.34	203.24	3,600.00	-518.93	-222.88	-215.43	0.00	0.00	0.00
Pictured Cliffs									
3,700.00	11.34	203.24	3,644.88	-527.20	-226.43	-218.86	0.00	0.00	0.00

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Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,755.20	11.34	203.24	3,699.00	-537.18	-230.71	-223.00	0.00	0.00	0.00
Lewis									
3,800.00	11.34	203.24	3,742.93	-545.28	-234.19	-226.36	0.00	0.00	0.00
3,900.00	11.34	203.24	3,840.97	-563.35	-241.95	-233.87	0.00	0.00	0.00
4,000.00	11.34	203.24	3,939.02	-581.42	-249.71	-241.37	0.00	0.00	0.00
4,100.00	11.34	203.24	4,037.07	-599.49	-257.48	-248.87	0.00	0.00	0.00
4,200.00	11.34	203.24	4,135.11	-617.56	-265.24	-256.37	0.00	0.00	0.00
4,300.00	11.34	203.24	4,233.16	-635.63	-273.00	-263.87	0.00	0.00	0.00
4,400.00	11.34	203.24	4,331.21	-653.70	-280.76	-271.38	0.00	0.00	0.00
4,500.00	11.34	203.24	4,429.25	-671.77	-288.52	-278.88	0.00	0.00	0.00
4,600.00	11.34	203.24	4,527.30	-689.85	-296.28	-286.38	0.00	0.00	0.00
4,700.00	11.34	203.24	4,625.35	-707.92	-304.05	-293.88	0.00	0.00	0.00
4,800.00	11.34	203.24	4,723.40	-725.99	-311.81	-301.38	0.00	0.00	0.00
4,890.37	11.34	203.24	4,812.00	-742.32	-318.82	-308.16	0.00	0.00	0.00
Chacra									
4,900.00	11.34	203.24	4,821.44	-744.06	-319.57	-308.89	0.00	0.00	0.00
5,000.00	11.34	203.24	4,919.49	-762.13	-327.33	-316.39	0.00	0.00	0.00
5,100.00	11.34	203.24	5,017.54	-780.20	-335.09	-323.89	0.00	0.00	0.00
5,200.00	11.34	203.24	5,115.58	-798.27	-342.85	-331.39	0.00	0.00	0.00
5,300.00	11.34	203.24	5,213.63	-816.34	-350.61	-338.90	0.00	0.00	0.00
5,400.00	11.34	203.24	5,311.68	-834.42	-358.38	-346.40	0.00	0.00	0.00
5,423.79	11.34	203.24	5,335.00	-838.71	-360.22	-348.18	0.00	0.00	0.00
Upper Cliff House									
5,500.00	11.34	203.24	5,409.72	-852.49	-366.14	-353.90	0.00	0.00	0.00
5,600.00	11.34	203.24	5,507.77	-870.56	-373.90	-361.40	0.00	0.00	0.00
5,700.00	11.34	203.24	5,605.82	-888.63	-381.66	-368.90	0.00	0.00	0.00
5,714.47	11.34	203.24	5,620.00	-891.24	-382.78	-369.99	0.00	0.00	0.00
Cliff House									
5,749.14	11.34	203.24	5,654.00	-897.51	-385.47	-372.59	0.00	0.00	0.00
Menefee									
5,800.00	11.34	203.24	5,703.86	-906.70	-389.42	-376.41	0.00	0.00	0.00
5,900.00	11.34	203.24	5,801.91	-924.77	-397.18	-383.91	0.00	0.00	0.00
5,934.77	11.34	203.24	5,836.00	-931.06	-399.88	-386.52	0.00	0.00	0.00
Point Lookout									
6,000.00	11.34	203.24	5,899.96	-942.84	-404.94	-391.41	0.00	0.00	0.00
6,100.00	11.34	203.24	5,998.00	-960.91	-412.71	-398.91	0.00	0.00	0.00
6,200.00	11.34	203.24	6,096.05	-978.99	-420.47	-406.41	0.00	0.00	0.00
6,300.00	11.34	203.24	6,194.10	-997.06	-428.23	-413.92	0.00	0.00	0.00
6,400.00	11.34	203.24	6,292.15	-1,015.13	-435.99	-421.42	0.00	0.00	0.00
6,489.61	11.34	203.24	6,380.00	-1,031.32	-442.94	-428.14	0.00	0.00	0.00
Mancos									
6,500.00	11.34	203.24	6,390.19	-1,033.20	-443.75	-428.92	0.00	0.00	0.00
6,587.61	11.34	203.24	6,476.09	-1,049.03	-450.55	-435.49	0.00	0.00	0.00
Start DLS 9.00 TFO -112.03									
6,600.00	10.97	197.80	6,488.25	-1,051.27	-451.39	-436.30	9.00	-2.99	-43.90
6,650.00	10.59	173.65	6,537.39	-1,060.37	-452.34	-437.12	9.00	-0.77	-48.30
6,700.00	11.99	151.64	6,586.44	-1,069.51	-449.36	-434.01	9.00	2.81	-44.03
6,750.00	14.68	135.87	6,635.11	-1,078.64	-442.48	-427.00	9.00	5.38	-31.53
6,800.00	18.09	125.40	6,683.08	-1,087.69	-431.74	-416.13	9.00	6.82	-20.95
6,850.00	21.89	118.30	6,730.07	-1,096.61	-417.20	-401.46	9.00	7.59	-14.20
6,900.00	25.90	113.27	6,775.78	-1,105.34	-398.95	-383.09	9.00	8.03	-10.08
6,950.00	30.05	109.52	6,819.93	-1,113.84	-377.11	-361.13	9.00	8.29	-7.50
7,000.00	34.27	106.61	6,862.25	-1,122.05	-351.80	-335.71	9.00	8.45	-5.82

SDT

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Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,050.00	38.56	104.27	6,902.48	-1,129.92	-323.20	-306.99	9.00	8.56	-4.67
7,100.00	42.88	102.34	6,940.37	-1,137.40	-291.46	-275.16	9.00	8.64	-3.87
7,150.00	47.22	100.70	6,975.69	-1,144.45	-256.80	-240.39	9.00	8.70	-3.28
7,177.60	49.63	99.89	6,994.00	-1,148.13	-236.48	-220.03	9.00	8.73	-2.93
Top Black									
7,200.00	51.59	99.27	7,008.21	-1,151.01	-219.41	-202.92	9.00	8.75	-2.75
7,250.00	55.97	98.01	7,037.75	-1,157.06	-179.54	-162.96	9.00	8.77	-2.52
7,300.00	60.37	96.87	7,064.11	-1,162.55	-137.43	-120.77	9.00	8.79	-2.28
7,350.00	64.77	95.83	7,087.14	-1,167.45	-93.33	-76.61	9.00	8.81	-2.08
7,400.00	69.18	94.86	7,106.69	-1,171.73	-47.52	-30.75	9.00	8.82	-1.94
7,450.00	73.60	93.95	7,122.64	-1,175.36	-0.29	16.53	9.00	8.83	-1.83
7,491.17	77.24	93.23	7,133.00	-1,177.85	39.47	56.32	9.00	8.84	-1.75
Top Target									
7,500.00	78.02	93.07	7,134.89	-1,178.33	48.08	64.94	9.00	8.84	-1.72
7,550.00	82.44	92.23	7,143.37	-1,180.60	97.29	114.18	9.00	8.84	-1.69
7,600.00	86.87	91.40	7,148.03	-1,182.18	147.04	163.94	9.00	8.85	-1.66
7,635.28	89.99	90.82	7,149.00	-1,182.86	182.29	199.20	9.00	8.85	-1.64
Start 9350.93 hold at 7635.28 MD									
7,700.00	89.99	90.82	7,149.01	-1,183.79	247.01	263.92	0.00	0.00	0.00
7,800.00	89.99	90.82	7,149.03	-1,185.22	347.00	363.92	0.00	0.00	0.00
7,900.00	89.99	90.82	7,149.06	-1,186.65	446.98	463.92	0.00	0.00	0.00
8,000.00	89.99	90.82	7,149.08	-1,188.09	546.97	563.92	0.00	0.00	0.00
8,100.00	89.99	90.82	7,149.10	-1,189.52	646.96	663.92	0.00	0.00	0.00
8,200.00	89.99	90.82	7,149.12	-1,190.95	746.95	763.92	0.00	0.00	0.00
8,300.00	89.99	90.82	7,149.14	-1,192.38	846.94	863.92	0.00	0.00	0.00
8,400.00	89.99	90.82	7,149.16	-1,193.82	946.93	963.92	0.00	0.00	0.00
8,500.00	89.99	90.82	7,149.18	-1,195.25	1,046.92	1,063.92	0.00	0.00	0.00
8,600.00	89.99	90.82	7,149.20	-1,196.68	1,146.91	1,163.92	0.00	0.00	0.00
8,700.00	89.99	90.82	7,149.22	-1,198.12	1,246.90	1,263.92	0.00	0.00	0.00
8,800.00	89.99	90.82	7,149.24	-1,199.55	1,346.89	1,363.92	0.00	0.00	0.00
8,900.00	89.99	90.82	7,149.27	-1,200.98	1,446.88	1,463.92	0.00	0.00	0.00
9,000.00	89.99	90.82	7,149.29	-1,202.41	1,546.87	1,563.92	0.00	0.00	0.00
9,100.00	89.99	90.82	7,149.31	-1,203.85	1,646.86	1,663.92	0.00	0.00	0.00
9,200.00	89.99	90.82	7,149.33	-1,205.28	1,746.85	1,763.92	0.00	0.00	0.00
9,300.00	89.99	90.82	7,149.35	-1,206.71	1,846.84	1,863.92	0.00	0.00	0.00
9,400.00	89.99	90.82	7,149.37	-1,208.14	1,946.83	1,963.92	0.00	0.00	0.00
9,500.00	89.99	90.82	7,149.39	-1,209.58	2,046.82	2,063.92	0.00	0.00	0.00
9,600.00	89.99	90.82	7,149.41	-1,211.01	2,146.81	2,163.92	0.00	0.00	0.00
9,700.00	89.99	90.82	7,149.43	-1,212.44	2,246.80	2,263.92	0.00	0.00	0.00
9,800.00	89.99	90.82	7,149.45	-1,213.87	2,346.79	2,363.92	0.00	0.00	0.00
9,900.00	89.99	90.82	7,149.48	-1,215.31	2,446.78	2,463.92	0.00	0.00	0.00
10,000.00	89.99	90.82	7,149.50	-1,216.74	2,546.77	2,563.92	0.00	0.00	0.00
10,100.00	89.99	90.82	7,149.52	-1,218.17	2,646.76	2,663.92	0.00	0.00	0.00
10,200.00	89.99	90.82	7,149.54	-1,219.61	2,746.75	2,763.92	0.00	0.00	0.00
10,300.00	89.99	90.82	7,149.56	-1,221.04	2,846.74	2,863.92	0.00	0.00	0.00
10,400.00	89.99	90.82	7,149.58	-1,222.47	2,946.73	2,963.92	0.00	0.00	0.00
10,500.00	89.99	90.82	7,149.60	-1,223.90	3,046.72	3,063.92	0.00	0.00	0.00
10,600.00	89.99	90.82	7,149.62	-1,225.34	3,146.71	3,163.92	0.00	0.00	0.00
10,700.00	89.99	90.82	7,149.64	-1,226.77	3,246.70	3,263.92	0.00	0.00	0.00
10,800.00	89.99	90.82	7,149.67	-1,228.20	3,346.69	3,363.92	0.00	0.00	0.00
10,900.00	89.99	90.82	7,149.69	-1,229.63	3,446.68	3,463.92	0.00	0.00	0.00
11,000.00	89.99	90.82	7,149.71	-1,231.07	3,546.67	3,563.92	0.00	0.00	0.00
11,100.00	89.99	90.82	7,149.73	-1,232.50	3,646.66	3,663.92	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,200.00	89.99	90.82	7,149.75	-1,233.93	3,746.65	3,763.92	0.00	0.00	0.00	
11,300.00	89.99	90.82	7,149.77	-1,235.36	3,846.64	3,863.92	0.00	0.00	0.00	
11,400.00	89.99	90.82	7,149.79	-1,236.80	3,946.63	3,963.92	0.00	0.00	0.00	
11,500.00	89.99	90.82	7,149.81	-1,238.23	4,046.62	4,063.92	0.00	0.00	0.00	
11,600.00	89.99	90.82	7,149.83	-1,239.66	4,146.61	4,163.92	0.00	0.00	0.00	
11,700.00	89.99	90.82	7,149.85	-1,241.10	4,246.59	4,263.92	0.00	0.00	0.00	
11,800.00	89.99	90.82	7,149.88	-1,242.53	4,346.58	4,363.92	0.00	0.00	0.00	
11,900.00	89.99	90.82	7,149.90	-1,243.96	4,446.57	4,463.92	0.00	0.00	0.00	
12,000.00	89.99	90.82	7,149.92	-1,245.39	4,546.56	4,563.92	0.00	0.00	0.00	
12,100.00	89.99	90.82	7,149.94	-1,246.83	4,646.55	4,663.92	0.00	0.00	0.00	
12,200.00	89.99	90.82	7,149.96	-1,248.26	4,746.54	4,763.92	0.00	0.00	0.00	
12,300.00	89.99	90.82	7,149.98	-1,249.69	4,846.53	4,863.92	0.00	0.00	0.00	
12,400.00	89.99	90.82	7,150.00	-1,251.12	4,946.52	4,963.92	0.00	0.00	0.00	
12,500.00	89.99	90.82	7,150.02	-1,252.56	5,046.51	5,063.92	0.00	0.00	0.00	
12,600.00	89.99	90.82	7,150.04	-1,253.99	5,146.50	5,163.92	0.00	0.00	0.00	
12,700.00	89.99	90.82	7,150.06	-1,255.42	5,246.49	5,263.92	0.00	0.00	0.00	
12,800.00	89.99	90.82	7,150.09	-1,256.85	5,346.48	5,363.92	0.00	0.00	0.00	
12,900.00	89.99	90.82	7,150.11	-1,258.29	5,446.47	5,463.92	0.00	0.00	0.00	
13,000.00	89.99	90.82	7,150.13	-1,259.72	5,546.46	5,563.92	0.00	0.00	0.00	
13,100.00	89.99	90.82	7,150.15	-1,261.15	5,646.45	5,663.92	0.00	0.00	0.00	
13,200.00	89.99	90.82	7,150.17	-1,262.59	5,746.44	5,763.92	0.00	0.00	0.00	
13,300.00	89.99	90.82	7,150.19	-1,264.02	5,846.43	5,863.92	0.00	0.00	0.00	
13,400.00	89.99	90.82	7,150.21	-1,265.45	5,946.42	5,963.92	0.00	0.00	0.00	
13,500.00	89.99	90.82	7,150.23	-1,266.88	6,046.41	6,063.92	0.00	0.00	0.00	
13,600.00	89.99	90.82	7,150.25	-1,268.32	6,146.40	6,163.92	0.00	0.00	0.00	
13,700.00	89.99	90.82	7,150.27	-1,269.75	6,246.39	6,263.92	0.00	0.00	0.00	
13,800.00	89.99	90.82	7,150.30	-1,271.18	6,346.38	6,363.92	0.00	0.00	0.00	
13,900.00	89.99	90.82	7,150.32	-1,272.61	6,446.37	6,463.92	0.00	0.00	0.00	
14,000.00	89.99	90.82	7,150.34	-1,274.05	6,546.36	6,563.92	0.00	0.00	0.00	
14,100.00	89.99	90.82	7,150.36	-1,275.48	6,646.35	6,663.92	0.00	0.00	0.00	
14,200.00	89.99	90.82	7,150.38	-1,276.91	6,746.34	6,763.92	0.00	0.00	0.00	
14,300.00	89.99	90.82	7,150.40	-1,278.34	6,846.33	6,863.92	0.00	0.00	0.00	
14,400.00	89.99	90.82	7,150.42	-1,279.78	6,946.32	6,963.92	0.00	0.00	0.00	
14,500.00	89.99	90.82	7,150.44	-1,281.21	7,046.31	7,063.92	0.00	0.00	0.00	
14,600.00	89.99	90.82	7,150.46	-1,282.64	7,146.30	7,163.92	0.00	0.00	0.00	
14,700.00	89.99	90.82	7,150.48	-1,284.08	7,246.29	7,263.92	0.00	0.00	0.00	
14,800.00	89.99	90.82	7,150.51	-1,285.51	7,346.28	7,363.92	0.00	0.00	0.00	
14,900.00	89.99	90.82	7,150.53	-1,286.94	7,446.27	7,463.92	0.00	0.00	0.00	
15,000.00	89.99	90.82	7,150.55	-1,288.37	7,546.26	7,563.92	0.00	0.00	0.00	
15,100.00	89.99	90.82	7,150.57	-1,289.81	7,646.25	7,663.92	0.00	0.00	0.00	
15,200.00	89.99	90.82	7,150.59	-1,291.24	7,746.24	7,763.92	0.00	0.00	0.00	
15,300.00	89.99	90.82	7,150.61	-1,292.67	7,846.23	7,863.92	0.00	0.00	0.00	
15,400.00	89.99	90.82	7,150.63	-1,294.10	7,946.22	7,963.92	0.00	0.00	0.00	
15,500.00	89.99	90.82	7,150.65	-1,295.54	8,046.20	8,063.92	0.00	0.00	0.00	
15,600.00	89.99	90.82	7,150.67	-1,296.97	8,146.19	8,163.92	0.00	0.00	0.00	
15,700.00	89.99	90.82	7,150.69	-1,298.40	8,246.18	8,263.92	0.00	0.00	0.00	
15,800.00	89.99	90.82	7,150.72	-1,299.83	8,346.17	8,363.92	0.00	0.00	0.00	
15,900.00	89.99	90.82	7,150.74	-1,301.27	8,446.16	8,463.92	0.00	0.00	0.00	
16,000.00	89.99	90.82	7,150.76	-1,302.70	8,546.15	8,563.92	0.00	0.00	0.00	
16,100.00	89.99	90.82	7,150.78	-1,304.13	8,646.14	8,663.92	0.00	0.00	0.00	
16,200.00	89.99	90.82	7,150.80	-1,305.57	8,746.13	8,763.92	0.00	0.00	0.00	
16,300.00	89.99	90.82	7,150.82	-1,307.00	8,846.12	8,863.92	0.00	0.00	0.00	
16,400.00	89.99	90.82	7,150.84	-1,308.43	8,946.11	8,963.92	0.00	0.00	0.00	
16,500.00	89.99	90.82	7,150.86	-1,309.86	9,046.10	9,063.92	0.00	0.00	0.00	

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
16,600.00	89.99	90.82	7,150.88	-1,311.30	9,146.09	9,163.92	0.00	0.00	0.00	
16,700.00	89.99	90.82	7,150.90	-1,312.73	9,246.08	9,263.92	0.00	0.00	0.00	
16,800.00	89.99	90.82	7,150.93	-1,314.16	9,346.07	9,363.92	0.00	0.00	0.00	
16,900.00	89.99	90.82	7,150.95	-1,315.59	9,446.06	9,463.92	0.00	0.00	0.00	
16,986.21	89.99	90.82	7,150.96	-1,316.83	9,532.26	9,550.13	0.00	0.00	0.00	
FPP @ 330' FEL										
17,000.00	89.99	90.82	7,150.97	-1,317.03	9,546.05	9,563.92	0.00	0.00	0.00	
17,100.00	89.99	90.82	7,150.99	-1,318.46	9,646.04	9,663.92	0.00	0.00	0.00	
17,154.59	89.99	90.82	7,151.00	-1,319.24	9,700.62	9,718.51	0.00	0.00	0.00	
TD at 17154.59 @ 162' 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	
RU 834H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,133,429.53	2,872,973.57	36.861823	-107.320981	
RU 834H POE - plan hits target center - Point	0.00	0.00	7,149.00	-1,182.86	182.29	2,132,247.67	2,873,162.20	36.858574	-107.320358	
RU 834H FPP - plan hits target center - Point	0.00	0.00	7,150.96	-1,316.83	9,532.26	2,132,163.86	2,882,512.76	36.858202	-107.288399	
RU 834H PBHL - plan hits target center - Point	0.00	0.00	7,151.00	-1,319.24	9,700.62	2,132,162.35	2,882,681.13	36.858195	-107.287823	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,787.29	2,750.00	Ojo Alamo				
2,912.74	2,873.00	Kirtland				
3,294.19	3,247.00	Fruitland		0.00		
3,336.01	3,288.00	Top of Coals		0.00		
3,425.76	3,376.00	Base of Coals		0.00		
3,654.23	3,600.00	Pictured Cliffs				
3,755.20	3,699.00	Lewis		0.00		
4,890.37	4,812.00	Chacra		0.00		
5,423.79	5,335.00	Upper Cliff House		0.00		
5,714.47	5,620.00	Cliff House				
5,749.14	5,654.00	Menefee				
5,934.77	5,836.00	Point Lookout				
6,489.61	6,380.00	Mancos				
7,177.60	6,994.00	Top Black				
7,491.17	7,133.00	Top Target				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
500.00	500.00	0.00	0.00	Start Build 2.00	
1,067.13	1,063.43	-51.41	-22.08	Start 5520.48 hold at 1067.13 MD	
6,587.61	6,476.09	-1,049.03	-450.55	Start DLS 9.00 TFO -112.03	
7,635.28	7,149.00	-1,182.86	182.29	Start 9350.93 hold at 7635.28 MD	
16,986.21	7,150.96	-1,316.83	9,532.26	FPP @ 330' FEL	
17,154.59	7,151.00	-1,319.24	9,700.62	TD at 17154.59 @ 162' FEL	

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 42

Rosa Unit 834H

OH

Plan #3

Anticollision Report

22 August, 2023

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum centre distance of 100,000.00usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	8/22/2023		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,154.59	Plan #3 (OH)	B001Mb_MWD+HRGM	OWSG MWD + HRGM	

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 31						
Rosa Unit #744H - OH - OH	6,920.90	20,806.96	1,515.78	1,162.55	4.291	CC
Rosa Unit #744H - OH - OH	6,950.00	20,806.96	1,516.13	1,161.91	4.280	ES
Rosa Unit #744H - OH - OH	7,000.00	20,806.96	1,518.42	1,162.88	4.271	SF
Rosa Unit #745H - OH - OH	7,174.05	21,289.96	736.96	469.44	2.755	CC
Rosa Unit #745H - OH - OH	7,200.00	21,289.96	737.75	469.42	2.749	ES, SF
Rosa Unit #746H - OH - OH	7,137.54	20,952.96	564.19	336.02	2.473	CC, ES, SF
Rosa Unit 42						
(O) Rosa Unit #601 - OH - OH-SVY	16,125.40	7,524.25	406.05	150.79	1.591	CC, ES, SF
(O) Schalk 32 #001A - OH - OH-SVY	17,154.59	3,909.00	3,946.38	3,862.54	47.071	CC, ES, SF
(O) Schalk 32 #003H - OH - OH-SVY	17,154.59	3,800.00	4,173.10	4,059.80	36.832	CC, ES, SF
Rosa Unit 830H - OH - Plan #2	500.00	500.00	45.02	41.65	13.360	CC, ES
Rosa Unit 830H - OH - Plan #2	600.00	598.47	48.31	44.24	11.880	SF
Rosa Unit 832H - OH - Plan #2	500.00	500.00	30.21	26.84	8.965	CC, ES
Rosa Unit 832H - OH - Plan #2	17,154.59	16,867.26	2,647.66	2,165.22	5.488	SF
Rosa Unit 836H - OH - Plan #3	500.00	500.00	15.01	11.64	4.453	CC, ES
Rosa Unit 836H - OH - Plan #3	17,154.59	17,056.76	1,354.56	865.95	2.772	SF

Offset Design:	Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error:	0.00 usft
	Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project												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		
0.00	0.00	20,806.96	7,074.42	0.00	336.82	-55.95	358.90	-531.16	7,174.13					
100.00	100.00	20,806.96	7,074.42	0.25	336.82	-55.95	358.90	-531.16	7,074.54	6,962.51	112.02	63.152		
200.00	200.00	20,806.96	7,074.42	0.61	336.82	-55.95	358.90	-531.16	6,974.95	6,862.89	112.06	62.243		
300.00	300.00	20,806.96	7,074.42	0.97	336.82	-55.95	358.90	-531.16	6,875.38	6,763.28	112.10	61.331		
400.00	400.00	20,806.96	7,074.42	1.33	336.82	-55.95	358.90	-531.16	6,775.83	6,663.67	112.15	60.415		
500.00	500.00	20,806.96	7,074.42	1.68	336.82	-55.95	358.90	-531.16	6,676.28	6,564.07	112.21	59.497		
600.00	599.98	20,806.96	7,074.42	2.03	336.82	119.08	358.90	-531.16	6,576.80	6,464.52	112.29	58.572		
700.00	699.84	20,806.96	7,074.42	2.36	336.82	132.47	358.90	-531.16	6,477.53	6,365.14	112.39	57.634		
800.00	799.45	20,806.96	7,074.42	2.71	336.82	141.74	358.90	-531.16	6,378.59	6,266.06	112.53	56.683		
900.00	898.70	20,806.96	7,074.42	3.07	336.82	148.21	358.90	-531.16	6,280.13	6,167.43	112.71	55.720		
1,000.00	997.47	20,806.96	7,074.42	3.44	336.82	152.87	358.90	-531.16	6,182.30	6,069.37	112.93	54.744		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH													Offset Site Error:	0.00 usft	
Survey Program:		100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project					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		
1,067.13	1,063.43	20,806.96	7,074.42	3.71	336.82	155.30	358.90	-531.16	6,117.05	6,003.94	113.11	54.081			
1,100.00	1,095.66	20,806.96	7,074.42	3.84	336.82	155.30	358.90	-531.16	6,085.19	5,971.99	113.20	53.754			
1,200.00	1,193.71	20,806.96	7,074.42	4.25	336.82	155.30	358.90	-531.16	5,988.36	5,874.83	113.53	52.746			
1,300.00	1,291.75	20,806.96	7,074.42	4.67	336.82	155.30	358.90	-531.16	5,891.63	5,777.74	113.89	51.731			
1,400.00	1,389.80	20,806.96	7,074.42	5.10	336.82	155.30	358.90	-531.16	5,795.01	5,680.73	114.28	50.707			
1,500.00	1,487.85	20,806.96	7,074.42	5.53	336.82	155.30	358.90	-531.16	5,698.51	5,583.80	114.71	49.677			
1,600.00	1,585.90	20,806.96	7,074.42	5.96	336.82	155.30	358.90	-531.16	5,602.13	5,486.95	115.18	48.639			
1,700.00	1,683.94	20,806.96	7,074.42	6.40	336.82	155.30	358.90	-531.16	5,505.88	5,390.20	115.68	47.594			
1,800.00	1,781.99	20,806.96	7,074.42	6.84	336.82	155.30	358.90	-531.16	5,409.77	5,293.54	116.23	46.542			
1,900.00	1,880.04	20,806.96	7,074.42	7.29	336.82	155.30	358.90	-531.16	5,313.80	5,196.97	116.83	45.484			
2,000.00	1,978.08	20,806.96	7,074.42	7.73	336.82	155.30	358.90	-531.16	5,217.98	5,100.51	117.47	44.420			
2,100.00	2,076.13	20,806.96	7,074.42	8.18	336.82	155.30	358.90	-531.16	5,122.32	5,004.16	118.16	43.350			
2,200.00	2,174.18	20,806.96	7,074.42	8.63	336.82	155.30	358.90	-531.16	5,026.83	4,907.92	118.91	42.275			
2,300.00	2,272.22	20,806.96	7,074.42	9.08	336.82	155.30	358.90	-531.16	4,931.52	4,811.81	119.71	41.195			
2,400.00	2,370.27	20,806.96	7,074.42	9.53	336.82	155.30	358.90	-531.16	4,836.40	4,715.82	120.58	40.109			
2,500.00	2,468.32	20,806.96	7,074.42	9.98	336.82	155.30	358.90	-531.16	4,741.48	4,619.96	121.51	39.020			
2,600.00	2,566.36	20,806.96	7,074.42	10.43	336.82	155.30	358.90	-531.16	4,646.77	4,524.25	122.52	37.926			
2,700.00	2,664.41	20,806.96	7,074.42	10.89	336.82	155.30	358.90	-531.16	4,552.29	4,428.69	123.60	36.830			
2,800.00	2,762.46	20,806.96	7,074.42	11.34	336.82	155.30	358.90	-531.16	4,458.05	4,333.28	124.77	35.730			
2,900.00	2,860.50	20,806.96	7,074.42	11.79	336.82	155.30	358.90	-531.16	4,364.06	4,238.04	126.02	34.629			
3,000.00	2,958.55	20,806.96	7,074.42	12.25	336.82	155.30	358.90	-531.16	4,270.35	4,142.98	127.37	33.526			
3,100.00	3,056.60	20,806.96	7,074.42	12.70	336.82	155.30	358.90	-531.16	4,176.93	4,048.11	128.83	32.423			
3,200.00	3,154.65	20,806.96	7,074.42	13.16	336.82	155.30	358.90	-531.16	4,083.83	3,953.43	130.39	31.320			
3,300.00	3,252.69	20,806.96	7,074.42	13.61	336.82	155.30	358.90	-531.16	3,991.05	3,858.98	132.08	30.218			
3,400.00	3,350.74	20,806.96	7,074.42	14.07	336.82	155.30	358.90	-531.16	3,898.63	3,764.75	133.89	29.119			
3,500.00	3,448.79	20,806.96	7,074.42	14.52	336.82	155.30	358.90	-531.16	3,806.60	3,670.76	135.84	28.023			
3,600.00	3,546.83	20,806.96	7,074.42	14.98	336.82	155.30	358.90	-531.16	3,714.98	3,577.04	137.94	26.932			
3,700.00	3,644.88	20,806.96	7,074.42	15.43	336.82	155.30	358.90	-531.16	3,623.80	3,483.60	140.20	25.847			
3,800.00	3,742.93	20,806.96	7,074.42	15.89	336.82	155.30	358.90	-531.16	3,533.10	3,390.46	142.63	24.770			
3,900.00	3,840.97	20,806.96	7,074.42	16.35	336.82	155.30	358.90	-531.16	3,442.91	3,297.66	145.26	23.702			
4,000.00	3,939.02	20,806.96	7,074.42	16.80	336.82	155.30	358.90	-531.16	3,353.28	3,205.20	148.08	22.645			
4,100.00	4,037.07	20,806.96	7,074.42	17.26	336.82	155.30	358.90	-531.16	3,264.25	3,113.14	151.12	21.601			
4,200.00	4,135.11	20,806.96	7,074.42	17.72	336.82	155.30	358.90	-531.16	3,175.88	3,021.49	154.39	20.571			
4,300.00	4,233.16	20,806.96	7,074.42	18.17	336.82	155.30	358.90	-531.16	3,088.22	2,930.31	157.91	19.557			
4,400.00	4,331.21	20,806.96	7,074.42	18.63	336.82	155.30	358.90	-531.16	3,001.32	2,839.63	161.69	18.562			
4,500.00	4,429.25	20,806.96	7,074.42	19.09	336.82	155.30	358.90	-531.16	2,915.27	2,749.50	165.77	17.586			
4,600.00	4,527.30	20,806.96	7,074.42	19.54	336.82	155.30	358.90	-531.16	2,830.13	2,659.98	170.15	16.633			
4,700.00	4,625.35	20,806.96	7,074.42	20.00	336.82	155.30	358.90	-531.16	2,746.00	2,571.14	174.86	15.704			
4,800.00	4,723.40	20,806.96	7,074.42	20.46	336.82	155.30	358.90	-531.16	2,662.96	2,483.05	179.91	14.801			
4,900.00	4,821.44	20,806.96	7,074.42	20.92	336.82	155.30	358.90	-531.16	2,581.13	2,395.79	185.34	13.926			
5,000.00	4,919.49	20,806.96	7,074.42	21.37	336.82	155.30	358.90	-531.16	2,500.62	2,309.46	191.15	13.082			
5,100.00	5,017.54	20,806.96	7,074.42	21.83	336.82	155.30	358.90	-531.16	2,421.56	2,224.18	197.38	12.269			
5,200.00	5,115.58	20,806.96	7,074.42	22.29	336.82	155.30	358.90	-531.16	2,344.10	2,140.07	204.03	11.489			
5,300.00	5,213.63	20,806.96	7,074.42	22.75	336.82	155.30	358.90	-531.16	2,268.41	2,057.28	211.12	10.744			
5,400.00	5,311.68	20,806.96	7,074.42	23.21	336.82	155.30	358.90	-531.16	2,194.66	1,975.99	218.67	10.036			
5,500.00	5,409.72	20,806.96	7,074.42	23.66	336.82	155.30	358.90	-531.16	2,123.06	1,896.39	226.67	9.366			
5,600.00	5,507.77	20,806.96	7,074.42	24.12	336.82	155.30	358.90	-531.16	2,053.84	1,818.71	235.13	8.735			
5,700.00	5,605.82	20,806.96	7,074.42	24.58	336.82	155.30	358.90	-531.16	1,987.24	1,743.21	244.02	8.144			
5,800.00	5,703.86	20,806.96	7,074.42	25.04	336.82	155.30	358.90	-531.16	1,923.53	1,670.20	253.33	7.593			
5,900.00	5,801.91	20,806.96	7,074.42	25.49	336.82	155.30	358.90	-531.16	1,863.01	1,600.01	263.00	7.084			
6,000.00	5,899.96	20,806.96	7,074.42	25.95	336.82	155.30	358.90	-531.16	1,806.01	1,533.03	272.98	6.616			
6,100.00	5,998.00	20,806.96	7,074.42	26.41	336.82	155.30	358.90	-531.16	1,752.87	1,469.70	283.17	6.190			

