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

Sundry Print Report
05/03/2024

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 33 / SWNW / 36.856169 / -107.373412

County or Parish/State: RIO ARRIBA / NM

Well Number: 754H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF078773

Unit or CA Name:

Unit or CA Number: NMNM078407E

US Well Number: 3003931459

Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2787567

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 04/30/2024

Time Sundry Submitted: 09:21

Date proposed operation will begin: 04/30/2024

Procedure Description: LOGOS Operating request a change in plans for the following (based on KB elevation): Original surface-hole location from 2616' FNL & 950' FWL to new surface-hole location 2636' FNL & 951' FWL Original bottom-hole location from 2275' FSL & 1406' FEL to new bottom-hole location 1780' FSL & 1409' FEL Original TD @ 20,209' (MD) 7,109' (TVD) to new TD @ 20,215' (MD) 7,104' (TVD). Geology tops have been updated per changes. Original KOP @ 6,551' MD 6,544' TVD to new KOP @ 6,528' MD 6,485' TVD Original Landing point @ 7,439' MD 7,104' TVD to new Landing point @ 7,515' MD 7,104' TVD Original 13.375" Surface casing @ 320' MD to new 20" Surface casing @ 350' MD Original 9,625" casing Intermediate @ 6,372' MD to new 9.625" Intermediate casing @ 6,407' MD Original 5.5" casing Production casing @ 20,209' MD to new 5.5" Production casing @ 20,215' MD All cementing bbls and sacks have been updated per casing depth Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_005_Rosa_Unit_754H_Change_in_Plan_5__20240430_20240430092110.pdf

CONFIDENTIAL

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 33 / SWNW / 36.856169 / -107.373412

County or Parish/State: RIO ARRIBA / NM

Well Number: 754H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF078773

Unit or CA Name:

Unit or CA Number: NMNM078407E

US Well Number: 3003931459

Operator: LOGOS OPERATING LLC

Operator

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

Operator Electronic Signature: ETTA TRUJILLO

Signed on: APR 30, 2024 09:21 AM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: Farmington **State:** NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

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

Phone:

Email address:

BLM Point of Contact

BLM POC Name: DAVE J MANKIEWICZ

BLM POC Title: AFM-Minerals

BLM POC Phone: 5055647761

BLM POC Email Address: DMANKIEW@BLM.GOV

Disposition: Approved

Disposition Date: 05/02/2024

Signature: Dave J Mankiewicz

CONFIDENTIAL

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No.: NMSF078773

6. If Indian, Allottee or Tribe Name:

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

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

8. Well Name and No.: ROSA UNIT 754H

2. Name of Operator: LOGOS OPERATING, LLC

9. API Well No.: 30-039-31459

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

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

10. Field and Pool or Exploratory Area: BASIN MANCOS

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*: UNIT E SEC 33 T31N 5W 2636' FNL 951' FWL

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

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

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

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

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

Original surface-hole location from 2616' FNL & 950' FWL to **new surface-hole location 2636' FNL & 951' FWL**
Original bottom-hole location from 2275' FSL & 1406' FEL to **new bottom-hole location 1780' FSL & 1409' FEL**
Original TD @ 20,209' (MD) 7,109' (TVD) to **new TD @ 20,215' (MD) 7,104' (TVD)**.

Geology tops have been updated per changes.
Original KOP @ 6,551' MD 6,544' TVD to **new KOP @ 6,528' MD 6,485' TVD**
Original Landing point @ 7,439' MD 7,104' TVD to **new Landing point @ 7,515' MD 7,104' TVD**

Original 13.375" Surface casing @ 320' MD to **new 20" Surface casing @ 350' MD**
Original 9,625" casing Intermediate @ 6,372' MD to **new 9.625" Intermediate casing @ 6,407' MD**
Original 5.5" casing Production casing @ 20,209' MD to **new 5.5" Production casing @ 20,215' MD**

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

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

Title: Regulatory Specialist

Signature: Etta Trujillo

Date: 4/30/2024

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Received by OCD: 5/3/2024 9:30:33 AM

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

State of New Mexico
Energy, Minerals & Natural Resources Department

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

Form C-102
Revised August 1, 2011

Submit one copy to Appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-039-31459	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	754H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6534'

[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
E	33	31N	5W		2636	NORTH	951	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
J	35	31N	5W		1780	SOUTH	1409	EAST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
960.00	S/2 - Section 33 S/2 - Section 34 S/2 - Section 35			R-13457

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

[17] OPERATOR CERTIFICATION

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

Etta Trujillo — Signature — 4/30/2024 — Date

Etta Trujillo — Printed Name

etrujillo@logosresourcesllc.com — E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: APRIL 29, 2024
Date of Survey: JUNE 28, 2022

Signature and Seal of Professional Surveyor

JASON C. EDWARDS NEW MEXICO 15269 REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

SURFACE LOCATION (A)
2636' FNL 951' FWL
SEC 33, T31N, R5W
LAT 36.856107°N
LONG -107.372807°W
DATUM: NAD1927

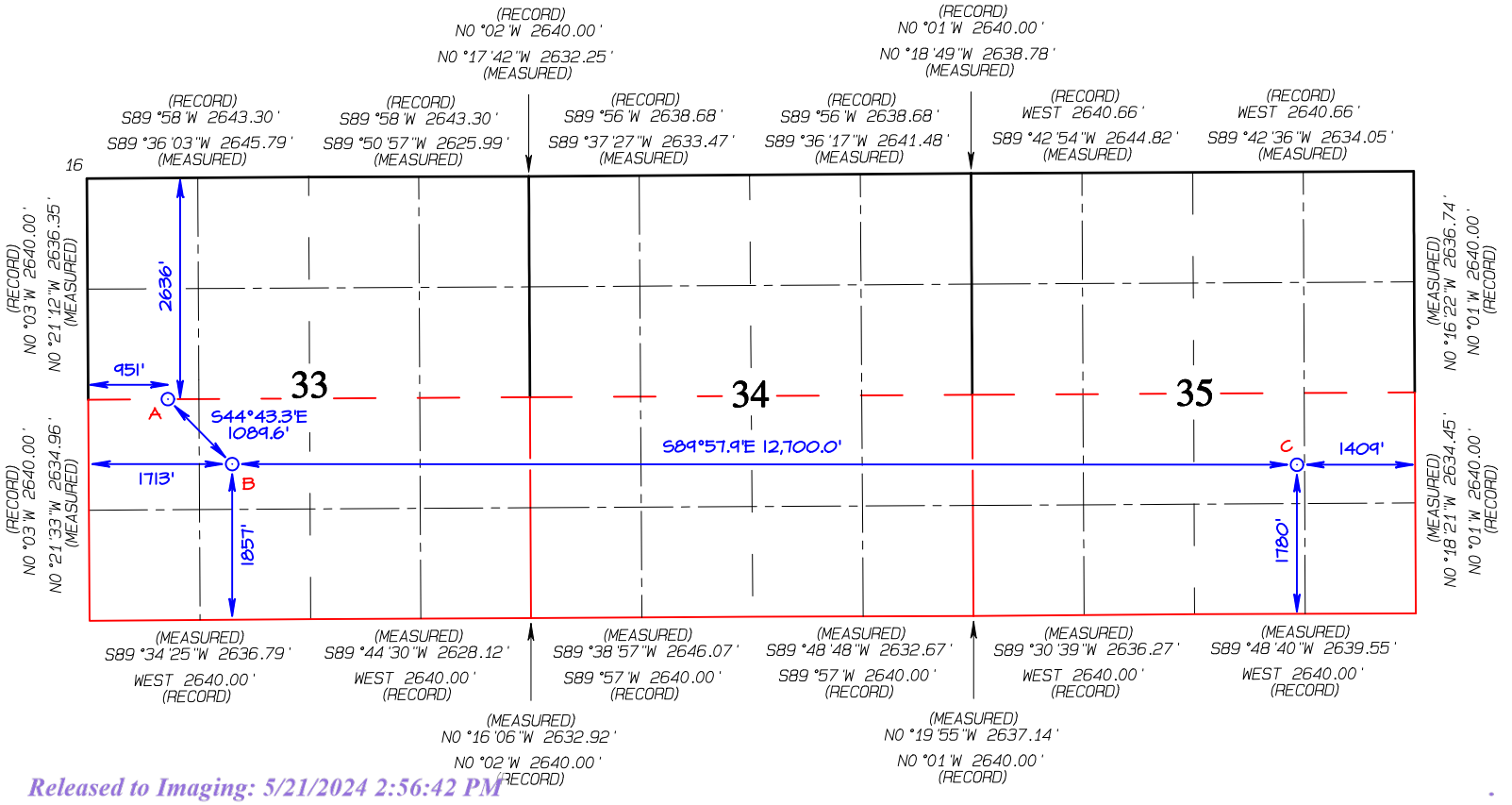
LAT 36.856114°N
LONG -107.373409°W
DATUM: NAD1983

FIRST TAKE POINT (B)
1857' FSL 1713' FWL
SEC 33, T31N, R5W
LAT 36.853971°N
LONG -107.370199°W
DATUM: NAD1927

LAT 36.853977°N
LONG -107.370801°W
DATUM: NAD1983

LAST TAKE POINT (C)
1780' FSL 1409' FEL
SEC 35, T31N, R5W
LAT 36.853772°N
LONG -107.326793°W
DATUM: NAD1927

LAT 36.853778°N
LONG -107.327394°W
DATUM: NAD1983



Released to Imaging: 5/21/2024 2:56:42 PM

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 32
Rosa Unit 754H

OH
Plan #5

Anticollision Report

19 April, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Reference	Plan #5		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Max. Cent. Dist. of 999,999.00usft or Max. SF of 999,999	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 4/19/2024

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,214.91	Plan #5 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Rosa Unit 32						
(O) RU #024 - OH - OH	6,042.08	5,952.00	5,445.67	4,903.77	10.049	CC, ES
(O) RU #024 - OH - OH	6,100.00	5,952.00	5,445.98	4,903.90	10.046	SF
(O) RU #024B - OH - OH-INC	6,534.74	6,446.69	4,495.22	4,332.10	27.558	CC
(O) RU #024B - OH - OH-INC	6,550.00	6,461.82	4,495.40	4,331.93	27.501	ES
(O) RU #024B - OH - OH-INC	6,900.00	6,778.23	4,594.43	4,423.71	26.913	SF
(O) RU #026A - OH - OH-INC	6,546.91	6,432.18	2,753.22	2,591.93	17.070	CC
(O) RU #026A - OH - OH-INC	6,550.00	6,435.03	2,753.23	2,591.85	17.060	ES
(O) RU #026A - OH - OH-INC	6,850.00	6,721.67	2,819.32	2,648.88	16.541	SF
(O) RU #026C - OH - OH-INC	175.52	182.52	1,064.79	1,056.86	134.320	CC
(O) RU #026C - OH - OH-INC	700.00	706.74	1,068.10	1,049.10	56.207	ES
(O) RU #026C - OH - OH-INC	6,650.00	6,613.07	1,385.72	1,220.31	8.377	SF
(O) RU #055 - OH - OH-SVY	15,177.65	7,125.51	331.62	189.60	2.335	CC, ES
(O) RU #055 - OH - OH-SVY	15,200.00	7,125.53	332.37	189.80	2.331	SF
(O) RU #077 - OH - OH-SVY	6,554.10	6,485.89	350.49	318.47	10.944	CC, ES
(O) RU #077 - OH - OH-SVY	6,600.00	6,532.01	351.82	319.60	10.917	SF
(O) RU #077A - OH - OH-INC	9,927.40	7,043.26	273.80	77.26	1.393	Level 3, CC, ES, SF
(O) RU #077B - OH - OH	8,332.04	6,219.00	1,267.54	1,142.93	10.172	CC, ES
(O) RU #077B - OH - OH	8,600.00	6,219.00	1,295.55	1,166.40	10.031	SF
(O) RU #077C - OH - OH-SVY	10,542.40	7,247.68	1,161.86	1,091.10	16.421	CC, ES
(O) RU #077C - OH - OH-SVY	10,800.00	7,248.23	1,190.07	1,115.29	15.915	SF
(O) RU #097 - OH - OH-INC	212.31	193.24	9,336.42	9,328.31	1,151.668	CC
(O) RU #097 - OH - OH-INC	6,528.17	6,467.01	9,431.55	9,270.16	58.440	ES
(O) RU #097 - OH - OH-INC	7,150.00	6,985.06	9,722.07	9,545.80	55.155	SF
(O) RU #137 - OH - OH	381.47	365.49	9,338.52	9,328.72	953.377	CC
(O) RU #137 - OH - OH	6,200.00	6,146.05	9,388.28	9,208.99	52.363	ES
(O) RU #137 - OH - OH	6,600.00	6,170.00	9,404.44	9,222.86	51.792	SF
(O) RU #137A - OH - OH	500.00	440.00	7,270.55	7,261.35	790.888	CC
(O) RU #137A - OH - OH	6,300.00	6,199.76	7,350.05	7,188.52	45.504	ES
(O) RU #137A - OH - OH	6,600.00	6,210.00	7,365.19	7,202.30	45.214	SF
(O) RU #137B - OH - OH	6,337.52	6,165.00	6,738.96	6,589.60	45.119	CC, ES
(O) RU #137B - OH - OH	6,600.00	6,165.00	6,748.03	6,597.76	44.908	SF
(O) RU #137C - OH - OH	300.00	200.00	8,614.21	8,607.51	1,285.183	CC
(O) RU #137C - OH - OH	304.45	200.00	8,614.21	8,607.51	1,284.311	ES
(O) RU #137C - OH - OH	7,150.00	6,822.56	8,966.66	8,932.40	261.690	SF
(O) RU #184 - OH - OH	15,114.00	6,308.00	867.65	739.44	6.767	CC, ES
(O) RU #184 - OH - OH	15,500.00	6,308.00	949.50	802.66	6.466	SF
(O) RU #184B - OH - OH	16,119.31	6,298.00	1,422.38	1,103.97	4.467	CC, ES