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference	Offset	Offset		Reference	Offset	Highside	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)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
6,200.00	6,096.05	20,806.96	7,074.42	26.87	336.82	155.30	358.90	-531.16	1,703.94	1,410.48	293.45	5.806		
6,300.00	6,194.10	20,806.96	7,074.42	27.33	336.82	155.30	358.90	-531.16	1,659.60	1,355.89	303.70	5.465		
6,400.00	6,292.15	20,806.96	7,074.42	27.79	336.82	155.30	358.90	-531.16	1,620.22	1,306.48	313.74	5.164		
6,500.00	6,390.19	20,806.96	7,074.42	28.24	336.82	155.30	358.90	-531.16	1,586.18	1,262.80	323.38	4.905		
6,587.61	6,476.09	20,806.96	7,074.42	28.65	336.82	155.30	358.90	-531.16	1,561.02	1,229.68	331.35	4.711		
6,600.00	6,488.25	20,806.96	7,074.42	28.70	336.82	160.34	358.90	-531.16	1,557.84	1,225.41	332.43	4.686		
6,650.00	6,537.39	20,806.96	7,074.42	28.92	336.82	-177.02	358.90	-531.16	1,546.05	1,209.42	336.63	4.593		
6,700.00	6,586.44	20,806.96	7,074.42	29.12	336.82	-156.33	358.90	-531.16	1,536.08	1,195.52	340.55	4.511		
6,750.00	6,635.11	20,806.96	7,074.42	29.30	336.82	-141.71	358.90	-531.16	1,528.01	1,183.88	344.13	4.440		
6,800.00	6,683.08	20,806.96	7,074.42	29.46	336.82	-132.21	358.90	-531.16	1,521.93	1,174.60	347.33	4.382		
6,850.00	6,730.07	20,806.96	7,074.42	29.61	336.82	-125.89	358.90	-531.16	1,517.90	1,167.80	350.10	4.336		
6,900.00	6,775.78	20,806.96	7,074.42	29.74	336.82	-121.46	358.90	-531.16	1,515.96	1,163.56	352.41	4.302		
6,920.90	6,794.44	20,806.96	7,074.42	29.79	336.82	-119.96	358.90	-531.16	1,515.78	1,162.55	353.23	4.291	CC	
6,950.00	6,819.93	20,806.96	7,074.42	29.86	336.82	-118.13	358.90	-531.16	1,516.13	1,161.91	354.23	4.280	ES	
7,000.00	6,862.25	20,806.96	7,074.42	29.96	336.82	-115.46	358.90	-531.16	1,518.42	1,162.88	355.54	4.271	SF	
7,050.00	6,902.48	20,806.96	7,074.42	30.04	336.82	-113.19	358.90	-531.16	1,522.78	1,166.45	356.33	4.273		
7,100.00	6,940.37	20,806.96	7,074.42	30.12	336.82	-111.14	358.90	-531.16	1,529.19	1,172.58	356.62	4.288		
7,150.00	6,975.69	20,806.96	7,074.42	30.18	336.82	-109.22	358.90	-531.16	1,537.58	1,181.18	356.40	4.314		
7,200.00	7,008.21	20,806.96	7,074.42	30.22	336.82	-107.35	358.90	-531.16	1,547.86	1,192.16	355.69	4.352		
7,250.00	7,037.75	20,806.96	7,074.42	30.26	336.82	-105.48	358.90	-531.16	1,559.93	1,205.40	354.53	4.400		
7,300.00	7,064.11	20,806.96	7,074.42	30.28	336.82	-103.60	358.90	-531.16	1,573.68	1,220.73	352.95	4.459		
7,350.00	7,087.14	20,806.96	7,074.42	30.29	336.82	-101.67	358.90	-531.16	1,588.98	1,238.00	350.97	4.527		
7,400.00	7,106.69	20,806.96	7,074.42	30.30	336.82	-99.69	358.90	-531.16	1,605.69	1,257.04	348.65	4.605		
7,450.00	7,122.64	20,806.96	7,074.42	30.30	336.82	-97.67	358.90	-531.16	1,623.67	1,277.65	346.02	4.692		
7,500.00	7,134.89	20,806.96	7,074.42	30.30	336.82	-95.60	358.90	-531.16	1,642.77	1,299.66	343.12	4.788		
7,550.00	7,143.37	20,806.96	7,074.42	30.30	336.82	-93.50	358.90	-531.16	1,662.84	1,322.85	339.99	4.891		
7,600.00	7,148.03	20,806.96	7,074.42	30.32	336.82	-91.37	358.90	-531.16	1,683.71	1,347.05	336.66	5.001		
7,635.28	7,149.00	20,806.96	7,074.42	30.35	336.82	-89.87	358.90	-531.16	1,698.84	1,364.63	334.21	5.083		
7,700.00	7,149.01	20,806.96	7,074.42	30.54	336.82	-89.87	358.90	-531.16	1,727.84	1,398.27	329.57	5.243		
7,800.00	7,149.03	20,806.96	7,074.42	31.33	336.82	-89.87	358.90	-531.16	1,776.37	1,454.22	322.15	5.514		
7,900.00	7,149.06	20,806.96	7,074.42	32.52	336.82	-89.87	358.90	-531.16	1,829.08	1,514.56	314.52	5.815		
8,000.00	7,149.08	20,806.96	7,074.42	33.88	336.82	-89.87	358.90	-531.16	1,885.62	1,578.83	306.79	6.146		
8,100.00	7,149.10	20,806.96	7,074.42	35.37	336.82	-89.87	358.90	-531.16	1,945.66	1,646.60	299.06	6.506		
8,200.00	7,149.12	20,806.96	7,074.42	36.97	336.82	-89.87	358.90	-531.16	2,008.89	1,717.49	291.40	6.894		
8,300.00	7,149.14	20,806.96	7,074.42	38.65	336.82	-89.87	358.90	-531.16	2,075.01	1,791.14	283.87	7.310		
8,400.00	7,149.16	20,806.96	7,074.42	40.42	336.82	-89.87	358.90	-531.16	2,143.76	1,867.24	276.52	7.753		
8,500.00	7,149.18	20,806.96	7,074.42	42.24	336.82	-89.87	358.90	-531.16	2,214.89	1,945.52	269.37	8.222		
8,600.00	7,149.20	20,806.96	7,074.42	44.13	336.82	-89.87	358.90	-531.16	2,288.18	2,025.72	262.47	8.718		
8,700.00	7,149.22	20,806.96	7,074.42	46.07	336.82	-89.87	358.90	-531.16	2,363.43	2,107.63	255.81	9.239		
8,800.00	7,149.24	20,806.96	7,074.42	48.05	336.82	-89.87	358.90	-531.16	2,440.46	2,191.06	249.40	9.785		
8,900.00	7,149.27	20,806.96	7,074.42	50.07	336.82	-89.87	358.90	-531.16	2,519.11	2,275.85	243.26	10.356		
9,000.00	7,149.29	20,806.96	7,074.42	52.13	336.82	-89.87	358.90	-531.16	2,599.22	2,361.84	237.38	10.950		
9,100.00	7,149.31	20,806.96	7,074.42	54.21	336.82	-89.87	358.90	-531.16	2,680.67	2,448.92	231.75	11.567		
9,200.00	7,149.33	20,806.96	7,074.42	56.33	336.82	-89.87	358.90	-531.16	2,763.33	2,536.96	226.37	12.207		
9,300.00	7,149.35	20,806.96	7,074.42	58.47	336.82	-89.87	358.90	-531.16	2,847.11	2,625.88	221.23	12.869		
9,400.00	7,149.37	20,806.96	7,074.42	60.63	336.82	-89.87	358.90	-531.16	2,931.91	2,715.58	216.33	13.553		
9,500.00	7,149.39	20,806.96	7,074.42	62.82	336.82	-89.87	358.90	-531.16	3,017.64	2,805.99	211.64	14.258		
9,600.00	7,149.41	20,806.96	7,074.42	65.02	336.82	-89.87	358.90	-531.16	3,104.22	2,897.05	207.17	14.984		
9,700.00	7,149.43	20,806.96	7,074.42	67.23	336.82	-89.87	358.90	-531.16	3,191.58	2,988.68	202.90	15.730		
9,800.00	7,149.45	20,806.96	7,074.42	69.47	336.82	-89.87	358.90	-531.16	3,279.67	3,080.84	198.83	16.495		
9,900.00	7,149.48	20,806.96	7,074.42	71.71	336.82	-89.87	358.90	-531.16	3,368.42	3,173.49	194.94	17.280		
10,000.00	7,149.50	20,806.96	7,074.42	73.97	336.82	-89.87	358.90	-531.16	3,457.79	3,266.57	191.22	18.083		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project				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
10,100.00	7,149.52	20,806.96	7,074.42	76.24	336.82	-89.87	358.90	-531.16	3,547.72	3,360.06	187.67	18.904	
10,200.00	7,149.54	20,806.96	7,074.42	78.52	336.82	-89.87	358.90	-531.16	3,638.18	3,453.92	184.27	19.744	
10,300.00	7,149.56	20,806.96	7,074.42	80.80	336.82	-89.87	358.90	-531.16	3,729.13	3,548.11	181.02	20.601	
10,400.00	7,149.58	20,806.96	7,074.42	83.10	336.82	-89.87	358.90	-531.16	3,820.53	3,642.62	177.91	21.474	
10,500.00	7,149.60	20,806.96	7,074.42	85.40	336.82	-89.87	358.90	-531.16	3,912.35	3,737.42	174.93	22.365	
10,600.00	7,149.62	20,806.96	7,074.42	87.72	336.82	-89.87	358.90	-531.16	4,004.56	3,832.48	172.08	23.271	
10,700.00	7,149.64	20,806.96	7,074.42	90.03	336.82	-89.87	358.90	-531.16	4,097.14	3,927.79	169.35	24.193	
10,800.00	7,149.67	20,806.96	7,074.42	92.36	336.82	-89.87	358.90	-531.16	4,190.06	4,023.33	166.73	25.131	
10,900.00	7,149.69	20,806.96	7,074.42	94.69	336.82	-89.87	358.90	-531.16	4,283.30	4,119.09	164.21	26.084	
11,000.00	7,149.71	20,806.96	7,074.42	97.02	336.82	-89.87	358.90	-531.16	4,376.84	4,215.04	161.80	27.051	
11,100.00	7,149.73	20,806.96	7,074.42	99.37	336.82	-89.87	358.90	-531.16	4,470.65	4,311.17	159.48	28.032	
11,200.00	7,149.75	20,806.96	7,074.42	101.71	336.82	-89.87	358.90	-531.16	4,564.73	4,407.48	157.25	29.028	
11,300.00	7,149.77	20,806.96	7,074.42	104.06	336.82	-89.87	358.90	-531.16	4,659.06	4,503.94	155.11	30.036	
11,400.00	7,149.79	20,806.96	7,074.42	106.41	336.82	-89.87	358.90	-531.16	4,753.61	4,600.56	153.05	31.058	
11,500.00	7,149.81	20,806.96	7,074.42	108.77	336.82	-89.87	358.90	-531.16	4,848.39	4,697.32	151.07	32.093	
11,600.00	7,149.83	20,806.96	7,074.42	111.13	336.82	-89.87	358.90	-531.16	4,943.37	4,794.21	149.16	33.141	
11,700.00	7,149.85	20,806.96	7,074.42	113.50	336.82	-89.87	358.90	-531.16	5,038.55	4,891.22	147.32	34.200	
11,800.00	7,149.88	20,806.96	7,074.42	115.86	336.82	-89.87	358.90	-531.16	5,133.91	4,988.35	145.55	35.272	
11,900.00	7,149.90	20,806.96	7,074.42	118.23	336.82	-89.87	358.90	-531.16	5,229.44	5,085.59	143.84	36.355	
12,000.00	7,149.92	20,806.96	7,074.42	120.61	336.82	-89.87	358.90	-531.16	5,325.14	5,182.94	142.20	37.449	
12,100.00	7,149.94	20,806.96	7,074.42	122.98	336.82	-89.87	358.90	-531.16	5,420.99	5,280.38	140.61	38.554	
12,200.00	7,149.96	20,806.96	7,074.42	125.36	336.82	-89.87	358.90	-531.16	5,516.99	5,377.92	139.07	39.670	
12,300.00	7,149.98	20,806.96	7,074.42	127.74	336.82	-89.87	358.90	-531.16	5,613.13	5,475.54	137.59	40.797	
12,400.00	7,150.00	20,806.96	7,074.42	130.12	336.82	-89.87	358.90	-531.16	5,709.40	5,573.24	136.15	41.933	
12,500.00	7,150.02	20,806.96	7,074.42	132.51	336.82	-89.87	358.90	-531.16	5,805.79	5,671.03	134.77	43.079	
12,600.00	7,150.04	20,806.96	7,074.42	134.89	336.82	-89.87	358.90	-531.16	5,902.31	5,768.88	133.43	44.235	
12,700.00	7,150.06	20,806.96	7,074.42	137.28	336.82	-89.87	358.90	-531.16	5,998.94	5,866.81	132.13	45.400	
12,800.00	7,150.09	20,806.96	7,074.42	139.67	336.82	-89.87	358.90	-531.16	6,095.68	5,964.80	130.88	46.575	
12,900.00	7,150.11	20,806.96	7,074.42	142.06	336.82	-89.87	358.90	-531.16	6,192.53	6,062.86	129.67	47.757	
13,000.00	7,150.13	20,806.96	7,074.42	144.46	336.82	-89.87	358.90	-531.16	6,289.47	6,160.98	128.49	48.949	
13,100.00	7,150.15	20,806.96	7,074.42	146.85	336.82	-89.87	358.90	-531.16	6,386.51	6,259.16	127.35	50.149	
13,200.00	7,150.17	20,806.96	7,074.42	149.25	336.82	-89.87	358.90	-531.16	6,483.63	6,357.39	126.25	51.356	
13,300.00	7,150.19	20,806.96	7,074.42	151.64	336.82	-89.87	358.90	-531.16	6,580.85	6,455.67	125.18	52.572	
13,400.00	7,150.21	20,806.96	7,074.42	154.04	336.82	-89.87	358.90	-531.16	6,678.14	6,554.00	124.14	53.795	
13,500.00	7,150.23	20,806.96	7,074.42	156.44	336.82	-89.87	358.90	-531.16	6,775.52	6,652.38	123.13	55.025	
13,600.00	7,150.25	20,806.96	7,074.42	158.85	336.82	-89.87	358.90	-531.16	6,872.97	6,750.81	122.16	56.263	
13,700.00	7,150.27	20,806.96	7,074.42	161.25	336.82	-89.87	358.90	-531.16	6,970.49	6,849.28	121.21	57.508	
13,800.00	7,150.30	20,806.96	7,074.42	163.65	336.82	-89.87	358.90	-531.16	7,068.08	6,947.79	120.29	58.759	
13,900.00	7,150.32	20,806.96	7,074.42	166.06	336.82	-89.87	358.90	-531.16	7,165.74	7,046.34	119.40	60.016	
14,000.00	7,150.34	20,806.96	7,074.42	168.46	336.82	-89.87	358.90	-531.16	7,263.46	7,144.93	118.53	61.280	
14,100.00	7,150.36	20,806.96	7,074.42	170.87	336.82	-89.87	358.90	-531.16	7,361.24	7,243.55	117.69	62.550	
14,200.00	7,150.38	20,806.96	7,074.42	173.28	336.82	-89.87	358.90	-531.16	7,459.08	7,342.21	116.87	63.826	
14,300.00	7,150.40	20,806.96	7,074.42	175.68	336.82	-89.87	358.90	-531.16	7,556.98	7,440.91	116.07	65.107	
14,400.00	7,150.42	20,806.96	7,074.42	178.09	336.82	-89.87	358.90	-531.16	7,654.93	7,539.64	115.30	66.394	
14,500.00	7,150.44	20,806.96	7,074.42	180.50	336.82	-89.87	358.90	-531.16	7,752.94	7,638.39	114.54	67.686	
14,600.00	7,150.46	20,806.96	7,074.42	182.92	336.82	-89.87	358.90	-531.16	7,850.99	7,737.18	113.81	68.983	
14,700.00	7,150.48	20,806.96	7,074.42	185.33	336.82	-89.87	358.90	-531.16	7,949.09	7,836.00	113.10	70.285	
14,800.00	7,150.51	20,806.96	7,074.42	187.74	336.82	-89.87	358.90	-531.16	8,047.24	7,934.84	112.40	71.592	
14,900.00	7,150.53	20,806.96	7,074.42	190.15	336.82	-89.87	358.90	-531.16	8,145.44	8,033.71	111.73	72.903	
15,000.00	7,150.55	20,806.96	7,074.42	192.57	336.82	-89.87	358.90	-531.16	8,243.68	8,132.60	111.07	74.219	
15,100.00	7,150.57	20,806.96	7,074.42	194.98	336.82	-89.87	358.90	-531.16	8,341.96	8,231.52	110.43	75.539	
15,200.00	7,150.59	20,806.96	7,074.42	197.40	336.82	-89.87	358.90	-531.16	8,440.28	8,330.47	109.81	76.863	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error: 0.00 usft	
Survey Program: Reference		100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project						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	
15,300.00	7,150.61	20,806.96	7,074.42	199.81	336.82	-89.87	358.90	-531.16	8,538.64	8,429.43	109.20	78.191	
15,400.00	7,150.63	20,806.96	7,074.42	202.23	336.82	-89.87	358.90	-531.16	8,637.03	8,528.42	108.61	79.522	
15,500.00	7,150.65	20,806.96	7,074.42	204.64	336.82	-89.87	358.90	-531.16	8,735.47	8,627.43	108.04	80.857	
15,600.00	7,150.67	20,806.96	7,074.42	207.06	336.82	-89.87	358.90	-531.16	8,833.94	8,726.46	107.47	82.196	
15,700.00	7,150.69	20,806.96	7,074.42	209.48	336.82	-89.87	358.90	-531.16	8,932.44	8,825.51	106.93	83.537	
15,800.00	7,150.72	20,806.96	7,074.42	211.90	336.82	-89.87	358.90	-531.16	9,030.97	8,924.58	106.39	84.882	
15,900.00	7,150.74	20,806.96	7,074.42	214.32	336.82	-89.87	358.90	-531.16	9,129.54	9,023.67	105.87	86.230	
16,000.00	7,150.76	20,806.96	7,074.42	216.74	336.82	-89.87	358.90	-531.16	9,228.14	9,122.77	105.37	87.580	
16,100.00	7,150.78	20,806.96	7,074.42	219.16	336.82	-89.87	358.90	-531.16	9,326.77	9,221.89	104.87	88.933	
16,200.00	7,150.80	20,806.96	7,074.42	221.58	336.82	-89.87	358.90	-531.16	9,425.43	9,321.03	104.39	90.289	
16,300.00	7,150.82	20,806.96	7,074.42	224.00	336.82	-89.87	358.90	-531.16	9,524.11	9,420.19	103.92	91.647	
16,400.00	7,150.84	20,806.96	7,074.42	226.42	336.82	-89.87	358.90	-531.16	9,622.82	9,519.36	103.46	93.007	
16,500.00	7,150.86	20,806.96	7,074.42	228.84	336.82	-89.87	358.90	-531.16	9,721.56	9,618.55	103.02	94.369	
16,600.00	7,150.88	20,806.96	7,074.42	231.26	336.82	-89.87	358.90	-531.16	9,820.33	9,717.75	102.58	95.733	
16,700.00	7,150.90	20,806.96	7,074.42	233.68	336.82	-89.87	358.90	-531.16	9,919.11	9,816.96	102.15	97.099	
16,800.00	7,150.93	20,806.96	7,074.42	236.11	336.82	-89.87	358.90	-531.16	10,017.93	9,916.19	101.74	98.467	
16,900.00	7,150.95	20,806.96	7,074.42	238.53	336.82	-89.87	358.90	-531.16	10,116.76	10,015.43	101.33	99.836	
16,986.21	7,150.96	20,806.96	7,074.42	240.62	336.82	-89.87	358.90	-531.16	10,201.99	10,100.99	100.99	101.018	
17,000.00	7,150.97	20,806.96	7,074.42	240.95	336.82	-89.87	358.90	-531.16	10,215.62	10,114.69	100.94	101.207	
17,100.00	7,150.99	20,806.96	7,074.42	243.37	336.82	-89.87	358.90	-531.16	10,314.50	10,213.95	100.55	102.579	
17,154.59	7,151.00	20,806.96	7,074.42	244.70	336.82	-89.87	358.90	-531.16	10,368.49	10,268.14	100.34	103.329	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		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	21,289.96	7,363.81	0.00	339.92	-140.01	-639.31	-536.32	7,481.51				
100.00	100.00	21,289.96	7,363.81	0.25	339.92	-140.01	-639.31	-536.32	7,382.14	7,265.95	116.19	63.537	
200.00	200.00	21,289.96	7,363.81	0.61	339.92	-140.01	-639.31	-536.32	7,282.79	7,166.51	116.28	62.629	
300.00	300.00	21,289.96	7,363.81	0.97	339.92	-140.01	-639.31	-536.32	7,183.46	7,067.07	116.39	61.719	
400.00	400.00	21,289.96	7,363.81	1.33	339.92	-140.01	-639.31	-536.32	7,084.15	6,967.64	116.51	60.804	
500.00	500.00	21,289.96	7,363.81	1.68	339.92	-140.01	-639.31	-536.32	6,984.85	6,868.22	116.63	59.887	
600.00	599.98	21,289.96	7,363.81	2.03	339.92	23.30	-639.31	-536.32	6,885.40	6,768.64	116.75	58.973	
700.00	699.84	21,289.96	7,363.81	2.36	339.92	36.90	-639.31	-536.32	6,785.67	6,668.88	116.85	58.072	
800.00	799.45	21,289.96	7,363.81	2.71	339.92	70.43	-639.31	-536.32	6,685.78	6,568.88	116.91	57.189	
900.00	898.70	21,289.96	7,363.81	3.07	339.92	121.25	-639.31	-536.32	6,585.86	6,468.93	116.93	56.325	
1,000.00	997.47	21,289.96	7,363.81	3.44	339.92	147.24	-639.31	-536.32	6,486.01	6,369.10	116.91	55.480	
1,067.13	1,063.43	21,289.96	7,363.81	3.71	339.92	155.37	-639.31	-536.32	6,419.09	6,302.22	116.87	54.924	
1,100.00	1,095.66	21,289.96	7,363.81	3.84	339.92	155.37	-639.31	-536.32	6,386.35	6,269.50	116.85	54.654	
1,200.00	1,193.71	21,289.96	7,363.81	4.25	339.92	155.37	-639.31	-536.32	6,286.77	6,169.98	116.79	53.829	
1,300.00	1,291.75	21,289.96	7,363.81	4.67	339.92	155.37	-639.31	-536.32	6,187.20	6,070.46	116.74	53.002	
1,400.00	1,389.80	21,289.96	7,363.81	5.10	339.92	155.37	-639.31	-536.32	6,087.64	5,970.96	116.68	52.172	
1,500.00	1,487.85	21,289.96	7,363.81	5.53	339.92	155.37	-639.31	-536.32	5,988.10	5,871.47	116.63	51.341	
1,600.00	1,585.90	21,289.96	7,363.81	5.96	339.92	155.37	-639.31	-536.32	5,888.57	5,771.99	116.59	50.509	
1,700.00	1,683.94	21,289.96	7,363.81	6.40	339.92	155.37	-639.31	-536.32	5,789.06	5,672.52	116.54	49.674	
1,800.00	1,781.99	21,289.96	7,363.81	6.84	339.92	155.37	-639.31	-536.32	5,689.57	5,573.07	116.50	48.839	
1,900.00	1,880.04	21,289.96	7,363.81	7.29	339.92	155.37	-639.31	-536.32	5,590.09	5,473.64	116.46	48.001	
2,000.00	1,978.08	21,289.96	7,363.81	7.73	339.92	155.37	-639.31	-536.32	5,490.64	5,374.22	116.42	47.163	
2,100.00	2,076.13	21,289.96	7,363.81	8.18	339.92	155.37	-639.31	-536.32	5,391.20	5,274.82	116.38	46.323	
2,200.00	2,174.18	21,289.96	7,363.81	8.63	339.92	155.37	-639.31	-536.32	5,291.79	5,175.44	116.35	45.482	
2,300.00	2,272.22	21,289.96	7,363.81	9.08	339.92	155.37	-639.31	-536.32	5,192.39	5,076.07	116.32	44.639	
2,400.00	2,370.27	21,289.96	7,363.81	9.53	339.92	155.37	-639.31	-536.32	5,093.02	4,976.73	116.29	43.795	
2,500.00	2,468.32	21,289.96	7,363.81	9.98	339.92	155.37	-639.31	-536.32	4,993.68	4,877.42	116.27	42.950	
2,600.00	2,566.36	21,289.96	7,363.81	10.43	339.92	155.37	-639.31	-536.32	4,894.36	4,778.12	116.24	42.104	
2,700.00	2,664.41	21,289.96	7,363.81	10.89	339.92	155.37	-639.31	-536.32	4,795.08	4,678.85	116.23	41.257	
2,800.00	2,762.46	21,289.96	7,363.81	11.34	339.92	155.37	-639.31	-536.32	4,695.82	4,579.61	116.21	40.408	
2,900.00	2,860.50	21,289.96	7,363.81	11.79	339.92	155.37	-639.31	-536.32	4,596.59	4,480.39	116.20	39.558	
3,000.00	2,958.55	21,289.96	7,363.81	12.25	339.92	155.37	-639.31	-536.32	4,497.40	4,381.21	116.19	38.706	
3,100.00	3,056.60	21,289.96	7,363.81	12.70	339.92	155.37	-639.31	-536.32	4,398.25	4,282.05	116.19	37.853	
3,200.00	3,154.65	21,289.96	7,363.81	13.16	339.92	155.37	-639.31	-536.32	4,299.13	4,182.93	116.20	36.998	
3,300.00	3,252.69	21,289.96	7,363.81	13.61	339.92	155.37	-639.31	-536.32	4,200.06	4,083.85	116.21	36.142	
3,400.00	3,350.74	21,289.96	7,363.81	14.07	339.92	155.37	-639.31	-536.32	4,101.03	3,984.80	116.23	35.284	
3,500.00	3,448.79	21,289.96	7,363.81	14.52	339.92	155.37	-639.31	-536.32	4,002.05	3,885.79	116.26	34.423	
3,600.00	3,546.83	21,289.96	7,363.81	14.98	339.92	155.37	-639.31	-536.32	3,903.12	3,786.82	116.30	33.561	
3,700.00	3,644.88	21,289.96	7,363.81	15.43	339.92	155.37	-639.31	-536.32	3,804.25	3,687.89	116.35	32.696	
3,800.00	3,742.93	21,289.96	7,363.81	15.89	339.92	155.37	-639.31	-536.32	3,705.43	3,589.02	116.42	31.829	
3,900.00	3,840.97	21,289.96	7,363.81	16.35	339.92	155.37	-639.31	-536.32	3,606.69	3,490.19	116.50	30.958	
4,000.00	3,939.02	21,289.96	7,363.81	16.80	339.92	155.37	-639.31	-536.32	3,508.01	3,391.41	116.60	30.085	
4,100.00	4,037.07	21,289.96	7,363.81	17.26	339.92	155.37	-639.31	-536.32	3,409.41	3,292.69	116.73	29.208	
4,200.00	4,135.11	21,289.96	7,363.81	17.72	339.92	155.37	-639.31	-536.32	3,310.90	3,194.02	116.88	28.328	
4,300.00	4,233.16	21,289.96	7,363.81	18.17	339.92	155.37	-639.31	-536.32	3,212.48	3,095.42	117.06	27.443	
4,400.00	4,331.21	21,289.96	7,363.81	18.63	339.92	155.37	-639.31	-536.32	3,114.15	2,996.88	117.28	26.553	
4,500.00	4,429.25	21,289.96	7,363.81	19.09	339.92	155.37	-639.31	-536.32	3,015.94	2,898.40	117.54	25.659	
4,600.00	4,527.30	21,289.96	7,363.81	19.54	339.92	155.37	-639.31	-536.32	2,917.85	2,800.00	117.85	24.759	
4,700.00	4,625.35	21,289.96	7,363.81	20.00	339.92	155.37	-639.31	-536.32	2,819.90	2,701.67	118.22	23.852	
4,800.00	4,723.40	21,289.96	7,363.81	20.46	339.92	155.37	-639.31	-536.32	2,722.09	2,603.42	118.67	22.939	
4,900.00	4,821.44	21,289.96	7,363.81	20.92	339.92	155.37	-639.31	-536.32	2,624.45	2,505.26	119.19	22.019	
5,000.00	4,919.49	21,289.96	7,363.81	21.37	339.92	155.37	-639.31	-536.32	2,526.99	2,407.17	119.82	21.090	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	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)			
5,100.00	5,017.54	21,289.96	7,363.81	21.83	339.92	155.37	-639.31	-536.32	2,429.74	2,309.18	120.56	20.154	
5,200.00	5,115.58	21,289.96	7,363.81	22.29	339.92	155.37	-639.31	-536.32	2,332.72	2,211.27	121.45	19.208	
5,300.00	5,213.63	21,289.96	7,363.81	22.75	339.92	155.37	-639.31	-536.32	2,235.96	2,113.46	122.51	18.252	
5,400.00	5,311.68	21,289.96	7,363.81	23.21	339.92	155.37	-639.31	-536.32	2,139.51	2,015.74	123.77	17.286	
5,500.00	5,409.72	21,289.96	7,363.81	23.66	339.92	155.37	-639.31	-536.32	2,043.39	1,918.11	125.28	16.311	
5,600.00	5,507.77	21,289.96	7,363.81	24.12	339.92	155.37	-639.31	-536.32	1,947.66	1,820.57	127.09	15.325	
5,700.00	5,605.82	21,289.96	7,363.81	24.58	339.92	155.37	-639.31	-536.32	1,852.39	1,723.13	129.26	14.330	
5,800.00	5,703.86	21,289.96	7,363.81	25.04	339.92	155.37	-639.31	-536.32	1,757.64	1,625.77	131.88	13.328	
5,900.00	5,801.91	21,289.96	7,363.81	25.49	339.92	155.37	-639.31	-536.32	1,663.51	1,528.48	135.02	12.320	
6,000.00	5,899.96	21,289.96	7,363.81	25.95	339.92	155.37	-639.31	-536.32	1,570.10	1,431.28	138.82	11.310	
6,100.00	5,998.00	21,289.96	7,363.81	26.41	339.92	155.37	-639.31	-536.32	1,477.55	1,334.14	143.41	10.303	
6,200.00	6,096.05	21,289.96	7,363.81	26.87	339.92	155.37	-639.31	-536.32	1,386.04	1,237.07	148.97	9.304	
6,300.00	6,194.10	21,289.96	7,363.81	27.33	339.92	155.37	-639.31	-536.32	1,295.79	1,140.08	155.71	8.322	
6,400.00	6,292.15	21,289.96	7,363.81	27.79	339.92	155.37	-639.31	-536.32	1,207.07	1,043.20	163.87	7.366	
6,500.00	6,390.19	21,289.96	7,363.81	28.24	339.92	155.37	-639.31	-536.32	1,120.26	946.50	173.76	6.447	
6,587.61	6,476.09	21,289.96	7,363.81	28.65	339.92	155.37	-639.31	-536.32	1,046.14	862.04	184.10	5.682	
6,600.00	6,488.25	21,289.96	7,363.81	28.70	339.92	159.03	-639.31	-536.32	1,035.83	850.12	185.70	5.578	
6,650.00	6,537.39	21,289.96	7,363.81	28.92	339.92	176.39	-639.31	-536.32	994.86	802.32	192.54	5.167	
6,700.00	6,586.44	21,289.96	7,363.81	29.12	339.92	-167.71	-639.31	-536.32	955.19	755.25	199.94	4.777	
6,750.00	6,635.11	21,289.96	7,363.81	29.30	339.92	-157.33	-639.31	-536.32	917.26	709.40	207.86	4.413	
6,800.00	6,683.08	21,289.96	7,363.81	29.46	339.92	-151.49	-639.31	-536.32	881.53	665.33	216.20	4.077	
6,850.00	6,730.07	21,289.96	7,363.81	29.61	339.92	-148.34	-639.31	-536.32	848.53	623.71	224.82	3.774	
6,900.00	6,775.78	21,289.96	7,363.81	29.74	339.92	-146.60	-639.31	-536.32	818.78	585.28	233.50	3.507	
6,950.00	6,819.93	21,289.96	7,363.81	29.86	339.92	-145.58	-639.31	-536.32	792.86	550.91	241.96	3.277	
7,000.00	6,862.25	21,289.96	7,363.81	29.96	339.92	-144.87	-639.31	-536.32	771.32	521.47	249.85	3.087	
7,050.00	6,902.48	21,289.96	7,363.81	30.04	339.92	-144.27	-639.31	-536.32	754.66	497.88	256.78	2.939	
7,100.00	6,940.37	21,289.96	7,363.81	30.12	339.92	-143.63	-639.31	-536.32	743.33	480.95	262.38	2.833	
7,150.00	6,975.69	21,289.96	7,363.81	30.18	339.92	-142.88	-639.31	-536.32	737.64	471.33	266.30	2.770	
7,174.05	6,991.69	21,289.96	7,363.81	30.20	339.92	-142.45	-639.31	-536.32	736.96	469.44	267.52	2.755 CC	
7,200.00	7,008.21	21,289.96	7,363.81	30.22	339.92	-141.94	-639.31	-536.32	737.75	469.42	268.33	2.749 ES, SF	
7,250.00	7,037.75	21,289.96	7,363.81	30.26	339.92	-140.77	-639.31	-536.32	743.66	475.29	268.37	2.771	
7,300.00	7,064.11	21,289.96	7,363.81	30.28	339.92	-139.33	-639.31	-536.32	755.20	488.71	266.49	2.834	
7,350.00	7,087.14	21,289.96	7,363.81	30.29	339.92	-137.55	-639.31	-536.32	772.05	509.17	262.88	2.937	
7,400.00	7,106.69	21,289.96	7,363.81	30.30	339.92	-135.39	-639.31	-536.32	793.77	535.93	257.84	3.079	
7,450.00	7,122.64	21,289.96	7,363.81	30.30	339.92	-132.79	-639.31	-536.32	819.85	568.17	251.68	3.258	
7,500.00	7,134.89	21,289.96	7,363.81	30.30	339.92	-129.68	-639.31	-536.32	849.72	605.00	244.73	3.472	
7,550.00	7,143.37	21,289.96	7,363.81	30.30	339.92	-125.99	-639.31	-536.32	882.84	645.56	237.28	3.721	
7,600.00	7,148.03	21,289.96	7,363.81	30.32	339.92	-121.67	-639.31	-536.32	918.66	689.07	229.59	4.001	
7,635.28	7,149.00	21,289.96	7,363.81	30.35	339.92	-118.21	-639.31	-536.32	945.28	721.16	224.12	4.218	
7,700.00	7,149.01	21,289.96	7,363.81	30.54	339.92	-118.21	-639.31	-536.32	995.87	781.42	214.44	4.644	
7,800.00	7,149.03	21,289.96	7,363.81	31.33	339.92	-118.21	-639.31	-536.32	1,077.01	876.18	200.83	5.363	
7,900.00	7,149.06	21,289.96	7,363.81	32.52	339.92	-118.21	-639.31	-536.32	1,161.10	972.35	188.74	6.152	
8,000.00	7,149.08	21,289.96	7,363.81	33.88	339.92	-118.21	-639.31	-536.32	1,247.53	1,069.49	178.04	7.007	
8,100.00	7,149.10	21,289.96	7,363.81	35.37	339.92	-118.21	-639.31	-536.32	1,335.87	1,167.31	168.55	7.925	
8,200.00	7,149.12	21,289.96	7,363.81	36.97	339.92	-118.21	-639.31	-536.32	1,425.74	1,265.61	160.13	8.904	
8,300.00	7,149.14	21,289.96	7,363.81	38.65	339.92	-118.21	-639.31	-536.32	1,516.88	1,364.26	152.63	9.938	
8,400.00	7,149.16	21,289.96	7,363.81	40.42	339.92	-118.21	-639.31	-536.32	1,609.08	1,463.15	145.93	11.027	
8,500.00	7,149.18	21,289.96	7,363.81	42.24	339.92	-118.21	-639.31	-536.32	1,702.16	1,562.24	139.92	12.165	
8,600.00	7,149.20	21,289.96	7,363.81	44.13	339.92	-118.21	-639.31	-536.32	1,795.98	1,661.46	134.51	13.352	
8,700.00	7,149.22	21,289.96	7,363.81	46.07	339.92	-118.21	-639.31	-536.32	1,890.43	1,760.80	129.63	14.583	
8,800.00	7,149.24	21,289.96	7,363.81	48.05	339.92	-118.21	-639.31	-536.32	1,985.43	1,860.21	125.21	15.856	
8,900.00	7,149.27	21,289.96	7,363.81	50.07	339.92	-118.21	-639.31	-536.32	2,080.89	1,959.70	121.20	17.169	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		409-B001Mb_MWD+HRGM, 21290-Project						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	7,149.29	21,289.96	7,363.81	52.13	339.92	-118.21	-639.31	-536.32	2,176.77	2,059.23	117.54	18.519	
9,100.00	7,149.31	21,289.96	7,363.81	54.21	339.92	-118.21	-639.31	-536.32	2,273.00	2,158.80	114.20	19.905	
9,200.00	7,149.33	21,289.96	7,363.81	56.33	339.92	-118.21	-639.31	-536.32	2,369.54	2,258.41	111.13	21.322	
9,300.00	7,149.35	21,289.96	7,363.81	58.47	339.92	-118.21	-639.31	-536.32	2,466.36	2,358.04	108.31	22.770	
9,400.00	7,149.37	21,289.96	7,363.81	60.63	339.92	-118.21	-639.31	-536.32	2,563.42	2,457.70	105.72	24.247	
9,500.00	7,149.39	21,289.96	7,363.81	62.82	339.92	-118.21	-639.31	-536.32	2,660.70	2,557.37	103.33	25.750	
9,600.00	7,149.41	21,289.96	7,363.81	65.02	339.92	-118.21	-639.31	-536.32	2,758.17	2,657.06	101.11	27.278	
9,700.00	7,149.43	21,289.96	7,363.81	67.23	339.92	-118.21	-639.31	-536.32	2,855.82	2,756.76	99.06	28.829	
9,800.00	7,149.45	21,289.96	7,363.81	69.47	339.92	-118.21	-639.31	-536.32	2,953.63	2,856.47	97.16	30.401	
9,900.00	7,149.48	21,289.96	7,363.81	71.71	339.92	-118.21	-639.31	-536.32	3,051.57	2,956.19	95.38	31.993	
10,000.00	7,149.50	21,289.96	7,363.81	73.97	339.92	-118.21	-639.31	-536.32	3,149.65	3,055.92	93.73	33.603	
10,100.00	7,149.52	21,289.96	7,363.81	76.24	339.92	-118.21	-639.31	-536.32	3,247.85	3,155.65	92.19	35.230	
10,200.00	7,149.54	21,289.96	7,363.81	78.52	339.92	-118.21	-639.31	-536.32	3,346.15	3,255.40	90.75	36.872	
10,300.00	7,149.56	21,289.96	7,363.81	80.80	339.92	-118.21	-639.31	-536.32	3,444.55	3,355.14	89.40	38.528	
10,400.00	7,149.58	21,289.96	7,363.81	83.10	339.92	-118.21	-639.31	-536.32	3,543.03	3,454.89	88.14	40.197	
10,500.00	7,149.60	21,289.96	7,363.81	85.40	339.92	-118.21	-639.31	-536.32	3,641.61	3,554.65	86.96	41.878	
10,600.00	7,149.62	21,289.96	7,363.81	87.72	339.92	-118.21	-639.31	-536.32	3,740.25	3,654.41	85.84	43.570	
10,700.00	7,149.64	21,289.96	7,363.81	90.03	339.92	-118.21	-639.31	-536.32	3,838.97	3,754.17	84.80	45.271	
10,800.00	7,149.67	21,289.96	7,363.81	92.36	339.92	-118.21	-639.31	-536.32	3,937.75	3,853.94	83.82	46.981	
10,900.00	7,149.69	21,289.96	7,363.81	94.69	339.92	-118.21	-639.31	-536.32	4,036.59	3,953.70	82.89	48.699	
11,000.00	7,149.71	21,289.96	7,363.81	97.02	339.92	-118.21	-639.31	-536.32	4,135.49	4,053.48	82.01	50.424	
11,100.00	7,149.73	21,289.96	7,363.81	99.37	339.92	-118.21	-639.31	-536.32	4,234.44	4,153.25	81.19	52.155	
11,200.00	7,149.75	21,289.96	7,363.81	101.71	339.92	-118.21	-639.31	-536.32	4,333.44	4,253.03	80.41	53.891	
11,300.00	7,149.77	21,289.96	7,363.81	104.06	339.92	-118.21	-639.31	-536.32	4,432.48	4,352.80	79.68	55.632	
11,400.00	7,149.79	21,289.96	7,363.81	106.41	339.92	-118.21	-639.31	-536.32	4,531.56	4,452.58	78.98	57.377	
11,500.00	7,149.81	21,289.96	7,363.81	108.77	339.92	-118.21	-639.31	-536.32	4,630.69	4,552.37	78.32	59.125	
11,600.00	7,149.83	21,289.96	7,363.81	111.13	339.92	-118.21	-639.31	-536.32	4,729.85	4,652.15	77.70	60.875	
11,700.00	7,149.85	21,289.96	7,363.81	113.50	339.92	-118.21	-639.31	-536.32	4,829.04	4,751.94	77.11	62.628	
11,800.00	7,149.88	21,289.96	7,363.81	115.86	339.92	-118.21	-639.31	-536.32	4,928.27	4,851.73	76.55	64.383	
11,900.00	7,149.90	21,289.96	7,363.81	118.23	339.92	-118.21	-639.31	-536.32	5,027.53	4,951.51	76.02	66.138	
12,000.00	7,149.92	21,289.96	7,363.81	120.61	339.92	-118.21	-639.31	-536.32	5,126.82	5,051.31	75.51	67.895	
12,100.00	7,149.94	21,289.96	7,363.81	122.98	339.92	-118.21	-639.31	-536.32	5,226.13	5,151.10	75.03	69.651	
12,200.00	7,149.96	21,289.96	7,363.81	125.36	339.92	-118.21	-639.31	-536.32	5,325.47	5,250.89	74.58	71.407	
12,300.00	7,149.98	21,289.96	7,363.81	127.74	339.92	-118.21	-639.31	-536.32	5,424.84	5,350.69	74.15	73.163	
12,400.00	7,150.00	21,289.96	7,363.81	130.12	339.92	-118.21	-639.31	-536.32	5,524.22	5,450.49	73.74	74.917	
12,500.00	7,150.02	21,289.96	7,363.81	132.51	339.92	-118.21	-639.31	-536.32	5,623.63	5,550.28	73.35	76.670	
12,600.00	7,150.04	21,289.96	7,363.81	134.89	339.92	-118.21	-639.31	-536.32	5,723.06	5,650.08	72.98	78.422	
12,700.00	7,150.06	21,289.96	7,363.81	137.28	339.92	-118.21	-639.31	-536.32	5,822.51	5,749.89	72.63	80.171	
12,800.00	7,150.09	21,289.96	7,363.81	139.67	339.92	-118.21	-639.31	-536.32	5,921.98	5,849.69	72.29	81.919	
12,900.00	7,150.11	21,289.96	7,363.81	142.06	339.92	-118.21	-639.31	-536.32	6,021.46	5,949.49	71.97	83.664	
13,000.00	7,150.13	21,289.96	7,363.81	144.46	339.92	-118.21	-639.31	-536.32	6,120.97	6,049.30	71.67	85.406	
13,100.00	7,150.15	21,289.96	7,363.81	146.85	339.92	-118.21	-639.31	-536.32	6,220.49	6,149.10	71.38	87.145	
13,200.00	7,150.17	21,289.96	7,363.81	149.25	339.92	-118.21	-639.31	-536.32	6,320.02	6,248.91	71.11	88.880	
13,300.00	7,150.19	21,289.96	7,363.81	151.64	339.92	-118.21	-639.31	-536.32	6,419.57	6,348.72	70.85	90.613	
13,400.00	7,150.21	21,289.96	7,363.81	154.04	339.92	-118.21	-639.31	-536.32	6,519.13	6,448.53	70.60	92.341	
13,500.00	7,150.23	21,289.96	7,363.81	156.44	339.92	-118.21	-639.31	-536.32	6,618.70	6,548.34	70.36	94.066	
13,600.00	7,150.25	21,289.96	7,363.81	158.85	339.92	-118.21	-639.31	-536.32	6,718.29	6,648.15	70.14	95.787	
13,700.00	7,150.27	21,289.96	7,363.81	161.25	339.92	-118.21	-639.31	-536.32	6,817.89	6,747.97	69.92	97.504	
13,800.00	7,150.30	21,289.96	7,363.81	163.65	339.92	-118.21	-639.31	-536.32	6,917.50	6,847.78	69.72	99.217	
13,900.00	7,150.32	21,289.96	7,363.81	166.06	339.92	-118.21	-639.31	-536.32	7,017.12	6,947.59	69.53	100.925	
14,000.00	7,150.34	21,289.96	7,363.81	168.46	339.92	-118.21	-639.31	-536.32	7,116.76	7,047.41	69.34	102.628	
14,100.00	7,150.36	21,289.96	7,363.81	170.87	339.92	-118.21	-639.31	-536.32	7,216.40	7,147.23	69.17	104.327	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
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)			
14,200.00	7,150.38	21,289.96	7,363.81	173.28	339.92	-118.21	-639.31	-536.32	7,316.05	7,247.05	69.01	106.021	
14,300.00	7,150.40	21,289.96	7,363.81	175.68	339.92	-118.21	-639.31	-536.32	7,415.71	7,346.87	68.85	107.711	
14,400.00	7,150.42	21,289.96	7,363.81	178.09	339.92	-118.21	-639.31	-536.32	7,515.38	7,446.69	68.70	109.395	
14,500.00	7,150.44	21,289.96	7,363.81	180.50	339.92	-118.21	-639.31	-536.32	7,615.06	7,546.51	68.56	111.074	
14,600.00	7,150.46	21,289.96	7,363.81	182.92	339.92	-118.21	-639.31	-536.32	7,714.75	7,646.33	68.42	112.748	
14,700.00	7,150.48	21,289.96	7,363.81	185.33	339.92	-118.21	-639.31	-536.32	7,814.45	7,746.15	68.30	114.417	
14,800.00	7,150.51	21,289.96	7,363.81	187.74	339.92	-118.21	-639.31	-536.32	7,914.15	7,845.97	68.18	116.080	
14,900.00	7,150.53	21,289.96	7,363.81	190.15	339.92	-118.21	-639.31	-536.32	8,013.86	7,945.80	68.06	117.738	
15,000.00	7,150.55	21,289.96	7,363.81	192.57	339.92	-118.21	-639.31	-536.32	8,113.58	8,045.62	67.96	119.391	
15,100.00	7,150.57	21,289.96	7,363.81	194.98	339.92	-118.21	-639.31	-536.32	8,213.31	8,145.45	67.86	121.038	
15,200.00	7,150.59	21,289.96	7,363.81	197.40	339.92	-118.21	-639.31	-536.32	8,313.04	8,245.28	67.76	122.680	
15,300.00	7,150.61	21,289.96	7,363.81	199.81	339.92	-118.21	-639.31	-536.32	8,412.78	8,345.10	67.67	124.316	
15,400.00	7,150.63	21,289.96	7,363.81	202.23	339.92	-118.21	-639.31	-536.32	8,512.52	8,444.93	67.59	125.946	
15,500.00	7,150.65	21,289.96	7,363.81	204.64	339.92	-118.21	-639.31	-536.32	8,612.27	8,544.76	67.51	127.570	
15,600.00	7,150.67	21,289.96	7,363.81	207.06	339.92	-118.21	-639.31	-536.32	8,712.03	8,644.59	67.44	129.189	
15,700.00	7,150.69	21,289.96	7,363.81	209.48	339.92	-118.21	-639.31	-536.32	8,811.79	8,744.42	67.37	130.802	
15,800.00	7,150.72	21,289.96	7,363.81	211.90	339.92	-118.21	-639.31	-536.32	8,911.55	8,844.25	67.30	132.409	
15,900.00	7,150.74	21,289.96	7,363.81	214.32	339.92	-118.21	-639.31	-536.32	9,011.32	8,944.08	67.24	134.011	
16,000.00	7,150.76	21,289.96	7,363.81	216.74	339.92	-118.21	-639.31	-536.32	9,111.10	9,043.91	67.19	135.606	
16,100.00	7,150.78	21,289.96	7,363.81	219.16	339.92	-118.21	-639.31	-536.32	9,210.88	9,143.75	67.14	137.196	
16,200.00	7,150.80	21,289.96	7,363.81	221.58	339.92	-118.21	-639.31	-536.32	9,310.67	9,243.58	67.09	138.779	
16,300.00	7,150.82	21,289.96	7,363.81	224.00	339.92	-118.21	-639.31	-536.32	9,410.46	9,343.41	67.05	140.357	
16,400.00	7,150.84	21,289.96	7,363.81	226.42	339.92	-118.21	-639.31	-536.32	9,510.26	9,443.25	67.01	141.929	
16,500.00	7,150.86	21,289.96	7,363.81	228.84	339.92	-118.21	-639.31	-536.32	9,610.06	9,543.08	66.97	143.494	
16,600.00	7,150.88	21,289.96	7,363.81	231.26	339.92	-118.21	-639.31	-536.32	9,709.86	9,642.92	66.94	145.054	
16,700.00	7,150.90	21,289.96	7,363.81	233.68	339.92	-118.21	-639.31	-536.32	9,809.67	9,742.76	66.91	146.608	
16,800.00	7,150.93	21,289.96	7,363.81	236.11	339.92	-118.21	-639.31	-536.32	9,909.48	9,842.59	66.89	148.155	
16,900.00	7,150.95	21,289.96	7,363.81	238.53	339.92	-118.21	-639.31	-536.32	10,009.29	9,942.43	66.86	149.697	
16,986.21	7,150.96	21,289.96	7,363.81	240.62	339.92	-118.21	-639.31	-536.32	10,095.35	10,028.50	66.85	151.021	
17,000.00	7,150.97	21,289.96	7,363.81	240.95	339.92	-118.21	-639.31	-536.32	10,109.11	10,042.27	66.84	151.232	
17,100.00	7,150.99	21,289.96	7,363.81	243.37	339.92	-118.21	-639.31	-536.32	10,208.93	10,142.11	66.83	152.762	
17,154.59	7,151.00	21,289.96	7,363.81	244.70	339.92	-118.21	-639.31	-536.32	10,263.43	10,196.60	66.82	153.594	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		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	20,952.96	7,074.90	0.00	233.58	-161.69	-1,607.04	-531.72	7,343.67				
100.00	100.00	20,952.96	7,074.90	0.25	233.58	-161.69	-1,607.04	-531.72	7,246.40	7,123.04	123.36	58.744	
200.00	200.00	20,952.96	7,074.90	0.61	233.58	-161.69	-1,607.04	-531.72	7,149.20	7,025.59	123.61	57.838	
300.00	300.00	20,952.96	7,074.90	0.97	233.58	-161.69	-1,607.04	-531.72	7,052.08	6,928.20	123.88	56.927	
400.00	400.00	20,952.96	7,074.90	1.33	233.58	-161.69	-1,607.04	-531.72	6,955.05	6,830.88	124.17	56.013	
500.00	500.00	20,952.96	7,074.90	1.68	233.58	-161.69	-1,607.04	-531.72	6,858.10	6,733.62	124.48	55.096	
600.00	599.98	20,952.96	7,074.90	2.03	233.58	-5.71	-1,607.04	-531.72	6,760.82	6,636.03	124.79	54.177	
700.00	699.84	20,952.96	7,074.90	2.36	233.58	-6.78	-1,607.04	-531.72	6,662.86	6,537.77	125.09	53.265	
800.00	799.45	20,952.96	7,074.90	2.71	233.58	-8.30	-1,607.04	-531.72	6,564.31	6,438.96	125.36	52.364	
900.00	898.70	20,952.96	7,074.90	3.07	233.58	-10.67	-1,607.04	-531.72	6,465.27	6,339.68	125.60	51.477	
1,000.00	997.47	20,952.96	7,074.90	3.44	233.58	-14.82	-1,607.04	-531.72	6,365.83	6,240.04	125.80	50.605	
1,067.13	1,063.43	20,952.96	7,074.90	3.71	233.58	-19.90	-1,607.04	-531.72	6,298.91	6,173.01	125.91	50.027	
1,100.00	1,095.66	20,952.96	7,074.90	3.84	233.58	-19.90	-1,607.04	-531.72	6,266.12	6,140.16	125.96	49.747	
1,200.00	1,193.71	20,952.96	7,074.90	4.25	233.58	-19.90	-1,607.04	-531.72	6,166.36	6,040.24	126.11	48.895	
1,300.00	1,291.75	20,952.96	7,074.90	4.67	233.58	-19.90	-1,607.04	-531.72	6,066.60	5,940.33	126.28	48.042	
1,400.00	1,389.80	20,952.96	7,074.90	5.10	233.58	-19.90	-1,607.04	-531.72	5,966.86	5,840.41	126.45	47.189	
1,500.00	1,487.85	20,952.96	7,074.90	5.53	233.58	-19.90	-1,607.04	-531.72	5,867.12	5,740.49	126.62	46.335	
1,600.00	1,585.90	20,952.96	7,074.90	5.96	233.58	-19.90	-1,607.04	-531.72	5,767.39	5,640.58	126.81	45.480	
1,700.00	1,683.94	20,952.96	7,074.90	6.40	233.58	-19.90	-1,607.04	-531.72	5,667.67	5,540.67	127.00	44.626	
1,800.00	1,781.99	20,952.96	7,074.90	6.84	233.58	-19.90	-1,607.04	-531.72	5,567.96	5,440.75	127.21	43.771	
1,900.00	1,880.04	20,952.96	7,074.90	7.29	233.58	-19.90	-1,607.04	-531.72	5,468.26	5,340.85	127.42	42.917	
2,000.00	1,978.08	20,952.96	7,074.90	7.73	233.58	-19.90	-1,607.04	-531.72	5,368.57	5,240.94	127.63	42.062	
2,100.00	2,076.13	20,952.96	7,074.90	8.18	233.58	-19.90	-1,607.04	-531.72	5,268.90	5,141.04	127.86	41.208	
2,200.00	2,174.18	20,952.96	7,074.90	8.63	233.58	-19.90	-1,607.04	-531.72	5,169.23	5,041.14	128.10	40.354	
2,300.00	2,272.22	20,952.96	7,074.90	9.08	233.58	-19.90	-1,607.04	-531.72	5,069.58	4,941.24	128.34	39.500	
2,400.00	2,370.27	20,952.96	7,074.90	9.53	233.58	-19.90	-1,607.04	-531.72	4,969.95	4,841.35	128.60	38.647	
2,500.00	2,468.32	20,952.96	7,074.90	9.98	233.58	-19.90	-1,607.04	-531.72	4,870.33	4,741.46	128.87	37.794	
2,600.00	2,566.36	20,952.96	7,074.90	10.43	233.58	-19.90	-1,607.04	-531.72	4,770.72	4,641.58	129.14	36.942	
2,700.00	2,664.41	20,952.96	7,074.90	10.89	233.58	-19.90	-1,607.04	-531.72	4,671.13	4,541.70	129.43	36.090	
2,800.00	2,762.46	20,952.96	7,074.90	11.34	233.58	-19.90	-1,607.04	-531.72	4,571.56	4,441.84	129.73	35.240	
2,900.00	2,860.50	20,952.96	7,074.90	11.79	233.58	-19.90	-1,607.04	-531.72	4,472.01	4,341.97	130.04	34.390	
3,000.00	2,958.55	20,952.96	7,074.90	12.25	233.58	-19.90	-1,607.04	-531.72	4,372.48	4,242.12	130.36	33.541	
3,100.00	3,056.60	20,952.96	7,074.90	12.70	233.58	-19.90	-1,607.04	-531.72	4,272.97	4,142.27	130.70	32.693	
3,200.00	3,154.65	20,952.96	7,074.90	13.16	233.58	-19.90	-1,607.04	-531.72	4,173.49	4,042.43	131.05	31.846	
3,300.00	3,252.69	20,952.96	7,074.90	13.61	233.58	-19.90	-1,607.04	-531.72	4,074.03	3,942.61	131.42	31.000	
3,400.00	3,350.74	20,952.96	7,074.90	14.07	233.58	-19.90	-1,607.04	-531.72	3,974.59	3,842.79	131.81	30.155	
3,500.00	3,448.79	20,952.96	7,074.90	14.52	233.58	-19.90	-1,607.04	-531.72	3,875.19	3,742.98	132.21	29.311	
3,600.00	3,546.83	20,952.96	7,074.90	14.98	233.58	-19.90	-1,607.04	-531.72	3,775.82	3,643.19	132.63	28.469	
3,700.00	3,644.88	20,952.96	7,074.90	15.43	233.58	-19.90	-1,607.04	-531.72	3,676.48	3,543.41	133.07	27.628	
3,800.00	3,742.93	20,952.96	7,074.90	15.89	233.58	-19.90	-1,607.04	-531.72	3,577.18	3,443.64	133.54	26.788	
3,900.00	3,840.97	20,952.96	7,074.90	16.35	233.58	-19.90	-1,607.04	-531.72	3,477.92	3,343.89	134.03	25.950	
4,000.00	3,939.02	20,952.96	7,074.90	16.80	233.58	-19.90	-1,607.04	-531.72	3,378.70	3,244.16	134.54	25.113	
4,100.00	4,037.07	20,952.96	7,074.90	17.26	233.58	-19.90	-1,607.04	-531.72	3,279.53	3,144.45	135.08	24.278	
4,200.00	4,135.11	20,952.96	7,074.90	17.72	233.58	-19.90	-1,607.04	-531.72	3,180.41	3,044.75	135.66	23.444	
4,300.00	4,233.16	20,952.96	7,074.90	18.17	233.58	-19.90	-1,607.04	-531.72	3,081.35	2,945.08	136.27	22.613	
4,400.00	4,331.21	20,952.96	7,074.90	18.63	233.58	-19.90	-1,607.04	-531.72	2,982.35	2,845.44	136.91	21.783	
4,500.00	4,429.25	20,952.96	7,074.90	19.09	233.58	-19.90	-1,607.04	-531.72	2,883.42	2,745.82	137.60	20.955	
4,600.00	4,527.30	20,952.96	7,074.90	19.54	233.58	-19.90	-1,607.04	-531.72	2,784.57	2,646.23	138.34	20.129	
4,700.00	4,625.35	20,952.96	7,074.90	20.00	233.58	-19.90	-1,607.04	-531.72	2,685.80	2,546.67	139.13	19.305	
4,800.00	4,723.40	20,952.96	7,074.90	20.46	233.58	-19.90	-1,607.04	-531.72	2,587.13	2,447.15	139.97	18.483	
4,900.00	4,821.44	20,952.96	7,074.90	20.92	233.58	-19.90	-1,607.04	-531.72	2,488.56	2,347.68	140.88	17.664	
5,000.00	4,919.49	20,952.96	7,074.90	21.37	233.58	-19.90	-1,607.04	-531.72	2,390.11	2,248.24	141.87	16.847	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		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	
5,100.00	5,017.54	20,952.96	7,074.90	21.83	233.58	-19.90	-1,607.04	-531.72	2,291.80	2,148.86	142.94	16.034	
5,200.00	5,115.58	20,952.96	7,074.90	22.29	233.58	-19.90	-1,607.04	-531.72	2,193.63	2,049.53	144.10	15.223	
5,300.00	5,213.63	20,952.96	7,074.90	22.75	233.58	-19.90	-1,607.04	-531.72	2,095.65	1,950.27	145.38	14.415	
5,400.00	5,311.68	20,952.96	7,074.90	23.21	233.58	-19.90	-1,607.04	-531.72	1,997.86	1,851.08	146.78	13.611	
5,500.00	5,409.72	20,952.96	7,074.90	23.66	233.58	-19.90	-1,607.04	-531.72	1,900.30	1,751.97	148.33	12.811	
5,600.00	5,507.77	20,952.96	7,074.90	24.12	233.58	-19.90	-1,607.04	-531.72	1,803.01	1,652.96	150.05	12.016	
5,700.00	5,605.82	20,952.96	7,074.90	24.58	233.58	-19.90	-1,607.04	-531.72	1,706.03	1,554.05	151.98	11.226	
5,800.00	5,703.86	20,952.96	7,074.90	25.04	233.58	-19.90	-1,607.04	-531.72	1,609.42	1,455.28	154.14	10.441	
5,900.00	5,801.91	20,952.96	7,074.90	25.49	233.58	-19.90	-1,607.04	-531.72	1,513.26	1,356.66	156.60	9.663	
6,000.00	5,899.96	20,952.96	7,074.90	25.95	233.58	-19.90	-1,607.04	-531.72	1,417.62	1,258.22	159.40	8.893	
6,100.00	5,998.00	20,952.96	7,074.90	26.41	233.58	-19.90	-1,607.04	-531.72	1,322.63	1,160.01	162.62	8.133	
6,200.00	6,096.05	20,952.96	7,074.90	26.87	233.58	-19.90	-1,607.04	-531.72	1,228.43	1,062.08	166.36	7.384	
6,300.00	6,194.10	20,952.96	7,074.90	27.33	233.58	-19.90	-1,607.04	-531.72	1,135.23	964.51	170.72	6.650	
6,400.00	6,292.15	20,952.96	7,074.90	27.79	233.58	-19.90	-1,607.04	-531.72	1,043.29	867.43	175.86	5.932	
6,500.00	6,390.19	20,952.96	7,074.90	28.24	233.58	-19.90	-1,607.04	-531.72	952.97	771.00	181.97	5.237	
6,587.61	6,476.09	20,952.96	7,074.90	28.65	233.58	-19.90	-1,607.04	-531.72	875.58	687.30	188.28	4.650	
6,600.00	6,488.25	20,952.96	7,074.90	28.70	233.58	-12.59	-1,607.04	-531.72	864.79	675.53	189.26	4.569	
6,650.00	6,537.39	20,952.96	7,074.90	28.92	233.58	18.61	-1,607.04	-531.72	821.86	628.44	193.41	4.249	
6,700.00	6,586.44	20,952.96	7,074.90	29.12	233.58	46.76	-1,607.04	-531.72	780.21	582.29	197.92	3.942	
6,750.00	6,635.11	20,952.96	7,074.90	29.30	233.58	67.68	-1,607.04	-531.72	740.34	537.61	202.73	3.652	
6,800.00	6,683.08	20,952.96	7,074.90	29.46	233.58	82.33	-1,607.04	-531.72	702.81	495.05	207.76	3.383	
6,850.00	6,730.07	20,952.96	7,074.90	29.61	233.58	92.73	-1,607.04	-531.72	668.27	455.40	212.87	3.139	
6,900.00	6,775.78	20,952.96	7,074.90	29.74	233.58	100.29	-1,607.04	-531.72	637.44	419.62	217.82	2.926	
6,950.00	6,819.93	20,952.96	7,074.90	29.86	233.58	105.86	-1,607.04	-531.72	611.08	388.78	222.30	2.749	
7,000.00	6,862.25	20,952.96	7,074.90	29.96	233.58	109.98	-1,607.04	-531.72	589.96	364.05	225.91	2.611	
7,050.00	6,902.48	20,952.96	7,074.90	30.04	233.58	112.97	-1,607.04	-531.72	574.79	346.56	228.24	2.518	
7,100.00	6,940.37	20,952.96	7,074.90	30.12	233.58	115.04	-1,607.04	-531.72	566.16	337.26	228.90	2.473	
7,137.54	6,967.14	20,952.96	7,074.90	30.16	233.58	116.07	-1,607.04	-531.72	564.19	336.02	228.17	2.473 CC, ES, SF	
7,150.00	6,975.69	20,952.96	7,074.90	30.18	233.58	116.32	-1,607.04	-531.72	564.41	336.72	227.68	2.479	
7,200.00	7,008.21	20,952.96	7,074.90	30.22	233.58	116.89	-1,607.04	-531.72	569.62	345.04	224.58	2.536	
7,250.00	7,037.75	20,952.96	7,074.90	30.26	233.58	116.78	-1,607.04	-531.72	581.56	361.76	219.80	2.646	
7,300.00	7,064.11	20,952.96	7,074.90	30.28	233.58	116.01	-1,607.04	-531.72	599.78	386.03	213.75	2.806	
7,350.00	7,087.14	20,952.96	7,074.90	30.29	233.58	114.54	-1,607.04	-531.72	623.61	416.73	206.88	3.014	
7,400.00	7,106.69	20,952.96	7,074.90	30.30	233.58	112.33	-1,607.04	-531.72	652.29	452.66	199.64	3.267	
7,450.00	7,122.64	20,952.96	7,074.90	30.30	233.58	109.30	-1,607.04	-531.72	685.06	492.68	192.38	3.561	
7,500.00	7,134.89	20,952.96	7,074.90	30.30	233.58	105.37	-1,607.04	-531.72	721.17	535.79	185.38	3.890	
7,550.00	7,143.37	20,952.96	7,074.90	30.30	233.58	100.44	-1,607.04	-531.72	759.95	581.13	178.81	4.250	
7,600.00	7,148.03	20,952.96	7,074.90	30.32	233.58	94.46	-1,607.04	-531.72	800.77	628.01	172.76	4.635	
7,635.28	7,149.00	20,952.96	7,074.90	30.35	233.58	89.61	-1,607.04	-531.72	830.52	661.69	168.83	4.919	
7,700.00	7,149.01	20,952.96	7,074.90	30.54	233.58	89.61	-1,607.04	-531.72	886.33	724.09	162.24	5.463	
7,800.00	7,149.03	20,952.96	7,074.90	31.33	233.58	89.61	-1,607.04	-531.72	974.73	821.37	153.36	6.356	
7,900.00	7,149.06	20,952.96	7,074.90	32.52	233.58	89.61	-1,607.04	-531.72	1,065.18	919.35	145.83	7.304	
8,000.00	7,149.08	20,952.96	7,074.90	33.88	233.58	89.61	-1,607.04	-531.72	1,157.21	1,017.79	139.41	8.301	
8,100.00	7,149.10	20,952.96	7,074.90	35.37	233.58	89.61	-1,607.04	-531.72	1,250.46	1,116.55	133.91	9.338	
8,200.00	7,149.12	20,952.96	7,074.90	36.97	233.58	89.61	-1,607.04	-531.72	1,344.68	1,215.52	129.16	10.411	
8,300.00	7,149.14	20,952.96	7,074.90	38.65	233.58	89.61	-1,607.04	-531.72	1,439.68	1,314.65	125.03	11.515	
8,400.00	7,149.16	20,952.96	7,074.90	40.42	233.58	89.61	-1,607.04	-531.72	1,535.32	1,413.89	121.42	12.645	
8,500.00	7,149.18	20,952.96	7,074.90	42.24	233.58	89.61	-1,607.04	-531.72	1,631.47	1,513.23	118.25	13.797	
8,600.00	7,149.20	20,952.96	7,074.90	44.13	233.58	89.61	-1,607.04	-531.72	1,728.07	1,612.62	115.45	14.969	
8,700.00	7,149.22	20,952.96	7,074.90	46.07	233.58	89.61	-1,607.04	-531.72	1,825.03	1,712.08	112.96	16.157	
8,800.00	7,149.24	20,952.96	7,074.90	48.05	233.58	89.61	-1,607.04	-531.72	1,922.31	1,811.57	110.74	17.359	
8,900.00	7,149.27	20,952.96	7,074.90	50.07	233.58	89.61	-1,607.04	-531.72	2,019.85	1,911.10	108.74	18.574	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND													Offset Well Error: 0.00 usft
Reference													
Offset													
Semi Major Axis													
Offset Wellbore Centre													
Distance													
Between Centres													
Between Ellipses													
Minimum Separation													
Separation Factor													
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
9,000.00	7,149.29	20,952.96	7,074.90	52.13	233.58	89.61	-1,607.04	-531.72	2,117.62	2,010.67	106.95	19.800	
9,100.00	7,149.31	20,952.96	7,074.90	54.21	233.58	89.61	-1,607.04	-531.72	2,215.58	2,110.25	105.33	21.035	
9,200.00	7,149.33	20,952.96	7,074.90	56.33	233.58	89.61	-1,607.04	-531.72	2,313.73	2,209.86	103.86	22.277	
9,300.00	7,149.35	20,952.96	7,074.90	58.47	233.58	89.61	-1,607.04	-531.72	2,412.02	2,309.50	102.53	23.526	
9,400.00	7,149.37	20,952.96	7,074.90	60.63	233.58	89.61	-1,607.04	-531.72	2,510.45	2,409.14	101.31	24.781	
9,500.00	7,149.39	20,952.96	7,074.90	62.82	233.58	89.61	-1,607.04	-531.72	2,609.00	2,508.81	100.19	26.040	
9,600.00	7,149.41	20,952.96	7,074.90	65.02	233.58	89.61	-1,607.04	-531.72	2,707.66	2,608.49	99.17	27.303	
9,700.00	7,149.43	20,952.96	7,074.90	67.23	233.58	89.61	-1,607.04	-531.72	2,806.41	2,708.18	98.23	28.570	
9,800.00	7,149.45	20,952.96	7,074.90	69.47	233.58	89.61	-1,607.04	-531.72	2,905.24	2,807.88	97.36	29.840	
9,900.00	7,149.48	20,952.96	7,074.90	71.71	233.58	89.61	-1,607.04	-531.72	3,004.16	2,907.60	96.56	31.112	
10,000.00	7,149.50	20,952.96	7,074.90	73.97	233.58	89.61	-1,607.04	-531.72	3,103.14	3,007.32	95.82	32.386	
10,100.00	7,149.52	20,952.96	7,074.90	76.24	233.58	89.61	-1,607.04	-531.72	3,202.18	3,107.06	95.13	33.661	
10,200.00	7,149.54	20,952.96	7,074.90	78.52	233.58	89.61	-1,607.04	-531.72	3,301.29	3,206.80	94.49	34.938	
10,300.00	7,149.56	20,952.96	7,074.90	80.80	233.58	89.61	-1,607.04	-531.72	3,400.44	3,306.55	93.90	36.215	
10,400.00	7,149.58	20,952.96	7,074.90	83.10	233.58	89.61	-1,607.04	-531.72	3,499.65	3,406.31	93.34	37.493	
10,500.00	7,149.60	20,952.96	7,074.90	85.40	233.58	89.61	-1,607.04	-531.72	3,598.90	3,506.07	92.82	38.771	
10,600.00	7,149.62	20,952.96	7,074.90	87.72	233.58	89.61	-1,607.04	-531.72	3,698.19	3,605.84	92.34	40.049	
10,700.00	7,149.64	20,952.96	7,074.90	90.03	233.58	89.61	-1,607.04	-531.72	3,797.51	3,705.62	91.89	41.328	
10,800.00	7,149.67	20,952.96	7,074.90	92.36	233.58	89.61	-1,607.04	-531.72	3,896.87	3,805.41	91.46	42.606	
10,900.00	7,149.69	20,952.96	7,074.90	94.69	233.58	89.61	-1,607.04	-531.72	3,996.26	3,905.20	91.07	43.883	
11,000.00	7,149.71	20,952.96	7,074.90	97.02	233.58	89.61	-1,607.04	-531.72	4,095.69	4,004.99	90.69	45.160	
11,100.00	7,149.73	20,952.96	7,074.90	99.37	233.58	89.61	-1,607.04	-531.72	4,195.14	4,104.79	90.34	46.436	
11,200.00	7,149.75	20,952.96	7,074.90	101.71	233.58	89.61	-1,607.04	-531.72	4,294.61	4,204.60	90.01	47.712	
11,300.00	7,149.77	20,952.96	7,074.90	104.06	233.58	89.61	-1,607.04	-531.72	4,394.11	4,304.41	89.70	48.986	
11,400.00	7,149.79	20,952.96	7,074.90	106.41	233.58	89.61	-1,607.04	-531.72	4,493.63	4,404.22	89.41	50.260	
11,500.00	7,149.81	20,952.96	7,074.90	108.77	233.58	89.61	-1,607.04	-531.72	4,593.17	4,504.04	89.13	51.532	
11,600.00	7,149.83	20,952.96	7,074.90	111.13	233.58	89.61	-1,607.04	-531.72	4,692.73	4,603.86	88.87	52.803	
11,700.00	7,149.85	20,952.96	7,074.90	113.50	233.58	89.61	-1,607.04	-531.72	4,792.31	4,703.69	88.63	54.073	
11,800.00	7,149.88	20,952.96	7,074.90	115.86	233.58	89.61	-1,607.04	-531.72	4,891.91	4,803.52	88.39	55.342	
11,900.00	7,149.90	20,952.96	7,074.90	118.23	233.58	89.61	-1,607.04	-531.72	4,991.52	4,903.35	88.17	56.609	
12,000.00	7,149.92	20,952.96	7,074.90	120.61	233.58	89.61	-1,607.04	-531.72	5,091.15	5,003.18	87.97	57.875	
12,100.00	7,149.94	20,952.96	7,074.90	122.98	233.58	89.61	-1,607.04	-531.72	5,190.79	5,103.02	87.77	59.139	
12,200.00	7,149.96	20,952.96	7,074.90	125.36	233.58	89.61	-1,607.04	-531.72	5,290.45	5,202.86	87.59	60.402	
12,300.00	7,149.98	20,952.96	7,074.90	127.74	233.58	89.61	-1,607.04	-531.72	5,390.12	5,302.71	87.41	61.663	
12,400.00	7,150.00	20,952.96	7,074.90	130.12	233.58	89.61	-1,607.04	-531.72	5,489.80	5,402.55	87.25	62.923	
12,500.00	7,150.02	20,952.96	7,074.90	132.51	233.58	89.61	-1,607.04	-531.72	5,589.49	5,502.40	87.09	64.181	
12,600.00	7,150.04	20,952.96	7,074.90	134.89	233.58	89.61	-1,607.04	-531.72	5,689.19	5,602.25	86.94	65.437	
12,700.00	7,150.06	20,952.96	7,074.90	137.28	233.58	89.61	-1,607.04	-531.72	5,788.91	5,702.10	86.80	66.691	
12,800.00	7,150.09	20,952.96	7,074.90	139.67	233.58	89.61	-1,607.04	-531.72	5,888.63	5,801.96	86.67	67.943	
12,900.00	7,150.11	20,952.96	7,074.90	142.06	233.58	89.61	-1,607.04	-531.72	5,988.36	5,901.82	86.54	69.194	
13,000.00	7,150.13	20,952.96	7,074.90	144.46	233.58	89.61	-1,607.04	-531.72	6,088.10	6,001.68	86.43	70.443	
13,100.00	7,150.15	20,952.96	7,074.90	146.85	233.58	89.61	-1,607.04	-531.72	6,187.85	6,101.54	86.31	71.690	
13,200.00	7,150.17	20,952.96	7,074.90	149.25	233.58	89.61	-1,607.04	-531.72	6,287.61	6,201.40	86.21	72.934	
13,300.00	7,150.19	20,952.96	7,074.90	151.64	233.58	89.61	-1,607.04	-531.72	6,387.37	6,301.26	86.11	74.177	
13,400.00	7,150.21	20,952.96	7,074.90	154.04	233.58	89.61	-1,607.04	-531.72	6,487.15	6,401.13	86.02	75.418	
13,500.00	7,150.23	20,952.96	7,074.90	156.44	233.58	89.61	-1,607.04	-531.72	6,586.92	6,501.00	85.93	76.657	
13,600.00	7,150.25	20,952.96	7,074.90	158.85	233.58	89.61	-1,607.04	-531.72	6,686.71	6,600.87	85.84	77.894	
13,700.00	7,150.27	20,952.96	7,074.90	161.25	233.58	89.61	-1,607.04	-531.72	6,786.50	6,700.74	85.77	79.129	
13,800.00	7,150.30	20,952.96	7,074.90	163.65	233.58	89.61	-1,607.04	-531.72	6,886.30	6,800.61	85.69	80.361	
13,900.00	7,150.32	20,952.96	7,074.90	166.06	233.58	89.61	-1,607.04	-531.72	6,986.10	6,900.48	85.62	81.592	
14,000.00	7,150.34	20,952.96	7,074.90	168.46	233.58	89.61	-1,607.04	-531.72	7,085.91	7,000.36	85.56	82.820	
14,100.00	7,150.36	20,952.96	7,074.90	170.87	233.58	89.61	-1,607.04	-531.72	7,185.73	7,100.23	85.50	84.046	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND							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		
14,200.00	7,150.38	20,952.96	7,074.90	173.28	233.58	89.61	-1,607.04	-531.72	7,285.55	7,200.11	85.44	85.270		
14,300.00	7,150.40	20,952.96	7,074.90	175.68	233.58	89.61	-1,607.04	-531.72	7,385.37	7,299.98	85.39	86.492		
14,400.00	7,150.42	20,952.96	7,074.90	178.09	233.58	89.61	-1,607.04	-531.72	7,485.20	7,399.86	85.34	87.712		
14,500.00	7,150.44	20,952.96	7,074.90	180.50	233.58	89.61	-1,607.04	-531.72	7,585.03	7,499.74	85.29	88.929		
14,600.00	7,150.46	20,952.96	7,074.90	182.92	233.58	89.61	-1,607.04	-531.72	7,684.87	7,599.62	85.25	90.144		
14,700.00	7,150.48	20,952.96	7,074.90	185.33	233.58	89.61	-1,607.04	-531.72	7,784.71	7,699.50	85.21	91.357		
14,800.00	7,150.51	20,952.96	7,074.90	187.74	233.58	89.61	-1,607.04	-531.72	7,884.56	7,799.38	85.18	92.567		
14,900.00	7,150.53	20,952.96	7,074.90	190.15	233.58	89.61	-1,607.04	-531.72	7,984.41	7,899.27	85.14	93.775		
15,000.00	7,150.55	20,952.96	7,074.90	192.57	233.58	89.61	-1,607.04	-531.72	8,084.26	7,999.15	85.11	94.981		
15,100.00	7,150.57	20,952.96	7,074.90	194.98	233.58	89.61	-1,607.04	-531.72	8,184.12	8,099.03	85.09	96.184		
15,200.00	7,150.59	20,952.96	7,074.90	197.40	233.58	89.61	-1,607.04	-531.72	8,283.98	8,198.92	85.06	97.385		
15,300.00	7,150.61	20,952.96	7,074.90	199.81	233.58	89.61	-1,607.04	-531.72	8,383.85	8,298.80	85.04	98.583		
15,400.00	7,150.63	20,952.96	7,074.90	202.23	233.58	89.61	-1,607.04	-531.72	8,483.71	8,398.69	85.02	99.779		
15,500.00	7,150.65	20,952.96	7,074.90	204.64	233.58	89.61	-1,607.04	-531.72	8,583.58	8,498.58	85.01	100.973		
15,600.00	7,150.67	20,952.96	7,074.90	207.06	233.58	89.61	-1,607.04	-531.72	8,683.46	8,598.46	85.00	102.164		
15,700.00	7,150.69	20,952.96	7,074.90	209.48	233.58	89.61	-1,607.04	-531.72	8,783.33	8,698.35	84.98	103.352		
15,800.00	7,150.72	20,952.96	7,074.90	211.90	233.58	89.61	-1,607.04	-531.72	8,883.21	8,798.24	84.98	104.539		
15,900.00	7,150.74	20,952.96	7,074.90	214.32	233.58	89.61	-1,607.04	-531.72	8,983.09	8,898.13	84.97	105.722		
16,000.00	7,150.76	20,952.96	7,074.90	216.74	233.58	89.61	-1,607.04	-531.72	9,082.98	8,998.01	84.96	106.903		
16,100.00	7,150.78	20,952.96	7,074.90	219.16	233.58	89.61	-1,607.04	-531.72	9,182.87	9,097.90	84.96	108.082		
16,200.00	7,150.80	20,952.96	7,074.90	221.58	233.58	89.61	-1,607.04	-531.72	9,282.76	9,197.79	84.96	109.258		
16,300.00	7,150.82	20,952.96	7,074.90	224.00	233.58	89.61	-1,607.04	-531.72	9,382.65	9,297.68	84.96	110.431		
16,400.00	7,150.84	20,952.96	7,074.90	226.42	233.58	89.61	-1,607.04	-531.72	9,482.54	9,397.57	84.97	111.602		
16,500.00	7,150.86	20,952.96	7,074.90	228.84	233.58	89.61	-1,607.04	-531.72	9,582.44	9,497.46	84.97	112.770		
16,600.00	7,150.88	20,952.96	7,074.90	231.26	233.58	89.61	-1,607.04	-531.72	9,682.34	9,597.35	84.98	113.936		
16,700.00	7,150.90	20,952.96	7,074.90	233.68	233.58	89.61	-1,607.04	-531.72	9,782.24	9,697.25	84.99	115.099		
16,800.00	7,150.93	20,952.96	7,074.90	236.11	233.58	89.61	-1,607.04	-531.72	9,882.14	9,797.14	85.00	116.259		
16,900.00	7,150.95	20,952.96	7,074.90	238.53	233.58	89.61	-1,607.04	-531.72	9,982.04	9,897.03	85.01	117.417		
16,986.21	7,150.96	20,952.96	7,074.90	240.62	233.58	89.61	-1,607.04	-531.72	10,068.17	9,983.14	85.03	118.413		
17,000.00	7,150.97	20,952.96	7,074.90	240.95	233.58	89.61	-1,607.04	-531.72	10,081.95	9,996.92	85.03	118.572		
17,100.00	7,150.99	20,952.96	7,074.90	243.37	233.58	89.61	-1,607.04	-531.72	10,181.86	10,096.81	85.04	119.725		
17,154.59	7,151.00	20,952.96	7,074.90	244.70	233.58	89.61	-1,607.04	-531.72	10,236.39	10,151.34	85.05	120.353		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	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	367.79	367.79	0.00	0.64	96.08	-921.07	8,642.34	8,691.28				
100.00	100.00	469.26	469.26	0.25	0.94	96.09	-921.35	8,642.33	8,691.30	8,690.11	1.19	7,294.734	
200.00	200.00	560.82	560.82	0.61	1.26	96.09	-921.83	8,642.31	8,691.34	8,689.47	1.87	4,648.193	
300.00	300.00	645.53	645.53	0.97	1.56	96.09	-921.89	8,642.46	8,691.53	8,689.00	2.52	3,442.944	
400.00	400.00	735.12	735.11	1.33	1.87	96.09	-921.98	8,642.79	8,691.90	8,688.70	3.20	2,719.292	
500.00	500.00	832.65	832.65	1.68	2.21	96.09	-922.05	8,643.17	8,692.29	8,688.40	3.90	2,230.892	
600.00	599.98	948.32	948.31	2.03	2.62	-107.15	-922.20	8,643.67	8,693.26	8,688.62	4.64	1,872.457	
700.00	699.84	1,055.08	1,055.08	2.36	2.99	-107.15	-922.18	8,643.76	8,694.88	8,689.53	5.35	1,625.410	
800.00	799.45	1,139.39	1,139.39	2.71	3.29	-107.14	-922.48	8,643.98	8,697.75	8,691.76	5.99	1,452.207	
900.00	898.70	1,249.10	1,249.10	3.07	3.67	-107.15	-922.94	8,644.28	8,701.70	8,694.96	6.73	1,292.679	
1,000.00	997.47	1,341.78	1,341.77	3.44	3.99	-107.14	-923.72	8,644.37	8,706.55	8,699.12	7.43	1,171.812	
1,067.13	1,063.43	1,400.00	1,399.99	3.71	4.20	-107.13	-924.08	8,644.58	8,710.55	8,702.66	7.90	1,103.264	
1,100.00	1,095.66	1,412.71	1,412.70	3.84	4.24	-107.15	-924.14	8,644.65	8,712.67	8,704.60	8.07	1,079.559	
1,200.00	1,193.71	1,500.00	1,499.98	4.25	4.55	-107.25	-924.82	8,645.23	8,719.33	8,710.55	8.78	992.935	
1,300.00	1,291.75	1,630.93	1,630.91	4.67	5.01	-107.41	-925.90	8,645.80	8,725.81	8,716.15	9.65	903.908	
1,400.00	1,389.80	1,721.27	1,721.24	5.10	5.32	-107.51	-926.26	8,646.17	8,732.26	8,721.87	10.39	840.475	
1,500.00	1,487.85	1,837.02	1,836.99	5.53	5.73	-107.66	-926.57	8,646.47	8,738.59	8,727.37	11.22	778.843	
1,600.00	1,585.90	1,930.47	1,930.44	5.96	6.06	-107.77	-926.46	8,646.75	8,744.97	8,732.99	11.98	730.219	
1,700.00	1,683.94	2,042.40	2,042.38	6.40	6.45	-107.91	-926.54	8,646.99	8,751.33	8,738.53	12.80	683.727	
1,800.00	1,781.99	2,140.36	2,140.34	6.84	6.79	-108.03	-926.35	8,647.08	8,757.59	8,744.01	13.58	645.072	
1,900.00	1,880.04	2,239.65	2,239.62	7.29	7.13	-108.15	-926.12	8,647.32	8,764.02	8,749.66	14.36	610.336	
2,000.00	1,978.08	2,344.63	2,344.60	7.73	7.50	-108.29	-925.56	8,647.32	8,770.24	8,755.07	15.16	578.366	
2,100.00	2,076.13	2,420.10	2,420.06	8.18	7.76	-108.38	-924.80	8,647.54	8,776.73	8,760.86	15.87	553.183	
2,200.00	2,174.18	2,515.06	2,515.02	8.63	8.09	-108.50	-923.80	8,647.91	8,783.38	8,766.74	16.64	527.916	
2,300.00	2,272.22	2,616.77	2,616.72	9.08	8.45	-108.64	-922.81	8,648.34	8,790.11	8,772.67	17.43	504.182	
2,400.00	2,370.27	2,734.66	2,734.61	9.53	8.86	-108.79	-921.37	8,648.52	8,796.58	8,778.29	18.29	480.988	
2,500.00	2,468.32	2,809.18	2,809.12	9.98	9.12	-108.88	-920.47	8,648.76	8,803.26	8,784.27	18.99	463.564	