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Rosa Unit 32						
(O) RU #184B - OH - OH	16,200.00	6,298.00	1,424.67	1,104.82	4.454	SF
(O) RU #188 - OH - OH	12,810.08	6,476.00	822.20	735.03	9.433	CC, ES
(O) RU #188 - OH - OH	13,300.00	6,476.00	957.09	837.16	7.980	SF
(O) RU #188C - OH - OH-SVY	13,629.64	7,263.84	920.68	802.83	7.813	CC, ES
(O) RU #188C - OH - OH-SVY	13,700.00	7,263.75	923.36	804.16	7.746	SF
(O) RU #231 - OH - OH	500.00	479.00	9,435.70	9,425.48	923.745	CC
(O) RU #231 - OH - OH	3,400.00	3,337.00	9,458.15	9,382.07	124.331	ES
(O) RU #231 - OH - OH	5,600.00	3,337.00	9,729.95	9,647.49	118.003	SF
(O) RU #231A - OH - OH	3,546.40	3,384.00	6,610.71	6,530.04	81.948	CC, ES
(O) RU #231A - OH - OH	4,600.00	3,384.00	6,694.14	6,610.48	80.016	SF
(O) RU #259 - OH - OH-INC	3,500.00	3,392.00	1,005.10	886.88	8.501	SF
(O) RU #259 - OH - OH-INC	3,569.64	3,392.00	1,002.69	884.80	8.506	CC, ES
(O) RU #259A - OH - OH	3,633.97	3,414.00	3,220.13	3,139.66	40.019	CC, ES
(O) RU #259A - OH - OH	3,800.00	3,414.00	3,224.40	3,143.57	39.887	SF
(O) RU #269A - OH - OH	15,370.54	3,512.00	3,763.34	3,679.37	44.814	CC
(O) RU #269A - OH - OH	15,400.00	3,512.00	3,763.46	3,679.23	44.680	ES
(O) RU #269A - OH - OH	16,200.00	3,512.00	3,853.67	3,764.06	43.007	SF
(O) RU #270 - OH - OH	12,693.85	3,597.00	3,677.21	3,618.61	62.752	CC
(O) RU #270 - OH - OH	12,700.00	3,597.00	3,677.22	3,618.57	62.707	ES
(O) RU #270 - OH - OH	15,000.00	3,597.00	4,340.53	4,246.77	46.293	SF
(O) RU #271A - OH - OH	20,215.00	3,527.00	3,859.92	3,744.59	33.468	CC, ES, SF
(O) RU #272 - OH - OH	17,148.76	3,569.00	3,754.10	3,652.98	37.127	CC
(O) RU #272 - OH - OH	17,200.00	3,569.00	3,754.45	3,652.95	36.993	ES
(O) RU #272 - OH - OH	18,600.00	3,569.00	4,024.84	3,907.00	34.156	SF
(O) RU #334A - OH - OH	500.00	472.01	2,872.61	2,862.82	293.185	CC
(O) RU #334A - OH - OH	3,000.00	2,955.58	2,929.10	2,857.38	40.838	ES
(O) RU #334A - OH - OH	3,700.00	3,468.00	2,953.98	2,867.79	34.274	SF
(O) RU #337 - OH - OH	341.16	302.16	4,810.95	4,802.99	603.825	CC
(O) RU #337 - OH - OH	3,400.00	3,341.54	4,845.60	4,765.45	60.453	ES
(O) RU #337 - OH - OH	3,900.00	3,351.00	4,876.92	4,795.06	59.580	SF
Rosa Unit #746H - OH - OH	17,594.83	16,997.97	1,298.36	961.95	3.859	CC
Rosa Unit #746H - OH - OH	20,215.00	19,615.37	1,316.71	897.35	3.140	ES, SF
Rosa Unit 750H - OH - Plan #5	500.00	500.00	49.92	42.55	6.769	CC
Rosa Unit 750H - OH - Plan #5	600.00	601.46	50.00	42.29	6.484	ES
Rosa Unit 750H - OH - Plan #5	700.00	702.66	50.62	42.54	6.265	SF
Rosa Unit 752H - OH - Plan #5	1,133.40	1,136.84	23.21	12.98	2.268	CC, ES, SF
Rosa Unit 756H - OH - Plan #6	500.00	500.00	25.14	17.77	3.409	CC
Rosa Unit 756H - OH - Plan #6	600.00	599.12	25.33	17.63	3.287	ES
Rosa Unit 756H - OH - Plan #6	700.00	698.22	26.03	17.96	3.228	SF

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-107.54	-1,653.79	-5,233.53	5,488.73				
100.00	100.00	64.00	64.00	3.29	6.47	-107.54	-1,653.79	-5,233.53	5,488.61	5,478.85	9.76	562.445	
200.00	200.00	164.00	164.00	3.34	14.66	-107.54	-1,653.79	-5,233.53	5,488.61	5,470.61	18.00	305.000	
300.00	300.00	264.00	264.00	3.42	23.23	-107.54	-1,653.79	-5,233.53	5,488.61	5,461.96	26.65	205.935	
400.00	400.00	364.00	364.00	3.54	31.88	-107.54	-1,653.79	-5,233.53	5,488.61	5,453.19	35.42	154.963	
500.00	500.00	464.00	464.00	3.69	40.56	-107.54	-1,653.79	-5,233.53	5,488.61	5,444.36	44.24	124.054	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
600.00	599.98	563.98	563.98	3.86	49.24	102.47	-1,653.79	-5,233.53	5,488.99	5,435.89	53.10	103.372	
700.00	699.84	663.84	663.84	4.04	57.93	102.51	-1,653.79	-5,233.53	5,490.12	5,428.15	61.97	88.596	
800.00	799.45	763.45	763.45	4.26	66.59	102.56	-1,653.79	-5,233.53	5,492.02	5,421.17	70.85	77.521	
849.50	848.63	812.63	812.63	4.37	70.87	102.59	-1,653.79	-5,233.53	5,493.24	5,418.00	75.24	73.010	
900.00	898.77	862.77	862.77	4.49	75.24	94.39	-1,653.79	-5,233.53	5,494.15	5,414.43	79.72	68.915	
973.84	972.07	936.07	936.07	4.68	81.62	82.36	-1,653.79	-5,233.53	5,493.89	5,407.60	86.29	63.667	
1,000.00	998.03	962.03	962.03	4.74	83.88	82.39	-1,653.79	-5,233.53	5,493.46	5,404.84	88.62	61.989	
1,100.00	1,097.29	1,061.29	1,061.29	5.02	92.52	82.51	-1,653.79	-5,233.53	5,491.85	5,394.32	97.53	56.307	
1,200.00	1,196.54	1,160.54	1,160.54	5.30	101.16	82.64	-1,653.79	-5,233.53	5,490.27	5,383.80	106.46	51.569	
1,300.00	1,295.80	1,259.80	1,259.80	5.61	109.80	82.76	-1,653.79	-5,233.53	5,488.71	5,373.30	115.41	47.559	
1,400.00	1,395.06	1,359.06	1,359.06	5.92	118.45	82.89	-1,653.79	-5,233.53	5,487.18	5,362.81	124.36	44.122	
1,500.00	1,494.31	1,458.31	1,458.31	6.24	127.09	83.02	-1,653.79	-5,233.53	5,485.67	5,352.34	133.33	41.144	
1,600.00	1,593.57	1,557.57	1,557.57	6.57	135.73	83.14	-1,653.79	-5,233.53	5,484.19	5,341.89	142.30	38.539	
1,700.00	1,692.82	1,656.82	1,656.82	6.91	144.38	83.27	-1,653.79	-5,233.53	5,482.74	5,331.46	151.28	36.241	
1,800.00	1,792.08	1,756.08	1,756.08	7.25	153.02	83.39	-1,653.79	-5,233.53	5,481.32	5,321.04	160.27	34.200	
1,900.00	1,891.33	1,855.33	1,855.33	7.60	161.67	83.52	-1,653.79	-5,233.53	5,479.92	5,310.65	169.26	32.375	
2,000.00	1,990.59	1,954.59	1,954.59	7.95	170.32	83.64	-1,653.79	-5,233.53	5,478.55	5,300.28	178.26	30.733	
2,100.00	2,089.85	2,053.85	2,053.85	8.30	178.96	83.77	-1,653.79	-5,233.53	5,477.20	5,289.94	187.26	29.249	
2,200.00	2,189.10	2,153.10	2,153.10	8.66	187.61	83.89	-1,653.79	-5,233.53	5,475.88	5,279.61	196.27	27.900	
2,300.00	2,288.36	2,252.36	2,252.36	9.02	196.25	84.02	-1,653.79	-5,233.53	5,474.59	5,269.32	205.28	26.670	
2,400.00	2,387.61	2,351.61	2,351.61	9.39	204.90	84.15	-1,653.79	-5,233.53	5,473.33	5,259.04	214.29	25.542	
2,500.00	2,486.87	2,450.87	2,450.87	9.76	213.54	84.27	-1,653.79	-5,233.53	5,472.09	5,248.79	223.30	24.506	
2,600.00	2,586.12	2,550.12	2,550.12	10.13	222.19	84.40	-1,653.79	-5,233.53	5,470.88	5,238.56	232.31	23.549	
2,700.00	2,685.38	2,649.38	2,649.38	10.50	230.84	84.52	-1,653.79	-5,233.53	5,469.69	5,228.36	241.33	22.665	
2,800.00	2,784.63	2,748.63	2,748.63	10.87	239.48	84.65	-1,653.79	-5,233.53	5,468.53	5,218.18	250.35	21.844	
2,900.00	2,883.89	2,847.89	2,847.89	11.24	248.13	84.78	-1,653.79	-5,233.53	5,467.40	5,208.03	259.37	21.079	
3,000.00	2,983.15	2,947.15	2,947.15	11.62	256.78	84.90	-1,653.79	-5,233.53	5,466.30	5,197.91	268.39	20.367	
3,100.00	3,082.40	3,046.40	3,046.40	12.00	265.42	85.03	-1,653.79	-5,233.53	5,465.22	5,187.81	277.42	19.700	
3,200.00	3,181.66	3,145.66	3,145.66	12.38	274.07	85.15	-1,653.79	-5,233.53	5,464.17	5,177.73	286.44	19.076	
3,300.00	3,280.91	3,244.91	3,244.91	12.75	282.72	85.28	-1,653.79	-5,233.53	5,463.15	5,167.68	295.47	18.490	
3,400.00	3,380.17	3,344.17	3,344.17	13.13	291.36	85.41	-1,653.79	-5,233.53	5,462.16	5,157.66	304.49	17.939	
3,500.00	3,479.42	3,443.42	3,443.42	13.52	300.01	85.53	-1,653.79	-5,233.53	5,461.19	5,147.67	313.52	17.419	
3,600.00	3,578.68	3,542.68	3,542.68	13.90	308.66	85.66	-1,653.79	-5,233.53	5,460.24	5,137.70	322.55	16.928	
3,700.00	3,677.94	3,641.94	3,641.94	14.28	317.30	85.79	-1,653.79	-5,233.53	5,459.33	5,127.75	331.58	16.465	
3,800.00	3,777.19	3,741.19	3,741.19	14.66	325.95	85.91	-1,653.79	-5,233.53	5,458.44	5,117.83	340.61	16.026	
3,900.00	3,876.45	3,840.45	3,840.45	15.05	334.60	86.04	-1,653.79	-5,233.53	5,457.58	5,107.94	349.64	15.609	
4,000.00	3,975.70	3,939.70	3,939.70	15.43	343.24	86.17	-1,653.79	-5,233.53	5,456.75	5,098.08	358.67	15.214	
4,100.00	4,074.96	4,038.96	4,038.96	15.82	351.89	86.29	-1,653.79	-5,233.53	5,455.94	5,088.24	367.70	14.838	
4,200.00	4,174.21	4,138.21	4,138.21	16.20	360.54	86.42	-1,653.79	-5,233.53	5,455.16	5,078.43	376.73	14.480	
4,300.00	4,273.47	4,237.47	4,237.47	16.59	369.18	86.55	-1,653.79	-5,233.53	5,454.41	5,068.64	385.77	14.139	
4,400.00	4,372.73	4,336.73	4,336.73	16.97	377.83	86.67	-1,653.79	-5,233.53	5,453.68	5,058.88	394.80	13.814	
4,500.00	4,471.98	4,435.98	4,435.98	17.36	386.48	86.80	-1,653.79	-5,233.53	5,452.98	5,049.15	403.83	13.503	
4,600.00	4,571.24	4,535.24	4,535.24	17.75	395.12	86.93	-1,653.79	-5,233.53	5,452.31	5,039.45	412.87	13.206	
4,700.00	4,670.49	4,634.49	4,634.49	18.13	403.77	87.05	-1,653.79	-5,233.53	5,451.67	5,029.77	421.90	12.922	
4,800.00	4,769.75	4,733.75	4,733.75	18.52	412.42	87.18	-1,653.79	-5,233.53	5,451.05	5,020.12	430.94	12.649	
4,900.00	4,869.00	4,833.00	4,833.00	18.91	421.06	87.31	-1,653.79	-5,233.53	5,450.46	5,010.49	439.97	12.388	
5,000.00	4,968.26	4,932.26	4,932.26	19.30	429.71	87.43	-1,653.79	-5,233.53	5,449.90	5,000.89	449.01	12.138	
5,100.00	5,067.51	5,031.51	5,031.51	19.69	438.36	87.56	-1,653.79	-5,233.53	5,449.36	4,991.32	458.04	11.897	
5,200.00	5,166.77	5,130.77	5,130.77	20.07	447.00	87.69	-1,653.79	-5,233.53	5,448.85	4,981.78	467.08	11.666	
5,300.00	5,266.03	5,230.03	5,230.03	20.46	455.65	87.82	-1,653.79	-5,233.53	5,448.37	4,972.26	476.11	11.443	
5,400.00	5,365.28	5,329.28	5,329.28	20.85	464.30	87.94	-1,653.79	-5,233.53	5,447.92	4,962.77	485.15	11.229	
5,500.00	5,464.54	5,428.54	5,428.54	21.24	472.94	88.07	-1,653.79	-5,233.53	5,447.49	4,953.31	494.19	11.023	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG — **Rule Assigned:** — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,600.00	5,563.79	5,527.79	5,527.79	21.63	481.59	88.20	-1,653.79	-5,233.53	5,447.09	4,943.87	503.22	10.824	
5,700.00	5,663.05	5,627.05	5,627.05	22.02	490.24	88.32	-1,653.79	-5,233.53	5,446.72	4,934.46	512.26	10.633	
5,800.00	5,762.30	5,726.30	5,726.30	22.41	498.89	88.45	-1,653.79	-5,233.53	5,446.37	4,925.08	521.30	10.448	
5,900.00	5,861.56	5,825.56	5,825.56	22.80	507.53	88.58	-1,653.79	-5,233.53	5,446.06	4,915.72	530.33	10.269	
6,000.00	5,960.82	5,924.82	5,924.82	23.19	516.18	88.71	-1,653.79	-5,233.53	5,445.77	4,906.39	539.37	10.097	
6,042.08	6,002.58	5,952.00	5,952.00	23.36	518.55	88.74	-1,653.79	-5,233.53	5,445.67	4,903.77	541.90	10.049	CC, ES
6,100.00	6,060.07	5,952.00	5,952.00	23.58	518.55	88.74	-1,653.79	-5,233.53	5,445.98	4,903.90	542.08	10.046	SF
6,200.00	6,159.33	5,952.00	5,952.00	23.97	518.55	88.74	-1,653.79	-5,233.53	5,447.96	4,905.71	542.25	10.047	
6,300.00	6,258.58	5,952.00	5,952.00	24.36	518.55	88.74	-1,653.79	-5,233.53	5,451.78	4,909.53	542.25	10.054	
6,400.00	6,357.84	5,952.00	5,952.00	24.76	518.55	88.74	-1,653.79	-5,233.53	5,457.42	4,915.36	542.06	10.068	
6,500.00	6,457.09	5,952.00	5,952.00	25.15	518.55	88.74	-1,653.79	-5,233.53	5,464.89	4,923.19	541.70	10.088	
6,528.17	6,485.05	5,952.00	5,952.00	25.26	518.55	88.74	-1,653.79	-5,233.53	5,467.32	4,925.75	541.57	10.095	
6,550.00	6,506.71	5,952.00	5,952.00	25.34	518.55	103.43	-1,653.79	-5,233.53	5,469.67	4,928.22	541.46	10.102	
6,600.00	6,556.11	5,952.00	5,952.00	25.54	518.55	126.60	-1,653.79	-5,233.53	5,478.11	4,936.94	541.18	10.123	
6,650.00	6,605.00	5,952.00	5,952.00	25.74	518.55	138.74	-1,653.79	-5,233.53	5,490.76	4,949.89	540.86	10.152	
6,700.00	6,653.07	5,952.00	5,952.00	25.93	518.55	145.42	-1,653.79	-5,233.53	5,507.49	4,966.97	540.52	10.189	
6,750.00	6,700.02	5,952.00	5,952.00	26.12	518.55	149.35	-1,653.79	-5,233.53	5,528.18	4,988.01	540.16	10.234	
6,800.00	6,745.56	5,952.00	5,952.00	26.31	518.55	151.72	-1,653.79	-5,233.53	5,552.64	5,012.85	539.79	10.287	
6,850.00	6,789.42	5,952.00	5,952.00	26.50	518.55	153.11	-1,653.79	-5,233.53	5,580.70	5,041.28	539.42	10.346	
6,900.00	6,831.32	5,952.00	5,952.00	26.69	518.55	153.77	-1,653.79	-5,233.53	5,612.10	5,073.06	539.05	10.411	
6,950.00	6,871.01	5,952.00	5,952.00	26.87	518.55	153.84	-1,653.79	-5,233.53	5,646.62	5,107.93	538.69	10.482	
7,000.00	6,908.23	5,952.00	5,952.00	27.05	518.55	153.35	-1,653.79	-5,233.53	5,683.98	5,145.63	538.35	10.558	
7,050.00	6,942.77	5,952.00	5,952.00	27.23	518.55	152.25	-1,653.79	-5,233.53	5,723.90	5,185.86	538.04	10.638	
7,100.00	6,974.40	5,952.00	5,952.00	27.41	518.55	150.44	-1,653.79	-5,233.53	5,766.07	5,228.31	537.77	10.722	
7,150.00	7,002.93	5,952.00	5,952.00	27.60	518.55	147.65	-1,653.79	-5,233.53	5,810.21	5,272.68	537.53	10.809	
7,200.00	7,028.20	5,952.00	5,952.00	27.80	518.55	143.45	-1,653.79	-5,233.53	5,855.98	5,318.64	537.34	10.898	
7,250.00	7,050.03	5,952.00	5,952.00	28.00	518.55	137.02	-1,653.79	-5,233.53	5,903.08	5,365.88	537.21	10.988	
7,300.00	7,068.30	5,952.00	5,952.00	28.22	518.55	126.89	-1,653.79	-5,233.53	5,951.19	5,414.07	537.12	11.080	
7,350.00	7,082.89	5,952.00	5,952.00	28.45	518.55	110.79	-1,653.79	-5,233.53	5,999.99	5,462.90	537.09	11.171	
7,400.00	7,093.72	5,952.00	5,952.00	28.70	518.55	87.60	-1,653.79	-5,233.53	6,049.16	5,512.04	537.12	11.262	
7,450.00	7,100.71	5,952.00	5,952.00	28.96	518.55	62.62	-1,653.79	-5,233.53	6,098.40	5,561.20	537.20	11.352	
7,500.00	7,103.82	5,952.00	5,952.00	29.24	518.55	43.48	-1,653.79	-5,233.53	6,147.40	5,610.07	537.34	11.440	
7,515.00	7,104.00	5,952.00	5,952.00	29.32	518.55	39.15	-1,653.79	-5,233.53	6,162.02	5,624.63	537.39	11.467	
7,600.00	7,104.00	5,952.00	5,952.00	29.84	518.55	39.15	-1,653.79	-5,233.53	6,244.70	5,707.00	537.70	11.614	
7,700.00	7,104.00	5,952.00	5,952.00	30.51	518.55	39.15	-1,653.79	-5,233.53	6,342.05	5,804.00	538.05	11.787	
7,800.00	7,104.00	5,952.00	5,952.00	31.26	518.55	39.15	-1,653.79	-5,233.53	6,439.48	5,901.09	538.39	11.961	
7,900.00	7,104.00	5,952.00	5,952.00	32.07	518.55	39.15	-1,653.79	-5,233.53	6,536.99	5,998.27	538.72	12.134	
8,000.00	7,104.00	5,952.00	5,952.00	32.94	518.55	39.15	-1,653.79	-5,233.53	6,634.57	6,095.53	539.04	12.308	
8,100.00	7,104.00	5,952.00	5,952.00	33.86	518.55	39.15	-1,653.79	-5,233.53	6,732.23	6,192.88	539.35	12.482	
8,200.00	7,104.00	5,952.00	5,952.00	34.84	518.55	39.15	-1,653.79	-5,233.53	6,829.95	6,290.30	539.65	12.656	
8,300.00	7,104.00	5,952.00	5,952.00	35.86	518.55	39.15	-1,653.79	-5,233.53	6,927.74	6,387.80	539.94	12.831	
8,400.00	7,104.00	5,952.00	5,952.00	36.92	518.55	39.15	-1,653.79	-5,233.53	7,025.59	6,485.37	540.22	13.005	
8,500.00	7,104.00	5,952.00	5,952.00	38.02	518.55	39.15	-1,653.79	-5,233.53	7,123.50	6,583.00	540.49	13.180	
8,600.00	7,104.00	5,952.00	5,952.00	39.15	518.55	39.15	-1,653.79	-5,233.53	7,221.46	6,680.70	540.76	13.354	
8,700.00	7,104.00	5,952.00	5,952.00	40.32	518.55	39.15	-1,653.79	-5,233.53	7,319.49	6,778.47	541.02	13.529	
8,800.00	7,104.00	5,952.00	5,952.00	41.52	518.55	39.15	-1,653.79	-5,233.53	7,417.56	6,876.29	541.27	13.704	
8,900.00	7,104.00	5,952.00	5,952.00	42.74	518.55	39.15	-1,653.79	-5,233.53	7,515.68	6,974.17	541.51	13.879	
9,000.00	7,104.00	5,952.00	5,952.00	43.99	518.55	39.15	-1,653.79	-5,233.53	7,613.86	7,072.11	541.75	14.054	
9,100.00	7,104.00	5,952.00	5,952.00	45.26	518.55	39.15	-1,653.79	-5,233.53	7,712.08	7,170.10	541.98	14.229	
9,200.00	7,104.00	5,952.00	5,952.00	46.55	518.55	39.15	-1,653.79	-5,233.53	7,810.35	7,268.14	542.21	14.405	
9,300.00	7,104.00	5,952.00	5,952.00	47.85	518.55	39.15	-1,653.79	-5,233.53	7,908.66	7,366.22	542.43	14.580	