2,600.00	2,566.36	2,931.94	2,931.88	10.43	9.55	-109.04	-919.23	8,649.07	8,809.96	8,790.10	19.86	443.540	
2,700.00	2,664.41	3,027.28	3,027.21	10.89	9.88	-109.16	-918.20	8,649.13	8,816.50	8,795.86	20.64	427.180	
2,800.00	2,762.46	3,100.00	3,099.92	11.34	10.13	-109.26	-917.46	8,649.39	8,823.37	8,802.04	21.34	413.558	
2,900.00	2,860.50	3,188.77	3,188.69	11.79	10.44	-109.37	-916.55	8,649.89	8,830.49	8,808.40	22.09	399.771	
3,000.00	2,958.55	3,281.93	3,281.84	12.25	10.77	-109.49	-915.61	8,650.41	8,837.65	8,814.79	22.86	386.629	
3,100.00	3,056.60	3,392.37	3,392.28	12.70	11.16	-109.63	-914.77	8,650.99	8,844.83	8,821.14	23.69	373.371	
3,200.00	3,154.65	3,491.98	3,491.88	13.16	11.50	-109.75	-913.97	8,651.40	8,851.95	8,827.47	24.48	361.577	
3,300.00	3,252.69	3,580.18	3,580.08	13.61	11.81	-109.86	-913.27	8,651.81	8,859.16	8,833.93	25.23	351.086	
3,400.00	3,350.74	3,634.59	3,634.49	14.07	12.00	-109.93	-912.98	8,652.18	8,866.67	8,840.81	25.87	342.804	
3,500.00	3,448.79	3,700.00	3,699.89	14.52	12.23	-110.01	-912.70	8,653.12	8,874.85	8,848.31	26.54	334.451	
3,600.00	3,546.83	3,749.48	3,749.36	14.98	12.41	-110.07	-912.55	8,654.05	8,883.47	8,856.32	27.15	327.222	
3,700.00	3,644.88	3,837.10	3,836.96	15.43	12.71	-110.18	-912.41	8,655.75	8,892.31	8,864.41	27.90	318.745	
3,800.00	3,742.93	3,927.91	3,927.75	15.89	13.03	-110.28	-912.57	8,657.63	8,901.33	8,872.67	28.66	310.593	
3,900.00	3,840.97	4,038.68	4,038.50	16.35	13.42	-110.42	-912.51	8,659.83	8,910.30	8,880.81	29.49	302.119	
4,000.00	3,939.02	4,150.59	4,150.39	16.80	13.81	-110.55	-912.69	8,661.95	8,919.23	8,888.90	30.33	294.069	
4,100.00	4,037.07	4,268.64	4,268.43	17.26	14.22	-110.69	-913.31	8,663.86	8,927.93	8,896.74	31.19	286.240	
4,200.00	4,135.11	4,358.96	4,358.74	17.72	14.54	-110.79	-913.68	8,665.27	8,936.61	8,904.66	31.95	279.707	
4,300.00	4,233.16	4,437.52	4,437.28	18.17	14.81	-110.88	-914.22	8,666.61	8,945.48	8,912.82	32.67	273.842	
4,400.00	4,331.21	4,500.00	4,499.75	18.63	15.03	-110.96	-914.03	8,667.84	8,954.66	8,921.33	33.32	268.715	
4,500.00	4,429.25	4,565.89	4,565.61	19.09	15.26	-111.04	-913.30	8,669.41	8,964.23	8,930.24	33.99	263.706	
4,600.00	4,527.30	4,638.08	4,637.76	19.54	15.52	-111.13	-912.03	8,671.48	8,974.27	8,939.58	34.69	258.736	
4,700.00	4,625.35	5,042.12	5,041.47	20.00	16.93	-111.69	-897.95	8,676.87	8,983.04	8,946.46	36.58	245.575	
4,800.00	4,723.40	5,227.30	5,226.63	20.46	17.58	-111.93	-895.42	8,675.02	8,989.41	8,951.74	37.67	238.629	
4,900.00	4,821.44	5,300.00	5,299.32	20.92	17.83	-112.01	-895.28	8,674.03	8,995.52	8,957.15	38.37	234.465	
5,000.00	4,919.49	5,363.78	5,363.09	21.37	18.05	-112.08	-895.60	8,673.37	9,001.99	8,962.96	39.03	230.645	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-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	5,017.54	5,428.19	5,427.50	21.83	18.28	-112.16	-896.07	8,672.97	9,008.89	8,969.20	39.69	226.955		
5,200.00	5,115.58	5,500.00	5,499.31	22.29	18.52	-112.24	-896.26	8,672.77	9,016.17	8,975.78	40.39	223.254		
5,300.00	5,213.63	5,540.95	5,540.26	22.75	18.67	-112.29	-896.26	8,672.85	9,023.92	8,982.96	40.96	220.284		
5,400.00	5,311.68	5,600.00	5,599.31	23.21	18.87	-112.35	-896.36	8,673.38	9,032.34	8,990.73	41.61	217.079		
5,500.00	5,409.72	5,692.11	5,691.41	23.66	19.20	-112.46	-896.57	8,674.43	9,041.11	8,998.74	42.37	213.372		
5,600.00	5,507.77	5,759.48	5,758.78	24.12	19.43	-112.54	-896.79	8,675.18	9,049.90	9,006.85	43.05	210.238		
5,700.00	5,605.82	5,950.71	5,950.00	24.58	20.10	-112.75	-898.17	8,677.03	9,058.73	9,014.56	44.17	205.088		
5,800.00	5,703.86	6,052.56	6,051.84	25.04	20.46	-112.86	-898.70	8,677.24	9,066.69	9,021.72	44.97	201.625		
5,900.00	5,801.91	6,172.63	6,171.91	25.49	20.84	-113.00	-898.96	8,677.35	9,074.57	9,028.78	45.80	198.145		
6,000.00	5,899.96	6,274.00	6,273.28	25.95	21.15	-113.11	-899.33	8,677.52	9,082.57	9,036.03	46.55	195.132		
6,100.00	5,998.00	6,387.74	6,387.01	26.41	21.49	-113.24	-899.02	8,677.38	9,090.32	9,042.98	47.33	192.053		
6,200.00	6,096.05	6,466.78	6,466.05	26.87	22.13	-113.33	-898.96	8,677.35	9,098.17	9,049.76	48.42	187.917		
6,300.00	6,194.10	6,565.09	6,564.35	27.33	23.03	-113.45	-898.10	8,677.35	9,106.12	9,056.37	49.75	183.034		
6,400.00	6,292.15	6,664.32	6,663.57	27.79	23.93	-113.56	-898.84	8,677.35	9,114.09	9,062.99	51.09	178.377		
6,500.00	6,390.19	6,760.96	6,760.19	28.24	25.06	-113.67	-898.96	8,677.35	9,122.09	9,069.43	52.66	173.221		
6,587.61	6,476.09	6,846.85	6,846.09	28.65	26.08	-113.77	-898.96	8,677.35	9,129.14	9,075.06	54.07	168.830		
6,600.00	6,488.25	6,859.01	6,858.25	28.70	26.23	-108.44	-898.96	8,677.35	9,130.02	9,075.74	54.27	168.225		
6,650.00	6,537.39	6,908.18	6,907.42	28.92	26.81	-84.76	-898.73	8,677.35	9,131.12	9,076.05	55.08	165.793		
6,700.00	6,586.44	6,957.32	6,956.55	29.12	27.40	-63.22	-898.75	8,677.35	9,128.32	9,072.45	55.87	163.388		
6,750.00	6,635.11	7,006.07	7,005.31	29.30	27.98	-47.95	-898.79	8,677.35	9,121.61	9,064.96	56.65	161.029		
6,800.00	6,683.08	7,054.15	7,053.38	29.46	28.56	-37.99	-898.86	8,677.35	9,111.05	9,053.65	57.40	158.722		
6,850.00	6,730.07	7,101.24	7,100.48	29.61	29.12	-31.42	-898.94	8,677.35	9,096.70	9,038.56	58.14	156.473		
6,900.00	6,775.78	7,146.57	7,145.78	29.74	29.79	-26.94	-898.96	8,677.35	9,078.65	9,019.68	58.96	153.969		
6,950.00	6,819.93	7,190.72	7,189.93	29.86	30.47	-23.78	-898.96	8,677.35	9,057.01	8,997.22	59.79	151.471		
7,000.00	6,862.25	7,233.04	7,232.25	29.96	31.12	-21.49	-898.96	8,677.35	9,031.91	8,971.33	60.58	149.081		
7,050.00	6,902.48	7,273.27	7,272.48	30.04	31.74	-19.82	-898.96	8,677.35	9,003.51	8,942.18	61.33	146.802		
7,100.00	6,940.37	7,311.16	7,310.37	30.12	32.32	-18.61	-898.96	8,677.35	8,971.99	8,909.95	62.03	144.638		
7,150.00	6,975.69	7,346.48	7,345.69	30.18	32.87	-17.76	-898.96	8,677.35	8,937.52	8,874.84	62.68	142.590		
7,200.00	7,008.21	7,379.30	7,378.50	30.22	33.37	-17.22	-897.94	8,677.35	8,900.36	8,837.08	63.28	140.651		
7,250.00	7,037.75	7,409.13	7,408.33	30.26	33.83	-16.96	-898.00	8,677.35	8,860.68	8,796.86	63.82	138.831		
7,300.00	7,064.11	7,435.77	7,434.96	30.28	34.24	-16.99	-898.07	8,677.35	8,818.75	8,754.44	64.31	137.135		
7,350.00	7,087.14	7,459.04	7,458.24	30.29	34.60	-17.36	-898.15	8,677.35	8,774.82	8,710.09	64.73	135.561		
7,400.00	7,106.69	7,478.81	7,478.00	30.30	34.91	-18.19	-898.24	8,677.35	8,729.16	8,664.07	65.09	134.113		
7,450.00	7,122.64	7,494.95	7,494.14	30.30	35.16	-19.72	-898.33	8,677.35	8,682.06	8,616.68	65.38	132.789		
7,500.00	7,134.89	7,507.35	7,506.54	30.30	35.35	-22.59	-898.40	8,677.35	8,633.81	8,568.20	65.61	131.592		
7,550.00	7,143.37	7,515.93	7,515.12	30.30	35.48	-28.70	-898.45	8,677.35	8,584.70	8,518.93	65.77	130.520		
7,600.00	7,148.03	7,520.65	7,519.84	30.32	35.55	-46.68	-898.48	8,677.35	8,535.03	8,469.16	65.87	129.575		
7,635.28	7,149.00	7,521.63	7,520.82	30.35	35.57	-90.01	-898.48	8,677.35	8,499.82	8,433.92	65.90	128.984		
7,700.00	7,149.01	7,521.65	7,520.84	30.54	35.57	-90.01	-898.48	8,677.35	8,435.17	8,369.25	65.92	127.958		
7,800.00	7,149.03	7,521.68	7,520.87	31.33	35.57	-90.01	-898.48	8,677.35	8,335.29	8,269.33	65.96	126.372		
7,900.00	7,149.06	7,521.71	7,520.90	32.52	35.57	-90.02	-898.48	8,677.35	8,235.41	8,169.41	66.00	124.784		
8,000.00	7,149.08	7,521.74	7,520.93	33.88	35.57	-90.02	-898.48	8,677.35	8,135.53	8,069.50	66.04	123.193		
8,100.00	7,149.10	7,521.78	7,520.96	35.37	35.57	-90.03	-898.48	8,677.35	8,035.66	7,969.58	66.08	121.601		
8,200.00	7,149.12	7,521.81	7,521.00	36.97	35.57	-90.03	-898.48	8,677.35	7,935.79	7,869.66	66.13	120.007		
8,300.00	7,149.14	7,521.84	7,521.03	38.65	35.57	-90.03	-898.48	8,677.35	7,835.92	7,769.75	66.18	118.410		
8,400.00	7,149.16	7,521.87	7,521.06	40.42	35.57	-90.04	-898.48	8,677.35	7,736.06	7,669.83	66.23	116.812		
8,500.00	7,149.18	7,521.90	7,521.09	42.24	35.57	-90.04	-898.48	8,677.35	7,636.20	7,569.92	66.28	115.212		
8,600.00	7,149.20	7,521.93	7,521.12	44.13	35.57	-90.05	-898.48	8,677.35	7,536.34	7,470.01	66.34	113.610		
8,700.00	7,149.22	7,521.96	7,521.15	46.07	35.57	-90.05	-898.49	8,677.35	7,436.49	7,370.10	66.39	112.006		
8,800.00	7,149.24	7,521.99	7,521.18	48.05	35.57	-90.06	-898.49	8,677.35	7,336.64	7,270.19	66.45	110.401		
8,900.00	7,149.27	7,522.02	7,521.21	50.07	35.57	-90.06	-898.49	8,677.35	7,236.80	7,170.28	66.52	108.794		
9,000.00	7,149.29	7,522.05	7,521.24	52.13	35.57	-90.06	-898.49	8,677.35	7,136.96	7,070.37	66.59	107.185		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY						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)			
9,100.00	7,149.31	7,522.08	7,521.27	54.21	35.58	-90.07	-898.49	8,677.35	7,037.12	6,970.46	66.66	105.574		
9,200.00	7,149.33	7,522.11	7,521.30	56.33	35.58	-90.07	-898.49	8,677.35	6,937.29	6,870.56	66.73	103.962		
9,300.00	7,149.35	7,522.14	7,521.33	58.47	35.58	-90.08	-898.49	8,677.35	6,837.46	6,770.66	66.81	102.348		
9,400.00	7,149.37	7,522.17	7,521.36	60.63	35.58	-90.08	-898.49	8,677.35	6,737.64	6,670.76	66.89	100.733		
9,500.00	7,149.39	7,522.21	7,521.39	62.82	35.58	-90.09	-898.49	8,677.35	6,637.83	6,570.86	66.97	99.116		
9,600.00	7,149.41	7,522.24	7,521.43	65.02	35.58	-90.09	-898.49	8,677.35	6,538.02	6,470.96	67.06	97.498		
9,700.00	7,149.43	7,522.27	7,521.46	67.23	35.58	-90.09	-898.49	8,677.35	6,438.21	6,371.06	67.15	95.878		
9,800.00	7,149.45	7,522.30	7,521.49	69.47	35.58	-90.10	-898.49	8,677.35	6,338.41	6,271.17	67.25	94.257		
9,900.00	7,149.48	7,522.33	7,521.52	71.71	35.58	-90.10	-898.49	8,677.35	6,238.62	6,171.28	67.35	92.634		
10,000.00	7,149.50	7,522.36	7,521.55	73.97	35.58	-90.11	-898.49	8,677.35	6,138.84	6,071.39	67.45	91.010		
10,100.00	7,149.52	7,522.39	7,521.58	76.24	35.58	-90.11	-898.49	8,677.35	6,039.06	5,971.50	67.56	89.384		
10,200.00	7,149.54	7,522.42	7,521.61	78.52	35.58	-90.12	-898.49	8,677.35	5,939.29	5,871.61	67.68	87.758		
10,300.00	7,149.56	7,522.45	7,521.64	80.80	35.58	-90.12	-898.49	8,677.35	5,839.53	5,771.73	67.80	86.130		
10,400.00	7,149.58	7,522.48	7,521.67	83.10	35.58	-90.13	-898.49	8,677.35	5,739.78	5,671.85	67.93	84.500		
10,500.00	7,149.60	7,522.51	7,521.70	85.40	35.58	-90.13	-898.49	8,677.35	5,640.03	5,571.97	68.06	82.870		
10,600.00	7,149.62	7,522.54	7,521.73	87.72	35.58	-90.13	-898.49	8,677.35	5,540.30	5,472.10	68.20	81.238		
10,700.00	7,149.64	7,522.57	7,521.76	90.03	35.58	-90.14	-898.49	8,677.35	5,440.57	5,372.22	68.34	79.605		
10,800.00	7,149.67	7,522.61	7,521.79	92.36	35.58	-90.14	-898.49	8,677.35	5,340.85	5,272.36	68.50	77.971		
10,900.00	7,149.69	7,522.64	7,521.83	94.69	35.58	-90.15	-898.49	8,677.35	5,241.15	5,172.49	68.66	76.335		
11,000.00	7,149.71	7,522.67	7,521.86	97.02	35.58	-90.15	-898.49	8,677.35	5,141.45	5,072.63	68.83	74.699		
11,100.00	7,149.73	7,522.70	7,521.89	99.37	35.58	-90.16	-898.49	8,677.35	5,041.77	4,972.77	69.01	73.061		
11,200.00	7,149.75	7,522.73	7,521.92	101.71	35.59	-90.16	-898.49	8,677.35	4,942.10	4,872.91	69.20	71.423		
11,300.00	7,149.77	7,522.76	7,521.95	104.06	35.59	-90.16	-898.49	8,677.35	4,842.45	4,773.06	69.39	69.783		
11,400.00	7,149.79	7,522.79	7,521.98	106.41	35.59	-90.17	-898.49	8,677.35	4,742.81	4,673.21	69.60	68.142		
11,500.00	7,149.81	7,522.82	7,522.01	108.77	35.59	-90.17	-898.49	8,677.35	4,643.18	4,573.36	69.82	66.500		
11,600.00	7,149.83	7,522.85	7,522.04	111.13	35.59	-90.18	-898.49	8,677.35	4,543.58	4,473.52	70.06	64.857		
11,700.00	7,149.85	7,522.88	7,522.07	113.50	35.59	-90.18	-898.49	8,677.35	4,443.98	4,373.68	70.30	63.213		
11,800.00	7,149.88	7,522.91	7,522.10	115.86	35.59	-90.19	-898.49	8,677.35	4,344.41	4,273.85	70.56	61.569		
11,900.00	7,149.90	7,522.94	7,522.13	118.23	35.59	-90.19	-898.49	8,677.35	4,244.86	4,174.02	70.84	59.923		
12,000.00	7,149.92	7,522.98	7,522.16	120.61	35.59	-90.19	-898.49	8,677.35	4,145.33	4,074.20	71.13	58.277		
12,100.00	7,149.94	7,523.01	7,522.20	122.98	35.59	-90.20	-898.49	8,677.35	4,045.82	3,974.38	71.44	56.630		
12,200.00	7,149.96	7,523.04	7,522.23	125.36	35.59	-90.20	-898.49	8,677.35	3,946.34	3,874.57	71.78	54.982		
12,300.00	7,149.98	7,523.07	7,522.26	127.74	35.59	-90.21	-898.49	8,677.35	3,846.89	3,774.76	72.13	53.334		
12,400.00	7,150.00	7,523.10	7,522.29	130.12	35.59	-90.21	-898.49	8,677.35	3,747.46	3,674.95	72.51	51.685		
12,500.00	7,150.02	7,523.13	7,522.32	132.51	35.59	-90.22	-898.49	8,677.35	3,648.06	3,575.15	72.91	50.036		
12,600.00	7,150.04	7,523.16	7,522.35	134.89	35.59	-90.22	-898.49	8,677.35	3,548.70	3,475.36	73.34	48.387		
12,700.00	7,150.06	7,523.19	7,522.38	137.28	35.59	-90.23	-898.49	8,677.35	3,449.38	3,375.57	73.80	46.737		
12,800.00	7,150.09	7,523.22	7,522.41	139.67	35.59	-90.23	-898.49	8,677.35	3,350.09	3,275.79	74.30	45.089		
12,900.00	7,150.11	7,523.25	7,522.44	142.06	35.59	-90.23	-898.49	8,677.35	3,250.85	3,176.02	74.84	43.440		
13,000.00	7,150.13	7,523.28	7,522.47	144.46	35.59	-90.24	-898.49	8,677.35	3,151.66	3,076.25	75.41	41.793		
13,100.00	7,150.15	7,523.32	7,522.50	146.85	35.59	-90.24	-898.49	8,677.35	3,052.52	2,976.49	76.04	40.146		
13,200.00	7,150.17	7,523.35	7,522.54	149.25	35.59	-90.25	-898.49	8,677.35	2,953.44	2,876.73	76.71	38.502		
13,300.00	7,150.19	7,523.38	7,522.57	151.64	35.60	-90.25	-898.49	8,677.35	2,854.42	2,776.98	77.44	36.859		
13,400.00	7,150.21	7,523.41	7,522.60	154.04	35.60	-90.26	-898.49	8,677.35	2,755.48	2,677.24	78.24	35.219		
13,500.00	7,150.23	7,523.44	7,522.63	156.44	35.60	-90.26	-898.49	8,677.35	2,656.61	2,577.50	79.11	33.582		
13,600.00	7,150.25	7,523.47	7,522.66	158.85	35.60	-90.26	-898.49	8,677.35	2,557.83	2,477.77	80.06	31.950		
13,700.00	7,150.27	7,523.50	7,522.69	161.25	35.60	-90.27	-898.50	8,677.35	2,459.15	2,378.05	81.10	30.323		
13,800.00	7,150.30	7,523.53	7,522.72	163.65	35.60	-90.27	-898.50	8,677.35	2,360.58	2,278.34	82.24	28.702		
13,900.00	7,150.32	7,523.56	7,522.75	166.06	35.60	-90.28	-898.50	8,677.35	2,262.14	2,178.63	83.51	27.089		
14,000.00	7,150.34	7,523.59	7,522.78	168.46	35.60	-90.28	-898.50	8,677.35	2,163.83	2,078.93	84.91	25.485		
14,100.00	7,150.36	7,523.62	7,522.81	170.87	35.60	-90.29	-898.50	8,677.35	2,065.70	1,979.24	86.46	23.892		
14,200.00	7,150.38	7,523.66	7,522.84	173.28	35.60	-90.29	-898.50	8,677.35	1,967.75	1,879.55	88.19	22.312		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY													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	
14,300.00	7,150.40	7,523.69	7,522.88	175.68	35.60	-90.30	-898.50	8,677.35	1,870.01	1,779.88	90.13	20.748	
14,400.00	7,150.42	7,523.72	7,522.91	178.09	35.60	-90.30	-898.50	8,677.35	1,772.53	1,680.22	92.31	19.201	
14,500.00	7,150.44	7,523.75	7,522.94	180.50	35.60	-90.30	-898.50	8,677.35	1,675.35	1,580.57	94.78	17.677	
14,600.00	7,150.46	7,523.78	7,522.97	182.92	35.60	-90.31	-898.50	8,677.35	1,578.51	1,480.94	97.58	16.177	
14,700.00	7,150.48	7,523.81	7,523.00	185.33	35.60	-90.31	-898.50	8,677.35	1,482.10	1,381.33	100.77	14.707	
14,800.00	7,150.51	7,523.84	7,523.03	187.74	35.60	-90.32	-898.50	8,677.35	1,386.20	1,281.75	104.45	13.272	
14,900.00	7,150.53	7,523.87	7,523.06	190.15	35.60	-90.32	-898.50	8,677.35	1,290.92	1,182.22	108.70	11.876	
15,000.00	7,150.55	7,523.90	7,523.09	192.57	35.60	-90.33	-898.50	8,677.35	1,196.41	1,082.76	113.64	10.528	
15,100.00	7,150.57	7,523.93	7,523.12	194.98	35.60	-90.33	-898.50	8,677.35	1,102.86	983.42	119.44	9.233	
15,200.00	7,150.59	7,523.96	7,523.15	197.40	35.60	-90.33	-898.50	8,677.35	1,010.56	884.25	126.30	8.001	
15,300.00	7,150.61	7,524.00	7,523.18	199.81	35.60	-90.34	-898.50	8,677.35	919.87	785.39	134.48	6.840	
15,400.00	7,150.63	7,524.03	7,523.22	202.23	35.61	-90.34	-898.50	8,677.35	831.31	687.03	144.28	5.762	
15,500.00	7,150.65	7,524.06	7,523.25	204.64	35.61	-90.35	-898.50	8,677.35	745.65	589.57	156.08	4.777	
15,600.00	7,150.67	7,524.09	7,523.28	207.06	35.61	-90.35	-898.50	8,677.35	664.01	493.72	170.30	3.899	
15,700.00	7,150.69	7,524.12	7,523.31	209.48	35.61	-90.36	-898.50	8,677.35	588.08	400.88	187.20	3.142	
15,800.00	7,150.72	7,524.15	7,523.34	211.90	35.61	-90.36	-898.50	8,677.35	520.34	313.75	206.59	2.519	
15,900.00	7,150.74	7,524.18	7,523.37	214.32	35.61	-90.36	-898.50	8,677.35	464.41	237.37	227.04	2.045	
16,000.00	7,150.76	7,524.21	7,523.40	216.74	35.61	-90.37	-898.50	8,677.35	424.97	180.03	244.94	1.735	
16,100.00	7,150.78	7,524.24	7,523.43	219.16	35.61	-90.37	-898.50	8,677.35	406.84	152.16	254.68	1.597	
16,125.40	7,150.78	7,524.25	7,523.44	219.77	35.61	-90.37	-898.50	8,677.35	406.05	150.79	255.26	1.591	CC, ES, SF
16,200.00	7,150.80	7,524.27	7,523.46	221.58	35.61	-90.38	-898.50	8,677.35	412.84	160.66	252.19	1.637	
16,300.00	7,150.82	7,524.31	7,523.49	224.00	35.61	-90.38	-898.50	8,677.35	442.00	203.18	238.82	1.851	
16,400.00	7,150.84	7,524.34	7,523.53	226.42	35.61	-90.39	-898.50	8,677.35	490.19	270.28	219.91	2.229	
16,500.00	7,150.86	7,524.37	7,523.56	228.84	35.61	-90.39	-898.50	8,677.35	552.45	352.16	200.30	2.758	
16,600.00	7,150.88	7,524.40	7,523.59	231.26	35.61	-90.40	-898.50	8,677.35	624.60	442.11	182.48	3.423	
16,700.00	7,150.90	7,524.43	7,523.62	233.68	35.61	-90.40	-898.50	8,677.35	703.59	536.36	167.23	4.207	
16,800.00	7,150.93	7,524.46	7,523.65	236.11	35.61	-90.40	-898.50	8,677.35	787.38	632.90	154.48	5.097	
16,900.00	7,150.95	7,524.49	7,523.68	238.53	35.61	-90.41	-898.50	8,677.35	874.58	730.70	143.88	6.079	
16,986.21	7,150.96	7,524.52	7,523.71	240.62	35.61	-90.41	-898.50	8,677.35	951.77	815.59	136.18	6.989	
17,000.00	7,150.97	7,524.52	7,523.71	240.95	35.61	-90.41	-898.50	8,677.35	964.26	829.21	135.06	7.140	
17,100.00	7,150.99	7,524.55	7,523.74	243.37	35.61	-90.42	-898.50	8,677.35	1,055.81	928.13	127.68	8.269	
17,154.59	7,151.00	7,524.57	7,523.76	244.70	35.61	-90.42	-898.50	8,677.35	1,106.39	982.24	124.16	8.911	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	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	293.38	293.36	0.00	0.55	97.57	-1,399.55	10,524.87	10,617.92				
100.00	100.00	369.97	369.93	0.25	0.81	97.58	-1,400.88	10,525.53	10,618.98	10,617.93	1.06	N/A	
200.00	200.00	474.60	474.54	0.61	1.18	97.59	-1,402.91	10,526.41	10,620.07	10,618.29	1.78	5,965.638	
300.00	300.00	576.35	576.27	0.97	1.54	97.60	-1,404.95	10,527.17	10,621.08	10,618.58	2.50	4,256.288	
400.00	400.00	655.36	655.27	1.33	1.81	97.61	-1,406.33	10,527.89	10,622.21	10,619.08	3.13	3,394.052	
500.00	500.00	772.90	772.79	1.68	2.22	97.62	-1,408.05	10,529.07	10,623.40	10,619.51	3.90	2,726.329	
600.00	599.98	878.47	878.34	2.03	2.59	-105.60	-1,409.50	10,529.99	10,624.92	10,620.31	4.61	2,305.492	
700.00	699.84	985.86	985.72	2.36	2.97	-105.58	-1,410.86	10,530.87	10,627.31	10,621.99	5.32	1,998.099	
800.00	799.45	1,086.94	1,086.79	2.71	3.32	-105.55	-1,412.03	10,531.65	10,630.58	10,624.56	6.02	1,766.568	
900.00	898.70	1,179.50	1,179.34	3.07	3.64	-105.52	-1,413.06	10,532.41	10,634.83	10,628.13	6.70	1,587.495	
1,000.00	997.47	1,272.35	1,272.18	3.44	3.96	-105.49	-1,414.04	10,533.24	10,640.09	10,632.69	7.40	1,438.261	
1,067.13	1,063.43	1,335.10	1,334.92	3.71	4.18	-105.47	-1,414.73	10,533.82	10,644.19	10,636.31	7.88	1,350.952	
1,100.00	1,095.66	1,365.75	1,365.58	3.84	4.29	-105.50	-1,415.07	10,534.11	10,646.31	10,638.19	8.12	1,311.589	
1,200.00	1,193.71	1,460.44	1,460.26	4.25	4.62	-105.59	-1,416.21	10,535.02	10,652.80	10,643.95	8.85	1,203.134	
1,300.00	1,291.75	1,557.73	1,557.53	4.67	4.96	-105.69	-1,417.68	10,535.94	10,659.35	10,649.74	9.61	1,109.220	
1,400.00	1,389.80	1,659.24	1,659.01	5.10	5.32	-105.78	-1,419.56	10,536.85	10,665.92	10,655.53	10.39	1,026.890	
1,500.00	1,487.85	1,767.51	1,767.27	5.53	5.69	-105.88	-1,421.33	10,537.78	10,672.45	10,661.26	11.19	953.559	
1,600.00	1,585.90	1,881.37	1,881.12	5.96	6.09	-105.99	-1,422.76	10,538.68	10,678.90	10,666.88	12.02	888.376	
1,700.00	1,683.94	1,998.75	1,998.49	6.40	6.50	-106.10	-1,423.82	10,539.45	10,685.21	10,672.34	12.86	830.622	
1,800.00	1,781.99	2,127.94	2,127.67	6.84	6.95	-106.23	-1,424.69	10,540.02	10,691.31	10,677.56	13.75	777.505	
1,900.00	1,880.04	2,240.37	2,240.10	7.29	7.34	-106.34	-1,425.34	10,540.26	10,697.21	10,682.63	14.58	733.647	
2,000.00	1,978.08	2,335.64	2,335.37	7.73	7.68	-106.44	-1,425.70	10,540.46	10,703.12	10,687.76	15.35	697.152	
2,100.00	2,076.13	2,456.80	2,456.53	8.18	8.10	-106.56	-1,425.89	10,540.70	10,709.02	10,692.81	16.22	660.417	
2,200.00	2,174.18	2,602.69	2,602.42	8.63	8.61	-106.71	-1,425.82	10,540.45	10,714.58	10,697.42	17.17	624.205	
2,300.00	2,272.22	2,694.71	2,694.44	9.08	8.92	-106.80	-1,425.65	10,540.18	10,720.03	10,702.11	17.93	598.001	
2,400.00	2,370.27	2,807.08	2,806.81	9.53	9.31	-106.91	-1,425.32	10,539.80	10,725.46	10,706.70	18.76	571.716	
2,500.00	2,468.32	2,946.08	2,945.81	9.98	9.80	-107.06	-1,424.84	10,538.92	10,730.64	10,710.95	19.69	545.056	
2,600.00	2,566.36	3,054.98	3,054.69	10.43	10.18	-107.17	-1,424.41	10,537.97	10,735.60	10,715.09	20.51	523.420	
2,700.00	2,664.41	3,165.19	3,164.90	10.89	10.56	-107.28	-1,423.93	10,536.91	10,740.52	10,719.18	21.34	503.331	
2,800.00	2,762.46	3,303.29	3,302.99	11.34	11.04	-107.42	-1,423.45	10,535.22	10,745.22	10,722.96	22.27	482.604	
2,900.00	2,860.50	3,412.81	3,412.49	11.79	11.42	-107.53	-1,423.37	10,533.57	10,749.70	10,726.61	23.09	465.511	
3,000.00	2,958.55	3,435.00	3,434.69	12.25	11.50	-107.55	-1,423.30	10,533.23	10,754.43	10,730.82	23.62	455.402	
3,100.00	3,056.60	3,451.17	3,450.85	12.70	11.56	-107.57	-1,423.01	10,533.11	10,759.94	10,735.83	24.12	446.170	
3,200.00	3,154.65	3,467.00	3,466.67	13.16	11.61	-107.59	-1,422.33	10,533.29	10,766.36	10,741.75	24.61	437.397	
3,300.00	3,252.69	3,467.00	3,466.67	13.61	11.61	-107.59	-1,422.33	10,533.29	10,773.57	10,748.52	25.06	429.991	
3,400.00	3,350.74	3,467.00	3,466.67	14.07	11.61	-107.59	-1,422.33	10,533.29	10,781.71	10,756.21	25.49	422.911	
3,500.00	3,448.79	3,467.00	3,466.67	14.52	11.61	-107.59	-1,422.33	10,533.29	10,790.76	10,764.83	25.93	416.143	
3,600.00	3,546.83	3,467.00	3,466.67	14.98	11.61	-107.59	-1,422.33	10,533.29	10,800.73	10,774.37	26.36	409.670	
3,700.00	3,644.88	3,467.00	3,466.67	15.43	11.61	-107.59	-1,422.33	10,533.29	10,811.62	10,784.82	26.80	403.478	
3,800.00	3,742.93	3,467.00	3,466.67	15.89	11.61	-107.59	-1,422.33	10,533.29	10,823.42	10,796.19	27.23	397.553	
3,900.00	3,840.97	3,467.00	3,466.67	16.35	11.61	-107.59	-1,422.33	10,533.29	10,836.13	10,808.48	27.65	391.882	
4,000.00	3,939.02	3,467.00	3,466.67	16.80	11.61	-107.59	-1,422.33	10,533.29	10,849.75	10,821.67	28.08	386.453	
4,100.00	4,037.07	3,467.00	3,466.67	17.26	11.61	-107.59	-1,422.33	10,533.29	10,864.27	10,835.77	28.50	381.254	
4,200.00	4,135.11	3,467.00	3,466.67	17.72	11.61	-107.59	-1,422.33	10,533.29	10,879.69	10,850.77	28.91	376.276	
4,300.00	4,233.16	3,467.00	3,466.67	18.17	11.61	-107.59	-1,422.33	10,533.29	10,896.01	10,866.68	29.33	371.507	
4,400.00	4,331.21	3,467.00	3,466.67	18.63	11.61	-107.59	-1,422.33	10,533.29	10,913.21	10,883.47	29.74	366.939	
4,500.00	4,429.25	3,467.00	3,466.67	19.09	11.61	-107.59	-1,422.33	10,533.29	10,931.31	10,901.16	30.15	362.562	
4,600.00	4,527.30	3,467.00	3,466.67	19.54	11.61	-107.59	-1,422.33	10,533.29	10,950.29	10,919.73	30.56	358.369	
4,700.00	4,625.35	3,469.00	3,468.64	20.00	11.65	-107.59	-1,422.23	10,533.57	10,970.14	10,939.18	30.96	354.311	
4,800.00	4,723.40	3,469.00	3,468.64	20.46	11.65	-107.59	-1,422.23	10,533.57	10,990.86	10,959.50	31.36	350.482	
4,900.00	4,821.44	3,469.00	3,468.64	20.92	11.65	-107.59	-1,422.23	10,533.57	11,012.44	10,980.69	31.75	346.812	
5,000.00	4,919.49	3,469.00	3,468.64	21.37	11.65	-107.59	-1,422.23	10,533.57	11,034.89	11,002.75	32.14	343.295	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM							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		
5,100.00	5,017.54	3,469.00	3,468.64	21.83	11.65	-107.59	-1,422.23	10,533.57	11,058.20	11,025.67	32.53	339.923		
5,200.00	5,115.58	3,469.00	3,468.64	22.29	11.65	-107.59	-1,422.23	10,533.57	11,082.36	11,049.44	32.92	336.691		
5,300.00	5,213.63	3,469.00	3,468.64	22.75	11.65	-107.59	-1,422.23	10,533.57	11,107.37	11,074.07	33.30	333.594		
5,400.00	5,311.68	3,469.00	3,468.64	23.21	11.65	-107.59	-1,422.23	10,533.57	11,133.22	11,099.54	33.67	330.625		
5,500.00	5,409.72	3,469.00	3,468.64	23.66	11.65	-107.59	-1,422.23	10,533.57	11,159.90	11,125.86	34.05	327.780		
5,600.00	5,507.77	3,469.00	3,468.64	24.12	11.65	-107.59	-1,422.23	10,533.57	11,187.42	11,153.00	34.42	325.054		
5,700.00	5,605.82	3,469.00	3,468.64	24.58	11.65	-107.59	-1,422.23	10,533.57	11,215.76	11,180.98	34.78	322.442		
5,800.00	5,703.86	3,469.00	3,468.64	25.04	11.65	-107.59	-1,422.23	10,533.57	11,244.92	11,209.77	35.15	319.939		
5,900.00	5,801.91	3,469.00	3,468.64	25.49	11.65	-107.59	-1,422.23	10,533.57	11,274.89	11,239.38	35.51	317.541		
6,000.00	5,899.96	3,469.00	3,468.64	25.95	11.65	-107.59	-1,422.23	10,533.57	11,305.67	11,269.80	35.86	315.244		
6,100.00	5,998.00	3,469.00	3,468.64	26.41	11.65	-107.59	-1,422.23	10,533.57	11,337.24	11,301.02	36.22	313.045		
6,200.00	6,096.05	3,469.00	3,468.64	26.87	11.65	-107.59	-1,422.23	10,533.57	11,369.61	11,333.04	36.57	310.939		
6,300.00	6,194.10	3,469.00	3,468.64	27.33	11.65	-107.59	-1,422.23	10,533.57	11,402.76	11,365.85	36.91	308.924		
6,400.00	6,292.15	3,469.00	3,468.64	27.79	11.65	-107.59	-1,422.23	10,533.57	11,436.69	11,399.43	37.25	306.994		
6,500.00	6,390.19	3,469.00	3,468.64	28.24	11.65	-107.59	-1,422.23	10,533.57	11,471.39	11,433.80	37.59	305.149		
6,587.61	6,476.09	3,502.00	3,500.18	28.65	11.67	-107.63	-1,420.94	10,543.18	11,502.30	11,464.38	37.92	303.339		
6,600.00	6,488.25	3,502.00	3,500.18	28.70	11.67	-102.33	-1,420.94	10,543.18	11,506.59	11,468.63	37.96	303.126		
6,650.00	6,537.39	3,502.00	3,500.18	28.92	11.67	-78.70	-1,420.94	10,543.18	11,521.71	11,483.59	38.12	302.248		
6,700.00	6,586.44	3,502.00	3,500.18	29.12	11.67	-57.18	-1,420.94	10,543.18	11,533.26	11,494.99	38.27	301.363		
6,750.00	6,635.11	3,502.00	3,500.18	29.30	11.67	-41.88	-1,420.94	10,543.18	11,541.18	11,502.77	38.41	300.479		
6,800.00	6,683.08	3,502.00	3,500.18	29.46	11.67	-31.85	-1,420.94	10,543.18	11,545.43	11,506.89	38.54	299.593		
6,850.00	6,730.07	3,502.00	3,500.18	29.61	11.67	-25.18	-1,420.94	10,543.18	11,545.98	11,507.33	38.65	298.696		
6,900.00	6,775.78	3,502.00	3,500.18	29.74	11.67	-20.55	-1,420.94	10,543.18	11,542.84	11,504.07	38.76	297.786		
6,950.00	6,819.93	3,502.00	3,500.18	29.86	11.67	-17.19	-1,420.94	10,543.18	11,536.01	11,497.15	38.86	296.859		
7,000.00	6,862.25	3,502.00	3,500.18	29.96	11.67	-14.66	-1,420.94	10,543.18	11,525.54	11,486.59	38.95	295.917		
7,050.00	6,902.48	3,502.00	3,500.18	30.04	11.67	-12.68	-1,420.94	10,543.18	11,511.47	11,472.45	39.03	294.958		
7,100.00	6,940.37	3,502.00	3,500.18	30.12	11.67	-11.08	-1,420.94	10,543.18	11,493.89	11,454.80	39.10	293.985		
7,150.00	6,975.69	3,502.00	3,500.18	30.18	11.67	-9.76	-1,420.94	10,543.18	11,472.89	11,433.73	39.16	292.998		
7,200.00	7,008.21	3,502.00	3,500.18	30.22	11.67	-8.62	-1,420.94	10,543.18	11,448.57	11,409.36	39.21	291.999		
7,250.00	7,037.75	3,502.00	3,500.18	30.26	11.67	-7.62	-1,420.94	10,543.18	11,421.07	11,381.82	39.25	290.988		
7,300.00	7,064.11	3,502.00	3,500.18	30.28	11.67	-6.70	-1,420.94	10,543.18	11,390.53	11,351.24	39.28	289.969		
7,350.00	7,087.14	3,502.00	3,500.18	30.29	11.67	-5.83	-1,420.94	10,543.18	11,357.11	11,317.81	39.31	288.942		
7,400.00	7,106.69	3,502.00	3,500.18	30.30	11.67	-4.95	-1,420.94	10,543.18	11,321.01	11,281.69	39.32	287.910		
7,450.00	7,122.64	3,502.00	3,500.18	30.30	11.67	-4.03	-1,420.94	10,543.18	11,282.41	11,243.08	39.33	286.876		
7,500.00	7,134.89	3,502.00	3,500.18	30.30	11.67	-3.00	-1,420.94	10,543.18	11,241.53	11,202.21	39.33	285.839		
7,550.00	7,143.37	3,502.00	3,500.18	30.30	11.67	-1.77	-1,420.94	10,543.18	11,198.60	11,159.28	39.32	284.803		
7,600.00	7,148.03	3,502.00	3,500.18	30.32	11.67	-0.19	-1,420.94	10,543.18	11,153.87	11,114.56	39.31	283.766		
7,635.28	7,149.00	3,502.00	3,500.18	30.35	11.67	1.27	-1,420.94	10,543.18	11,121.35	11,082.06	39.29	283.030		
7,700.00	7,149.01	3,517.14	3,514.38	30.54	11.68	1.27	-1,420.44	10,548.39	11,060.74	11,021.46	39.28	281.574		
7,800.00	7,149.03	3,533.00	3,529.01	31.33	11.68	1.26	-1,419.92	10,554.49	10,967.96	10,928.71	39.25	279.416		
7,900.00	7,149.06	3,533.00	3,529.01	32.52	11.68	1.26	-1,419.92	10,554.49	10,874.95	10,835.74	39.21	277.370		
8,000.00	7,149.08	3,533.00	3,529.01	33.88	11.68	1.26	-1,419.92	10,554.49	10,782.05	10,742.89	39.16	275.300		
8,100.00	7,149.10	3,533.00	3,529.01	35.37	11.68	1.26	-1,419.92	10,554.49	10,689.29	10,650.16	39.13	273.205		
8,200.00	7,149.12	3,533.00	3,529.01	36.97	11.68	1.26	-1,419.92	10,554.49	10,596.65	10,557.56	39.09	271.086		
8,300.00	7,149.14	3,533.00	3,529.01	38.65	11.68	1.26	-1,419.92	10,554.49	10,504.16	10,465.10	39.06	268.941		
8,400.00	7,149.16	3,533.00	3,529.01	40.42	11.68	1.26	-1,419.92	10,554.49	10,411.80	10,372.77	39.03	266.770		
8,500.00	7,149.18	3,533.00	3,529.01	42.24	11.68	1.26	-1,419.92	10,554.49	10,319.58	10,280.57	39.00	264.572		
8,600.00	7,149.20	3,533.00	3,529.01	44.13	11.68	1.26	-1,419.92	10,554.49	10,227.51	10,188.52	38.98	262.347		
8,700.00	7,149.22	3,533.00	3,529.01	46.07	11.68	1.26	-1,419.92	10,554.49	10,135.59	10,096.62	38.97	260.094		
8,800.00	7,149.24	3,533.00	3,529.01	48.05	11.68	1.26	-1,419.92	10,554.49	10,043.82	10,004.86	38.96	257.812		
8,900.00	7,149.27	3,533.00	3,529.01	50.07	11.68	1.26	-1,419.92	10,554.49	9,952.21	9,913.26	38.95	255.502		
9,000.00	7,149.29	3,533.00	3,529.01	52.13	11.68	1.26	-1,419.92	10,554.49	9,860.77	9,821.82	38.95	253.162		

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM												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)	Semi Major Axis 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)			
9,100.00	7,149.31	3,533.00	3,529.01	54.21	11.68	1.26	-1,419.92	10,554.49	9,769.49	9,730.54	38.95	250.792	
9,200.00	7,149.33	3,533.00	3,529.01	56.33	11.68	1.26	-1,419.92	10,554.49	9,678.39	9,639.42	38.96	248.391	
9,300.00	7,149.35	3,533.00	3,529.01	58.47	11.68	1.26	-1,419.92	10,554.49	9,587.46	9,548.48	38.98	245.960	
9,400.00	7,149.37	3,533.00	3,529.01	60.63	11.68	1.26	-1,419.92	10,554.49	9,496.71	9,457.71	39.00	243.496	
9,500.00	7,149.39	3,533.00	3,529.01	62.82	11.68	1.26	-1,419.92	10,554.49	9,406.16	9,367.13	39.03	241.002	
9,600.00	7,149.41	3,547.57	3,542.25	65.02	11.69	1.26	-1,419.49	10,560.57	9,315.59	9,276.51	39.08	238.354	
9,700.00	7,149.43	3,561.00	3,554.30	67.23	11.70	1.26	-1,419.18	10,566.48	9,225.47	9,186.32	39.14	235.698	
9,800.00	7,149.45	3,561.00	3,554.30	69.47	11.70	1.26	-1,419.18	10,566.48	9,135.37	9,096.18	39.19	233.111	
9,900.00	7,149.48	3,561.00	3,554.30	71.71	11.70	1.26	-1,419.18	10,566.48	9,045.49	9,006.24	39.24	230.492	
10,000.00	7,149.50	3,561.00	3,554.30	73.97	11.70	1.26	-1,419.18	10,566.48	8,955.82	8,916.51	39.31	227.840	
10,100.00	7,149.52	3,561.00	3,554.30	76.24	11.70	1.26	-1,419.18	10,566.48	8,866.37	8,826.99	39.38	225.156	
10,200.00	7,149.54	3,561.00	3,554.30	78.52	11.70	1.26	-1,419.18	10,566.48	8,777.14	8,737.69	39.46	222.440	
10,300.00	7,149.56	3,561.00	3,554.30	80.80	11.70	1.26	-1,419.18	10,566.48	8,688.16	8,648.61	39.55	219.691	
10,400.00	7,149.58	3,561.00	3,554.30	83.10	11.70	1.26	-1,419.18	10,566.48	8,599.41	8,559.77	39.64	216.911	
10,500.00	7,149.60	3,577.19	3,568.69	85.40	11.70	1.26	-1,419.19	10,573.90	8,510.76	8,470.99	39.77	214.010	
10,600.00	7,149.62	3,592.00	3,581.73	87.72	11.71	1.27	-1,419.81	10,580.89	8,422.48	8,382.58	39.90	211.105	
10,700.00	7,149.64	3,592.00	3,581.73	90.03	11.71	1.27	-1,419.81	10,580.89	8,334.33	8,294.31	40.02	208.240	
10,800.00	7,149.67	3,592.00	3,581.73	92.36	11.71	1.27	-1,419.81	10,580.89	8,246.46	8,206.30	40.16	205.346	
10,900.00	7,149.69	3,592.00	3,581.73	94.69	11.71	1.27	-1,419.81	10,580.89	8,158.86	8,118.55	40.31	202.423	
11,000.00	7,149.71	3,592.00	3,581.73	97.02	11.71	1.27	-1,419.81	10,580.89	8,071.55	8,031.08	40.46	199.471	
11,100.00	7,149.73	3,592.00	3,581.73	99.37	11.71	1.27	-1,419.81	10,580.89	7,984.54	7,943.90	40.64	196.493	
11,200.00	7,149.75	3,592.00	3,581.73	101.71	11.71	1.27	-1,419.81	10,580.89	7,897.83	7,857.01	40.82	193.490	
11,300.00	7,149.77	3,592.00	3,581.73	104.06	11.71	1.27	-1,419.81	10,580.89	7,811.44	7,770.43	41.01	190.461	
11,400.00	7,149.79	3,592.00	3,581.73	106.41	11.71	1.27	-1,419.81	10,580.89	7,725.39	7,684.16	41.22	187.410	
11,500.00	7,149.81	3,592.00	3,581.73	108.77	11.71	1.27	-1,419.81	10,580.89	7,639.67	7,598.22	41.44	184.337	
11,600.00	7,149.83	3,592.00	3,581.73	111.13	11.71	1.27	-1,419.81	10,580.89	7,554.30	7,512.62	41.68	181.245	
11,700.00	7,149.85	3,592.00	3,581.73	113.50	11.71	1.27	-1,419.81	10,580.89	7,469.29	7,427.36	41.93	178.134	
11,800.00	7,149.88	3,623.00	3,607.94	115.86	11.73	1.32	-1,422.42	10,597.20	7,384.53	7,342.33	42.19	175.020	
11,900.00	7,149.90	3,623.00	3,607.94	118.23	11.73	1.32	-1,422.42	10,597.20	7,300.06	7,257.59	42.47	171.889	
12,000.00	7,149.92	3,623.00	3,607.94	120.61	11.73	1.32	-1,422.42	10,597.20	7,215.99	7,173.23	42.76	168.745	
12,100.00	7,149.94	3,623.00	3,607.94	122.98	11.73	1.32	-1,422.42	10,597.20	7,132.33	7,089.26	43.07	165.591	
12,200.00	7,149.96	3,623.00	3,607.94	125.36	11.73	1.32	-1,422.42	10,597.20	7,049.10	7,005.70	43.40	162.429	
12,300.00	7,149.98	3,623.00	3,607.94	127.74	11.73	1.32	-1,422.42	10,597.20	6,966.31	6,922.57	43.74	159.262	
12,400.00	7,150.00	3,623.00	3,607.94	130.12	11.73	1.32	-1,422.42	10,597.20	6,883.98	6,839.88	44.10	156.093	
12,500.00	7,150.02	3,623.00	3,607.94	132.51	11.73	1.32	-1,422.42	10,597.20	6,802.12	6,757.64	44.48	152.923	
12,600.00	7,150.04	3,623.00	3,607.94	134.89	11.73	1.32	-1,422.42	10,597.20	6,720.75	6,675.87	44.88	149.756	
12,700.00	7,150.06	3,623.00	3,607.94	137.28	11.73	1.32	-1,422.42	10,597.20	6,639.89	6,594.59	45.29	146.594	
12,800.00	7,150.09	3,623.00	3,607.94	139.67	11.73	1.32	-1,422.42	10,597.20	6,559.56	6,513.83	45.73	143.440	
12,900.00	7,150.11	3,623.00	3,607.94	142.06	11.73	1.32	-1,422.42	10,597.20	6,479.77	6,433.59	46.19	140.298	
13,000.00	7,150.13	3,623.00	3,607.94	144.46	11.73	1.32	-1,422.42	10,597.20	6,400.55	6,353.89	46.66	137.169	
13,100.00	7,150.15	3,623.00	3,607.94	146.85	11.73	1.32	-1,422.42	10,597.20	6,321.93	6,274.77	47.16	134.057	
13,200.00	7,150.17	3,638.21	3,620.02	149.25	11.75	1.34	-1,424.03	10,606.28	6,243.42	6,195.77	47.65	131.030	
13,300.00	7,150.19	3,654.00	3,631.96	151.64	11.77	1.37	-1,425.70	10,616.49	6,166.25	6,118.10	48.15	128.052	
13,400.00	7,150.21	3,654.00	3,631.96	154.04	11.77	1.37	-1,425.70	10,616.49	6,089.21	6,040.50	48.71	125.008	
13,500.00	7,150.23	3,654.00	3,631.96	156.44	11.77	1.37	-1,425.70	10,616.49	6,012.84	5,963.55	49.29	121.991	
13,600.00	7,150.25	3,654.00	3,631.96	158.85	11.77	1.37	-1,425.70	10,616.49	5,937.17	5,887.28	49.89	119.005	
13,700.00	7,150.27	3,654.00	3,631.96	161.25	11.77	1.37	-1,425.70	10,616.49	5,862.24	5,811.72	50.51	116.052	
13,800.00	7,150.30	3,654.00	3,631.96	163.65	11.77	1.37	-1,425.70	10,616.49	5,788.06	5,736.90	51.16	113.134	
13,900.00	7,150.32	3,654.00	3,631.96	166.06	11.77	1.37	-1,425.70	10,616.49	5,714.66	5,662.83	51.83	110.254	
14,000.00	7,150.34	3,654.00	3,631.96	168.46	11.77	1.37	-1,425.70	10,616.49	5,642.09	5,589.56	52.53	107.415	
14,100.00	7,150.36	3,654.00	3,631.96	170.87	11.77	1.37	-1,425.70	10,616.49	5,570.36	5,517.12	53.24	104.620	
14,200.00	7,150.38	3,654.00	3,631.96	173.28	11.77	1.37	-1,425.70	10,616.49	5,499.52	5,445.54	53.99	101.869	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM						Rule Assigned:					Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis				Offset Wellbore Centre		Distance		Minimum Separation		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		
14,300.00	7,150.40	3,686.00	3,654.28	175.68	11.81	1.42	-1,428.94	10,639.16	5,429.47	5,374.82	54.65	99.349		
14,400.00	7,150.42	3,686.00	3,654.28	178.09	11.81	1.42	-1,428.94	10,639.16	5,360.07	5,304.63	55.44	96.689		
14,500.00	7,150.44	3,686.00	3,654.28	180.50	11.81	1.42	-1,428.94	10,639.16	5,291.65	5,235.41	56.25	94.081		
14,600.00	7,150.46	3,686.00	3,654.28	182.92	11.81	1.42	-1,428.94	10,639.16	5,224.25	5,167.17	57.08	91.525		
14,700.00	7,150.48	3,686.00	3,654.28	185.33	11.81	1.42	-1,428.94	10,639.16	5,157.91	5,099.98	57.94	89.025		
14,800.00	7,150.51	3,686.00	3,654.28	187.74	11.81	1.42	-1,428.94	10,639.16	5,092.67	5,033.85	58.82	86.581		
14,900.00	7,150.53	3,686.00	3,654.28	190.15	11.81	1.42	-1,428.94	10,639.16	5,028.57	4,968.85	59.73	84.195		
15,000.00	7,150.55	3,686.00	3,654.28	192.57	11.81	1.42	-1,428.94	10,639.16	4,965.66	4,905.01	60.65	81.869		
15,100.00	7,150.57	3,718.00	3,674.12	194.98	11.91	1.46	-1,431.79	10,664.09	4,903.67	4,842.19	61.48	79.757		
15,200.00	7,150.59	3,718.00	3,674.12	197.40	11.91	1.46	-1,431.79	10,664.09	4,842.75	4,780.30	62.45	77.542		
15,300.00	7,150.61	3,718.00	3,674.12	199.81	11.91	1.46	-1,431.79	10,664.09	4,783.15	4,719.70	63.45	75.390		
15,400.00	7,150.63	3,718.00	3,674.12	202.23	11.91	1.46	-1,431.79	10,664.09	4,724.91	4,660.45	64.46	73.301		
15,500.00	7,150.65	3,718.00	3,674.12	204.64	11.91	1.46	-1,431.79	10,664.09	4,668.08	4,602.59	65.49	71.276		
15,600.00	7,150.67	3,735.39	3,683.94	207.06	11.98	1.48	-1,432.91	10,678.39	4,612.38	4,545.90	66.48	69.382		
15,700.00	7,150.69	3,750.00	3,691.79	209.48	12.05	1.49	-1,433.45	10,690.71	4,558.21	4,490.72	67.49	67.540		
15,800.00	7,150.72	3,750.00	3,691.79	211.90	12.05	1.49	-1,433.45	10,690.71	4,505.35	4,436.77	68.58	65.698		
15,900.00	7,150.74	3,750.00	3,691.79	214.32	12.05	1.49	-1,433.45	10,690.71	4,454.11	4,384.43	69.68	63.923		
16,000.00	7,150.76	3,782.00	3,707.89	216.74	12.22	1.52	-1,435.22	10,718.29	4,404.09	4,333.41	70.68	62.313		
16,100.00	7,150.78	3,782.00	3,707.89	219.16	12.22	1.52	-1,435.22	10,718.29	4,355.61	4,283.81	71.81	60.656		
16,200.00	7,150.80	3,814.00	3,722.96	221.58	12.43	1.55	-1,437.25	10,746.44	4,308.59	4,235.75	72.84	59.150		
16,300.00	7,150.82	3,814.00	3,722.96	224.00	12.43	1.55	-1,437.25	10,746.44	4,263.06	4,189.06	74.00	57.610		
16,400.00	7,150.84	3,845.00	3,736.61	226.42	12.67	1.58	-1,439.20	10,774.21	4,219.10	4,144.03	75.07	56.205		
16,500.00	7,150.86	3,845.00	3,736.61	228.84	12.67	1.58	-1,439.20	10,774.21	4,176.72	4,100.48	76.24	54.783		
16,600.00	7,150.88	3,845.00	3,736.61	231.26	12.67	1.58	-1,439.20	10,774.21	4,136.33	4,058.91	77.42	53.427		
16,700.00	7,150.90	3,877.00	3,748.86	233.68	12.96	1.61	-1,441.73	10,803.65	4,097.80	4,019.28	78.52	52.186		
16,800.00	7,150.93	3,877.00	3,748.86	236.11	12.96	1.61	-1,441.73	10,803.65	4,060.82	3,981.11	79.71	50.944		
16,900.00	7,150.95	3,877.00	3,748.86	238.53	12.96	1.61	-1,441.73	10,803.65	4,025.99	3,945.09	80.90	49.767		
16,986.21	7,150.96	3,877.00	3,748.86	240.62	12.96	1.61	-1,441.73	10,803.65	3,997.72	3,915.81	81.91	48.804		
17,000.00	7,150.97	3,877.00	3,748.86	240.95	12.96	1.61	-1,441.73	10,803.65	3,993.36	3,911.28	82.08	48.654		
17,100.00	7,150.99	3,909.00	3,758.90	243.37	13.29	1.63	-1,443.16	10,833.99	3,962.41	3,879.22	83.20	47.626		
17,154.59	7,151.00	3,909.00	3,758.90	244.70	13.29	1.63	-1,443.16	10,833.99	3,946.38	3,862.54	83.84	47.071	CC, 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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-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	364.00	364.00	0.00	1.30	103.80	-2,628.73	10,701.38	11,019.51				
100.00	100.00	464.00	464.00	0.25	1.66	103.80	-2,628.73	10,701.38	11,019.51	11,017.60	1.91	5,756.605	
200.00	200.00	564.00	564.00	0.61	2.02	103.80	-2,628.73	10,701.38	11,019.51	11,016.88	2.63	4,188.048	
300.00	300.00	664.00	664.00	0.97	2.38	103.80	-2,628.73	10,701.38	11,019.51	11,016.17	3.35	3,291.250	
400.00	400.00	764.00	764.00	1.33	2.74	103.80	-2,628.73	10,701.38	11,019.51	11,015.45	4.07	2,710.783	
500.00	500.00	864.00	864.00	1.68	3.10	103.80	-2,628.73	10,701.38	11,019.51	11,014.73	4.78	2,304.369	
600.00	599.98	963.98	963.98	2.03	3.46	-99.45	-2,628.73	10,701.38	11,019.80	11,014.32	5.48	2,010.104	
700.00	699.84	1,063.84	1,063.84	2.36	3.81	-99.46	-2,628.73	10,701.38	11,020.66	11,014.49	6.17	1,784.976	
800.00	799.45	1,163.45	1,163.45	2.71	4.17	-99.47	-2,628.73	10,701.38	11,022.10	11,015.22	6.88	1,602.799	
900.00	898.70	1,262.70	1,262.70	3.07	4.53	-99.49	-2,628.73	10,701.38	11,024.12	11,016.53	7.59	1,452.110	
1,000.00	997.47	1,361.47	1,361.47	3.44	4.88	-99.52	-2,628.73	10,701.38	11,026.74	11,018.42	8.32	1,325.050	
1,067.13	1,063.43	1,427.43	1,427.43	3.71	5.12	-99.54	-2,628.73	10,701.38	11,028.83	11,020.01	8.82	1,250.243	
1,100.00	1,095.66	1,459.66	1,459.66	3.84	5.23	-99.57	-2,628.73	10,701.38	11,029.93	11,020.86	9.07	1,216.277	
1,200.00	1,193.71	1,557.71	1,557.71	4.25	5.58	-99.67	-2,628.73	10,701.38	11,033.28	11,023.45	9.83	1,122.508	
1,300.00	1,291.75	1,655.75	1,655.75	4.67	5.94	-99.77	-2,628.73	10,701.38	11,036.66	11,026.07	10.60	1,041.337	
1,400.00	1,389.80	1,753.80	1,753.80	5.10	6.29	-99.87	-2,628.73	10,701.38	11,040.08	11,028.71	11.37	970.586	
1,500.00	1,487.85	1,851.85	1,851.85	5.53	6.64	-99.97	-2,628.73	10,701.38	11,043.54	11,031.38	12.16	908.493	
1,600.00	1,585.90	1,949.90	1,949.90	5.96	6.99	-100.07	-2,628.73	10,701.38	11,047.02	11,034.08	12.94	853.639	
1,700.00	1,683.94	2,047.94	2,047.94	6.40	7.34	-100.17	-2,628.73	10,701.38	11,050.55	11,036.82	13.73	804.878	
1,800.00	1,781.99	2,145.99	2,145.99	6.84	7.69	-100.27	-2,628.73	10,701.38	11,054.10	11,039.58	14.52	761.283	
1,900.00	1,880.04	2,244.04	2,244.04	7.29	8.04	-100.36	-2,628.73	10,701.38	11,057.69	11,042.38	15.31	722.096	
2,000.00	1,978.08	2,342.08	2,342.08	7.73	8.40	-100.46	-2,628.73	10,701.38	11,061.31	11,045.21	16.11	686.699	
2,100.00	2,076.13	2,440.13	2,440.13	8.18	8.75	-100.56	-2,628.73	10,701.38	11,064.97	11,048.07	16.90	654.577	
2,200.00	2,174.18	2,538.18	2,538.18	8.63	9.10	-100.66	-2,628.73	10,701.38	11,068.66	11,050.96	17.70	625.306	
2,300.00	2,272.22	2,636.22	2,636.22	9.08	9.45	-100.76	-2,628.73	10,701.38	11,072.39	11,053.89	18.50	598.528	
2,400.00	2,370.27	2,734.27	2,734.27	9.53	9.80	-100.85	-2,628.73	10,701.38	11,076.14	11,056.85	19.30	573.943	
2,500.00	2,468.32	2,832.32	2,832.32	9.98	10.15	-100.95	-2,628.73	10,701.38	11,079.94	11,059.84	20.10	551.295	
2,600.00	2,566.36	2,930.36	2,930.36	10.43	10.50	-101.05	-2,628.73	10,701.38	11,083.76	11,062.86	20.90	530.366	
2,700.00	2,664.41	3,028.41	3,028.41	10.89	10.86	-101.15	-2,628.73	10,701.38	11,087.62	11,065.92	21.70	510.971	
2,800.00	2,762.46	3,126.46	3,126.46	11.34	11.21	-101.25	-2,628.73	10,701.38	11,091.51	11,069.01	22.50	492.949	
2,900.00	2,860.50	3,224.50	3,224.50	11.79	11.56	-101.34	-2,628.73	10,701.38	11,095.44	11,072.14	23.30	476.160	
3,000.00	2,958.55	3,322.55	3,322.55	12.25	11.91	-101.44	-2,628.73	10,701.38	11,099.40	11,075.29	24.10	460.483	
3,100.00	3,056.60	3,420.60	3,420.60	12.70	12.26	-101.54	-2,628.73	10,701.38	11,103.39	11,078.48	24.91	445.812	
3,200.00	3,154.65	3,459.00	3,459.00	13.16	12.40	-101.58	-2,628.73	10,701.38	11,107.58	11,082.08	25.49	435.715	
3,300.00	3,252.69	3,459.00	3,459.00	13.61	12.40	-101.58	-2,628.73	10,701.38	11,112.59	11,086.65	25.94	428.409	
3,400.00	3,350.74	3,459.00	3,459.00	14.07	12.40	-101.58	-2,628.73	10,701.38	11,118.51	11,092.13	26.38	421.414	
3,500.00	3,448.79	3,459.00	3,459.00	14.52	12.40	-101.58	-2,628.73	10,701.38	11,125.32	11,098.49	26.83	414.717	
3,600.00	3,546.83	3,459.00	3,459.00	14.98	12.40	-101.58	-2,628.73	10,701.38	11,133.03	11,105.76	27.27	408.301	
3,700.00	3,644.88	3,459.00	3,459.00	15.43	12.40	-101.58	-2,628.73	10,701.38	11,141.62	11,113.92	27.70	402.154	
3,800.00	3,742.93	3,459.00	3,459.00	15.89	12.40	-101.58	-2,628.73	10,701.38	11,151.11	11,122.97	28.14	396.263	
3,900.00	3,840.97	3,459.00	3,459.00	16.35	12.40	-101.58	-2,628.73	10,701.38	11,161.49	11,132.91	28.57	390.617	
4,000.00	3,939.02	3,500.00	3,499.87	16.80	12.55	-101.62	-2,628.75	10,704.17	11,172.48	11,143.32	29.16	383.162	
4,100.00	4,037.07	3,500.00	3,499.87	17.26	12.55	-101.62	-2,628.75	10,704.17	11,184.27	11,154.68	29.59	378.006	
4,200.00	4,135.11	3,500.00	3,499.87	17.72	12.55	-101.62	-2,628.75	10,704.17	11,196.94	11,166.92	30.01	373.060	
4,300.00	4,233.16	3,500.00	3,499.87	18.17	12.55	-101.62	-2,628.75	10,704.17	11,210.48	11,180.04	30.44	368.314	
4,400.00	4,331.21	3,500.00	3,499.87	18.63	12.55	-101.62	-2,628.75	10,704.17	11,224.90	11,194.04	30.86	363.761	
4,500.00	4,429.25	3,500.00	3,499.87	19.09	12.55	-101.62	-2,628.75	10,704.17	11,240.19	11,208.92	31.28	359.392	
4,600.00	4,527.30	3,500.00	3,499.87	19.54	12.55	-101.62	-2,628.75	10,704.17	11,256.35	11,224.66	31.69	355.198	
4,700.00	4,625.35	3,500.00	3,499.87	20.00	12.55	-101.62	-2,628.75	10,704.17	11,273.38	11,241.28	32.10	351.172	
4,800.00	4,723.40	3,500.00	3,499.87	20.46	12.55	-101.62	-2,628.75	10,704.17	11,291.26	11,258.75	32.51	347.308	
4,900.00	4,821.44	3,500.00	3,499.87	20.92	12.55	-101.62	-2,628.75	10,704.17	11,310.00	11,277.08	32.92	343.599	
5,000.00	4,919.49	3,500.00	3,499.87	21.37	12.55	-101.62	-2,628.75	10,704.17	11,329.59	11,296.27	33.32	340.037	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
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	
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,017.54	3,500.00	3,499.87	21.83	12.55	-101.62	-2,628.75	10,704.17	11,350.03	11,316.31	33.72	336.619	
5,200.00	5,115.58	3,500.00	3,499.87	22.29	12.55	-101.62	-2,628.75	10,704.17	11,371.31	11,337.20	34.11	333.336	
5,300.00	5,213.63	3,500.00	3,499.87	22.75	12.55	-101.62	-2,628.75	10,704.17	11,393.43	11,358.92	34.51	330.185	
5,400.00	5,311.68	3,500.00	3,499.87	23.21	12.55	-101.62	-2,628.75	10,704.17	11,416.38	11,381.49	34.90	327.159	
5,500.00	5,409.72	3,500.00	3,499.87	23.66	12.55	-101.62	-2,628.75	10,704.17	11,440.16	11,404.88	35.28	324.255	
5,600.00	5,507.77	3,500.00	3,499.87	24.12	12.55	-101.62	-2,628.75	10,704.17	11,464.76	11,429.10	35.66	321.467	
5,700.00	5,605.82	3,500.00	3,499.87	24.58	12.55	-101.62	-2,628.75	10,704.17	11,490.19	11,454.14	36.04	318.791	
5,800.00	5,703.86	3,500.00	3,499.87	25.04	12.55	-101.62	-2,628.75	10,704.17	11,516.42	11,480.00	36.42	316.222	
5,900.00	5,801.91	3,500.00	3,499.87	25.49	12.55	-101.62	-2,628.75	10,704.17	11,543.46	11,506.67	36.79	313.757	
6,000.00	5,899.96	3,500.00	3,499.87	25.95	12.55	-101.62	-2,628.75	10,704.17	11,571.30	11,534.14	37.16	311.391	
6,100.00	5,998.00	3,500.00	3,499.87	26.41	12.55	-101.62	-2,628.75	10,704.17	11,599.94	11,562.41	37.53	309.122	
6,200.00	6,096.05	3,500.00	3,499.87	26.87	12.55	-101.62	-2,628.75	10,704.17	11,629.36	11,591.47	37.89	306.944	
6,300.00	6,194.10	3,500.00	3,499.87	27.33	12.55	-101.62	-2,628.75	10,704.17	11,659.57	11,621.32	38.25	304.856	
6,400.00	6,292.15	3,500.00	3,499.87	27.79	12.55	-101.62	-2,628.75	10,704.17	11,690.56	11,651.95	38.60	302.853	
6,500.00	6,390.19	3,500.00	3,499.87	28.24	12.55	-101.62	-2,628.75	10,704.17	11,722.31	11,683.36	38.95	300.933	
6,587.61	6,476.09	3,500.00	3,499.87	28.65	12.55	-101.62	-2,628.75	10,704.17	11,750.76	11,711.51	39.26	299.317	
6,600.00	6,488.25	3,500.00	3,499.87	28.70	12.55	-96.35	-2,628.75	10,704.17	11,754.72	11,715.42	39.30	299.095	
6,650.00	6,537.39	3,500.00	3,499.87	28.92	12.55	-72.85	-2,628.75	10,704.17	11,768.52	11,729.05	39.47	298.195	
6,700.00	6,586.44	3,500.00	3,499.87	29.12	12.55	-51.41	-2,628.75	10,704.17	11,778.76	11,739.14	39.62	297.305	
6,750.00	6,635.11	3,548.93	3,547.59	29.30	12.72	-36.21	-2,628.82	10,714.75	11,781.34	11,741.38	39.97	294.780	
6,800.00	6,683.08	3,550.15	3,548.76	29.46	12.72	-26.20	-2,628.82	10,715.12	11,784.13	11,744.03	40.10	293.875	
6,850.00	6,730.07	3,600.00	3,594.87	29.61	12.90	-19.55	-2,628.95	10,733.91	11,787.26	11,746.84	40.43	291.565	
6,900.00	6,775.78	3,600.00	3,594.87	29.74	12.90	-14.87	-2,628.95	10,733.91	11,782.54	11,742.01	40.53	290.692	
6,950.00	6,819.93	3,600.00	3,594.87	29.86	12.90	-11.42	-2,628.95	10,733.91	11,774.19	11,733.56	40.63	289.812	
7,000.00	6,862.25	3,600.00	3,594.87	29.96	12.90	-8.77	-2,628.95	10,733.91	11,762.26	11,721.54	40.71	288.926	
7,050.00	6,902.48	3,600.00	3,594.87	30.04	12.90	-6.63	-2,628.95	10,733.91	11,746.80	11,706.02	40.78	288.033	
7,100.00	6,940.37	3,600.00	3,594.87	30.12	12.90	-4.82	-2,628.95	10,733.91	11,727.91	11,687.07	40.84	287.136	
7,150.00	6,975.69	3,600.00	3,594.87	30.18	12.90	-3.24	-2,628.95	10,733.91	11,705.68	11,664.79	40.90	286.236	
7,200.00	7,008.21	3,600.00	3,594.87	30.22	12.90	-1.79	-2,628.95	10,733.91	11,680.23	11,639.30	40.94	285.333	
7,250.00	7,037.75	3,600.00	3,594.87	30.26	12.90	-0.39	-2,628.95	10,733.91	11,651.70	11,610.74	40.96	284.431	
7,300.00	7,064.11	3,600.00	3,594.87	30.28	12.90	1.01	-2,628.95	10,733.91	11,620.24	11,579.26	40.98	283.531	
7,350.00	7,087.14	3,600.00	3,594.87	30.29	12.90	2.49	-2,628.95	10,733.91	11,586.02	11,545.03	40.99	282.633	
7,400.00	7,106.69	3,600.00	3,594.87	30.30	12.90	4.11	-2,628.95	10,733.91	11,549.23	11,508.24	40.99	281.740	
7,450.00	7,122.64	3,600.00	3,594.87	30.30	12.90	5.98	-2,628.95	10,733.91	11,510.07	11,469.09	40.98	280.853	
7,500.00	7,134.89	3,600.00	3,594.87	30.30	12.90	8.23	-2,628.95	10,733.91	11,468.76	11,427.80	40.96	279.971	
7,550.00	7,143.37	3,600.00	3,594.87	30.30	12.90	11.07	-2,628.95	10,733.91	11,425.54	11,384.60	40.94	279.095	
7,600.00	7,148.03	3,600.00	3,594.87	30.32	12.90	14.81	-2,628.95	10,733.91	11,380.65	11,339.74	40.90	278.223	
7,635.28	7,149.00	3,600.00	3,594.87	30.35	12.90	18.28	-2,628.95	10,733.91	11,348.11	11,307.23	40.88	277.606	
7,700.00	7,149.01	3,600.00	3,594.87	30.54	12.90	18.28	-2,628.95	10,733.91	11,287.85	11,247.02	40.82	276.507	
7,800.00	7,149.03	3,600.00	3,594.87	31.33	12.90	18.28	-2,628.95	10,733.91	11,194.83	11,154.10	40.74	274.793	
7,900.00	7,149.06	3,600.00	3,594.87	32.52	12.90	18.28	-2,628.95	10,733.91	11,101.94	11,061.28	40.66	273.039	
8,000.00	7,149.08	3,600.00	3,594.87	33.88	12.90	18.28	-2,628.95	10,733.91	11,009.18	10,968.59	40.59	271.244	
8,100.00	7,149.10	3,600.00	3,594.87	35.37	12.90	18.28	-2,628.95	10,733.91	10,916.54	10,876.02	40.52	269.404	
8,200.00	7,149.12	3,600.00	3,594.87	36.97	12.90	18.28	-2,628.95	10,733.91	10,824.04	10,783.58	40.46	267.520	
8,300.00	7,149.14	3,600.00	3,594.87	38.65	12.90	18.28	-2,628.95	10,733.91	10,731.66	10,691.26	40.41	265.588	
8,400.00	7,149.16	3,600.00	3,594.87	40.42	12.90	18.28	-2,628.95	10,733.91	10,639.43	10,599.07	40.36	263.608	
8,500.00	7,149.18	3,600.00	3,594.87	42.24	12.90	18.28	-2,628.95	10,733.91	10,547.34	10,507.02	40.32	261.578	
8,600.00	7,149.20	3,600.00	3,594.87	44.13	12.90	18.28	-2,628.95	10,733.91	10,455.39	10,415.10	40.29	259.496	
8,700.00	7,149.22	3,600.00	3,594.87	46.07	12.90	18.28	-2,628.95	10,733.91	10,363.59	10,323.32	40.27	257.362	
8,800.00	7,149.24	3,600.00	3,594.87	48.05	12.90	18.28	-2,628.95	10,733.91	10,271.95	10,231.69	40.25	255.172	
8,900.00	7,149.27	3,600.00	3,594.87	50.07	12.90	18.28	-2,628.95	10,733.91	10,180.46	10,140.21	40.25	252.927	
9,000.00	7,149.29	3,600.00	3,594.87	52.13	12.90	18.28	-2,628.95	10,733.91	10,089.13	10,048.88	40.26	250.625	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		100-B001Mb_MWD+HRGM						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
9,100.00	7,149.31	3,600.00	3,594.87	54.21	12.90	18.28	-2,628.95	10,733.91	9,997.97	9,957.70	40.27	248.265	
9,200.00	7,149.33	3,600.00	3,594.87	56.33	12.90	18.28	-2,628.95	10,733.91	9,906.98	9,866.69	40.30	245.845	
9,300.00	7,149.35	3,600.00	3,594.87	58.47	12.90	18.28	-2,628.95	10,733.91	9,816.17	9,775.84	40.34	243.366	
9,400.00	7,149.37	3,600.00	3,594.87	60.63	12.90	18.28	-2,628.95	10,733.91	9,725.54	9,685.15	40.38	240.826	
9,500.00	7,149.39	3,600.00	3,594.87	62.82	12.90	18.28	-2,628.95	10,733.91	9,635.09	9,594.64	40.45	238.224	
9,600.00	7,149.41	3,600.00	3,594.87	65.02	12.90	18.28	-2,628.95	10,733.91	9,544.83	9,504.31	40.52	235.562	
9,700.00	7,149.43	3,600.00	3,594.87	67.23	12.90	18.28	-2,628.95	10,733.91	9,454.77	9,414.16	40.61	232.837	
9,800.00	7,149.45	3,600.00	3,594.87	69.47	12.90	18.28	-2,628.95	10,733.91	9,364.91	9,324.20	40.71	230.051	
9,900.00	7,149.48	3,600.00	3,594.87	71.71	12.90	18.28	-2,628.95	10,733.91	9,275.25	9,234.43	40.82	227.204	
10,000.00	7,149.50	3,600.00	3,594.87	73.97	12.90	18.28	-2,628.95	10,733.91	9,185.82	9,144.86	40.95	224.297	
10,100.00	7,149.52	3,600.00	3,594.87	76.24	12.90	18.28	-2,628.95	10,733.91	9,096.60	9,055.50	41.10	221.330	
10,200.00	7,149.54	3,600.00	3,594.87	78.52	12.90	18.28	-2,628.95	10,733.91	9,007.60	8,966.34	41.26	218.304	
10,300.00	7,149.56	3,600.00	3,594.87	80.80	12.90	18.28	-2,628.95	10,733.91	8,918.84	8,877.40	41.44	215.222	
10,400.00	7,149.58	3,600.00	3,594.87	83.10	12.90	18.28	-2,628.95	10,733.91	8,830.33	8,788.69	41.64	212.085	
10,500.00	7,149.60	3,600.00	3,594.87	85.40	12.90	18.28	-2,628.95	10,733.91	8,742.05	8,700.20	41.85	208.894	
10,600.00	7,149.62	3,600.00	3,594.87	87.72	12.90	18.28	-2,628.95	10,733.91	8,654.04	8,611.96	42.08	205.653	
10,700.00	7,149.64	3,600.00	3,594.87	90.03	12.90	18.28	-2,628.95	10,733.91	8,566.28	8,523.95	42.33	202.363	
10,800.00	7,149.67	3,600.00	3,594.87	92.36	12.90	18.28	-2,628.95	10,733.91	8,478.80	8,436.20	42.60	199.028	
10,900.00	7,149.69	3,600.00	3,594.87	94.69	12.90	18.28	-2,628.95	10,733.91	8,391.60	8,348.71	42.89	195.650	
11,000.00	7,149.71	3,600.00	3,594.87	97.02	12.90	18.28	-2,628.95	10,733.91	8,304.69	8,261.48	43.20	192.233	
11,100.00	7,149.73	3,600.00	3,594.87	99.37	12.90	18.28	-2,628.95	10,733.91	8,218.07	8,174.54	43.53	188.781	
11,200.00	7,149.75	3,600.00	3,594.87	101.71	12.90	18.28	-2,628.95	10,733.91	8,131.76	8,087.87	43.88	185.297	
11,300.00	7,149.77	3,613.51	3,606.77	104.06	12.95	18.33	-2,628.99	10,740.30	8,045.46	8,001.16	44.30	181.611	
11,400.00	7,149.79	3,627.76	3,619.00	106.41	13.01	18.38	-2,629.04	10,747.60	7,959.97	7,915.23	44.74	177.929	
11,500.00	7,149.81	3,627.76	3,619.00	108.77	13.01	18.38	-2,629.04	10,747.60	7,874.46	7,829.31	45.15	174.391	
11,600.00	7,149.83	3,627.76	3,619.00	111.13	13.01	18.38	-2,629.04	10,747.60	7,789.31	7,743.71	45.59	170.837	
11,700.00	7,149.85	3,627.76	3,619.00	113.50	13.01	18.38	-2,629.04	10,747.60	7,704.51	7,658.45	46.06	167.273	
11,800.00	7,149.88	3,627.76	3,619.00	115.86	13.01	18.38	-2,629.04	10,747.60	7,620.07	7,573.52	46.55	163.701	
11,900.00	7,149.90	3,627.76	3,619.00	118.23	13.01	18.38	-2,629.04	10,747.60	7,536.02	7,488.96	47.06	160.127	
12,000.00	7,149.92	3,627.76	3,619.00	120.61	13.01	18.38	-2,629.04	10,747.60	7,452.37	7,404.76	47.60	156.555	
12,100.00	7,149.94	3,627.76	3,619.00	122.98	13.01	18.38	-2,629.04	10,747.60	7,369.12	7,320.95	48.17	152.990	
12,200.00	7,149.96	3,627.76	3,619.00	125.36	13.01	18.38	-2,629.04	10,747.60	7,286.29	7,237.53	48.76	149.435	
12,300.00	7,149.98	3,627.76	3,619.00	127.74	13.01	18.38	-2,629.04	10,747.60	7,203.90	7,154.52	49.38	145.895	
12,400.00	7,150.00	3,627.76	3,619.00	130.12	13.01	18.38	-2,629.04	10,747.60	7,121.95	7,071.93	50.02	142.375	
12,500.00	7,150.02	3,627.76	3,619.00	132.51	13.01	18.38	-2,629.04	10,747.60	7,040.48	6,989.78	50.70	138.878	
12,600.00	7,150.04	3,627.76	3,619.00	134.89	13.01	18.38	-2,629.04	10,747.60	6,959.49	6,908.09	51.40	135.409	
12,700.00	7,150.06	3,627.76	3,619.00	137.28	13.01	18.38	-2,629.04	10,747.60	6,879.00	6,826.87	52.13	131.971	
12,800.00	7,150.09	3,627.76	3,619.00	139.67	13.01	18.38	-2,629.04	10,747.60	6,799.02	6,746.14	52.88	128.568	
12,900.00	7,150.11	3,627.76	3,619.00	142.06	13.01	18.38	-2,629.04	10,747.60	6,719.58	6,665.92	53.67	125.203	
13,000.00	7,150.13	3,627.76	3,619.00	144.46	13.01	18.38	-2,629.04	10,747.60	6,640.70	6,586.22	54.49	121.879	
13,100.00	7,150.15	3,627.76	3,619.00	146.85	13.01	18.38	-2,629.04	10,747.60	6,562.40	6,507.07	55.33	118.600	
13,200.00	7,150.17	3,627.76	3,619.00	149.25	13.01	18.38	-2,629.04	10,747.60	6,484.69	6,428.48	56.21	115.369	
13,300.00	7,150.19	3,627.76	3,619.00	151.64	13.01	18.38	-2,629.04	10,747.60	6,407.60	6,350.48	57.11	112.188	
13,400.00	7,150.21	3,627.76	3,619.00	154.04	13.01	18.38	-2,629.04	10,747.60	6,331.15	6,273.09	58.05	109.060	
13,500.00	7,150.23	3,664.49	3,648.80	156.44	13.14	18.51	-2,629.18	10,769.05	6,253.06	6,194.03	59.03	105.926	
13,600.00	7,150.25	3,700.00	3,674.90	158.85	13.27	18.63	-2,629.34	10,793.08	6,179.37	6,119.33	60.04	102.922	
13,700.00	7,150.27	3,700.00	3,674.90	161.25	13.27	18.63	-2,629.34	10,793.08	6,104.23	6,043.17	61.06	99.964	
13,800.00	7,150.30	3,700.00	3,674.90	163.65	13.27	18.63	-2,629.34	10,793.08	6,029.82	5,967.70	62.12	97.067	
13,900.00	7,150.32	3,700.00	3,674.90	166.06	13.27	18.63	-2,629.34	10,793.08	5,956.15	5,892.94	63.21	94.229	
14,000.00	7,150.34	3,700.00	3,674.90	168.46	13.27	18.63	-2,629.34	10,793.08	5,883.26	5,818.93	64.33	91.454	
14,100.00	7,150.36	3,700.00	3,674.90	170.87	13.27	18.63	-2,629.34	10,793.08	5,811.18	5,745.69	65.48	88.743	
14,200.00	7,150.38	3,700.00	3,674.90	173.28	13.27	18.63	-2,629.34	10,793.08	5,739.93	5,673.26	66.67	86.096	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY											Offset Site Error: 0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM											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)	
14,300.00	7,150.40	3,700.00	3,674.90	175.68	13.27	18.63	-2,629.34	10,793.08	5,669.55	5,601.66	
14,400.00	7,150.42	3,700.00	3,674.90	178.09	13.27	18.63	-2,629.34	10,793.08	5,600.07	5,530.94	
14,500.00	7,150.44	3,700.00	3,674.90	180.50	13.27	18.63	-2,629.34	10,793.08	5,531.53	5,461.11	
14,600.00	7,150.46	3,700.00	3,674.90	182.92	13.27	18.63	-2,629.34	10,793.08	5,463.96	5,392.22	
14,700.00	7,150.48	3,700.00	3,674.90	185.33	13.27	18.63	-2,629.34	10,793.08	5,397.40	5,324.31	
14,800.00	7,150.51	3,700.00	3,674.90	187.74	13.27	18.63	-2,629.34	10,793.08	5,331.88	5,257.41	
14,900.00	7,150.53	3,700.00	3,674.90	190.15	13.27	18.63	-2,629.34	10,793.08	5,267.44	5,191.57	
15,000.00	7,150.55	3,700.00	3,674.90	192.57	13.27	18.63	-2,629.34	10,793.08	5,204.13	5,126.81	
15,100.00	7,150.57	3,700.00	3,674.90	194.98	13.27	18.63	-2,629.34	10,793.08	5,141.98	5,063.20	
15,200.00	7,150.59	3,700.00	3,674.90	197.40	13.27	18.63	-2,629.34	10,793.08	5,081.04	5,000.76	
15,300.00	7,150.61	3,700.00	3,674.90	199.81	13.27	18.63	-2,629.34	10,793.08	5,021.36	4,939.54	
15,400.00	7,150.63	3,700.00	3,674.90	202.23	13.27	18.63	-2,629.34	10,793.08	4,962.97	4,879.60	
15,500.00	7,150.65	3,700.00	3,674.90	204.64	13.27	18.63	-2,629.34	10,793.08	4,905.92	4,820.97	
15,600.00	7,150.67	3,700.00	3,674.90	207.06	13.27	18.63	-2,629.34	10,793.08	4,850.26	4,763.71	
15,700.00	7,150.69	3,750.77	3,706.89	209.48	13.54	18.77	-2,629.60	10,832.42	4,791.66	4,703.54	
15,800.00	7,150.72	3,800.00	3,731.17	211.90	13.80	18.87	-2,629.88	10,875.19	4,741.33	4,651.66	
15,900.00	7,150.74	3,800.00	3,731.17	214.32	13.80	18.87	-2,629.88	10,875.19	4,688.37	4,597.01	
16,000.00	7,150.76	3,800.00	3,731.17	216.74	13.80	18.87	-2,629.88	10,875.19	4,636.96	4,543.90	
16,100.00	7,150.78	3,800.00	3,731.17	219.16	13.80	18.87	-2,629.88	10,875.19	4,587.15	4,492.38	
16,200.00	7,150.80	3,800.00	3,731.17	221.58	13.80	18.87	-2,629.88	10,875.19	4,539.01	4,442.49	
16,300.00	7,150.82	3,800.00	3,731.17	224.00	13.80	18.87	-2,629.88	10,875.19	4,492.57	4,394.31	
16,400.00	7,150.84	3,800.00	3,731.17	226.42	13.80	18.87	-2,629.88	10,875.19	4,447.90	4,347.88	
16,500.00	7,150.86	3,800.00	3,731.17	228.84	13.80	18.87	-2,629.88	10,875.19	4,405.04	4,303.25	
16,600.00	7,150.88	3,800.00	3,731.17	231.26	13.80	18.87	-2,629.88	10,875.19	4,364.05	4,260.50	
16,700.00	7,150.90	3,800.00	3,731.17	233.68	13.80	18.87	-2,629.88	10,875.19	4,324.99	4,219.67	
16,800.00	7,150.93	3,800.00	3,731.17	236.11	13.80	18.87	-2,629.88	10,875.19	4,287.91	4,180.81	
16,900.00	7,150.95	3,800.00	3,731.17	238.53	13.80	18.87	-2,629.88	10,875.19	4,252.85	4,143.99	
16,986.21	7,150.96	3,800.00	3,731.17	240.62	13.80	18.87	-2,629.88	10,875.19	4,224.30	4,113.92	
17,000.00	7,150.97	3,800.00	3,731.17	240.95	13.80	18.87	-2,629.88	10,875.19	4,219.88	4,109.26	
17,100.00	7,150.99	3,800.00	3,731.17	243.37	13.80	18.87	-2,629.88	10,875.19	4,189.03	4,076.67	
17,154.59	7,151.00	3,800.00	3,731.17	244.70	13.80	18.87	-2,629.88	10,875.19	4,173.10	4,059.80	36.832 CC, 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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM													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	0.00	0.00	0.00	0.00	34.43	37.14	25.45	45.02				
100.00	100.00	100.00	100.00	0.25	0.25	34.43	37.14	25.45	45.02	44.52	0.50	89.706	
200.00	200.00	200.00	200.00	0.61	0.61	34.43	37.14	25.45	45.02	43.80	1.22	36.938	
300.00	300.00	300.00	300.00	0.97	0.97	34.43	37.14	25.45	45.02	43.08	1.94	23.257	
400.00	400.00	400.00	400.00	1.33	1.33	34.43	37.14	25.45	45.02	42.37	2.65	16.971	
500.00	500.00	500.00	500.00	1.68	1.68	34.43	37.14	25.45	45.02	41.65	3.37	13.360	CC, ES
600.00	599.98	598.47	598.45	2.03	2.04	-170.02	38.80	25.75	48.31	44.24	4.07	11.880	SF
700.00	699.84	696.24	696.09	2.36	2.39	-172.81	43.75	26.65	58.26	53.51	4.76	12.250	
800.00	799.45	792.65	792.14	2.71	2.74	-175.79	51.83	28.12	74.97	69.52	5.45	13.766	
900.00	898.70	887.05	885.87	3.07	3.09	-178.26	62.82	30.12	98.37	92.24	6.13	16.056	
1,000.00	997.47	978.87	976.64	3.44	3.43	179.90	76.42	32.59	128.30	121.51	6.79	18.884	
1,067.13	1,063.43	1,038.79	1,035.62	3.71	3.66	178.95	86.84	34.48	151.94	144.70	7.24	20.998	
1,100.00	1,095.66	1,067.65	1,063.94	3.84	3.78	178.56	92.29	35.47	164.35	156.90	7.45	22.067	
1,200.00	1,193.71	1,153.97	1,148.31	4.25	4.13	177.56	110.26	38.74	203.96	195.89	8.07	25.289	
1,300.00	1,291.75	1,242.87	1,234.74	4.67	4.50	176.77	130.73	42.46	245.67	236.96	8.71	28.219	
1,400.00	1,389.80	1,333.65	1,322.97	5.10	4.90	176.19	151.76	46.28	287.54	278.15	9.38	30.641	
1,500.00	1,487.85	1,424.43	1,411.19	5.53	5.30	175.75	172.78	50.10	329.43	319.36	10.06	32.737	
1,600.00	1,585.90	1,515.21	1,499.42	5.96	5.70	175.42	193.81	53.92	371.33	360.58	10.75	34.555	
1,700.00	1,683.94	1,605.99	1,587.65	6.40	6.11	175.15	214.84	57.74	413.24	401.81	11.43	36.145	
1,800.00	1,781.99	1,696.77	1,675.88	6.84	6.52	174.93	235.86	61.56	455.16	443.03	12.12	37.545	
1,900.00	1,880.04	1,787.55	1,764.10	7.29	6.94	174.75	256.89	65.38	497.08	484.26	12.82	38.787	
2,000.00	1,978.08	1,878.33	1,852.33	7.73	7.35	174.60	277.92	69.20	539.00	525.49	13.51	39.895	
2,100.00	2,076.13	1,969.10	1,940.56	8.18	7.77	174.46	298.94	73.02	580.93	566.72	14.21	40.889	
2,200.00	2,174.18	2,059.88	2,028.79	8.63	8.19	174.35	319.97	76.84	622.86	607.95	14.91	41.786	
2,300.00	2,272.22	2,150.66	2,117.01	9.08	8.62	174.25	341.00	80.66	664.79	649.18	15.61	42.598	
2,400.00	2,370.27	2,241.44	2,205.24	9.53	9.04	174.16	362.02	84.48	706.72	690.41	16.31	43.337	
2,500.00	2,468.32	2,332.22	2,293.47	9.98	9.47	174.09	383.05	88.30	748.65	731.64	17.01	44.013	
2,600.00	2,566.36	2,423.00	2,381.70	10.43	9.89	174.02	404.08	92.12	790.59	772.87	17.71	44.632	
2,700.00	2,664.41	2,513.78	2,469.92	10.89	10.32	173.95	425.10	95.94	832.52	814.10	18.42	45.202	
2,800.00	2,762.46	2,604.56	2,558.15	11.34	10.75	173.90	446.13	99.76	874.46	855.33	19.12	45.728	
2,900.00	2,860.50	2,695.33	2,646.38	11.79	11.17	173.85	467.16	103.58	916.39	896.57	19.83	46.215	
3,000.00	2,958.55	2,786.11	2,734.61	12.25	11.60	173.80	488.18	107.41	958.33	937.80	20.54	46.666	
3,100.00	3,056.60	2,876.89	2,822.83	12.70	12.03	173.76	509.21	111.23	1,000.27	979.03	21.24	47.086	
3,200.00	3,154.65	2,967.67	2,911.06	13.16	12.46	173.72	530.24	115.05	1,042.21	1,020.26	21.95	47.478	
3,300.00	3,252.69	3,058.45	2,999.29	13.61	12.89	173.68	551.26	118.87	1,084.15	1,061.49	22.66	47.845	
3,400.00	3,350.74	3,149.23	3,087.51	14.07	13.32	173.65	572.29	122.69	1,126.08	1,102.72	23.37	48.188	
3,500.00	3,448.79	3,240.01	3,175.74	14.52	13.75	173.62	593.32	126.51	1,168.02	1,143.95	24.08	48.510	
3,600.00	3,546.83	3,330.79	3,263.97	14.98	14.18	173.59	614.34	130.33	1,209.96	1,185.17	24.79	48.812	
3,700.00	3,644.88	3,421.57	3,352.20	15.43	14.62	173.56	635.37	134.15	1,251.90	1,226.40	25.50	49.097	
3,800.00	3,742.93	3,512.34	3,440.42	15.89	15.05	173.53	656.40	137.97	1,293.84	1,267.63	26.21	49.366	
3,900.00	3,840.97	3,603.12	3,528.65	16.35	15.48	173.51	677.42	141.79	1,335.78	1,308.86	26.92	49.620	
4,000.00	3,939.02	3,693.90	3,616.88	16.80	15.91	173.49	698.45	145.61	1,377.72	1,350.09	27.63	49.860	
4,100.00	4,037.07	3,784.68	3,705.11	17.26	16.34	173.47	719.48	149.43	1,419.66	1,391.32	28.34	50.087	
4,200.00	4,135.11	3,875.46	3,793.33	17.72	16.77	173.45	740.50	153.25	1,461.60	1,432.55	29.06	50.303	
4,300.00	4,233.16	3,966.24	3,881.56	18.17	17.21	173.43	761.53	157.07	1,503.54	1,473.78	29.77	50.507	
4,400.00	4,331.21	4,057.02	3,969.79	18.63	17.64	173.41	782.56	160.89	1,545.48	1,515.00	30.48	50.702	
4,500.00	4,429.25	4,147.80	4,058.02	19.09	18.07	173.39	803.58	164.71	1,587.43	1,556.23	31.19	50.887	
4,600.00	4,527.30	4,238.57	4,146.24	19.54	18.51	173.38	824.61	168.53	1,629.37	1,597.46	31.91	51.064	
4,700.00	4,625.35	4,329.35	4,234.47	20.00	18.94	173.36	845.64	172.35	1,671.31	1,638.69	32.62	51.232	
4,800.00	4,723.40	4,420.13	4,322.70	20.46	19.37	173.35	866.66	176.17	1,713.25	1,679.91	33.34	51.393	
4,900.00	4,821.44	4,510.91	4,410.93	20.92	19.80	173.34	887.69	179.99	1,755.19	1,721.14	34.05	51.547	
5,000.00	4,919.49	4,601.69	4,499.15	21.37	20.24	173.32	908.72	183.82	1,797.13	1,762.37	34.77	51.693	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												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 (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,100.00	5,017.54	4,692.47	4,587.38	21.83	20.67	173.31	929.74	187.64	1,839.07	1,803.59	35.48	51.834	
5,200.00	5,115.58	4,783.25	4,675.61	22.29	21.11	173.30	950.77	191.46	1,881.01	1,844.82	36.20	51.968	
5,300.00	5,213.63	4,874.03	4,763.84	22.75	21.54	173.29	971.80	195.28	1,922.96	1,886.05	36.91	52.097	
5,400.00	5,311.68	4,964.80	4,852.06	23.21	21.97	173.28	992.82	199.10	1,964.90	1,927.27	37.63	52.221	
5,500.00	5,409.72	5,055.58	4,940.29	23.66	22.41	173.27	1,013.85	202.92	2,006.84	1,968.50	38.34	52.340	
5,600.00	5,507.77	5,146.36	5,028.52	24.12	22.84	173.26	1,034.88	206.74	2,048.78	2,009.72	39.06	52.454	
5,700.00	5,605.82	5,237.14	5,116.74	24.58	23.27	173.25	1,055.90	210.56	2,090.72	2,050.95	39.78	52.563	
5,800.00	5,703.86	5,327.92	5,204.97	25.04	23.71	173.24	1,076.93	214.38	2,132.66	2,092.17	40.49	52.668	
5,900.00	5,801.91	5,418.70	5,293.20	25.49	24.14	173.23	1,097.96	218.20	2,174.61	2,133.40	41.21	52.770	
6,000.00	5,899.96	5,509.48	5,381.43	25.95	24.58	173.22	1,118.98	222.02	2,216.55	2,174.62	41.93	52.867	
6,100.00	5,998.00	5,600.26	5,469.65	26.41	25.01	173.21	1,140.01	225.84	2,258.49	2,215.85	42.64	52.961	
6,200.00	6,096.05	5,691.03	5,557.88	26.87	25.44	173.20	1,161.04	229.66	2,300.43	2,257.07	43.36	53.051	
6,300.00	6,194.10	5,781.81	5,646.11	27.33	25.88	173.20	1,182.06	233.48	2,342.37	2,298.29	44.08	53.139	
6,400.00	6,292.15	5,872.59	5,734.34	27.79	26.31	173.19	1,203.09	237.30	2,384.32	2,339.52	44.80	53.223	
6,500.00	6,390.19	5,963.37	5,822.56	28.24	26.75	173.18	1,224.12	241.12	2,426.26	2,380.74	45.52	53.304	
6,587.61	6,476.09	6,042.90	5,899.86	28.65	27.13	173.17	1,242.54	244.47	2,463.00	2,416.86	46.15	53.373	
6,600.00	6,488.25	6,054.16	5,910.80	28.70	27.18	179.00	1,245.15	244.94	2,468.17	2,421.94	46.24	53.382	
6,650.00	6,537.39	6,099.78	5,955.14	28.92	27.40	-155.43	1,255.71	246.86	2,488.40	2,441.81	46.59	53.410	
6,700.00	6,586.44	6,145.46	5,999.54	29.12	27.62	-132.22	1,266.29	248.79	2,507.56	2,460.63	46.94	53.425	
6,750.00	6,635.11	6,190.93	6,043.73	29.30	27.84	-115.49	1,276.82	250.70	2,525.55	2,478.28	47.27	53.427	
6,800.00	6,683.08	6,235.91	6,087.45	29.46	28.05	-104.26	1,287.24	252.59	2,542.32	2,494.72	47.60	53.416	
6,850.00	6,730.07	6,280.12	6,130.41	29.61	28.26	-96.61	1,297.48	254.45	2,557.81	2,509.90	47.91	53.391	
6,900.00	6,775.78	6,323.29	6,172.37	29.74	28.47	-91.21	1,307.48	256.27	2,571.99	2,523.79	48.21	53.353	
6,950.00	6,819.93	6,365.15	6,213.05	29.86	28.67	-87.28	1,317.18	258.03	2,584.87	2,536.38	48.50	53.300	
7,000.00	6,862.25	6,405.45	6,252.22	29.96	28.86	-84.35	1,326.51	259.73	2,596.46	2,547.68	48.78	53.230	
7,050.00	6,902.48	6,443.93	6,289.62	30.04	29.05	-82.14	1,335.43	261.35	2,606.77	2,557.71	49.05	53.141	
7,100.00	6,940.37	6,480.36	6,325.02	30.12	29.22	-80.47	1,343.86	262.88	2,615.84	2,566.52	49.33	53.031	
7,150.00	6,975.69	6,514.51	6,358.21	30.18	29.38	-79.20	1,351.77	264.32	2,623.73	2,574.13	49.60	52.895	
7,200.00	7,008.21	6,546.18	6,388.99	30.22	29.54	-78.25	1,359.11	265.65	2,630.48	2,580.60	49.89	52.730	
7,250.00	7,037.75	6,575.16	6,417.16	30.26	29.68	-77.56	1,365.82	266.87	2,636.16	2,585.98	50.18	52.533	
7,300.00	7,064.11	6,601.28	6,442.55	30.28	29.80	-77.06	1,371.87	267.97	2,640.83	2,590.34	50.49	52.300	
7,350.00	7,087.14	6,624.38	6,465.00	30.29	29.91	-76.72	1,377.22	268.94	2,644.55	2,593.73	50.83	52.030	
7,400.00	7,106.69	6,644.32	6,484.37	30.30	30.01	-76.50	1,381.84	269.78	2,647.39	2,596.21	51.19	51.722	
7,450.00	7,122.64	6,660.97	6,500.55	30.30	30.09	-76.39	1,385.70	270.48	2,649.40	2,597.84	51.57	51.376	
7,500.00	7,134.89	6,674.23	6,513.44	30.30	30.15	-76.35	1,388.77	271.04	2,650.64	2,598.66	51.98	50.995	
7,550.00	7,143.37	6,684.01	6,522.95	30.30	30.20	-76.37	1,391.03	271.45	2,651.15	2,598.74	52.41	50.584	
7,600.00	7,148.03	6,690.27	6,529.03	30.32	30.23	-76.44	1,392.48	271.71	2,650.96	2,598.10	52.86	50.147	
7,635.28	7,149.00	6,692.56	6,531.26	30.35	30.24	-76.52	1,393.01	271.81	2,650.43	2,597.23	53.19	49.826	
7,687.83	7,149.01	6,694.52	6,533.16	30.48	30.25	-76.56	1,393.47	271.89	2,649.91	2,596.19	53.71	49.333	
7,700.00	7,149.01	6,694.93	6,533.56	30.54	30.25	-76.57	1,393.56	271.90	2,649.93	2,596.10	53.83	49.224	
7,800.00	7,149.03	6,697.80	6,536.35	31.33	30.26	-76.63	1,394.23	272.01	2,652.28	2,597.34	54.93	48.281	
7,900.00	7,149.06	6,700.00	6,538.49	32.52	30.27	-76.68	1,394.74	272.08	2,658.38	2,602.23	56.15	47.344	
8,000.00	7,149.08	6,700.00	6,538.49	33.88	30.27	-76.68	1,394.74	272.08	2,668.22	2,610.77	57.44	46.448	
8,100.00	7,149.10	6,700.00	6,538.49	35.37	30.27	-76.68	1,394.74	272.08	2,681.75	2,622.94	58.81	45.598	
8,200.00	7,149.12	6,700.00	6,538.49	36.97	30.27	-76.68	1,394.74	272.08	2,698.92	2,638.69	60.23	44.807	
8,300.00	7,149.14	6,700.00	6,538.49	38.65	30.27	-76.68	1,394.74	272.08	2,719.66	2,657.98	61.69	44.087	
8,400.00	7,149.16	6,700.00	6,538.49	40.42	30.27	-76.68	1,394.74	272.08	2,743.90	2,680.74	63.16	43.445	
8,500.00	7,149.18	6,700.00	6,538.49	42.24	30.27	-76.68	1,394.74	272.08	2,771.53	2,706.90	64.63	42.884	
8,600.00	7,149.20	6,700.00	6,538.49	44.13	30.27	-76.68	1,394.74	272.08	2,802.46	2,736.37	66.09	42.406	
8,700.00	7,149.22	6,700.00	6,538.49	46.07	30.27	-76.68	1,394.74	272.08	2,836.58	2,769.06	67.52	42.010	
8,800.00	7,149.24	6,700.00	6,538.49	48.05	30.27	-76.68	1,394.74	272.08	2,873.77	2,804.85	68.92	41.695	
8,900.00	7,149.27	6,700.00	6,538.49	50.07	30.27	-76.68	1,394.74	272.08	2,913.93	2,843.64	70.29	41.458	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #2												Offset Site Error:	0.00 usft
Survey Program:		0-B001Mb_MWD+HRGM				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
9,000.00	7,149.29	6,700.00	6,538.49	52.13	30.27	-76.68	1,394.74	272.08	2,956.92	2,885.32	71.60	41.295	
9,100.00	7,149.31	6,700.00	6,538.49	54.21	30.27	-76.68	1,394.74	272.08	3,002.63	2,929.76	72.87	41.203	
9,200.00	7,149.33	6,700.00	6,538.49	56.33	30.27	-76.68	1,394.74	272.08	3,050.93	2,976.84	74.09	41.178	
9,300.00	7,149.35	6,700.00	6,538.49	58.47	30.27	-76.68	1,394.74	272.08	3,101.71	3,026.45	75.26	41.216	
9,400.00	7,149.37	6,700.00	6,538.49	60.63	30.27	-76.68	1,394.74	272.08	3,154.83	3,078.47	76.36	41.313	
9,500.00	7,149.39	6,700.00	6,538.49	62.82	30.27	-76.68	1,394.74	272.08	3,210.20	3,132.78	77.42	41.465	
9,600.00	7,149.41	6,700.00	6,538.49	65.02	30.27	-76.68	1,394.74	272.08	3,267.69	3,189.27	78.42	41.669	
9,700.00	7,149.43	6,700.00	6,538.49	67.23	30.27	-76.68	1,394.74	272.08	3,327.19	3,247.82	79.37	41.921	
9,800.00	7,149.45	6,700.00	6,538.49	69.47	30.27	-76.68	1,394.74	272.08	3,388.60	3,308.33	80.26	42.218	
9,900.00	7,149.48	6,700.00	6,538.49	71.71	30.27	-76.68	1,394.74	272.08	3,451.81	3,370.70	81.11	42.556	
10,000.00	7,149.50	6,700.00	6,538.49	73.97	30.27	-76.68	1,394.74	272.08	3,516.73	3,434.82	81.91	42.934	
10,100.00	7,149.52	6,700.00	6,538.49	76.24	30.27	-76.68	1,394.74	272.08	3,583.26	3,500.60	82.66	43.348	
10,200.00	7,149.54	6,700.00	6,538.49	78.52	30.27	-76.68	1,394.74	272.08	3,651.33	3,567.95	83.37	43.796	
10,300.00	7,149.56	6,700.00	6,538.49	80.80	30.27	-76.68	1,394.74	272.08	3,720.83	3,636.79	84.04	44.275	
10,400.00	7,149.58	6,700.00	6,538.49	83.10	30.27	-76.68	1,394.74	272.08	3,791.70	3,707.03	84.67	44.783	
10,500.00	7,149.60	6,700.00	6,538.49	85.40	30.27	-76.68	1,394.74	272.08	3,863.86	3,778.60	85.26	45.319	
10,600.00	7,149.62	6,700.00	6,538.49	87.72	30.27	-76.68	1,394.74	272.08	3,937.23	3,851.42	85.82	45.880	
10,700.00	7,149.64	6,700.00	6,538.49	90.03	30.27	-76.68	1,394.74	272.08	4,011.76	3,925.42	86.34	46.466	
10,800.00	7,149.67	6,700.00	6,538.49	92.36	30.27	-76.68	1,394.74	272.08	4,087.37	4,000.54	86.83	47.073	
10,900.00	7,149.69	6,700.00	6,538.49	94.69	30.27	-76.68	1,394.74	272.08	4,164.01	4,076.72	87.29	47.701	