9,400.00	7,104.00	5,952.00	5,952.00	49.18	518.55	39.15	-1,653.79	-5,233.53	8,007.01	7,464.36	542.65	14.755	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,500.00	7,104.00	5,952.00	5,952.00	50.52	518.55	39.15	-1,653.79	-5,233.53	8,105.40	7,562.54	542.86	14.931	
9,600.00	7,104.00	5,952.00	5,952.00	51.88	518.55	39.15	-1,653.79	-5,233.53	8,203.83	7,660.77	543.06	15.107	
9,700.00	7,104.00	5,952.00	5,952.00	53.25	518.55	39.15	-1,653.79	-5,233.53	8,302.30	7,759.03	543.26	15.282	
9,800.00	7,104.00	5,952.00	5,952.00	54.63	518.55	39.15	-1,653.79	-5,233.53	8,400.80	7,857.34	543.46	15.458	
9,900.00	7,104.00	5,952.00	5,952.00	56.03	518.55	39.15	-1,653.79	-5,233.53	8,499.34	7,955.69	543.65	15.634	
10,000.00	7,104.00	5,952.00	5,952.00	57.43	518.55	39.15	-1,653.79	-5,233.53	8,597.91	8,054.07	543.84	15.810	
10,100.00	7,104.00	5,952.00	5,952.00	58.85	518.55	39.15	-1,653.79	-5,233.53	8,696.52	8,152.49	544.03	15.985	
10,200.00	7,104.00	5,952.00	5,952.00	60.27	518.55	39.15	-1,653.79	-5,233.53	8,795.16	8,250.95	544.21	16.161	
10,300.00	7,104.00	5,952.00	5,952.00	61.71	518.55	39.15	-1,653.79	-5,233.53	8,893.82	8,349.44	544.39	16.337	
10,400.00	7,104.00	5,952.00	5,952.00	63.15	518.55	39.15	-1,653.79	-5,233.53	8,992.52	8,447.96	544.56	16.513	
10,500.00	7,104.00	5,952.00	5,952.00	64.60	518.55	39.15	-1,653.79	-5,233.53	9,091.25	8,546.51	544.73	16.689	
10,600.00	7,104.00	5,952.00	5,952.00	66.05	518.55	39.15	-1,653.79	-5,233.53	9,190.00	8,645.10	544.90	16.865	
10,700.00	7,104.00	5,952.00	5,952.00	67.52	518.55	39.15	-1,653.79	-5,233.53	9,288.78	8,743.71	545.07	17.041	
10,800.00	7,104.00	5,952.00	5,952.00	68.99	518.55	39.15	-1,653.79	-5,233.53	9,387.59	8,842.35	545.23	17.218	
10,900.00	7,104.00	5,952.00	5,952.00	70.46	518.55	39.15	-1,653.79	-5,233.53	9,486.42	8,941.02	545.39	17.394	
11,000.00	7,104.00	5,952.00	5,952.00	71.94	518.55	39.15	-1,653.79	-5,233.53	9,585.27	9,039.72	545.55	17.570	
11,100.00	7,104.00	5,952.00	5,952.00	73.43	518.55	39.15	-1,653.79	-5,233.53	9,684.15	9,138.44	545.70	17.746	
11,200.00	7,104.00	5,952.00	5,952.00	74.92	518.55	39.15	-1,653.79	-5,233.53	9,783.05	9,237.19	545.86	17.922	
11,300.00	7,104.00	5,952.00	5,952.00	76.41	518.55	39.15	-1,653.79	-5,233.53	9,881.97	9,335.96	546.01	18.099	
11,400.00	7,104.00	5,952.00	5,952.00	77.91	518.55	39.15	-1,653.79	-5,233.53	9,980.92	9,434.76	546.16	18.275	
11,500.00	7,104.00	5,952.00	5,952.00	79.41	518.55	39.15	-1,653.79	-5,233.53	10,079.88	9,533.58	546.30	18.451	
11,600.00	7,104.00	5,952.00	5,952.00	80.92	518.55	39.15	-1,653.79	-5,233.53	10,178.87	9,632.42	546.45	18.627	
11,700.00	7,104.00	5,952.00	5,952.00	82.43	518.55	39.15	-1,653.79	-5,233.53	10,277.87	9,731.28	546.59	18.804	
11,800.00	7,104.00	5,952.00	5,952.00	83.94	518.55	39.15	-1,653.79	-5,233.53	10,376.90	9,830.17	546.73	18.980	
11,900.00	7,104.00	5,952.00	5,952.00	85.46	518.55	39.15	-1,653.79	-5,233.53	10,475.94	9,929.07	546.87	19.156	
12,000.00	7,104.00	5,952.00	5,952.00	86.98	518.55	39.15	-1,653.79	-5,233.53	10,575.00	10,027.99	547.01	19.332	
12,100.00	7,104.00	5,952.00	5,952.00	88.50	518.55	39.15	-1,653.79	-5,233.53	10,674.08	10,126.93	547.15	19.509	
12,200.00	7,104.00	5,952.00	5,952.00	90.03	518.55	39.15	-1,653.79	-5,233.53	10,773.18	10,225.90	547.28	19.685	
12,300.00	7,104.00	5,952.00	5,952.00	91.55	518.55	39.15	-1,653.79	-5,233.53	10,872.29	10,324.87	547.42	19.861	
12,400.00	7,104.00	5,952.00	5,952.00	93.08	518.55	39.15	-1,653.79	-5,233.53	10,971.42	10,423.87	547.55	20.037	
12,500.00	7,104.00	5,952.00	5,952.00	94.62	518.55	39.15	-1,653.79	-5,233.53	11,070.56	10,522.88	547.68	20.214	
12,600.00	7,104.00	5,952.00	5,952.00	96.15	518.55	39.15	-1,653.79	-5,233.53	11,169.72	10,621.91	547.81	20.390	
12,700.00	7,104.00	5,952.00	5,952.00	97.69	518.55	39.15	-1,653.79	-5,233.53	11,268.89	10,720.96	547.94	20.566	
12,800.00	7,104.00	5,952.00	5,952.00	99.23	518.55	39.15	-1,653.79	-5,233.53	11,368.08	10,820.02	548.06	20.742	
12,900.00	7,104.00	5,952.00	5,952.00	100.77	518.55	39.15	-1,653.79	-5,233.53	11,467.29	10,919.10	548.19	20.918	
13,000.00	7,104.00	5,952.00	5,952.00	102.31	518.55	39.15	-1,653.79	-5,233.53	11,566.50	11,018.19	548.31	21.095	
13,100.00	7,104.00	5,952.00	5,952.00	103.86	518.55	39.15	-1,653.79	-5,233.53	11,665.73	11,117.29	548.44	21.271	
13,200.00	7,104.00	5,952.00	5,952.00	105.40	518.55	39.15	-1,653.79	-5,233.53	11,764.97	11,216.41	548.56	21.447	
13,300.00	7,104.00	5,952.00	5,952.00	106.95	518.55	39.15	-1,653.79	-5,233.53	11,864.23	11,315.55	548.68	21.623	
13,400.00	7,104.00	5,952.00	5,952.00	108.50	518.55	39.15	-1,653.79	-5,233.53	11,963.50	11,414.69	548.81	21.799	
13,500.00	7,104.00	5,952.00	5,952.00	110.05	518.55	39.15	-1,653.79	-5,233.53	12,062.78	11,513.85	548.93	21.975	
13,600.00	7,104.00	5,952.00	5,952.00	111.60	518.55	39.15	-1,653.79	-5,233.53	12,162.07	11,613.02	549.05	22.151	
13,700.00	7,104.00	5,952.00	5,952.00	113.16	518.55	39.15	-1,653.79	-5,233.53	12,261.37	11,712.21	549.16	22.327	
13,800.00	7,104.00	5,952.00	5,952.00	114.71	518.55	39.15	-1,653.79	-5,233.53	12,360.69	11,811.41	549.28	22.503	
13,900.00	7,104.00	5,952.00	5,952.00	116.27	518.55	39.15	-1,653.79	-5,233.53	12,460.01	11,910.61	549.40	22.679	
14,000.00	7,104.00	5,952.00	5,952.00	117.83	518.55	39.15	-1,653.79	-5,233.53	12,559.35	12,009.83	549.52	22.855	
14,100.00	7,104.00	5,952.00	5,952.00	119.38	518.55	39.15	-1,653.79	-5,233.53	12,658.70	12,109.06	549.63	23.031	
14,200.00	7,104.00	5,952.00	5,952.00	120.94	518.55	39.15	-1,653.79	-5,233.53	12,758.05	12,208.30	549.75	23.207	
14,300.00	7,104.00	5,952.00	5,952.00	122.50	518.55	39.15	-1,653.79	-5,233.53	12,857.42	12,307.56	549.86	23.383	
14,400.00	7,104.00	5,952.00	5,952.00	124.07	518.55	39.15	-1,653.79	-5,233.53	12,956.80	12,406.82	549.98	23.559	
14,500.00	7,104.00	5,952.00	5,952.00	125.63	518.55	39.15	-1,653.79	-5,233.53	13,056.18	12,506.09	550.09	23.735	
14,600.00	7,104.00	5,952.00	5,952.00	127.19	518.55	39.15	-1,653.79	-5,233.53	13,155.58	12,605.37	550.21	23.910	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,700.00	7,104.00	5,952.00	5,952.00	128.76	518.55	39.15	-1,653.79	-5,233.53	13,254.98	12,704.66	550.32	24.086	
14,800.00	7,104.00	5,952.00	5,952.00	130.32	518.55	39.15	-1,653.79	-5,233.53	13,354.40	12,803.97	550.43	24.262	
14,900.00	7,104.00	5,952.00	5,952.00	131.89	518.55	39.15	-1,653.79	-5,233.53	13,453.82	12,903.28	550.54	24.437	
15,000.00	7,104.00	5,952.00	5,952.00	133.46	518.55	39.15	-1,653.79	-5,233.53	13,553.25	13,002.59	550.65	24.613	
15,100.00	7,104.00	5,952.00	5,952.00	135.02	518.55	39.15	-1,653.79	-5,233.53	13,652.69	13,101.92	550.77	24.789	
15,200.00	7,104.00	5,952.00	5,952.00	136.59	518.55	39.15	-1,653.79	-5,233.53	13,752.13	13,201.26	550.88	24.964	
15,300.00	7,104.00	5,952.00	5,952.00	138.16	518.55	39.15	-1,653.79	-5,233.53	13,851.59	13,300.60	550.99	25.140	
15,400.00	7,104.00	5,952.00	5,952.00	139.73	518.55	39.15	-1,653.79	-5,233.53	13,951.05	13,399.96	551.10	25.315	
15,500.00	7,104.00	5,952.00	5,952.00	141.30	518.55	39.15	-1,653.79	-5,233.53	14,050.52	13,499.32	551.21	25.490	
15,600.00	7,104.00	5,952.00	5,952.00	142.88	518.55	39.15	-1,653.79	-5,233.53	14,150.00	13,598.68	551.32	25.666	
15,700.00	7,104.00	5,952.00	5,952.00	144.45	518.55	39.15	-1,653.79	-5,233.53	14,249.49	13,698.06	551.43	25.841	
15,800.00	7,104.00	5,952.00	5,952.00	146.02	518.55	39.15	-1,653.79	-5,233.53	14,348.98	13,797.44	551.54	26.016	
15,900.00	7,104.00	5,952.00	5,952.00	147.60	518.55	39.15	-1,653.79	-5,233.53	14,448.48	13,896.83	551.64	26.192	
16,000.00	7,104.00	5,952.00	5,952.00	149.17	518.55	39.15	-1,653.79	-5,233.53	14,547.98	13,996.23	551.75	26.367	
16,100.00	7,104.00	5,952.00	5,952.00	150.74	518.55	39.15	-1,653.79	-5,233.53	14,647.50	14,095.64	551.86	26.542	
16,200.00	7,104.00	5,952.00	5,952.00	152.32	518.55	39.15	-1,653.79	-5,233.53	14,747.02	14,195.05	551.97	26.717	
16,300.00	7,104.00	5,952.00	5,952.00	153.89	518.55	39.15	-1,653.79	-5,233.53	14,846.54	14,294.46	552.08	26.892	
16,400.00	7,104.00	5,952.00	5,952.00	155.47	518.55	39.15	-1,653.79	-5,233.53	14,946.07	14,393.89	552.19	27.067	
16,500.00	7,104.00	5,952.00	5,952.00	157.05	518.55	39.15	-1,653.79	-5,233.53	15,045.61	14,493.32	552.29	27.242	
16,600.00	7,104.00	5,952.00	5,952.00	158.63	518.55	39.15	-1,653.79	-5,233.53	15,145.16	14,592.76	552.40	27.417	
16,700.00	7,104.00	5,952.00	5,952.00	160.20	518.55	39.15	-1,653.79	-5,233.53	15,244.71	14,692.20	552.51	27.592	
16,800.00	7,104.00	5,952.00	5,952.00	161.78	518.55	39.15	-1,653.79	-5,233.53	15,344.26	14,791.65	552.62	27.767	
16,900.00	7,104.00	5,952.00	5,952.00	163.36	518.55	39.15	-1,653.79	-5,233.53	15,443.83	14,891.10	552.72	27.941	
17,000.00	7,104.00	5,952.00	5,952.00	164.94	518.55	39.15	-1,653.79	-5,233.53	15,543.39	14,990.56	552.83	28.116	
17,100.00	7,104.00	5,952.00	5,952.00	166.52	518.55	39.15	-1,653.79	-5,233.53	15,642.97	15,090.03	552.94	28.291	
17,200.00	7,104.00	5,952.00	5,952.00	168.10	518.55	39.15	-1,653.79	-5,233.53	15,742.55	15,189.50	553.04	28.465	
17,300.00	7,104.00	5,952.00	5,952.00	169.68	518.55	39.15	-1,653.79	-5,233.53	15,842.13	15,288.98	553.15	28.640	
17,400.00	7,104.00	5,952.00	5,952.00	171.26	518.55	39.15	-1,653.79	-5,233.53	15,941.72	15,388.46	553.26	28.814	
17,500.00	7,104.00	5,952.00	5,952.00	172.84	518.55	39.15	-1,653.79	-5,233.53	16,041.31	15,487.95	553.37	28.989	
17,600.00	7,104.00	5,952.00	5,952.00	174.42	518.55	39.15	-1,653.79	-5,233.53	16,140.91	15,587.44	553.47	29.163	
17,700.00	7,104.00	5,952.00	5,952.00	176.00	518.55	39.15	-1,653.79	-5,233.53	16,240.52	15,686.94	553.58	29.337	
17,800.00	7,104.00	5,952.00	5,952.00	177.59	518.55	39.15	-1,653.79	-5,233.53	16,340.13	15,786.44	553.69	29.512	
17,900.00	7,104.00	5,952.00	5,952.00	179.17	518.55	39.15	-1,653.79	-5,233.53	16,439.74	15,885.95	553.79	29.686	
18,000.00	7,104.00	5,952.00	5,952.00	180.75	518.55	39.15	-1,653.79	-5,233.53	16,539.36	15,985.46	553.90	29.860	
18,100.00	7,104.00	5,952.00	5,952.00	182.33	518.55	39.15	-1,653.79	-5,233.53	16,638.98	16,084.98	554.01	30.034	
18,200.00	7,104.00	5,952.00	5,952.00	183.92	518.55	39.15	-1,653.79	-5,233.53	16,738.61	16,184.50	554.11	30.208	
18,300.00	7,104.00	5,952.00	5,952.00	185.50	518.55	39.15	-1,653.79	-5,233.53	16,838.24	16,284.02	554.22	30.382	
18,400.00	7,104.00	5,952.00	5,952.00	187.09	518.55	39.15	-1,653.79	-5,233.53	16,937.88	16,383.55	554.33	30.556	
18,500.00	7,104.00	5,952.00	5,952.00	188.67	518.55	39.15	-1,653.79	-5,233.53	17,037.52	16,483.09	554.43	30.730	
18,600.00	7,104.00	5,952.00	5,952.00	190.26	518.55	39.15	-1,653.79	-5,233.53	17,137.16	16,582.62	554.54	30.903	
18,700.00	7,104.00	5,952.00	5,952.00	191.84	518.55	39.15	-1,653.79	-5,233.53	17,236.81	16,682.17	554.65	31.077	
18,800.00	7,104.00	5,952.00	5,952.00	193.43	518.55	39.15	-1,653.79	-5,233.53	17,336.47	16,781.71	554.75	31.251	
18,900.00	7,104.00	5,952.00	5,952.00	195.01	518.55	39.15	-1,653.79	-5,233.53	17,436.12	16,881.26	554.86	31.424	
19,000.00	7,104.00	5,952.00	5,952.00	196.60	518.55	39.15	-1,653.79	-5,233.53	17,535.78	16,980.82	554.97	31.598	
19,100.00	7,104.00	5,952.00	5,952.00	198.18	518.55	39.15	-1,653.79	-5,233.53	17,635.45	17,080.37	555.07	31.771	
19,200.00	7,104.00	5,952.00	5,952.00	199.77	518.55	39.15	-1,653.79	-5,233.53	17,735.12	17,179.94	555.18	31.945	
19,300.00	7,104.00	5,952.00	5,952.00	201.36	518.55	39.15	-1,653.79	-5,233.53	17,834.79	17,279.50	555.29	32.118	
19,400.00	7,104.00	5,952.00	5,952.00	202.94	518.55	39.15	-1,653.79	-5,233.53	17,934.46	17,379.07	555.39	32.291	
19,500.00	7,104.00	5,952.00	5,952.00	204.53	518.55	39.15	-1,653.79	-5,233.53	18,034.14	17,478.64	555.50	32.465	
19,600.00	7,104.00	5,952.00	5,952.00	206.12	518.55	39.15	-1,653.79	-5,233.53	18,133.83	17,578.22	555.61	32.638	
19,700.00	7,104.00	5,952.00	5,952.00	207.70	518.55	39.15	-1,653.79	-5,233.53	18,233.51	17,677.80	555.72	32.811	
19,800.00	7,104.00	5,952.00	5,952.00	209.29	518.55	39.15	-1,653.79	-5,233.53	18,333.20	17,777.38	555.82	32.984	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 5952-A028Ua_INC-ONLY_PLANNED_5_DEG

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,900.00	7,104.00	5,952.00	5,952.00	210.88	518.55	39.15	-1,653.79	-5,233.53	18,432.90	17,876.96	555.93	33.157	
20,000.00	7,104.00	5,952.00	5,952.00	212.47	518.55	39.15	-1,653.79	-5,233.53	18,532.59	17,976.55	556.04	33.330	
20,100.00	7,104.00	5,952.00	5,952.00	214.05	518.55	39.15	-1,653.79	-5,233.53	18,632.29	18,076.14	556.15	33.502	
20,200.00	7,104.00	5,952.00	5,952.00	215.64	518.55	39.15	-1,653.79	-5,233.53	18,731.99	18,175.74	556.25	33.675	
20,215.00	7,104.00	5,952.00	5,952.00	215.88	518.55	39.15	-1,653.79	-5,233.53	18,746.95	18,190.68	556.27	33.701	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024B - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-113.06	-1,801.08	-4,231.33	4,598.93				
100.00	100.00	54.00	54.00	3.29	3.45	-113.06	-1,801.08	-4,231.33	4,598.70	4,591.96	6.74	682.521	
200.00	200.00	154.00	154.00	3.34	4.45	-113.06	-1,801.08	-4,231.33	4,598.70	4,590.91	7.79	590.488	
250.38	250.38	203.78	203.77	3.37	5.12	-113.05	-1,800.87	-4,231.33	4,598.62	4,590.13	8.49	541.725	
300.00	300.00	245.74	245.73	3.42	5.73	-113.06	-1,800.97	-4,231.33	4,598.66	4,589.52	9.15	502.695	
400.00	400.00	354.01	354.00	3.54	7.45	-113.06	-1,801.08	-4,231.33	4,598.70	4,587.71	10.99	418.359	
500.00	500.00	454.01	454.00	3.69	9.15	-113.06	-1,801.08	-4,231.33	4,598.70	4,585.86	12.84	358.267	
556.49	556.49	510.50	510.49	3.78	10.13	96.95	-1,800.81	-4,231.33	4,598.66	4,584.75	13.91	330.628	
600.00	599.98	553.30	553.29	3.86	10.88	96.96	-1,800.82	-4,231.33	4,598.81	4,584.07	14.74	312.081	
700.00	699.84	651.60	651.59	4.04	12.62	97.01	-1,800.90	-4,231.33	4,599.48	4,582.81	16.66	276.005	
800.00	799.45	749.66	749.65	4.26	14.38	97.09	-1,801.07	-4,231.33	4,600.62	4,581.99	18.63	246.920	
849.50	848.63	802.66	802.63	4.37	15.39	97.15	-1,801.08	-4,231.33	4,601.32	4,581.57	19.75	232.947	
900.00	898.77	852.79	852.77	4.49	16.35	88.97	-1,801.08	-4,231.33	4,601.65	4,580.82	20.84	220.846	
973.84	972.07	926.10	926.07	4.68	17.76	76.95	-1,801.08	-4,231.33	4,600.55	4,578.11	22.43	205.065	
1,000.00	998.03	952.06	952.03	4.74	18.26	76.99	-1,801.08	-4,231.33	4,599.83	4,576.82	23.00	199.956	
1,100.00	1,097.29	1,049.18	1,049.14	5.02	20.14	77.14	-1,800.30	-4,231.33	4,596.78	4,571.63	25.15	182.748	
1,200.00	1,196.54	1,144.08	1,144.04	5.30	21.98	77.28	-1,800.54	-4,231.33	4,594.16	4,566.88	27.28	168.405	
1,300.00	1,295.80	1,239.04	1,239.00	5.61	23.82	77.41	-1,801.01	-4,231.33	4,591.67	4,562.24	29.42	156.048	
1,400.00	1,395.06	1,349.13	1,349.06	5.92	26.03	77.58	-1,801.08	-4,231.33	4,589.02	4,557.08	31.95	143.650	
1,500.00	1,494.31	1,448.38	1,448.31	6.24	28.03	77.72	-1,801.08	-4,231.33	4,586.40	4,552.13	34.27	133.838	
1,600.00	1,593.57	1,545.23	1,545.15	6.57	29.99	77.88	-1,800.32	-4,231.33	4,583.53	4,546.98	36.55	125.397	
1,700.00	1,692.82	1,640.21	1,640.12	6.91	31.90	78.02	-1,800.58	-4,231.33	4,581.07	4,542.26	38.81	118.049	
1,800.00	1,792.08	1,746.21	1,746.08	7.25	34.05	78.17	-1,801.08	-4,231.33	4,578.72	4,537.43	41.29	110.888	
1,900.00	1,891.33	1,845.46	1,845.33	7.60	36.06	78.32	-1,801.08	-4,231.33	4,576.22	4,532.57	43.65	104.835	
2,000.00	1,990.59	1,944.72	1,944.59	7.95	38.08	78.46	-1,801.08	-4,231.33	4,573.75	4,527.73	46.02	99.392	
2,100.00	2,089.85	2,040.53	2,040.39	8.30	40.02	78.62	-1,800.07	-4,231.33	4,570.95	4,522.63	48.32	94.601	
2,200.00	2,189.10	2,134.43	2,134.29	8.66	41.93	78.76	-1,800.42	-4,231.33	4,568.68	4,518.10	50.58	90.319	
2,300.00	2,288.36	2,242.54	2,242.36	9.02	44.11	78.91	-1,801.08	-4,231.33	4,566.53	4,513.40	53.13	85.948	
2,400.00	2,387.61	2,341.80	2,341.61	9.39	46.06	79.06	-1,801.08	-4,231.33	4,564.19	4,508.74	55.45	82.319	
2,500.00	2,486.87	2,441.05	2,440.87	9.76	48.02	79.21	-1,801.08	-4,231.33	4,561.87	4,504.11	57.76	78.977	
2,600.00	2,586.12	2,537.51	2,537.32	10.13	49.91	79.36	-1,800.34	-4,231.33	4,559.34	4,499.31	60.03	75.955	
2,700.00	2,685.38	2,632.81	2,632.61	10.50	51.78	79.50	-1,800.63	-4,231.33	4,557.20	4,494.93	62.27	73.184	
2,800.00	2,784.63	2,738.86	2,738.63	10.87	53.96	79.66	-1,801.08	-4,231.33	4,555.13	4,490.31	64.82	70.278	
2,900.00	2,883.89	2,838.12	2,837.89	11.24	56.27	79.81	-1,801.08	-4,231.33	4,552.94	4,485.43	67.51	67.445	
3,000.00	2,983.15	2,937.37	2,937.15	11.62	58.59	79.96	-1,801.08	-4,231.33	4,550.78	4,480.59	70.20	64.828	
3,100.00	3,082.40	3,035.07	3,034.83	12.00	60.87	80.11	-1,800.20	-4,231.33	4,548.37	4,475.51	72.86	62.430	
3,200.00	3,181.66	3,130.94	3,130.70	12.38	63.11	80.26	-1,800.41	-4,231.33	4,546.35	4,470.88	75.47	60.239	
3,300.00	3,280.91	3,226.87	3,226.63	12.75	65.35	80.40	-1,800.83	-4,231.33	4,544.43	4,466.34	78.09	58.195	
3,400.00	3,380.17	3,334.57	3,334.17	13.13	67.94	80.56	-1,801.08	-4,231.33	4,542.48	4,461.42	81.06	56.040	
3,500.00	3,479.42	3,433.82	3,433.42	13.52	70.36	80.71	-1,801.08	-4,231.33	4,540.48	4,456.62	83.86	54.141	
3,600.00	3,578.68	3,533.08	3,532.68	13.90	72.79	80.86	-1,801.08	-4,231.33	4,538.52	4,451.85	86.67	52.364	
3,700.00	3,677.94	3,624.18	3,623.72	14.28	75.02	81.02	-1,798.99	-4,231.33	4,535.93	4,446.65	89.28	50.805	
3,800.00	3,777.19	3,715.14	3,714.67	14.66	77.24	81.15	-1,799.78	-4,231.33	4,534.30	4,442.41	91.89	49.346	
3,900.00	3,876.45	3,831.04	3,830.45	15.05	79.99	81.31	-1,801.08	-4,231.33	4,532.81	4,437.79	95.02	47.702	
4,000.00	3,975.70	3,930.29	3,929.70	15.43	82.10	81.46	-1,801.08	-4,231.33	4,530.98	4,433.46	97.52	46.463	
4,100.00	4,074.96	4,029.55	4,028.96	15.82	84.21	81.61	-1,801.08	-4,231.33	4,529.17	4,429.16	100.01	45.286	
4,200.00	4,174.21	4,125.42	4,124.82	16.20	86.25	81.77	-1,800.08	-4,231.33	4,527.09	4,424.66	102.44	44.195	
4,300.00	4,273.47	4,220.20	4,219.59	16.59	88.27	81.91	-1,800.47	-4,231.33	4,525.48	4,420.64	104.84	43.167	
4,400.00	4,372.73	4,327.39	4,326.73	16.97	90.54	82.07	-1,801.08	-4,231.33	4,523.95	4,416.45	107.50	42.083	
4,500.00	4,471.98	4,426.65	4,425.98	17.36	92.66	82.22	-1,801.08	-4,231.33	4,522.27	4,412.27	110.00	41.112	
4,600.00	4,571.24	4,525.90	4,525.24	17.75	94.77	82.37	-1,801.08	-4,231.33	4,520.63	4,408.13	112.50	40.185	
4,700.00	4,670.49	4,622.07	4,621.40	18.13	96.81	82.53	-1,800.07	-4,231.33	4,518.72	4,403.79	114.93	39.318	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024B - OH - OH-INC — **Offset Site Error:** 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,717.04	4,716.36	18.52	98.83	82.67	-1,800.45	-4,231.33	4,517.26	4,399.92	117.34	38.499	
4,900.00	4,869.00	4,823.74	4,823.00	18.91	101.10	82.83	-1,801.08	-4,231.33	4,515.89	4,395.89	119.99	37.635	
5,000.00	4,968.26	4,923.00	4,922.26	19.30	103.21	82.98	-1,801.08	-4,231.33	4,514.37	4,391.88	122.49	36.855	
5,100.00	5,067.51	5,022.26	5,021.51	19.69	105.32	83.13	-1,801.08	-4,231.33	4,512.89	4,387.90	124.99	36.106	
5,200.00	5,166.77	5,118.72	5,117.96	20.07	107.37	83.29	-1,800.06	-4,231.33	4,511.15	4,383.72	127.43	35.401	
5,300.00	5,266.03	5,213.87	5,213.11	20.46	109.40	83.43	-1,800.43	-4,231.33	4,509.84	4,380.00	129.84	34.733	
5,400.00	5,365.28	5,320.10	5,319.28	20.85	111.69	83.59	-1,801.08	-4,231.33	4,508.63	4,376.10	132.53	34.019	
5,500.00	5,464.54	5,419.35	5,418.54	21.24	114.06	83.74	-1,801.08	-4,231.33	4,507.28	4,371.99	135.29	33.316	
5,600.00	5,563.79	5,518.61	5,517.79	21.63	116.43	83.89	-1,801.08	-4,231.33	4,505.96	4,367.91	138.04	32.641	
5,700.00	5,663.05	5,615.34	5,614.51	22.02	118.73	84.06	-1,800.05	-4,231.33	4,504.39	4,363.65	140.74	32.005	
5,800.00	5,762.30	5,710.69	5,709.85	22.41	121.01	84.20	-1,800.41	-4,231.33	4,503.24	4,359.84	143.40	31.403	
5,900.00	5,861.56	5,816.53	5,815.56	22.80	123.53	84.35	-1,801.08	-4,231.33	4,502.19	4,355.87	146.32	30.770	
6,000.00	5,960.82	5,915.78	5,914.82	23.19	125.90	84.51	-1,801.08	-4,231.33	4,501.00	4,351.92	149.08	30.192	
6,100.00	6,060.07	6,015.04	6,014.07	23.58	128.27	84.66	-1,801.08	-4,231.33	4,499.84	4,348.00	151.84	29.635	
6,200.00	6,159.33	6,110.45	6,109.45	23.97	130.55	84.83	-1,799.27	-4,231.33	4,498.26	4,343.74	154.52	29.112	
6,300.00	6,258.58	6,203.40	6,202.39	24.36	132.78	84.97	-1,799.84	-4,231.33	4,497.32	4,340.19	157.13	28.622	
6,400.00	6,357.84	6,312.95	6,311.84	24.76	135.35	85.12	-1,801.08	-4,231.33	4,496.56	4,336.47	160.10	28.087	
6,500.00	6,457.09	6,412.21	6,411.09	25.15	137.20	85.27	-1,801.08	-4,231.33	4,495.53	4,333.20	162.34	27.692	
6,528.17	6,485.05	6,440.17	6,439.05	25.26	137.73	85.32	-1,801.08	-4,231.33	4,495.25	4,332.28	162.97	27.583	
6,534.74	6,491.58	6,446.69	6,445.58	25.28	137.85	90.00	-1,801.08	-4,231.33	4,495.22	4,332.10	163.12	27.558 CC	
6,550.00	6,506.71	6,461.82	6,460.71	25.34	138.13	100.08	-1,801.08	-4,231.33	4,495.40	4,331.93	163.46	27.501 ES	
6,600.00	6,556.11	6,511.23	6,510.11	25.54	139.05	123.41	-1,801.08	-4,231.33	4,498.46	4,333.88	164.58	27.333	
6,650.00	6,605.00	6,559.93	6,558.81	25.74	139.96	135.74	-1,799.99	-4,231.33	4,505.07	4,339.38	165.69	27.190	
6,700.00	6,653.07	6,606.25	6,605.13	25.93	140.82	142.60	-1,800.03	-4,231.33	4,515.70	4,348.95	166.75	27.081	
6,750.00	6,700.02	6,651.53	6,650.40	26.12	141.67	146.73	-1,800.15	-4,231.33	4,530.05	4,362.26	167.79	26.999	
6,800.00	6,745.56	6,695.46	6,694.33	26.31	142.49	149.33	-1,800.33	-4,231.33	4,548.03	4,379.23	168.80	26.943	