11,000.00	7,149.71	6,700.00	6,538.49	97.02	30.27	-76.68	1,394.74	272.08	4,241.63	4,153.90	87.73	48.349	
11,100.00	7,149.73	6,700.00	6,538.49	99.37	30.27	-76.68	1,394.74	272.08	4,320.16	4,232.02	88.14	49.015	
11,200.00	7,149.75	6,700.00	6,538.49	101.71	30.27	-76.68	1,394.74	272.08	4,399.57	4,311.04	88.53	49.698	
11,300.00	7,149.77	6,700.00	6,538.49	104.06	30.27	-76.68	1,394.74	272.08	4,479.80	4,390.91	88.89	50.398	
11,400.00	7,149.79	6,700.00	6,538.49	106.41	30.27	-76.68	1,394.74	272.08	4,560.81	4,471.58	89.23	51.112	
11,500.00	7,149.81	6,700.00	6,538.49	108.77	30.27	-76.68	1,394.74	272.08	4,642.56	4,553.01	89.56	51.840	
11,600.00	7,149.83	6,700.00	6,538.49	111.13	30.27	-76.68	1,394.74	272.08	4,725.02	4,635.16	89.86	52.582	
11,700.00	7,149.85	6,700.00	6,538.49	113.50	30.27	-76.68	1,394.74	272.08	4,808.14	4,717.99	90.15	53.336	
11,800.00	7,149.88	6,700.00	6,538.49	115.86	30.27	-76.68	1,394.74	272.08	4,891.89	4,801.47	90.42	54.101	
11,900.00	7,149.90	6,700.00	6,538.49	118.23	30.27	-76.68	1,394.74	272.08	4,976.24	4,885.57	90.68	54.878	
12,000.00	7,149.92	6,700.00	6,538.49	120.61	30.27	-76.68	1,394.74	272.08	5,061.17	4,970.24	90.92	55.665	
12,100.00	7,149.94	6,700.00	6,538.49	122.98	30.27	-76.68	1,394.74	272.08	5,146.63	5,055.48	91.15	56.462	
12,200.00	7,149.96	6,700.00	6,538.49	125.36	30.27	-76.68	1,394.74	272.08	5,232.61	5,141.24	91.37	57.268	
12,300.00	7,149.98	6,700.00	6,538.49	127.74	30.27	-76.68	1,394.74	272.08	5,319.08	5,227.50	91.58	58.083	
12,400.00	7,150.00	6,700.00	6,538.49	130.12	30.27	-76.68	1,394.74	272.08	5,406.02	5,314.24	91.77	58.906	
12,500.00	7,150.02	6,700.00	6,538.49	132.51	30.27	-76.68	1,394.74	272.08	5,493.40	5,401.44	91.96	59.737	
12,600.00	7,150.04	6,700.00	6,538.49	134.89	30.27	-76.68	1,394.74	272.08	5,581.20	5,489.06	92.14	60.575	
12,700.00	7,150.06	6,700.00	6,538.49	137.28	30.27	-76.68	1,394.74	272.08	5,669.41	5,577.10	92.31	61.419	
12,800.00	7,150.09	6,700.00	6,538.49	139.67	30.27	-76.68	1,394.74	272.08	5,758.00	5,665.54	92.47	62.271	
12,900.00	7,150.11	6,700.00	6,538.49	142.06	30.27	-76.68	1,394.74	272.08	5,846.97	5,754.35	92.62	63.129	
13,000.00	7,150.13	6,700.00	6,538.49	144.46	30.27	-76.68	1,394.74	272.08	5,936.28	5,843.51	92.77	63.992	
13,100.00	7,150.15	6,700.00	6,538.49	146.85	30.27	-76.68	1,394.74	272.08	6,025.93	5,933.02	92.91	64.861	
13,200.00	7,150.17	6,700.00	6,538.49	149.25	30.27	-76.68	1,394.74	272.08	6,115.90	6,022.86	93.04	65.735	
13,300.00	7,150.19	6,700.00	6,538.49	151.64	30.27	-76.68	1,394.74	272.08	6,206.17	6,113.01	93.17	66.614	
13,400.00	7,150.21	6,700.00	6,538.49	154.04	30.27	-76.68	1,394.74	272.08	6,296.75	6,203.46	93.29	67.498	
13,500.00	7,150.23	6,700.00	6,538.49	156.44	30.27	-76.68	1,394.74	272.08	6,387.60	6,294.19	93.40	68.386	
13,600.00	7,150.25	6,700.00	6,538.49	158.85	30.27	-76.68	1,394.74	272.08	6,478.72	6,385.20	93.52	69.279	
13,700.00	7,150.27	6,700.00	6,538.49	161.25	30.27	-76.68	1,394.74	272.08	6,570.10	6,476.47	93.62	70.175	
13,800.00	7,150.30	6,700.00	6,538.49	163.65	30.27	-76.68	1,394.74	272.08	6,661.73	6,568.00	93.73	71.075	
13,900.00	7,150.32	6,700.00	6,538.49	166.06	30.27	-76.68	1,394.74	272.08	6,753.59	6,659.76	93.83	71.979	
14,000.00	7,150.34	6,700.00	6,538.49	168.46	30.27	-76.68	1,394.74	272.08	6,845.69	6,751.76	93.92	72.885	
14,100.00	7,150.36	6,700.00	6,538.49	170.87	30.27	-76.68	1,394.74	272.08	6,938.00	6,843.98	94.02	73.796	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												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)			
14,200.00	7,150.38	6,700.00	6,538.49	173.28	30.27	-76.68	1,394.74	272.08	7,030.52	6,936.41	94.11	74.709	
14,300.00	7,150.40	6,700.00	6,538.49	175.68	30.27	-76.68	1,394.74	272.08	7,123.24	7,029.05	94.19	75.625	
14,400.00	7,150.42	6,700.00	6,538.49	178.09	30.27	-76.68	1,394.74	272.08	7,216.16	7,121.89	94.28	76.543	
14,500.00	7,150.44	6,700.00	6,538.49	180.50	30.27	-76.68	1,394.74	272.08	7,309.27	7,214.91	94.36	77.464	
14,600.00	7,150.46	6,700.00	6,538.49	182.92	30.27	-76.68	1,394.74	272.08	7,402.55	7,308.12	94.43	78.388	
14,700.00	7,150.48	6,700.00	6,538.49	185.33	30.27	-76.68	1,394.74	272.08	7,496.01	7,401.50	94.51	79.314	
14,800.00	7,150.51	6,700.00	6,538.49	187.74	30.27	-76.68	1,394.74	272.08	7,589.64	7,495.05	94.58	80.242	
14,900.00	7,150.53	6,700.00	6,538.49	190.15	30.27	-76.68	1,394.74	272.08	7,683.42	7,588.77	94.66	81.171	
15,000.00	7,150.55	6,700.00	6,538.49	192.57	30.27	-76.68	1,394.74	272.08	7,777.37	7,682.64	94.73	82.103	
15,100.00	7,150.57	6,700.00	6,538.49	194.98	30.27	-76.68	1,394.74	272.08	7,871.46	7,776.66	94.79	83.037	
15,200.00	7,150.59	6,700.00	6,538.49	197.40	30.27	-76.68	1,394.74	272.08	7,965.69	7,870.83	94.86	83.972	
15,300.00	7,150.61	6,700.00	6,538.49	199.81	30.27	-76.68	1,394.74	272.08	8,060.06	7,965.14	94.93	84.909	
15,400.00	7,150.63	6,700.00	6,538.49	202.23	30.27	-76.68	1,394.74	272.08	8,154.57	8,059.58	94.99	85.847	
15,500.00	7,150.65	6,700.00	6,538.49	204.64	30.27	-76.68	1,394.74	272.08	8,249.21	8,154.16	95.05	86.786	
15,600.00	7,150.67	6,700.00	6,538.49	207.06	30.27	-76.68	1,394.74	272.08	8,343.97	8,248.86	95.11	87.727	
15,700.00	7,150.69	6,700.00	6,538.49	209.48	30.27	-76.68	1,394.74	272.08	8,438.85	8,343.68	95.17	88.669	
15,800.00	7,150.72	6,700.00	6,538.49	211.90	30.27	-76.68	1,394.74	272.08	8,533.85	8,438.62	95.23	89.612	
15,900.00	7,150.74	6,700.00	6,538.49	214.32	30.27	-76.68	1,394.74	272.08	8,628.96	8,533.68	95.29	90.556	
16,000.00	7,150.76	6,700.00	6,538.49	216.74	30.27	-76.68	1,394.74	272.08	8,724.19	8,628.84	95.34	91.501	
16,100.00	7,150.78	6,700.00	6,538.49	219.16	30.27	-76.68	1,394.74	272.08	8,819.51	8,724.11	95.40	92.447	
16,200.00	7,150.80	6,700.00	6,538.49	221.58	30.27	-76.68	1,394.74	272.08	8,914.94	8,819.49	95.46	93.394	
16,300.00	7,150.82	6,700.00	6,538.49	224.00	30.27	-76.68	1,394.74	272.08	9,010.47	8,914.96	95.51	94.342	
16,400.00	7,150.84	6,700.00	6,538.49	226.42	30.27	-76.68	1,394.74	272.08	9,106.10	9,010.54	95.56	95.290	
16,500.00	7,150.86	6,700.00	6,538.49	228.84	30.27	-76.68	1,394.74	272.08	9,201.82	9,106.20	95.61	96.238	
16,600.00	7,150.88	6,700.00	6,538.49	231.26	30.27	-76.68	1,394.74	272.08	9,297.62	9,201.96	95.67	97.188	
16,700.00	7,150.90	6,700.00	6,538.49	233.68	30.27	-76.68	1,394.74	272.08	9,393.52	9,297.80	95.72	98.137	
16,800.00	7,150.93	6,700.00	6,538.49	236.11	30.27	-76.68	1,394.74	272.08	9,489.50	9,393.73	95.77	99.087	
16,900.00	7,150.95	6,700.00	6,538.49	238.53	30.27	-76.68	1,394.74	272.08	9,585.56	9,489.74	95.82	100.038	
16,986.21	7,150.96	6,700.00	6,538.49	240.62	30.27	-76.68	1,394.74	272.08	9,668.44	9,572.58	95.86	100.858	
17,000.00	7,150.97	6,700.00	6,538.49	240.95	30.27	-76.68	1,394.74	272.08	9,681.71	9,585.84	95.87	100.989	
17,100.00	7,150.99	6,700.00	6,538.49	243.37	30.27	-76.68	1,394.74	272.08	9,777.93	9,682.01	95.92	101.940	
17,154.59	7,151.00	6,700.00	6,538.49	244.70	30.27	-76.68	1,394.74	272.08	9,830.48	9,734.53	95.95	102.459	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		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	0.00	0.00	0.00	0.00	34.84	24.79	17.26	30.21				
100.00	100.00	100.00	100.00	0.25	0.25	34.84	24.79	17.26	30.21	29.71	0.50	60.195	
200.00	200.00	200.00	200.00	0.61	0.61	34.84	24.79	17.26	30.21	28.99	1.22	24.786	
300.00	300.00	300.00	300.00	0.97	0.97	34.84	24.79	17.26	30.21	28.27	1.94	15.606	
400.00	400.00	400.00	400.00	1.33	1.33	34.84	24.79	17.26	30.21	27.56	2.65	11.388	
500.00	500.00	500.00	500.00	1.68	1.68	34.84	24.79	17.26	30.21	26.84	3.37	8.965 CC, ES	
600.00	599.98	599.10	599.08	2.03	2.04	-170.92	26.50	17.08	33.26	29.19	4.07	8.175	
700.00	699.84	697.53	697.37	2.36	2.40	-176.28	31.56	16.55	42.67	37.91	4.76	8.962	
800.00	799.45	794.64	794.12	2.71	2.75	178.69	39.85	15.68	58.75	53.30	5.45	10.771	
900.00	898.70	889.82	888.62	3.07	3.10	175.00	51.13	14.49	81.50	75.35	6.14	13.270	
1,000.00	997.47	982.51	980.23	3.44	3.45	172.47	65.11	13.02	110.70	103.88	6.82	16.242	
1,067.13	1,063.43	1,043.08	1,039.83	3.71	3.68	171.23	75.83	11.89	133.80	126.54	7.26	18.422	
1,100.00	1,095.66	1,072.27	1,068.47	3.84	3.80	170.75	81.45	11.30	145.93	138.45	7.48	19.515	
1,200.00	1,193.71	1,163.03	1,157.25	4.25	4.17	169.51	100.17	9.33	184.13	175.99	8.14	22.627	
1,300.00	1,291.75	1,255.31	1,247.49	4.67	4.55	168.66	119.38	7.31	222.55	213.74	8.82	25.243	
1,400.00	1,389.80	1,347.59	1,337.73	5.10	4.94	168.06	138.60	5.29	261.01	251.50	9.51	27.458	
1,500.00	1,487.85	1,439.87	1,427.96	5.53	5.33	167.62	157.81	3.27	299.48	289.28	10.20	29.363	
1,600.00	1,585.90	1,532.15	1,518.20	5.96	5.73	167.27	177.03	1.25	337.96	327.07	10.90	31.014	
1,700.00	1,683.94	1,624.44	1,608.44	6.40	6.13	167.00	196.24	-0.78	376.45	364.86	11.60	32.458	
1,800.00	1,781.99	1,716.72	1,698.67	6.84	6.54	166.78	215.45	-2.80	414.95	402.65	12.30	33.730	
1,900.00	1,880.04	1,809.00	1,788.91	7.29	6.95	166.59	234.67	-4.82	453.45	440.45	13.01	34.858	
2,000.00	1,978.08	1,901.28	1,879.15	7.73	7.35	166.44	253.88	-6.84	491.96	478.24	13.72	35.864	
2,100.00	2,076.13	1,993.56	1,969.38	8.18	7.76	166.30	273.09	-8.86	530.47	516.04	14.43	36.768	
2,200.00	2,174.18	2,085.84	2,059.62	8.63	8.17	166.19	292.31	-10.88	568.98	553.84	15.14	37.582	
2,300.00	2,272.22	2,178.13	2,149.86	9.08	8.59	166.09	311.52	-12.90	607.49	591.64	15.85	38.321	
2,400.00	2,370.27	2,270.41	2,240.10	9.53	9.00	166.00	330.73	-14.92	646.00	629.44	16.57	38.993	
2,500.00	2,468.32	2,362.69	2,330.33	9.98	9.41	165.92	349.95	-16.94	684.52	667.24	17.28	39.608	
2,600.00	2,566.36	2,454.97	2,420.57	10.43	9.83	165.85	369.16	-18.97	723.03	705.04	18.00	40.171	
2,700.00	2,664.41	2,547.25	2,510.81	10.89	10.24	165.79	388.37	-20.99	761.55	742.84	18.72	40.690	
2,800.00	2,762.46	2,639.53	2,601.04	11.34	10.66	165.73	407.59	-23.01	800.07	780.63	19.43	41.168	
2,900.00	2,860.50	2,731.82	2,691.28	11.79	11.07	165.68	426.80	-25.03	838.59	818.43	20.15	41.612	
3,000.00	2,958.55	2,824.10	2,781.52	12.25	11.49	165.63	446.01	-27.05	877.10	856.23	20.87	42.023	
3,100.00	3,056.60	2,916.38	2,871.75	12.70	11.91	165.59	465.23	-29.07	915.62	894.03	21.59	42.406	
3,200.00	3,154.65	3,008.66	2,961.99	13.16	12.33	165.55	484.44	-31.09	954.14	931.83	22.31	42.763	
3,300.00	3,252.69	3,100.94	3,052.23	13.61	12.74	165.51	503.65	-33.11	992.66	969.63	23.03	43.098	
3,400.00	3,350.74	3,193.22	3,142.46	14.07	13.16	165.48	522.87	-35.14	1,031.18	1,007.43	23.75	43.410	
3,500.00	3,448.79	3,285.51	3,232.70	14.52	13.58	165.45	542.08	-37.16	1,069.70	1,045.23	24.48	43.704	
3,600.00	3,546.83	3,377.79	3,322.94	14.98	14.00	165.42	561.29	-39.18	1,108.22	1,083.03	25.20	43.980	
3,700.00	3,644.88	3,470.07	3,413.17	15.43	14.42	165.39	580.51	-41.20	1,146.74	1,120.82	25.92	44.241	
3,800.00	3,742.93	3,562.35	3,503.41	15.89	14.84	165.36	599.72	-43.22	1,185.27	1,158.62	26.64	44.486	
3,900.00	3,840.97	3,654.63	3,593.65	16.35	15.25	165.34	618.93	-45.24	1,223.79	1,196.42	27.37	44.718	
4,000.00	3,939.02	3,746.91	3,683.88	16.80	15.67	165.32	638.15	-47.26	1,262.31	1,234.22	28.09	44.938	
4,100.00	4,037.07	3,839.20	3,774.12	17.26	16.09	165.30	657.36	-49.28	1,300.83	1,272.02	28.81	45.146	
4,200.00	4,135.11	3,931.48	3,864.36	17.72	16.51	165.28	676.57	-51.30	1,339.35	1,309.81	29.54	45.343	
4,300.00	4,233.16	4,023.76	3,954.59	18.17	16.93	165.26	695.79	-53.33	1,377.87	1,347.61	30.26	45.531	
4,400.00	4,331.21	4,116.04	4,044.83	18.63	17.35	165.24	715.00	-55.35	1,416.39	1,385.41	30.99	45.709	
4,500.00	4,429.25	4,208.32	4,135.07	19.09	17.77	165.22	734.21	-57.37	1,454.92	1,423.20	31.71	45.879	
4,600.00	4,527.30	4,300.60	4,225.30	19.54	18.19	165.21	753.43	-59.39	1,493.44	1,461.00	32.44	46.041	
4,700.00	4,625.35	4,392.89	4,315.54	20.00	18.61	165.19	772.64	-61.41	1,531.96	1,498.80	33.16	46.195	
4,800.00	4,723.40	4,485.17	4,405.78	20.46	19.03	165.18	791.85	-63.43	1,570.48	1,536.59	33.89	46.343	
4,900.00	4,821.44	4,577.45	4,496.01	20.92	19.45	165.16	811.07	-65.45	1,609.00	1,574.39	34.61	46.484	
5,000.00	4,919.49	4,669.73	4,586.25	21.37	19.87	165.15	830.28	-67.47	1,647.53	1,612.19	35.34	46.618	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												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)			
5,100.00	5,017.54	4,762.01	4,676.49	21.83	20.29	165.14	849.49	-69.50	1,686.05	1,649.98	36.07	46.747	
5,200.00	5,115.58	4,854.29	4,766.72	22.29	20.71	165.13	868.71	-71.52	1,724.57	1,687.78	36.79	46.871	
5,300.00	5,213.63	4,946.58	4,856.96	22.75	21.13	165.11	887.92	-73.54	1,763.09	1,725.57	37.52	46.990	
5,400.00	5,311.68	5,038.86	4,947.20	23.21	21.55	165.10	907.13	-75.56	1,801.62	1,763.37	38.25	47.104	
5,500.00	5,409.72	5,131.14	5,037.43	23.66	21.97	165.09	926.35	-77.58	1,840.14	1,801.16	38.98	47.213	
5,600.00	5,507.77	5,223.42	5,127.67	24.12	22.39	165.08	945.56	-79.60	1,878.66	1,838.96	39.70	47.318	
5,700.00	5,605.82	5,315.70	5,217.91	24.58	22.82	165.07	964.77	-81.62	1,917.19	1,876.76	40.43	47.419	
5,800.00	5,703.86	5,407.98	5,308.14	25.04	23.24	165.06	983.99	-83.64	1,955.71	1,914.55	41.16	47.516	
5,900.00	5,801.91	5,500.27	5,398.38	25.49	23.66	165.05	1,003.20	-85.66	1,994.23	1,952.34	41.89	47.610	
6,000.00	5,899.96	5,592.55	5,488.62	25.95	24.08	165.05	1,022.41	-87.69	2,032.75	1,990.14	42.62	47.700	
6,100.00	5,998.00	5,684.83	5,578.85	26.41	24.50	165.04	1,041.63	-89.71	2,071.28	2,027.93	43.34	47.787	
6,200.00	6,096.05	5,777.11	5,669.09	26.87	24.92	165.03	1,060.84	-91.73	2,109.80	2,065.73	44.07	47.870	
6,300.00	6,194.10	5,869.39	5,759.33	27.33	25.34	165.02	1,080.05	-93.75	2,148.32	2,103.52	44.80	47.951	
6,400.00	6,292.15	5,961.67	5,849.56	27.79	25.76	165.01	1,099.27	-95.77	2,186.85	2,141.31	45.53	48.029	
6,500.00	6,390.19	6,053.96	5,939.80	28.24	26.18	165.01	1,118.48	-97.79	2,225.37	2,179.11	46.26	48.104	
6,587.61	6,476.09	6,134.80	6,018.86	28.65	26.55	165.00	1,135.31	-99.56	2,259.12	2,212.22	46.90	48.168	
6,600.00	6,488.25	6,146.24	6,030.04	28.70	26.60	170.80	1,137.70	-99.81	2,263.88	2,216.89	46.99	48.177	
6,650.00	6,537.39	6,192.42	6,075.20	28.92	26.81	-163.74	1,147.31	-100.82	2,282.77	2,235.43	47.35	48.213	
6,700.00	6,586.44	6,238.42	6,120.18	29.12	27.02	-140.57	1,156.89	-101.83	2,301.10	2,253.40	47.69	48.250	
6,750.00	6,635.11	6,283.96	6,164.70	29.30	27.23	-123.83	1,166.37	-102.83	2,318.77	2,270.75	48.02	48.288	
6,800.00	6,683.08	6,328.75	6,208.50	29.46	27.44	-112.55	1,175.69	-103.81	2,335.73	2,287.40	48.33	48.325	
6,850.00	6,730.07	6,372.52	6,251.30	29.61	27.64	-104.80	1,184.81	-104.77	2,351.95	2,303.32	48.63	48.362	
6,900.00	6,775.78	6,414.99	6,292.84	29.74	27.83	-99.27	1,193.65	-105.70	2,367.40	2,318.49	48.92	48.397	
6,950.00	6,819.93	6,455.92	6,332.86	29.86	28.02	-95.16	1,202.17	-106.60	2,382.09	2,332.90	49.19	48.429	
7,000.00	6,862.25	6,495.04	6,371.11	29.96	28.20	-92.01	1,210.32	-107.45	2,396.01	2,346.57	49.45	48.457	
7,050.00	6,902.48	6,532.11	6,407.36	30.04	28.36	-89.54	1,218.03	-108.26	2,409.20	2,359.50	49.70	48.479	
7,100.00	6,940.37	6,566.91	6,441.39	30.12	28.52	-87.56	1,225.28	-109.03	2,421.68	2,371.74	49.94	48.492	
7,150.00	6,975.69	6,599.22	6,472.98	30.18	28.67	-85.94	1,232.01	-109.73	2,433.49	2,383.31	50.18	48.493	
7,200.00	7,008.21	6,628.84	6,501.95	30.22	28.81	-84.60	1,238.17	-110.38	2,444.67	2,394.24	50.43	48.478	
7,250.00	7,037.75	6,655.59	6,528.10	30.26	28.93	-83.47	1,243.74	-110.97	2,455.26	2,404.58	50.68	48.444	
7,300.00	7,064.11	6,678.98	6,550.98	30.28	29.03	-82.48	1,248.61	-111.30	2,465.30	2,414.35	50.95	48.391	
7,350.00	7,087.14	6,701.66	6,573.16	30.29	29.14	-81.66	1,253.33	-110.84	2,474.81	2,423.56	51.24	48.296	
7,400.00	7,106.69	6,724.29	6,595.25	30.30	29.24	-80.99	1,258.03	-109.59	2,483.77	2,432.19	51.58	48.152	
7,450.00	7,122.64	6,746.84	6,617.22	30.30	29.33	-80.47	1,262.69	-107.54	2,492.20	2,440.23	51.97	47.958	
7,500.00	7,134.89	6,769.30	6,639.02	30.30	29.43	-80.07	1,267.31	-104.71	2,500.08	2,447.68	52.39	47.717	
7,550.00	7,143.37	6,791.65	6,660.60	30.30	29.52	-79.79	1,271.89	-101.11	2,507.42	2,454.55	52.87	47.430	
7,600.00	7,148.03	6,813.84	6,681.88	30.32	29.61	-79.63	1,276.39	-96.78	2,514.22	2,460.85	53.38	47.103	
7,635.28	7,149.00	6,829.34	6,696.67	30.35	29.68	-79.57	1,279.52	-93.30	2,518.71	2,464.95	53.76	46.853	
7,700.00	7,149.01	6,864.05	6,729.43	30.54	29.81	-80.34	1,286.44	-84.19	2,527.41	2,472.87	54.54	46.340	
7,800.00	7,149.03	6,936.14	6,795.52	31.33	30.08	-81.89	1,300.38	-59.16	2,543.25	2,487.29	55.96	45.446	
7,900.00	7,149.06	7,239.28	7,030.71	32.52	30.96	-87.32	1,349.47	120.81	2,559.75	2,500.94	58.82	43.520	
8,000.00	7,149.08	7,713.04	7,172.99	33.88	32.62	-90.53	1,377.43	560.75	2,565.66	2,501.79	63.88	40.166	
8,100.00	7,149.10	7,813.04	7,172.95	35.37	33.43	-90.53	1,376.89	660.74	2,566.56	2,500.06	66.50	38.595	
8,200.00	7,149.12	7,913.04	7,172.91	36.97	34.47	-90.53	1,376.35	760.74	2,567.45	2,498.09	69.37	37.013	
8,300.00	7,149.14	8,013.03	7,172.87	38.65	35.70	-90.53	1,375.82	860.73	2,568.35	2,495.90	72.45	35.450	
8,400.00	7,149.16	8,113.03	7,172.84	40.42	37.08	-90.53	1,375.28	960.72	2,569.25	2,493.52	75.72	33.930	
8,500.00	7,149.18	8,213.02	7,172.80	42.24	38.59	-90.53	1,374.75	1,060.72	2,570.14	2,490.98	79.16	32.468	
8,600.00	7,149.20	8,313.02	7,172.76	44.13	40.21	-90.53	1,374.21	1,160.71	2,571.04	2,488.29	82.74	31.072	
8,700.00	7,149.22	8,413.02	7,172.72	46.07	41.91	-90.52	1,373.67	1,260.71	2,571.93	2,485.48	86.46	29.748	
8,800.00	7,149.24	8,513.01	7,172.68	48.05	43.69	-90.52	1,373.14	1,360.70	2,572.83	2,482.55	90.28	28.498	
8,900.00	7,149.27	8,613.01	7,172.65	50.07	45.53	-90.52	1,372.60	1,460.70	2,573.72	2,479.52	94.20	27.321	
9,000.00	7,149.29	8,713.00	7,172.61	52.13	47.43	-90.52	1,372.06	1,560.69	2,574.62	2,476.41	98.21	26.215	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM													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)			
9,100.00	7,149.31	8,813.00	7,172.57	54.21	49.38	-90.52	1,371.53	1,660.69	2,575.51	2,473.22	102.29	25.177	
9,200.00	7,149.33	8,913.00	7,172.53	56.33	51.37	-90.52	1,370.99	1,760.68	2,576.41	2,469.96	106.45	24.204	
9,300.00	7,149.35	9,012.99	7,172.50	58.47	53.40	-90.51	1,370.45	1,860.68	2,577.31	2,466.65	110.66	23.291	
9,400.00	7,149.37	9,112.99	7,172.46	60.63	55.46	-90.51	1,369.92	1,960.67	2,578.20	2,463.28	114.92	22.434	
9,500.00	7,149.39	9,212.98	7,172.42	62.82	57.55	-90.51	1,369.38	2,060.66	2,579.10	2,459.86	119.23	21.631	
9,600.00	7,149.41	9,312.98	7,172.38	65.02	59.67	-90.51	1,368.84	2,160.66	2,579.99	2,456.41	123.59	20.876	
9,700.00	7,149.43	9,412.98	7,172.34	67.23	61.81	-90.51	1,368.31	2,260.65	2,580.89	2,452.91	127.98	20.166	
9,800.00	7,149.45	9,512.97	7,172.31	69.47	63.98	-90.51	1,367.77	2,360.65	2,581.78	2,449.38	132.41	19.499	
9,900.00	7,149.48	9,612.97	7,172.27	71.71	66.16	-90.51	1,367.24	2,460.64	2,582.68	2,445.82	136.86	18.871	
10,000.00	7,149.50	9,712.96	7,172.23	73.97	68.36	-90.50	1,366.70	2,560.64	2,583.58	2,442.23	141.35	18.278	
10,100.00	7,149.52	9,812.96	7,172.19	76.24	70.58	-90.50	1,366.16	2,660.63	2,584.47	2,438.61	145.86	17.719	
10,200.00	7,149.54	9,912.96	7,172.16	78.52	72.81	-90.50	1,365.63	2,760.63	2,585.37	2,434.98	150.39	17.191	
10,300.00	7,149.56	10,012.95	7,172.12	80.80	75.05	-90.50	1,365.09	2,860.62	2,586.26	2,431.32	154.95	16.691	
10,400.00	7,149.58	10,112.95	7,172.08	83.10	77.31	-90.50	1,364.55	2,960.62	2,587.16	2,427.64	159.52	16.219	
10,500.00	7,149.60	10,212.94	7,172.04	85.40	79.57	-90.50	1,364.02	3,060.61	2,588.05	2,423.94	164.11	15.770	
10,600.00	7,149.62	10,312.94	7,172.00	87.72	81.85	-90.50	1,363.48	3,160.60	2,588.95	2,420.23	168.72	15.345	
10,700.00	7,149.64	10,412.94	7,171.97	90.03	84.14	-90.49	1,362.94	3,260.60	2,589.85	2,416.51	173.34	14.941	
10,800.00	7,149.67	10,512.93	7,171.93	92.36	86.43	-90.49	1,362.41	3,360.59	2,590.74	2,412.77	177.97	14.557	
10,900.00	7,149.69	10,612.93	7,171.89	94.69	88.73	-90.49	1,361.87	3,460.59	2,591.64	2,409.01	182.62	14.191	
11,000.00	7,149.71	10,712.92	7,171.85	97.02	91.04	-90.49	1,361.33	3,560.58	2,592.53	2,405.25	187.28	13.843	
11,100.00	7,149.73	10,812.92	7,171.82	99.37	93.35	-90.49	1,360.80	3,660.58	2,593.43	2,401.47	191.95	13.511	
11,200.00	7,149.75	10,912.92	7,171.78	101.71	95.68	-90.49	1,360.26	3,760.57	2,594.32	2,397.69	196.63	13.194	
11,300.00	7,149.77	11,012.91	7,171.74	104.06	98.00	-90.49	1,359.72	3,860.57	2,595.22	2,393.89	201.33	12.891	
11,400.00	7,149.79	11,112.91	7,171.70	106.41	100.33	-90.48	1,359.19	3,960.56	2,596.12	2,390.09	206.02	12.601	
11,500.00	7,149.81	11,212.90	7,171.66	108.77	102.67	-90.48	1,358.65	4,060.56	2,597.01	2,386.28	210.73	12.324	
11,600.00	7,149.83	11,312.90	7,171.63	111.13	105.01	-90.48	1,358.12	4,160.55	2,597.91	2,382.46	215.45	12.058	
11,700.00	7,149.85	11,412.90	7,171.59	113.50	107.36	-90.48	1,357.58	4,260.54	2,598.80	2,378.63	220.17	11.804	
11,800.00	7,149.88	11,512.89	7,171.55	115.86	109.71	-90.48	1,357.04	4,360.54	2,599.70	2,374.80	224.90	11.560	
11,900.00	7,149.90	11,612.89	7,171.51	118.23	112.06	-90.48	1,356.51	4,460.53	2,600.59	2,370.96	229.63	11.325	
12,000.00	7,149.92	11,712.88	7,171.47	120.61	114.42	-90.47	1,355.97	4,560.53	2,601.49	2,367.12	234.37	11.100	
12,100.00	7,149.94	11,812.88	7,171.44	122.98	116.78	-90.47	1,355.43	4,660.52	2,602.39	2,363.27	239.12	10.883	
12,200.00	7,149.96	11,912.88	7,171.40	125.36	119.14	-90.47	1,354.90	4,760.52	2,603.28	2,359.41	243.87	10.675	
12,300.00	7,149.98	12,012.87	7,171.36	127.74	121.51	-90.47	1,354.36	4,860.51	2,604.18	2,355.55	248.63	10.474	
12,400.00	7,150.00	12,112.87	7,171.32	130.12	123.88	-90.47	1,353.82	4,960.51	2,605.07	2,351.69	253.39	10.281	
12,500.00	7,150.02	12,212.86	7,171.29	132.51	126.25	-90.47	1,353.29	5,060.50	2,605.97	2,347.82	258.15	10.095	
12,600.00	7,150.04	12,312.86	7,171.25	134.89	128.63	-90.47	1,352.75	5,160.49	2,606.86	2,343.94	262.92	9.915	
12,700.00	7,150.06	12,412.86	7,171.21	137.28	131.00	-90.46	1,352.21	5,260.49	2,607.76	2,340.07	267.69	9.742	
12,800.00	7,150.09	12,512.85	7,171.17	139.67	133.38	-90.46	1,351.68	5,360.48	2,608.66	2,336.18	272.47	9.574	
12,900.00	7,150.11	12,612.85	7,171.13	142.06	135.76	-90.46	1,351.14	5,460.48	2,609.55	2,332.30	277.25	9.412	
13,000.00	7,150.13	12,712.84	7,171.10	144.46	138.14	-90.46	1,350.61	5,560.47	2,610.45	2,328.41	282.04	9.256	
13,100.00	7,150.15	12,812.84	7,171.06	146.85	140.53	-90.46	1,350.07	5,660.47	2,611.34	2,324.52	286.82	9.104	
13,200.00	7,150.17	12,912.84	7,171.02	149.25	142.92	-90.46	1,349.53	5,760.46	2,612.24	2,320.63	291.61	8.958	
13,300.00	7,150.19	13,012.83	7,170.98	151.64	145.30	-90.46	1,349.00	5,860.46	2,613.13	2,316.73	296.41	8.816	
13,400.00	7,150.21	13,112.83	7,170.95	154.04	147.69	-90.45	1,348.46	5,960.45	2,614.03	2,312.83	301.20	8.679	
13,500.00	7,150.23	13,212.82	7,170.91	156.44	150.09	-90.45	1,347.92	6,060.45	2,614.93	2,308.93	306.00	8.546	
13,600.00	7,150.25	13,312.82	7,170.87	158.85	152.48	-90.45	1,347.39	6,160.44	2,615.82	2,305.02	310.80	8.416	
13,700.00	7,150.27	13,412.81	7,170.83	161.25	154.87	-90.45	1,346.85	6,260.43	2,616.72	2,301.11	315.60	8.291	
13,800.00	7,150.30	13,512.81	7,170.79	163.65	157.27	-90.45	1,346.31	6,360.43	2,617.61	2,297.21	320.41	8.170	
13,900.00	7,150.32	13,612.81	7,170.76	166.06	159.67	-90.45	1,345.78	6,460.42	2,618.51	2,293.29	325.22	8.052	
14,000.00	7,150.34	13,712.80	7,170.72	168.46	162.06	-90.45	1,345.24	6,560.42	2,619.40	2,289.38	330.02	7.937	
14,100.00	7,150.36	13,812.80	7,170.68	170.87	164.46	-90.44	1,344.70	6,660.41	2,620.30	2,285.46	334.84	7.826	
14,200.00	7,150.38	13,912.79	7,170.64	173.28	166.86	-90.44	1,344.17	6,760.41	2,621.20	2,281.55	339.65	7.717	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		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	
14,300.00	7,150.40	14,012.79	7,170.61	175.68	169.27	-90.44	1,343.63	6,860.40	2,622.09	2,277.63	344.46	7.612	
14,400.00	7,150.42	14,112.79	7,170.57	178.09	171.67	-90.44	1,343.10	6,960.40	2,622.99	2,273.71	349.28	7.510	
14,500.00	7,150.44	14,212.78	7,170.53	180.50	174.07	-90.44	1,342.56	7,060.39	2,623.88	2,269.78	354.10	7.410	
14,600.00	7,150.46	14,312.78	7,170.49	182.92	176.48	-90.44	1,342.02	7,160.39	2,624.78	2,265.86	358.92	7.313	
14,700.00	7,150.48	14,412.77	7,170.45	185.33	178.88	-90.44	1,341.49	7,260.38	2,625.68	2,261.93	363.74	7.219	
14,800.00	7,150.51	14,512.77	7,170.42	187.74	181.29	-90.43	1,340.95	7,360.37	2,626.57	2,258.01	368.56	7.126	
14,900.00	7,150.53	14,612.77	7,170.38	190.15	183.69	-90.43	1,340.41	7,460.37	2,627.47	2,254.08	373.39	7.037	
15,000.00	7,150.55	14,712.76	7,170.34	192.57	186.10	-90.43	1,339.88	7,560.36	2,628.36	2,250.15	378.22	6.949	
15,100.00	7,150.57	14,812.76	7,170.30	194.98	188.51	-90.43	1,339.34	7,660.36	2,629.26	2,246.22	383.04	6.864	
15,200.00	7,150.59	14,912.75	7,170.27	197.40	190.92	-90.43	1,338.80	7,760.35	2,630.15	2,242.28	387.87	6.781	
15,300.00	7,150.61	15,012.75	7,170.23	199.81	193.33	-90.43	1,338.27	7,860.35	2,631.05	2,238.35	392.70	6.700	
15,400.00	7,150.63	15,112.75	7,170.19	202.23	195.74	-90.43	1,337.73	7,960.34	2,631.95	2,234.41	397.53	6.621	
15,500.00	7,150.65	15,212.74	7,170.15	204.64	198.15	-90.42	1,337.19	8,060.34	2,632.84	2,230.48	402.36	6.543	
15,600.00	7,150.67	15,312.74	7,170.11	207.06	200.57	-90.42	1,336.66	8,160.33	2,633.74	2,226.54	407.20	6.468	
15,700.00	7,150.69	15,412.73	7,170.08	209.48	202.98	-90.42	1,336.12	8,260.33	2,634.63	2,222.60	412.03	6.394	
15,800.00	7,150.72	15,512.73	7,170.04	211.90	205.39	-90.42	1,335.59	8,360.32	2,635.53	2,218.66	416.87	6.322	
15,900.00	7,150.74	15,612.73	7,170.00	214.32	207.81	-90.42	1,335.05	8,460.31	2,636.42	2,214.72	421.70	6.252	
16,000.00	7,150.76	15,712.72	7,169.96	216.74	210.22	-90.42	1,334.51	8,560.31	2,637.32	2,210.78	426.54	6.183	
16,100.00	7,150.78	15,812.72	7,169.92	219.16	212.63	-90.42	1,333.98	8,660.30	2,638.22	2,206.84	431.38	6.116	
16,200.00	7,150.80	15,912.71	7,169.89	221.58	215.05	-90.41	1,333.44	8,760.30	2,639.11	2,202.90	436.22	6.050	
16,300.00	7,150.82	16,012.71	7,169.85	224.00	217.47	-90.41	1,332.90	8,860.29	2,640.01	2,198.95	441.06	5.986	
16,400.00	7,150.84	16,112.71	7,169.81	226.42	219.88	-90.41	1,332.37	8,960.29	2,640.90	2,195.01	445.90	5.923	
16,500.00	7,150.86	16,212.70	7,169.77	228.84	222.30	-90.41	1,331.83	9,060.28	2,641.80	2,191.06	450.74	5.861	
16,600.00	7,150.88	16,312.70	7,169.74	231.26	224.72	-90.41	1,331.29	9,160.28	2,642.69	2,187.12	455.58	5.801	
16,700.00	7,150.90	16,412.69	7,169.70	233.68	227.13	-90.41	1,330.76	9,260.27	2,643.59	2,183.17	460.42	5.742	
16,800.00	7,150.93	16,512.69	7,169.66	236.11	229.55	-90.41	1,330.22	9,360.26	2,644.49	2,179.22	465.27	5.684	
16,900.00	7,150.95	16,612.69	7,169.62	238.53	231.97	-90.40	1,329.68	9,460.26	2,645.38	2,175.27	470.11	5.627	
16,986.21	7,150.96	16,698.89	7,169.59	240.62	234.06	-90.40	1,329.22	9,546.46	2,646.15	2,171.87	474.29	5.579	
17,000.00	7,150.97	16,712.68	7,169.58	240.95	234.39	-90.40	1,329.15	9,560.25	2,646.28	2,171.32	474.95	5.572	
17,100.00	7,150.99	16,812.68	7,169.55	243.37	236.81	-90.40	1,328.61	9,660.25	2,647.17	2,167.37	479.80	5.517	
17,154.59	7,151.00	16,867.26	7,169.53	244.70	238.13	-90.40	1,328.32	9,714.83	2,647.66	2,165.22	482.45	5.488 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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - Plan #3												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												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	0.00	0.00	0.00	0.00	34.43	12.38	8.48	15.01				
100.00	100.00	100.00	100.00	0.25	0.25	34.43	12.38	8.48	15.01	14.50	0.50	29.902	
200.00	200.00	200.00	200.00	0.61	0.61	34.43	12.38	8.48	15.01	13.79	1.22	12.313	
300.00	300.00	300.00	300.00	0.97	0.97	34.43	12.38	8.48	15.01	13.07	1.94	7.752	
400.00	400.00	400.00	400.00	1.33	1.33	34.43	12.38	8.48	15.01	12.35	2.65	5.657	
500.00	500.00	500.00	500.00	1.68	1.68	34.43	12.38	8.48	15.01	11.64	3.37	4.453 CC, ES	
600.00	599.98	600.21	600.19	2.03	2.04	-175.53	12.54	6.74	15.97	11.91	4.06	3.931	
700.00	699.84	700.17	700.01	2.36	2.39	169.15	13.02	1.52	19.89	15.14	4.75	4.189	
800.00	799.45	799.72	799.26	2.71	2.74	156.86	13.71	-6.08	28.13	22.68	5.45	5.161	
900.00	898.70	898.96	898.21	3.07	3.10	152.57	14.41	-13.74	40.13	33.97	6.16	6.512	
1,000.00	997.47	997.80	996.75	3.44	3.46	151.98	15.11	-21.37	55.27	48.39	6.88	8.031	
1,067.13	1,063.43	1,063.87	1,062.62	3.71	3.70	152.48	15.58	-26.47	67.14	59.77	7.37	9.111	
1,100.00	1,095.66	1,096.15	1,094.81	3.84	3.82	152.85	15.81	-28.97	73.30	65.69	7.61	9.633	
1,200.00	1,193.71	1,194.38	1,192.73	4.25	4.18	153.67	16.51	-36.55	92.03	83.69	8.33	11.044	
1,300.00	1,291.75	1,292.60	1,290.66	4.67	4.54	154.21	17.20	-44.14	110.77	101.71	9.06	12.223	
1,400.00	1,389.80	1,390.82	1,388.59	5.10	4.91	154.59	17.90	-51.72	129.52	119.73	9.80	13.221	
1,500.00	1,487.85	1,489.05	1,486.52	5.53	5.27	154.88	18.59	-59.30	148.28	137.74	10.53	14.076	
1,600.00	1,585.90	1,587.27	1,584.44	5.96	5.64	155.10	19.28	-66.89	167.04	155.76	11.27	14.815	
1,700.00	1,683.94	1,685.49	1,682.37	6.40	6.00	155.28	19.98	-74.47	185.79	173.78	12.02	15.461	
1,800.00	1,781.99	1,783.72	1,780.30	6.84	6.37	155.43	20.67	-82.06	204.56	191.79	12.76	16.029	
1,900.00	1,880.04	1,881.94	1,878.23	7.29	6.73	155.55	21.37	-89.64	223.32	209.81	13.51	16.532	
2,000.00	1,978.08	1,980.16	1,976.15	7.73	7.10	155.65	22.06	-97.23	242.08	227.83	14.26	16.982	
2,100.00	2,076.13	2,078.39	2,074.08	8.18	7.46	155.74	22.76	-104.81	260.84	245.84	15.00	17.385	
2,200.00	2,174.18	2,176.61	2,172.01	8.63	7.83	155.81	23.45	-112.39	279.61	263.86	15.75	17.749	
2,300.00	2,272.22	2,274.83	2,269.93	9.08	8.20	155.88	24.15	-119.98	298.37	281.87	16.50	18.079	
2,400.00	2,370.27	2,373.06	2,367.86	9.53	8.56	155.94	24.84	-127.56	317.14	299.88	17.26	18.379	
2,500.00	2,468.32	2,471.28	2,465.79	9.98	8.93	155.99	25.54	-135.15	335.90	317.90	18.01	18.654	
2,600.00	2,566.36	2,569.50	2,563.72	10.43	9.30	156.03	26.23	-142.73	354.67	335.91	18.76	18.906	
2,700.00	2,664.41	2,667.72	2,661.64	10.89	9.67	156.08	26.93	-150.32	373.43	353.92	19.51	19.138	
2,800.00	2,762.46	2,765.95	2,759.57	11.34	10.03	156.11	27.62	-157.90	392.20	371.93	20.27	19.353	
2,900.00	2,860.50	2,864.17	2,857.50	11.79	10.40	156.15	28.32	-165.48	410.97	389.95	21.02	19.552	
3,000.00	2,958.55	2,962.39	2,955.43	12.25	10.77	156.18	29.01	-173.07	429.73	407.96	21.77	19.736	
3,100.00	3,056.60	3,060.62	3,053.35	12.70	11.14	156.21	29.71	-180.65	448.50	425.97	22.53	19.909	
3,200.00	3,154.65	3,158.84	3,151.28	13.16	11.50	156.23	30.40	-188.24	467.27	443.98	23.28	20.069	
3,300.00	3,252.69	3,257.06	3,249.21	13.61	11.87	156.26	31.10	-195.82	486.03	461.99	24.04	20.220	
3,400.00	3,350.74	3,355.29	3,347.14	14.07	12.24	156.28	31.79	-203.41	504.80	480.01	24.79	20.361	
3,500.00	3,448.79	3,453.51	3,445.06	14.52	12.61	156.30	32.49	-210.99	523.56	498.02	25.55	20.493	
3,600.00	3,546.83	3,551.73	3,542.99	14.98	12.97	156.32	33.18	-218.57	542.33	516.03	26.30	20.618	
3,700.00	3,644.88	3,649.96	3,640.92	15.43	13.34	156.34	33.88	-226.16	561.10	534.04	27.06	20.735	
3,800.00	3,742.93	3,748.18	3,738.85	15.89	13.71	156.36	34.57	-233.74	579.86	552.05	27.82	20.846	
3,900.00	3,840.97	3,846.40	3,836.77	16.35	14.08	156.37	35.27	-241.33	598.63	570.06	28.57	20.951	
4,000.00	3,939.02	3,944.63	3,934.70	16.80	14.44	156.39	35.96	-248.91	617.40	588.07	29.33	21.051	
4,100.00	4,037.07	4,042.85	4,032.63	17.26	14.81	156.40	36.66	-256.50	636.16	606.08	30.09	21.145	
4,200.00	4,135.11	4,141.07	4,130.56	17.72	15.18	156.42	37.35	-264.08	654.93	624.09	30.84	21.235	
4,300.00	4,233.16	4,239.29	4,228.48	18.17	15.55	156.43	38.05	-271.66	673.70	642.10	31.60	21.320	
4,400.00	4,331.21	4,337.52	4,326.41	18.63	15.92	156.44	38.74	-279.25	692.47	660.11	32.36	21.401	
4,500.00	4,429.25	4,435.74	4,424.34	19.09	16.28	156.45	39.44	-286.83	711.23	678.12	33.11	21.479	
4,600.00	4,527.30	4,533.96	4,522.27	19.54	16.65	156.46	40.13	-294.42	730.00	696.13	33.87	21.553	
4,700.00	4,625.35	4,632.19	4,620.19	20.00	17.02	156.47	40.83	-302.00	748.77	714.14	34.63	21.623	
4,800.00	4,723.40	4,730.41	4,718.12	20.46	17.39	156.48	41.52	-309.59	767.53	732.15	35.39	21.691	
4,900.00	4,821.44	4,828.63	4,816.05	20.92	17.76	156.49	42.22	-317.17	786.30	750.16	36.14	21.755	
5,000.00	4,919.49	4,926.86	4,913.98	21.37	18.13	156.50	42.91	-324.75	805.07	768.17	36.90	21.817	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - Plan #3													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)	Reference	Offset	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,017.54	5,025.08	5,011.90	21.83	18.49	156.51	43.61	-332.34	823.83	786.18	37.66	21.877	
5,200.00	5,115.58	5,123.30	5,109.83	22.29	18.86	156.52	44.30	-339.92	842.60	804.19	38.42	21.934	
5,300.00	5,213.63	5,221.53	5,207.76	22.75	19.23	156.52	45.00	-347.51	861.37	822.20	39.17	21.988	
5,400.00	5,311.68	5,319.75	5,305.69	23.21	19.60	156.53	45.69	-355.09	880.14	840.20	39.93	22.041	
5,500.00	5,409.72	5,417.97	5,403.61	23.66	19.97	156.54	46.39	-362.68	898.90	858.21	40.69	22.092	
5,600.00	5,507.77	5,516.20	5,501.54	24.12	20.33	156.54	47.08	-370.26	917.67	876.22	41.45	22.140	
5,700.00	5,605.82	5,614.42	5,599.47	24.58	20.70	156.55	47.78	-377.84	936.44	894.23	42.21	22.187	
5,800.00	5,703.86	5,712.64	5,697.39	25.04	21.07	156.56	48.47	-385.43	955.20	912.24	42.96	22.232	
5,900.00	5,801.91	5,810.86	5,795.32	25.49	21.44	156.56	49.17	-393.01	973.97	930.25	43.72	22.276	
6,000.00	5,899.96	5,909.09	5,893.25	25.95	21.81	156.57	49.86	-400.60	992.74	948.26	44.48	22.318	
6,100.00	5,998.00	6,007.31	5,991.18	26.41	22.18	156.57	50.56	-408.18	1,011.51	966.27	45.24	22.359	
6,200.00	6,096.05	6,105.53	6,089.10	26.87	22.54	156.58	51.25	-415.77	1,030.27	984.28	46.00	22.398	
6,300.00	6,194.10	6,203.76	6,187.03	27.33	22.91	156.58	51.95	-423.35	1,049.04	1,002.28	46.76	22.436	
6,400.00	6,292.15	6,301.98	6,284.96	27.79	23.28	156.59	52.64	-430.93	1,067.81	1,020.29	47.52	22.473	
6,500.00	6,390.19	6,400.20	6,382.89	28.24	23.65	156.59	53.34	-438.52	1,086.58	1,038.30	48.27	22.508	
6,587.61	6,476.09	6,486.25	6,468.68	28.65	23.97	156.60	53.95	-445.16	1,103.02	1,054.08	48.94	22.538	
6,600.00	6,488.25	6,498.40	6,480.79	28.70	24.02	162.14	54.03	-446.08	1,105.35	1,056.31	49.03	22.543	
6,650.00	6,537.39	6,547.31	6,529.66	28.92	24.18	-173.29	54.37	-447.55	1,114.79	1,065.40	49.39	22.573	
6,700.00	6,586.44	6,596.25	6,578.54	29.12	24.33	-150.86	54.71	-445.26	1,124.26	1,074.55	49.70	22.619	
6,750.00	6,635.11	6,645.26	6,627.16	29.30	24.47	-134.69	55.03	-439.22	1,133.70	1,083.70	50.00	22.675	
6,800.00	6,683.08	6,694.36	6,675.26	29.46	24.60	-123.83	55.34	-429.43	1,143.05	1,092.79	50.27	22.739	
6,850.00	6,730.07	6,743.56	6,722.56	29.61	24.73	-116.37	55.64	-415.94	1,152.27	1,101.75	50.52	22.807	
6,900.00	6,775.78	6,792.88	6,768.79	29.74	24.85	-110.99	55.92	-398.78	1,161.28	1,110.52	50.76	22.878	
6,950.00	6,819.93	6,842.36	6,813.69	29.86	24.96	-106.95	56.18	-378.04	1,170.04	1,119.05	50.99	22.948	
7,000.00	6,862.25	6,891.99	6,856.98	29.96	25.08	-103.79	56.42	-353.78	1,178.49	1,127.28	51.21	23.014	
7,050.00	6,902.48	6,941.80	6,898.39	30.04	25.19	-101.24	56.64	-326.12	1,186.58	1,135.15	51.43	23.073	
7,100.00	6,940.37	6,991.80	6,937.65	30.12	25.31	-99.15	56.84	-295.19	1,194.26	1,142.60	51.66	23.118	
7,150.00	6,975.69	7,041.98	6,974.50	30.18	25.45	-97.41	57.02	-261.14	1,201.48	1,149.56	51.91	23.144	
7,200.00	7,008.21	7,092.37	7,008.68	30.22	25.60	-95.95	57.17	-224.15	1,208.19	1,156.00	52.20	23.147	
7,250.00	7,037.75	7,142.94	7,039.95	30.26	25.77	-94.72	57.30	-184.41	1,214.37	1,161.84	52.53	23.120	
7,300.00	7,064.11	7,193.71	7,068.06	30.28	25.97	-93.68	57.39	-142.15	1,219.96	1,167.05	52.91	23.057	
7,350.00	7,087.14	7,244.66	7,092.80	30.29	26.21	-92.82	57.46	-97.62	1,224.93	1,171.57	53.36	22.956	
7,400.00	7,106.69	7,295.78	7,113.96	30.30	26.48	-92.11	57.50	-51.11	1,229.26	1,175.37	53.89	22.812	
7,450.00	7,122.64	7,347.05	7,131.37	30.30	26.79	-91.54	57.51	-2.89	1,232.91	1,178.41	54.49	22.625	
7,500.00	7,134.89	7,398.46	7,144.88	30.30	27.15	-91.11	57.49	46.69	1,235.86	1,180.67	55.18	22.396	
7,550.00	7,143.37	7,449.97	7,154.35	30.30	27.55	-90.80	57.43	97.31	1,238.09	1,182.13	55.95	22.127	
7,600.00	7,148.03	7,501.57	7,159.71	30.32	27.98	-90.61	57.35	148.62	1,239.59	1,182.79	56.80	21.823	
7,635.28	7,149.00	7,538.01	7,160.99	30.35	28.31	-90.55	57.28	185.03	1,240.20	1,182.76	57.44	21.591	
7,700.00	7,149.01	7,602.86	7,161.01	30.54	28.95	-90.55	57.13	249.87	1,240.98	1,182.28	58.69	21.143	
7,800.00	7,149.03	7,702.85	7,161.03	31.33	30.06	-90.55	56.90	349.87	1,242.18	1,181.28	60.90	20.396	
7,900.00	7,149.06	7,802.84	7,161.06	32.52	31.33	-90.55	56.67	449.86	1,243.38	1,179.97	63.41	19.608	
8,000.00	7,149.08	7,902.84	7,161.08	33.88	32.73	-90.55	56.43	549.85	1,244.58	1,178.40	66.18	18.805	
8,100.00	7,149.10	8,002.83	7,161.10	35.37	34.24	-90.55	56.20	649.84	1,245.78	1,176.59	69.19	18.005	
8,200.00	7,149.12	8,102.82	7,161.12	36.97	35.86	-90.55	55.97	749.84	1,246.98	1,174.59	72.40	17.224	
8,300.00	7,149.14	8,202.81	7,161.14	38.65	37.57	-90.55	55.74	849.83	1,248.19	1,172.40	75.79	16.470	
8,400.00	7,149.16	8,302.81	7,161.16	40.42	39.35	-90.55	55.51	949.82	1,249.39	1,170.06	79.33	15.749	
8,500.00	7,149.18	8,402.80	7,161.18	42.24	41.20	-90.55	55.28	1,049.81	1,250.59	1,167.58	83.01	15.066	
8,600.00	7,149.20	8,502.79	7,161.20	44.13	43.11	-90.55	55.05	1,149.81	1,251.79	1,164.99	86.80	14.421	
8,700.00	7,149.22	8,602.78	7,161.22	46.07	45.07	-90.55	54.82	1,249.80	1,252.99	1,162.29	90.70	13.814	
8,800.00	7,149.24	8,702.78	7,161.24	48.05	47.07	-90.55	54.58	1,349.79	1,254.19	1,159.50	94.69	13.245	
8,900.00	7,149.27	8,802.77	7,161.27	50.07	49.12	-90.55	54.35	1,449.78	1,255.39	1,156.63	98.76	12.711	
9,000.00	7,149.29	8,902.76	7,161.29	52.13	51.19	-90.55	54.12	1,549.78	1,256.60	1,153.69	102.90	12.211	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - Plan #3												Offset Site Error:	0.00 usft
Survey Program: 0-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Minimum	Separation	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)		
9,100.00	7,149.31	9,002.76	7,161.31	54.21	53.30	-90.55	53.89	1,649.77	1,257.80	1,150.69	107.10	11.744	
9,200.00	7,149.33	9,102.75	7,161.33	56.33	55.44	-90.55	53.66	1,749.76	1,259.00	1,147.64	111.36	11.305	
9,300.00	7,149.35	9,202.74	7,161.35	58.47	57.60	-90.55	53.43	1,849.75	1,260.20	1,144.53	115.67	10.895	
9,400.00	7,149.37	9,302.73	7,161.37	60.63	59.78	-90.55	53.20	1,949.75	1,261.40	1,141.38	120.02	10.510	
9,500.00	7,149.39	9,402.73	7,161.39	62.82	61.98	-90.54	52.97	2,049.74	1,262.60	1,138.20	124.41	10.149	
9,600.00	7,149.41	9,502.72	7,161.41	65.02	64.19	-90.54	52.73	2,149.73	1,263.80	1,134.97	128.83	9.810	
9,700.00	7,149.43	9,602.71	7,161.43	67.23	66.43	-90.54	52.50	2,249.72	1,265.01	1,131.72	133.28	9.491	
9,800.00	7,149.45	9,702.71	7,161.45	69.47	68.67	-90.54	52.27	2,349.72	1,266.21	1,128.44	137.77	9.191	
9,900.00	7,149.48	9,802.70	7,161.48	71.71	70.93	-90.54	52.04	2,449.71	1,267.41	1,125.13	142.28	8.908	
10,000.00	7,149.50	9,902.69	7,161.50	73.97	73.20	-90.54	51.81	2,549.70	1,268.61	1,121.80	146.81	8.641	
10,100.00	7,149.52	10,002.68	7,161.52	76.24	75.48	-90.54	51.58	2,649.69	1,269.81	1,118.44	151.37	8.389	
10,200.00	7,149.54	10,102.68	7,161.54	78.52	77.77	-90.54	51.35	2,749.69	1,271.01	1,115.07	155.94	8.151	
10,300.00	7,149.56	10,202.67	7,161.56	80.80	80.07	-90.54	51.12	2,849.68	1,272.21	1,111.68	160.53	7.925	
10,400.00	7,149.58	10,302.66	7,161.58	83.10	82.38	-90.54	50.88	2,949.67	1,273.41	1,108.27	165.14	7.711	
10,500.00	7,149.60	10,402.65	7,161.60	85.40	84.69	-90.54	50.65	3,049.66	1,274.62	1,104.85	169.76	7.508	
10,600.00	7,149.62	10,502.65	7,161.62	87.72	87.01	-90.54	50.42	3,149.66	1,275.82	1,101.42	174.40	7.315	
10,700.00	7,149.64	10,602.64	7,161.64	90.03	89.34	-90.54	50.19	3,249.65	1,277.02	1,097.97	179.05	7.132	
10,800.00	7,149.67	10,702.63	7,161.67	92.36	91.67	-90.54	49.96	3,349.64	1,278.22	1,094.51	183.71	6.958	
10,900.00	7,149.69	10,802.63	7,161.69	94.69	94.01	-90.54	49.73	3,449.63	1,279.42	1,091.04	188.38	6.792	
11,000.00	7,149.71	10,902.62	7,161.71	97.02	96.35	-90.54	49.50	3,549.63	1,280.62	1,087.56	193.07	6.633	
11,100.00	7,149.73	11,002.61	7,161.73	99.37	98.70	-90.54	49.26	3,649.62	1,281.82	1,084.07	197.76	6.482	
11,200.00	7,149.75	11,102.60	7,161.75	101.71	101.05	-90.54	49.03	3,749.61	1,283.03	1,080.57	202.46	6.337	
11,300.00	7,149.77	11,202.60	7,161.77	104.06	103.41	-90.54	48.80	3,849.60	1,284.23	1,077.06	207.17	6.199	
11,400.00	7,149.79	11,302.59	7,161.79	106.41	105.77	-90.54	48.57	3,949.60	1,285.43	1,073.55	211.88	6.067	
11,500.00	7,149.81	11,402.58	7,161.81	108.77	108.13	-90.53	48.34	4,049.59	1,286.63	1,070.02	216.61	5.940	
11,600.00	7,149.83	11,502.58	7,161.83	111.13	110.50	-90.53	48.11	4,149.58	1,287.83	1,066.50	221.34	5.818	
11,700.00	7,149.85	11,602.57	7,161.85	113.50	112.87	-90.53	47.88	4,249.57	1,289.03	1,062.96	226.07	5.702	
11,800.00	7,149.88	11,702.56	7,161.88	115.86	115.24	-90.53	47.65	4,349.57	1,290.23	1,059.42	230.81	5.590	
11,900.00	7,149.90	11,802.55	7,161.90	118.23	117.61	-90.53	47.41	4,449.56	1,291.43	1,055.87	235.56	5.482	
12,000.00	7,149.92	11,902.55	7,161.92	120.61	119.99	-90.53	47.18	4,549.55	1,292.64	1,052.32	240.31	5.379	
12,100.00	7,149.94	12,002.54	7,161.94	122.98	122.37	-90.53	46.95	4,649.54	1,293.84	1,048.77	245.07	5.279	
12,200.00	7,149.96	12,102.53	7,161.96	125.36	124.75	-90.53	46.72	4,749.54	1,295.04	1,045.21	249.83	5.184	
12,300.00	7,149.98	12,202.52	7,161.98	127.74	127.13	-90.53	46.49	4,849.53	1,296.24	1,041.64	254.60	5.091	
12,400.00	7,150.00	12,302.52	7,162.00	130.12	129.52	-90.53	46.26	4,949.52	1,297.44	1,038.07	259.37	5.002	
12,500.00	7,150.02	12,402.51	7,162.02	132.51	131.91	-90.53	46.03	5,049.51	1,298.64	1,034.50	264.15	4.916	
12,600.00	7,150.04	12,502.50	7,162.04	134.89	134.30	-90.53	45.80	5,149.51	1,299.84	1,030.92	268.92	4.834	
12,700.00	7,150.06	12,602.50	7,162.06	137.28	136.69	-90.53	45.56	5,249.50	1,301.05	1,027.34	273.70	4.753	
12,800.00	7,150.09	12,702.49	7,162.09	139.67	139.08	-90.53	45.33	5,349.49	1,302.25	1,023.76	278.49	4.676	
12,900.00	7,150.11	12,802.48	7,162.11	142.06	141.48	-90.53	45.10	5,449.48	1,303.45	1,020.17	283.28	4.601	
13,000.00	7,150.13	12,902.47	7,162.13	144.46	143.87	-90.53	44.87	5,549.48	1,304.65	1,016.58	288.07	4.529	
13,100.00	7,150.15	13,002.47	7,162.15	146.85	146.27	-90.53	44.64	5,649.47	1,305.85	1,012.99	292.86	4.459	
13,200.00	7,150.17	13,102.46	7,162.17	149.25	148.67	-90.53	44.41	5,749.46	1,307.05	1,009.39	297.66	4.391	
13,300.00	7,150.19	13,202.45	7,162.19	151.64	151.07	-90.53	44.18	5,849.45	1,308.25	1,005.80	302.46	4.325	
13,400.00	7,150.21	13,302.45	7,162.21	154.04	153.47	-90.53	43.95	5,949.45	1,309.46	1,002.20	307.26	4.262	
13,500.00	7,150.23	13,402.44	7,162.23	156.44	155.87	-90.52	43.71	6,049.44	1,310.66	998.59	312.06	4.200	
13,600.00	7,150.25	13,502.43	7,162.25	158.85	158.27	-90.52	43.48	6,149.43	1,311.86	994.99	316.87	4.140	
13,700.00	7,150.27	13,602.42	7,162.28	161.25	160.68	-90.52	43.25	6,249.42	1,313.06	991.38	321.68	4.082	
13,800.00	7,150.30	13,702.42	7,162.30	163.65	163.08	-90.52	43.02	6,349.42	1,314.26	987.77	326.49	4.025	
13,900.00	7,150.32	13,802.41	7,162.32	166.06	165.49	-90.52	42.79	6,449.41	1,315.46	984.16	331.30	3.971	
14,000.00	7,150.34	13,902.40	7,162.34	168.46	167.89	-90.52	42.56	6,549.40	1,316.66	980.55	336.11	3.917	
14,100.00	7,150.36	14,002.40	7,162.36	170.87	170.30	-90.52	42.33	6,649.39	1,317.86	976.94	340.93	3.866	
14,200.00	7,150.38	14,102.39	7,162.38	173.28	172.71	-90.52	42.10	6,749.39	1,319.07	973.32	345.75	3.815	

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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - Plan #3													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		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,300.00	7,150.40	14,202.38	7,162.40	175.68	175.12	-90.52	41.86	6,849.38	1,320.27	969.70	350.57	3.766	
14,400.00	7,150.42	14,302.37	7,162.42	178.09	177.53	-90.52	41.63	6,949.37	1,321.47	966.08	355.39	3.718	
14,500.00	7,150.44	14,402.37	7,162.44	180.50	179.94	-90.52	41.40	7,049.36	1,322.67	962.46	360.21	3.672	
14,600.00	7,150.46	14,502.36	7,162.46	182.92	182.35	-90.52	41.17	7,149.36	1,323.87	958.84	365.03	3.627	
14,700.00	7,150.48	14,602.35	7,162.49	185.33	184.76	-90.52	40.94	7,249.35	1,325.07	955.22	369.86	3.583	
14,800.00	7,150.51	14,702.34	7,162.51	187.74	187.18	-90.52	40.71	7,349.34	1,326.27	951.59	374.68	3.540	
14,900.00	7,150.53	14,802.34	7,162.53	190.15	189.59	-90.52	40.48	7,449.33	1,327.48	947.96	379.51	3.498	
15,000.00	7,150.55	14,902.33	7,162.55	192.57	192.00	-90.52	40.25	7,549.33	1,328.68	944.34	384.34	3.457	
15,100.00	7,150.57	15,002.32	7,162.57	194.98	194.42	-90.52	40.01	7,649.32	1,329.88	940.71	389.17	3.417	
15,200.00	7,150.59	15,102.32	7,162.59	197.40	196.83	-90.52	39.78	7,749.31	1,331.08	937.08	394.00	3.378	
15,300.00	7,150.61	15,202.31	7,162.61	199.81	199.25	-90.52	39.55	7,849.30	1,332.28	933.45	398.83	3.340	
15,400.00	7,150.63	15,302.30	7,162.63	202.23	201.67	-90.52	39.32	7,949.30	1,333.48	929.82	403.67	3.303	
15,500.00	7,150.65	15,402.29	7,162.65	204.64	204.08	-90.52	39.09	8,049.29	1,334.68	926.18	408.50	3.267	
15,600.00	7,150.67	15,502.29	7,162.67	207.06	206.50	-90.51	38.86	8,149.28	1,335.89	922.55	413.34	3.232	
15,700.00	7,150.69	15,602.28	7,162.70	209.48	208.92	-90.51	38.63	8,249.27	1,337.09	918.91	418.17	3.197	
15,800.00	7,150.72	15,702.27	7,162.72	211.90	211.34	-90.51	38.40	8,349.27	1,338.29	915.28	423.01	3.164	
15,900.00	7,150.74	15,802.27	7,162.74	214.32	213.75	-90.51	38.16	8,449.26	1,339.49	911.64	427.85	3.131	
16,000.00	7,150.76	15,902.26	7,162.76	216.74	216.17	-90.51	37.93	8,549.25	1,340.69	908.00	432.69	3.099	
16,100.00	7,150.78	16,002.25	7,162.78	219.16	218.59	-90.51	37.70	8,649.24	1,341.89	904.37	437.53	3.067	
16,200.00	7,150.80	16,102.24	7,162.80	221.58	221.01	-90.51	37.47	8,749.24	1,343.09	900.73	442.37	3.036	
16,300.00	7,150.82	16,202.24	7,162.82	224.00	223.43	-90.51	37.24	8,849.23	1,344.29	897.09	447.21	3.006	
16,400.00	7,150.84	16,302.23	7,162.84	226.42	225.85	-90.51	37.01	8,949.22	1,345.50	893.45	452.05	2.976	
16,500.00	7,150.86	16,402.22	7,162.86	228.84	228.27	-90.51	36.78	9,049.21	1,346.70	889.80	456.89	2.948	
16,600.00	7,150.88	16,502.21	7,162.89	231.26	230.70	-90.51	36.55	9,149.21	1,347.90	886.16	461.74	2.919	
16,700.00	7,150.90	16,602.21	7,162.91	233.68	233.12	-90.51	36.31	9,249.20	1,349.10	882.52	466.58	2.891	
16,800.00	7,150.93	16,702.20	7,162.93	236.11	235.54	-90.51	36.08	9,349.19	1,350.30	878.87	471.43	2.864	
16,900.00	7,150.95	16,802.19	7,162.95	238.53	237.96	-90.51	35.85	9,449.18	1,351.50	875.23	476.27	2.838	
16,986.21	7,150.96	16,888.39	7,162.97	240.62	240.05	-90.51	35.65	9,535.39	1,352.54	872.09	480.45	2.815	
17,000.00	7,150.97	16,902.19	7,162.97	240.95	240.38	-90.51	35.62	9,549.18	1,352.70	871.59	481.12	2.812	
17,100.00	7,150.99	17,002.18	7,162.99	243.37	242.81	-90.51	35.39	9,649.17	1,353.91	867.94	485.96	2.786	
17,154.59	7,151.00	17,056.76	7,163.00	244.70	244.13	-90.51	35.26	9,703.75	1,354.56	865.95	488.61	2.772 SF	