6,850.00	6,789.42	6,737.78	6,736.65	26.50	143.28	150.98	-1,800.57	-4,231.33	4,569.53	4,399.76	169.78	26.915	
6,900.00	6,831.32	6,778.23	6,777.10	26.69	144.03	151.95	-1,800.86	-4,231.33	4,594.43	4,423.71	170.71	26.913 SF	
6,950.00	6,871.01	6,826.15	6,825.01	26.87	144.89	152.45	-1,801.08	-4,231.33	4,622.52	4,450.77	171.75	26.915	
7,000.00	6,908.23	6,863.38	6,862.23	27.05	145.52	152.49	-1,801.08	-4,231.33	4,653.63	4,481.09	172.54	26.971	
7,050.00	6,942.77	6,897.91	6,896.77	27.23	146.11	152.10	-1,801.08	-4,231.33	4,687.61	4,514.32	173.29	27.051	
7,100.00	6,974.40	6,929.55	6,928.40	27.41	146.65	151.27	-1,801.08	-4,231.33	4,724.25	4,550.28	173.97	27.155	
7,150.00	7,002.93	6,958.08	6,956.93	27.60	147.13	149.92	-1,801.08	-4,231.33	4,763.33	4,588.74	174.60	27.282	
7,200.00	7,028.20	6,983.34	6,982.20	27.80	147.56	147.95	-1,801.08	-4,231.33	4,804.61	4,629.46	175.15	27.431	
7,250.00	7,050.03	7,005.17	7,004.03	28.00	147.93	145.13	-1,800.86	-4,231.33	4,847.78	4,672.15	175.64	27.601	
7,300.00	7,068.30	7,023.24	7,022.09	28.22	148.24	141.11	-1,800.86	-4,231.33	4,892.68	4,716.63	176.05	27.792	
7,350.00	7,082.89	7,037.67	7,036.52	28.45	148.48	135.30	-1,800.87	-4,231.33	4,938.97	4,762.58	176.39	28.001	
7,400.00	7,093.72	7,048.38	7,047.23	28.70	148.67	126.75	-1,800.87	-4,231.33	4,986.36	4,809.71	176.65	28.227	
7,450.00	7,100.71	7,055.29	7,054.15	28.96	148.78	114.07	-1,800.88	-4,231.33	5,034.58	4,857.73	176.84	28.469	
7,500.00	7,103.82	7,058.38	7,057.23	29.24	148.84	96.20	-1,800.88	-4,231.33	5,083.30	4,906.34	176.96	28.726	
7,515.00	7,104.00	7,058.55	7,057.40	29.32	148.84	89.97	-1,800.88	-4,231.33	5,097.97	4,921.00	176.98	28.806	
7,600.00	7,104.00	7,058.55	7,057.40	29.84	148.84	89.97	-1,800.88	-4,231.33	5,181.18	5,004.10	177.08	29.260	
7,700.00	7,104.00	7,058.55	7,057.40	30.51	148.84	89.97	-1,800.88	-4,231.33	5,279.14	5,101.95	177.19	29.794	
7,800.00	7,104.00	7,058.55	7,057.40	31.26	148.84	89.97	-1,800.88	-4,231.33	5,377.18	5,199.88	177.30	30.328	
7,900.00	7,104.00	7,058.55	7,057.40	32.07	148.84	89.97	-1,800.88	-4,231.33	5,475.29	5,297.88	177.41	30.862	
8,000.00	7,104.00	7,058.55	7,057.40	32.94	148.84	89.97	-1,800.88	-4,231.33	5,573.47	5,395.95	177.52	31.396	
8,100.00	7,104.00	7,058.55	7,057.40	33.86	148.84	89.97	-1,800.88	-4,231.33	5,671.71	5,494.08	177.63	31.930	
8,200.00	7,104.00	7,058.55	7,057.40	34.84	148.84	89.97	-1,800.88	-4,231.33	5,770.01	5,592.27	177.74	32.463	
8,300.00	7,104.00	7,058.55	7,057.40	35.86	148.84	89.97	-1,800.88	-4,231.33	5,868.37	5,690.52	177.85	32.997	
8,400.00	7,104.00	7,058.55	7,057.40	36.92	148.84	89.97	-1,800.88	-4,231.33	5,966.78	5,788.83	177.95	33.530	
8,500.00	7,104.00	7,058.55	7,057.41	38.02	148.84	89.97	-1,800.88	-4,231.33	6,065.24	5,887.19	178.06	34.064	
8,600.00	7,104.00	7,058.55	7,057.41	39.15	148.84	89.97	-1,800.88	-4,231.33	6,163.76	5,985.60	178.16	34.597	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024B - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	7,104.00	7,058.55	7,057.41	40.32	148.84	89.97	-1,800.88	-4,231.33	6,262.32	6,084.06	178.26	35.130	
8,800.00	7,104.00	7,058.55	7,057.41	41.52	148.84	89.97	-1,800.88	-4,231.33	6,360.93	6,182.56	178.37	35.662	
8,900.00	7,104.00	7,058.55	7,057.41	42.74	148.84	89.97	-1,800.88	-4,231.33	6,459.58	6,281.11	178.47	36.195	
9,000.00	7,104.00	7,058.55	7,057.41	43.99	148.84	89.97	-1,800.88	-4,231.33	6,558.27	6,379.70	178.57	36.727	
9,100.00	7,104.00	7,058.55	7,057.41	45.26	148.84	89.97	-1,800.88	-4,231.33	6,656.99	6,478.33	178.67	37.260	
9,200.00	7,104.00	7,058.55	7,057.41	46.55	148.84	89.97	-1,800.88	-4,231.33	6,755.76	6,577.00	178.76	37.792	
9,300.00	7,104.00	7,058.55	7,057.41	47.85	148.84	89.97	-1,800.88	-4,231.33	6,854.56	6,675.70	178.86	38.323	
9,400.00	7,104.00	7,058.55	7,057.41	49.18	148.84	89.97	-1,800.88	-4,231.33	6,953.40	6,774.44	178.96	38.855	
9,500.00	7,104.00	7,058.55	7,057.41	50.52	148.84	89.97	-1,800.88	-4,231.33	7,052.27	6,873.22	179.05	39.387	
9,600.00	7,104.00	7,058.56	7,057.41	51.88	148.84	89.97	-1,800.88	-4,231.33	7,151.17	6,972.02	179.15	39.918	
9,700.00	7,104.00	7,058.56	7,057.41	53.25	148.84	89.97	-1,800.88	-4,231.33	7,250.10	7,070.86	179.24	40.449	
9,800.00	7,104.00	7,058.56	7,057.41	54.63	148.84	89.97	-1,800.88	-4,231.33	7,349.06	7,169.73	179.34	40.979	
9,900.00	7,104.00	7,058.56	7,057.41	56.03	148.84	89.97	-1,800.88	-4,231.33	7,448.05	7,268.62	179.43	41.510	
10,000.00	7,104.00	7,058.56	7,057.41	57.43	148.84	89.97	-1,800.88	-4,231.33	7,547.06	7,367.54	179.52	42.040	
10,100.00	7,104.00	7,058.56	7,057.41	58.85	148.84	89.97	-1,800.88	-4,231.33	7,646.10	7,466.49	179.61	42.570	
10,200.00	7,104.00	7,058.56	7,057.41	60.27	148.84	89.97	-1,800.88	-4,231.33	7,745.17	7,565.47	179.70	43.100	
10,300.00	7,104.00	7,058.56	7,057.41	61.71	148.84	89.97	-1,800.88	-4,231.33	7,844.26	7,664.46	179.79	43.630	
10,400.00	7,104.00	7,058.56	7,057.41	63.15	148.84	89.97	-1,800.88	-4,231.33	7,943.37	7,763.49	179.88	44.159	
10,500.00	7,104.00	7,058.56	7,057.41	64.60	148.84	89.97	-1,800.88	-4,231.33	8,042.50	7,862.53	179.97	44.688	
10,600.00	7,104.00	7,058.56	7,057.41	66.05	148.84	89.97	-1,800.88	-4,231.33	8,141.66	7,961.60	180.06	45.217	
10,700.00	7,104.00	7,058.56	7,057.41	67.52	148.84	89.97	-1,800.88	-4,231.33	8,240.83	8,060.68	180.15	45.745	
10,800.00	7,104.00	7,058.56	7,057.41	68.99	148.84	89.97	-1,800.88	-4,231.33	8,340.03	8,159.79	180.23	46.273	
10,900.00	7,104.00	7,058.56	7,057.41	70.46	148.84	89.97	-1,800.88	-4,231.33	8,439.24	8,258.92	180.32	46.801	
11,000.00	7,104.00	7,058.56	7,057.41	71.94	148.84	89.97	-1,800.88	-4,231.33	8,538.47	8,358.06	180.41	47.329	
11,100.00	7,104.00	7,058.56	7,057.41	73.43	148.84	89.97	-1,800.88	-4,231.33	8,637.72	8,457.23	180.49	47.856	
11,200.00	7,104.00	7,058.56	7,057.41	74.92	148.84	89.97	-1,800.88	-4,231.33	8,736.99	8,556.41	180.58	48.383	
11,300.00	7,104.00	7,058.56	7,057.41	76.41	148.84	89.97	-1,800.88	-4,231.33	8,836.27	8,655.60	180.67	48.909	
11,400.00	7,104.00	7,058.56	7,057.41	77.91	148.84	89.97	-1,800.88	-4,231.33	8,935.57	8,754.82	180.75	49.435	
11,500.00	7,104.00	7,058.56	7,057.41	79.41	148.84	89.97	-1,800.88	-4,231.33	9,034.88	8,854.05	180.84	49.961	
11,600.00	7,104.00	7,058.56	7,057.41	80.92	148.84	89.97	-1,800.88	-4,231.33	9,134.21	8,953.29	180.92	50.487	
11,700.00	7,104.00	7,058.56	7,057.41	82.43	148.84	89.97	-1,800.88	-4,231.33	9,233.56	9,052.55	181.01	51.012	
11,800.00	7,104.00	7,058.56	7,057.42	83.94	148.84	89.97	-1,800.88	-4,231.33	9,332.92	9,151.83	181.09	51.537	
11,900.00	7,104.00	7,058.56	7,057.42	85.46	148.84	89.97	-1,800.88	-4,231.33	9,432.29	9,251.11	181.18	52.062	
12,000.00	7,104.00	7,058.56	7,057.42	86.98	148.84	89.97	-1,800.88	-4,231.33	9,531.67	9,350.41	181.26	52.586	
12,100.00	7,104.00	7,058.56	7,057.42	88.50	148.84	89.97	-1,800.88	-4,231.33	9,631.07	9,449.73	181.34	53.110	
12,200.00	7,104.00	7,058.56	7,057.42	90.03	148.84	89.97	-1,800.88	-4,231.33	9,730.48	9,549.05	181.43	53.633	
12,300.00	7,104.00	7,058.56	7,057.42	91.55	148.84	89.97	-1,800.88	-4,231.33	9,829.90	9,648.39	181.51	54.156	
12,400.00	7,104.00	7,058.56	7,057.42	93.08	148.84	89.97	-1,800.88	-4,231.33	9,929.34	9,747.74	181.59	54.679	
12,500.00	7,104.00	7,058.56	7,057.42	94.62	148.84	89.97	-1,800.88	-4,231.33	10,028.78	9,847.11	181.68	55.201	
12,600.00	7,104.00	7,058.56	7,057.42	96.15	148.84	89.97	-1,800.88	-4,231.33	10,128.24	9,946.48	181.76	55.723	
12,700.00	7,104.00	7,058.56	7,057.42	97.69	148.84	89.97	-1,800.88	-4,231.33	10,227.70	10,045.86	181.84	56.245	
12,800.00	7,104.00	7,058.57	7,057.42	99.23	148.84	89.97	-1,800.88	-4,231.33	10,327.18	10,145.26	181.93	56.766	
12,900.00	7,104.00	7,058.57	7,057.42	100.77	148.84	89.97	-1,800.88	-4,231.33	10,426.67	10,244.66	182.01	57.287	
13,000.00	7,104.00	7,058.57	7,057.42	102.31	148.84	89.97	-1,800.88	-4,231.33	10,526.16	10,344.07	182.09	57.807	
13,100.00	7,104.00	7,058.57	7,057.42	103.86	148.84	89.97	-1,800.88	-4,231.33	10,625.67	10,443.50	182.17	58.327	
13,200.00	7,104.00	7,058.57	7,057.42	105.40	148.84	89.97	-1,800.88	-4,231.33	10,725.18	10,542.93	182.26	58.847	
13,300.00	7,104.00	7,058.57	7,057.42	106.95	148.84	89.97	-1,800.88	-4,231.33	10,824.71	10,642.37	182.34	59.366	
13,400.00	7,104.00	7,058.57	7,057.42	108.50	148.84	89.97	-1,800.88	-4,231.33	10,924.24	10,741.82	182.42	59.884	
13,500.00	7,104.00	7,058.57	7,057.42	110.05	148.84	89.97	-1,800.88	-4,231.33	11,023.78	10,841.28	182.50	60.403	
13,600.00	7,104.00	7,058.57	7,057.42	111.60	148.84	89.97	-1,800.88	-4,231.33	11,123.33	10,940.74	182.59	60.921	
13,700.00	7,104.00	7,058.57	7,057.42	113.16	148.84	89.97	-1,800.88	-4,231.33	11,222.89	11,040.22	182.67	61.438	
13,800.00	7,104.00	7,058.57	7,057.42	114.71	148.84	89.97	-1,800.88	-4,231.33	11,322.45	11,139.70	182.75	61.955	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024B - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	7,058.57	7,057.42	116.27	148.84	89.97	-1,800.88	-4,231.33	11,422.03	11,239.19	182.84	62.471	
14,000.00	7,104.00	7,058.57	7,057.42	117.83	148.84	89.97	-1,800.88	-4,231.33	11,521.61	11,338.69	182.92	62.987	
14,100.00	7,104.00	7,058.57	7,057.42	119.38	148.84	89.97	-1,800.88	-4,231.33	11,621.19	11,438.19	183.00	63.503	