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6563+30 @ 6593.00usft (H&P 530)

Coordinates are relative to: Rosa Unit 834H

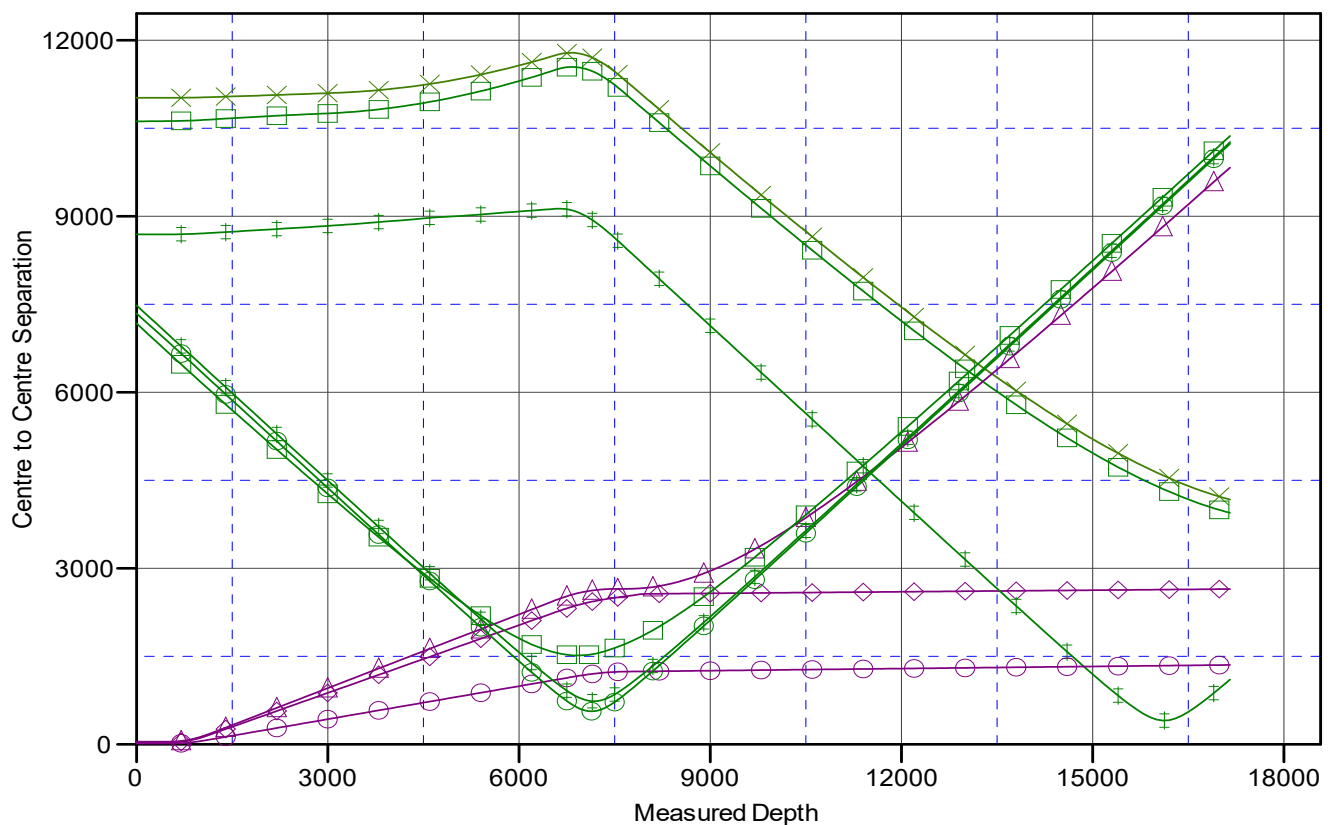
Offset Depths are relative to Offset Datum

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

Central Meridian is -107.833334

Grid Convergence at Surface is: 0.31°

Ladder Plot



LEGEND

Rosa Unit 832H, OH, Plan #2 V0	Rosa Unit 830H, OH, Plan #2 V0	Rosa Unit 746H, OH, OH V0
(O) Schalk 32 #003H, OH, OH-SVY V0	(O) Rosa Unit #601, OH, OH-SVY V0	Rosa Unit 745H, OH, OH V0
(O) Schalk 32 #001A, OH, OH-SVY V0	Rosa Unit 836H, OH, Plan #5 V0	Rosa Unit 744H, OH, OH 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 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 6563+30 @ 6593.00usft (H&P 530)

Offset Depths are relative to Offset Datum

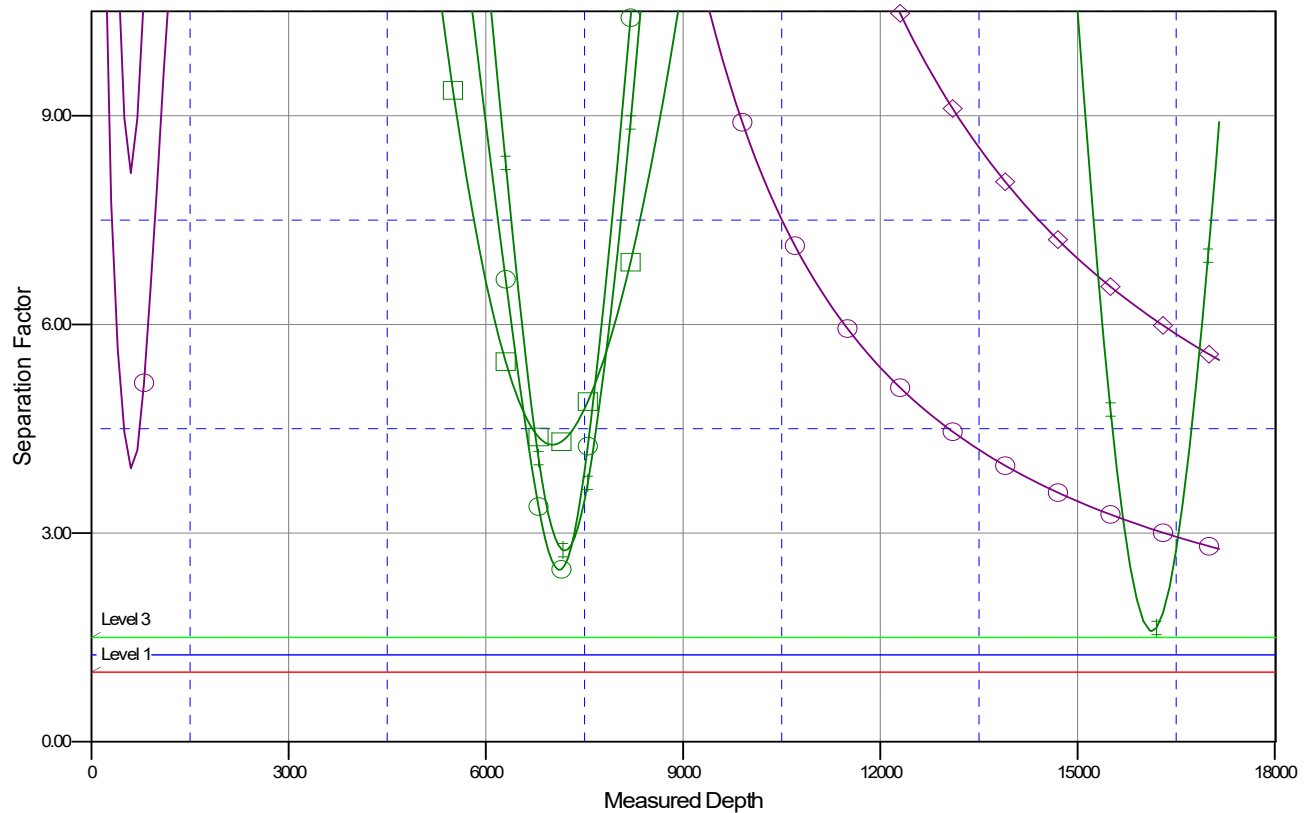
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 834H

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

Grid Convergence at Surface is: 0.31°

Separation Factor Plot



LEGEND

Rosa Unit 832H, OH, Plan #2 V0	Rosa Unit 830H, OH, Plan #2 V0	Rosa Unit 746H, OH, OH V0
(O) Schak 32 #003H, OH, OH-SVYV0	(O) Rosa Unit #601, OH, OH-SVYV0	Rosa Unit #745H, OH, OH V0
(O) Schak 32 #001A, OH, OH-SVYV0	Rosa Unit 836H, OH, Plan #5 V0	Rosa Unit #744H, OH, OH 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 263667

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 263667
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Original COA's still apply.	9/14/2023