14,200.00	7,104.00	7,058.57	7,057.42	120.94	148.84	89.97	-1,800.88	-4,231.33	11,720.79	11,537.70	183.09	64.018	
14,300.00	7,104.00	7,058.57	7,057.42	122.50	148.84	89.97	-1,800.88	-4,231.33	11,820.39	11,637.22	183.17	64.533	
14,400.00	7,104.00	7,058.57	7,057.42	124.07	148.84	89.97	-1,800.88	-4,231.33	11,920.00	11,736.75	183.25	65.047	
14,500.00	7,104.00	7,058.57	7,057.42	125.63	148.84	89.97	-1,800.88	-4,231.33	12,019.61	11,836.28	183.34	65.561	
14,600.00	7,104.00	7,058.57	7,057.42	127.19	148.84	89.97	-1,800.88	-4,231.33	12,119.23	11,935.81	183.42	66.074	
14,700.00	7,104.00	7,058.57	7,057.42	128.76	148.84	89.97	-1,800.88	-4,231.33	12,218.86	12,035.36	183.50	66.587	
14,800.00	7,104.00	7,058.57	7,057.42	130.32	148.84	89.97	-1,800.88	-4,231.33	12,318.49	12,134.91	183.59	67.099	
14,900.00	7,104.00	7,058.57	7,057.42	131.89	148.84	89.97	-1,800.88	-4,231.33	12,418.13	12,234.46	183.67	67.611	
15,000.00	7,104.00	7,058.57	7,057.42	133.46	148.84	89.97	-1,800.88	-4,231.33	12,517.78	12,334.02	183.75	68.122	
15,100.00	7,104.00	7,058.57	7,057.43	135.02	148.84	89.97	-1,800.88	-4,231.33	12,617.43	12,433.59	183.84	68.633	
15,200.00	7,104.00	7,058.57	7,057.43	136.59	148.84	89.97	-1,800.88	-4,231.33	12,717.08	12,533.16	183.92	69.144	
15,300.00	7,104.00	7,058.57	7,057.43	138.16	148.84	89.97	-1,800.88	-4,231.33	12,816.74	12,632.74	184.01	69.653	
15,400.00	7,104.00	7,058.57	7,057.43	139.73	148.84	89.97	-1,800.88	-4,231.33	12,916.41	12,732.32	184.09	70.163	
15,500.00	7,104.00	7,058.57	7,057.43	141.30	148.84	89.97	-1,800.88	-4,231.33	13,016.08	12,831.91	184.18	70.672	
15,600.00	7,104.00	7,058.57	7,057.43	142.88	148.84	89.97	-1,800.88	-4,231.33	13,115.76	12,931.50	184.26	71.180	
15,700.00	7,104.00	7,058.57	7,057.43	144.45	148.84	89.97	-1,800.88	-4,231.33	13,215.44	13,031.09	184.35	71.688	
15,800.00	7,104.00	7,058.57	7,057.43	146.02	148.84	89.97	-1,800.88	-4,231.33	13,315.13	13,130.69	184.43	72.195	
15,900.00	7,104.00	7,058.57	7,057.43	147.60	148.84	89.97	-1,800.88	-4,231.33	13,414.82	13,230.30	184.52	72.702	
16,000.00	7,104.00	7,058.57	7,057.43	149.17	148.84	89.97	-1,800.88	-4,231.33	13,514.51	13,329.91	184.60	73.208	
16,100.00	7,104.00	7,058.58	7,057.43	150.74	148.84	89.97	-1,800.88	-4,231.33	13,614.21	13,429.52	184.69	73.714	
16,200.00	7,104.00	7,058.58	7,057.43	152.32	148.84	89.97	-1,800.88	-4,231.33	13,713.92	13,529.14	184.78	74.219	
16,300.00	7,104.00	7,058.58	7,057.43	153.89	148.84	89.97	-1,800.88	-4,231.33	13,813.63	13,628.76	184.86	74.724	
16,400.00	7,104.00	7,058.58	7,057.43	155.47	148.84	89.97	-1,800.88	-4,231.33	13,913.34	13,728.39	184.95	75.228	
16,500.00	7,104.00	7,058.58	7,057.43	157.05	148.84	89.97	-1,800.88	-4,231.33	14,013.06	13,828.02	185.03	75.732	
16,600.00	7,104.00	7,058.58	7,057.43	158.63	148.84	89.97	-1,800.88	-4,231.33	14,112.78	13,927.65	185.12	76.235	
16,700.00	7,104.00	7,058.58	7,057.43	160.20	148.84	89.97	-1,800.88	-4,231.33	14,212.50	14,027.29	185.21	76.738	
16,800.00	7,104.00	7,058.58	7,057.43	161.78	148.84	89.97	-1,800.88	-4,231.33	14,312.23	14,126.93	185.30	77.240	
16,900.00	7,104.00	7,058.58	7,057.43	163.36	148.84	89.97	-1,800.88	-4,231.33	14,411.96	14,226.58	185.38	77.741	
17,000.00	7,104.00	7,058.58	7,057.43	164.94	148.84	89.97	-1,800.88	-4,231.33	14,511.70	14,326.23	185.47	78.242	
17,100.00	7,104.00	7,058.58	7,057.43	166.52	148.84	89.97	-1,800.88	-4,231.33	14,611.44	14,425.88	185.56	78.743	
17,200.00	7,104.00	7,058.58	7,057.43	168.10	148.84	89.97	-1,800.88	-4,231.33	14,711.18	14,525.53	185.65	79.243	
17,300.00	7,104.00	7,058.58	7,057.43	169.68	148.84	89.97	-1,800.88	-4,231.33	14,810.93	14,625.19	185.74	79.742	
17,400.00	7,104.00	7,058.58	7,057.43	171.26	148.84	89.97	-1,800.88	-4,231.33	14,910.68	14,724.85	185.82	80.241	
17,500.00	7,104.00	7,058.58	7,057.43	172.84	148.84	89.97	-1,800.88	-4,231.33	15,010.43	14,824.52	185.91	80.739	
17,600.00	7,104.00	7,058.58	7,057.43	174.42	148.84	89.97	-1,800.88	-4,231.33	15,110.19	14,924.19	186.00	81.237	
17,700.00	7,104.00	7,058.58	7,057.43	176.00	148.84	89.97	-1,800.88	-4,231.33	15,209.95	15,023.86	186.09	81.734	
17,800.00	7,104.00	7,058.58	7,057.43	177.59	148.84	89.97	-1,800.88	-4,231.33	15,309.71	15,123.53	186.18	82.230	
17,900.00	7,104.00	7,058.58	7,057.43	179.17	148.84	89.97	-1,800.88	-4,231.33	15,409.48	15,223.21	186.27	82.726	
18,000.00	7,104.00	7,058.58	7,057.43	180.75	148.84	89.97	-1,800.88	-4,231.33	15,509.25	15,322.88	186.36	83.222	
18,100.00	7,104.00	7,058.58	7,057.43	182.33	148.84	89.97	-1,800.88	-4,231.33	15,609.02	15,422.57	186.45	83.716	
18,200.00	7,104.00	7,058.58	7,057.43	183.92	148.84	89.97	-1,800.88	-4,231.33	15,708.79	15,522.25	186.54	84.211	
18,300.00	7,104.00	7,058.58	7,057.44	185.50	148.84	89.97	-1,800.88	-4,231.33	15,808.57	15,621.94	186.63	84.704	
18,400.00	7,104.00	7,058.58	7,057.44	187.09	148.84	89.97	-1,800.88	-4,231.33	15,908.35	15,721.63	186.72	85.197	
18,500.00	7,104.00	7,058.58	7,057.44	188.67	148.84	89.97	-1,800.88	-4,231.33	16,008.13	15,821.32	186.81	85.690	
18,600.00	7,104.00	7,058.58	7,057.44	190.26	148.84	89.97	-1,800.88	-4,231.33	16,107.92	15,921.01	186.91	86.182	
18,700.00	7,104.00	7,058.58	7,057.44	191.84	148.84	89.97	-1,800.88	-4,231.33	16,207.71	16,020.71	187.00	86.673	
18,800.00	7,104.00	7,058.58	7,057.44	193.43	148.84	89.97	-1,800.88	-4,231.33	16,307.50	16,120.41	187.09	87.164	
18,900.00	7,104.00	7,058.58	7,057.44	195.01	148.84	89.97	-1,800.88	-4,231.33	16,407.29	16,220.11	187.18	87.654	
19,000.00	7,104.00	7,058.58	7,057.44	196.60	148.84	89.97	-1,800.88	-4,231.33	16,507.09	16,319.82	187.27	88.144	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #024B - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 136-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	7,058.58	7,057.44	198.18	148.84	89.97	-1,800.88	-4,231.33	16,606.89	16,419.52	187.37	88.633	
19,200.00	7,104.00	7,058.58	7,057.44	199.77	148.84	89.97	-1,800.88	-4,231.33	16,706.69	16,519.23	187.46	89.121	
19,300.00	7,104.00	7,058.58	7,057.44	201.36	148.84	89.97	-1,800.88	-4,231.33	16,806.49	16,618.94	187.55	89.609	
19,400.00	7,104.00	7,058.59	7,057.44	202.94	148.84	89.97	-1,800.88	-4,231.33	16,906.30	16,718.65	187.65	90.096	
19,500.00	7,104.00	7,058.59	7,057.44	204.53	148.84	89.97	-1,800.88	-4,231.33	17,006.11	16,818.37	187.74	90.583	
19,600.00	7,104.00	7,058.59	7,057.44	206.12	148.84	89.97	-1,800.88	-4,231.33	17,105.92	16,918.08	187.84	91.069	
19,700.00	7,104.00	7,058.59	7,057.44	207.70	148.84	89.97	-1,800.88	-4,231.33	17,205.73	17,017.80	187.93	91.554	
19,800.00	7,104.00	7,058.59	7,057.44	209.29	148.84	89.97	-1,800.88	-4,231.33	17,305.54	17,117.52	188.02	92.039	
19,900.00	7,104.00	7,058.59	7,057.44	210.88	148.84	89.97	-1,800.88	-4,231.33	17,405.36	17,217.24	188.12	92.523	
20,000.00	7,104.00	7,058.59	7,057.44	212.47	148.84	89.97	-1,800.88	-4,231.33	17,505.18	17,316.97	188.21	93.007	
20,100.00	7,104.00	7,058.59	7,057.44	214.05	148.84	89.97	-1,800.88	-4,231.33	17,605.00	17,416.69	188.31	93.490	
20,200.00	7,104.00	7,058.59	7,057.44	215.64	148.84	89.97	-1,800.88	-4,231.33	17,704.82	17,516.42	188.40	93.972	
20,215.00	7,104.00	7,058.59	7,057.44	215.88	148.84	89.97	-1,800.88	-4,231.33	17,719.80	17,531.38	188.42	94.045	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-126.40	-1,775.81	-2,408.25	2,992.98				
100.00	100.00	31.00	31.00	3.29	3.33	-126.40	-1,775.81	-2,408.25	2,992.18	2,985.57	6.62	452.314	
200.00	200.00	131.00	131.00	3.34	4.02	-126.40	-1,775.81	-2,408.25	2,992.18	2,984.83	7.35	406.862	
300.00	300.00	231.00	231.00	3.42	5.24	-126.40	-1,775.81	-2,408.25	2,992.18	2,983.52	8.66	345.332	
400.00	400.00	331.00	331.00	3.54	6.72	-126.40	-1,775.81	-2,408.25	2,992.18	2,981.92	10.26	291.556	
500.00	500.00	431.00	431.00	3.69	8.34	-126.40	-1,775.81	-2,408.25	2,992.18	2,980.15	12.03	248.698	
600.00	599.98	530.98	530.98	3.86	10.03	83.63	-1,775.81	-2,408.25	2,991.99	2,978.11	13.88	215.541	
700.00	699.84	629.46	629.46	4.04	11.72	83.74	-1,775.59	-2,408.25	2,991.28	2,975.52	15.76	189.819	
800.00	799.45	727.48	727.48	4.26	13.42	83.92	-1,775.71	-2,408.25	2,990.42	2,972.74	17.67	169.195	
849.50	848.63	775.89	775.88	4.37	14.27	84.04	-1,775.80	-2,408.25	2,989.88	2,971.24	18.64	160.441	
900.00	898.77	829.78	829.77	4.49	15.23	75.89	-1,775.81	-2,408.25	2,988.82	2,969.10	19.72	151.542	
973.84	972.07	903.08	903.07	4.68	16.55	63.91	-1,775.81	-2,408.25	2,985.74	2,964.51	21.23	140.636	
1,000.00	998.03	929.04	929.03	4.74	17.02	63.96	-1,775.81	-2,408.25	2,984.34	2,962.57	21.77	137.098	
1,100.00	1,097.29	1,027.89	1,027.87	5.02	18.81	64.18	-1,775.30	-2,408.25	2,978.68	2,954.86	23.83	125.008	
1,200.00	1,196.54	1,124.07	1,124.06	5.30	20.56	64.38	-1,775.41	-2,408.25	2,973.43	2,947.57	25.86	114.983	
1,300.00	1,295.80	1,220.30	1,220.28	5.61	22.31	64.58	-1,775.70	-2,408.25	2,968.32	2,940.41	27.91	106.357	
1,400.00	1,395.06	1,326.09	1,326.06	5.92	24.27	64.81	-1,775.81	-2,408.25	2,963.15	2,932.96	30.18	98.171	
1,500.00	1,494.31	1,425.34	1,425.31	6.24	26.13	65.02	-1,775.81	-2,408.25	2,957.95	2,925.59	32.36	91.403	
1,600.00	1,593.57	1,523.76	1,523.73	6.57	27.98	65.24	-1,775.28	-2,408.25	2,952.50	2,917.96	34.53	85.495	
1,700.00	1,692.82	1,620.20	1,620.17	6.91	29.79	65.44	-1,775.41	-2,408.25	2,947.46	2,910.78	36.68	80.361	
1,800.00	1,792.08	1,716.68	1,716.65	7.25	31.61	65.65	-1,775.71	-2,408.25	2,942.56	2,903.73	38.83	75.781	
1,900.00	1,891.33	1,822.39	1,822.33	7.60	33.68	65.87	-1,775.81	-2,408.25	2,937.58	2,896.33	41.25	71.216	
2,000.00	1,990.59	1,921.65	1,921.59	7.95	35.66	66.09	-1,775.81	-2,408.25	2,932.59	2,889.02	43.57	67.303	
2,100.00	2,089.85	2,018.74	2,018.68	8.30	37.59	66.31	-1,775.09	-2,408.25	2,927.25	2,881.39	45.86	63.831	
2,200.00	2,189.10	2,113.70	2,113.63	8.66	39.48	66.52	-1,775.35	-2,408.25	2,922.50	2,874.39	48.11	60.750	
2,300.00	2,288.36	2,219.47	2,219.36	9.02	41.60	66.74	-1,775.81	-2,408.25	2,917.88	2,867.30	50.59	57.680	
2,400.00	2,387.61	2,318.73	2,318.61	9.39	43.66	66.96	-1,775.81	-2,408.25	2,913.07	2,860.06	53.00	54.960	
2,500.00	2,486.87	2,417.98	2,417.87	9.76	45.71	67.18	-1,775.81	-2,408.25	2,908.29	2,852.87	55.42	52.475	
2,600.00	2,586.12	2,511.76	2,511.64	10.13	47.66	67.40	-1,775.01	-2,408.25	2,903.13	2,845.40	57.73	50.288	
2,700.00	2,685.38	2,605.41	2,605.28	10.50	49.60	67.60	-1,775.51	-2,408.25	2,898.73	2,838.69	60.04	48.282	
2,800.00	2,784.63	2,715.82	2,715.63	10.87	51.99	67.84	-1,775.81	-2,408.25	2,894.22	2,831.42	62.80	46.084	
2,900.00	2,883.89	2,815.07	2,814.89	11.24	54.20	68.06	-1,775.81	-2,408.25	2,889.62	2,824.24	65.38	44.198	
3,000.00	2,983.15	2,912.32	2,912.13	11.62	56.36	68.30	-1,774.82	-2,408.25	2,884.55	2,816.64	67.91	42.474	
3,100.00	3,082.40	3,006.38	3,006.19	12.00	58.45	68.51	-1,775.11	-2,408.25	2,880.20	2,809.82	70.38	40.925	
3,200.00	3,181.66	3,112.95	3,112.66	12.38	60.82	68.73	-1,775.81	-2,408.25	2,876.09	2,802.96	73.13	39.331	
3,300.00	3,280.91	3,212.21	3,211.91	12.75	63.20	68.96	-1,775.81	-2,408.25	2,871.66	2,795.78	75.88	37.845	
3,400.00	3,380.17	3,311.33	3,311.02	13.13	65.57	69.21	-1,774.50	-2,408.25	2,866.62	2,787.99	78.63	36.456	
3,500.00	3,479.42	3,402.07	3,401.76	13.52	67.74	69.41	-1,774.78	-2,408.25	2,862.45	2,781.26	81.18	35.259	
3,600.00	3,578.68	3,510.11	3,509.68	13.90	70.33	69.64	-1,775.81	-2,408.25	2,858.66	2,774.51	84.15	33.970	
3,700.00	3,677.94	3,609.37	3,608.94	14.28	72.74	69.87	-1,775.81	-2,408.25	2,854.42	2,767.48	86.94	32.833	
3,800.00	3,777.19	3,702.60	3,702.15	14.66	75.00	70.10	-1,774.97	-2,408.25	2,849.81	2,760.23	89.58	31.813	
3,900.00	3,876.45	3,807.98	3,807.45	15.05	77.55	70.32	-1,775.81	-2,408.25	2,846.07	2,753.56	92.51	30.765	
4,000.00	3,975.70	3,907.23	3,906.70	15.43	79.89	70.55	-1,775.81	-2,408.25	2,841.97	2,746.73	95.24	29.840	
4,100.00	4,074.96	4,006.49	4,005.96	15.82	82.24	70.78	-1,775.81	-2,408.25	2,837.91	2,739.94	97.97	28.967	
4,200.00	4,174.21	4,101.61	4,101.06	16.20	84.49	71.03	-1,774.30	-2,408.25	2,833.18	2,732.57	100.60	28.162	
4,300.00	4,273.47	4,194.29	4,193.72	16.59	86.68	71.24	-1,774.81	-2,408.25	2,829.48	2,726.30	103.18	27.423	
4,400.00	4,372.73	4,304.40	4,303.73	16.97	89.25	71.48	-1,775.81	-2,408.25	2,826.01	2,719.89	106.13	26.628	
4,500.00	4,471.98	4,403.65	4,402.98	17.36	91.36	71.71	-1,775.81	-2,408.25	2,822.14	2,713.52	108.62	25.981	
4,600.00	4,571.24	4,502.91	4,502.24	17.75	93.46	71.94	-1,775.81	-2,408.25	2,818.32	2,707.20	111.12	25.363	
4,700.00	4,670.49	4,598.49	4,597.80	18.13	95.50	72.19	-1,774.57	-2,408.25	2,813.97	2,700.43	113.54	24.784	
4,800.00	4,769.75	4,692.46	4,691.76	18.52	97.49	72.41	-1,775.03	-2,408.25	2,810.47	2,694.55	115.92	24.244	
4,900.00	4,869.00	4,800.75	4,800.00	18.91	99.73	72.65	-1,775.81	-2,408.25	2,807.13	2,688.59	118.54	23.680	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,900.01	4,899.26	19.30	101.51	72.88	-1,775.81	-2,408.25	2,803.50	2,682.78	120.72	23.224	
5,100.00	5,067.51	4,999.26	4,998.51	19.69	103.30	73.12	-1,775.81	-2,408.25	2,799.92	2,677.02	122.89	22.783	
5,200.00	5,166.77	5,095.92	5,095.17	20.07	105.04	73.37	-1,775.11	-2,408.25	2,796.07	2,671.05	125.02	22.365	
5,300.00	5,266.03	5,192.00	5,191.24	20.46	106.77	73.59	-1,775.44	-2,408.25	2,792.73	2,665.59	127.14	21.966	
5,400.00	5,365.28	5,297.05	5,296.28	20.85	108.76	73.83	-1,775.81	-2,408.25	2,789.45	2,659.94	129.52	21.538	
5,500.00	5,464.54	5,396.30	5,395.54	21.24	110.78	74.07	-1,775.81	-2,408.25	2,786.06	2,654.13	131.93	21.117	
5,600.00	5,563.79	5,495.35	5,494.59	21.63	112.81	74.32	-1,775.57	-2,408.25	2,782.62	2,648.27	134.35	20.712	
5,700.00	5,663.05	5,593.47	5,592.70	22.02	114.81	74.55	-1,775.64	-2,408.25	2,779.36	2,642.62	136.74	20.325	
5,800.00	5,762.30	5,691.61	5,690.84	22.41	116.82	74.79	-1,775.80	-2,408.25	2,776.19	2,637.05	139.14	19.952	
5,900.00	5,861.56	5,793.39	5,792.56	22.80	119.37	75.03	-1,775.81	-2,408.25	2,773.00	2,630.92	142.08	19.517	
6,000.00	5,960.82	5,892.64	5,891.82	23.19	121.89	75.28	-1,775.81	-2,408.25	2,769.86	2,624.87	144.99	19.104	
6,100.00	6,060.07	5,988.79	5,987.94	23.58	124.32	75.54	-1,774.31	-2,408.25	2,766.16	2,618.34	147.82	18.713	
6,200.00	6,159.33	6,082.43	6,081.57	23.97	126.70	75.76	-1,774.81	-2,408.25	2,763.33	2,612.75	150.58	18.351	
6,300.00	6,258.58	6,190.60	6,189.58	24.36	129.46	76.00	-1,775.81	-2,408.25	2,760.73	2,606.99	153.74	17.957	
6,400.00	6,357.84	6,289.86	6,288.84	24.76	132.17	76.25	-1,775.81	-2,408.25	2,757.79	2,600.95	156.84	17.584	
6,500.00	6,457.09	6,388.99	6,387.94	25.15	134.87	76.52	-1,774.21	-2,408.25	2,754.27	2,594.34	159.93	17.222	
6,528.17	6,485.05	6,414.93	6,413.88	25.26	135.58	76.59	-1,774.24	-2,408.25	2,753.48	2,592.73	160.75	17.129	
6,546.91	6,503.65	6,432.18	6,431.13	25.33	136.05	89.44	-1,774.29	-2,408.25	2,753.22	2,591.93	161.29	17.070 CC	
6,550.00	6,506.71	6,435.03	6,433.98	25.34	136.13	91.38	-1,774.30	-2,408.25	2,753.23	2,591.85	161.38	17.060 ES	
6,600.00	6,556.11	6,480.91	6,479.86	25.54	137.38	114.75	-1,774.53	-2,408.25	2,755.31	2,592.47	162.83	16.921	
6,650.00	6,605.00	6,526.36	6,525.29	25.74	138.61	127.08	-1,774.92	-2,408.25	2,761.07	2,596.79	164.28	16.807	
6,700.00	6,653.07	6,571.09	6,570.01	25.93	139.83	133.93	-1,775.44	-2,408.25	2,770.49	2,604.79	165.70	16.720	
6,750.00	6,700.02	6,632.26	6,631.02	26.12	141.51	138.11	-1,775.81	-2,408.25	2,783.36	2,615.79	167.58	16.609	
6,800.00	6,745.56	6,677.81	6,676.56	26.31	142.76	140.67	-1,775.81	-2,408.25	2,799.63	2,630.60	169.03	16.562	
6,850.00	6,789.42	6,721.67	6,720.42	26.50	143.97	142.25	-1,775.81	-2,408.25	2,819.32	2,648.88	170.44	16.541 SF	
6,900.00	6,831.32	6,763.57	6,762.32	26.69	145.12	143.13	-1,775.81	-2,408.25	2,842.31	2,670.52	171.79	16.545	
6,950.00	6,871.01	6,803.25	6,802.01	26.87	146.21	143.45	-1,775.81	-2,408.25	2,868.48	2,695.41	173.07	16.574	
7,000.00	6,908.23	6,838.72	6,837.43	27.05	147.19	143.31	-1,773.91	-2,408.25	2,897.01	2,722.78	174.23	16.627	
7,050.00	6,942.77	6,870.70	6,869.41	27.23	148.06	142.64	-1,774.01	-2,408.25	2,929.12	2,753.83	175.29	16.710	
7,100.00	6,974.40	6,900.01	6,898.72	27.41	148.87	141.47	-1,774.17	-2,408.25	2,963.92	2,787.65	176.27	16.815	
7,150.00	7,002.93	6,926.47	6,925.17	27.60	149.60	139.72	-1,774.37	-2,408.25	3,001.20	2,824.04	177.16	16.941	
7,200.00	7,028.20	6,949.91	6,948.61	27.80	150.24	137.29	-1,774.60	-2,408.25	3,040.72	2,862.77	177.95	17.087	
7,250.00	7,050.03	6,970.18	6,968.87	28.00	150.80	134.00	-1,774.83	-2,408.25	3,082.23	2,903.58	178.65	17.253	
7,300.00	7,068.30	6,987.15	6,985.83	28.22	151.27	129.58	-1,775.04	-2,408.25	3,125.48	2,946.23	179.25	17.437	
7,350.00	7,082.89	7,000.71	6,999.39	28.45	151.64	123.69	-1,775.23	-2,408.25	3,170.19	2,990.44	179.74	17.637	
7,400.00	7,093.72	7,010.77	7,009.45	28.70	151.92	115.88	-1,775.39	-2,408.25	3,216.07	3,035.93	180.13	17.854	
7,450.00	7,100.71	7,017.27	7,015.95	28.96	152.09	105.74	-1,775.49	-2,408.25	3,262.83	3,082.42	180.41	18.085	
7,500.00	7,103.82	7,020.18	7,018.85	29.24	152.17	93.22	-1,775.53	-2,408.25	3,310.18	3,129.59	180.58	18.330	
7,515.00	7,104.00	7,020.34	7,019.01	29.32	152.18	89.10	-1,775.54	-2,408.25	3,324.45	3,143.84	180.61	18.406	
7,600.00	7,104.00	7,020.35	7,019.02	29.84	152.18	89.10	-1,775.54	-2,408.25	3,405.49	3,224.73	180.76	18.840	
7,700.00	7,104.00	7,020.35	7,019.03	30.51	152.18	89.10	-1,775.54	-2,408.25	3,501.07	3,320.15	180.92	19.351	
7,800.00	7,104.00	7,020.36	7,019.04	31.26	152.18	89.10	-1,775.54	-2,408.25	3,596.90	3,415.81	181.08	19.863	
7,900.00	7,104.00	7,020.37	7,019.04	32.07	152.18	89.10	-1,775.54	-2,408.25	3,692.94	3,511.70	181.24	20.376	
8,000.00	7,104.00	7,020.38	7,019.05	32.94	152.18	89.10	-1,775.54	-2,408.25	3,789.19	3,607.79	181.39	20.889	
8,100.00	7,104.00	7,020.39	7,019.06	33.86	152.18	89.10	-1,775.54	-2,408.25	3,885.63	3,704.08	181.54	21.403	
8,200.00	7,104.00	7,020.39	7,019.07	34.84	152.18	89.10	-1,775.54	-2,408.25	3,982.24	3,800.55	181.69	21.918	
8,300.00	7,104.00	7,020.40	7,019.08	35.86	152.18	89.10	-1,775.54	-2,408.25	4,079.02	3,897.19	181.83	22.433	
8,400.00	7,104.00	7,020.41	7,019.08	36.92	152.18	89.10	-1,775.54	-2,408.25	4,175.95	3,993.98	181.97	22.949	
8,500.00	7,104.00	7,020.42	7,019.09	38.02	152.18	89.10	-1,775.54	-2,408.25	4,273.02	4,090.92	182.10	23.465	
8,600.00	7,104.00	7,020.43	7,019.10	39.15	152.18	89.10	-1,775.54	-2,408.25	4,370.22	4,187.99	182.24	23.981	
8,700.00	7,104.00	7,020.43	7,019.11	40.32	152.18	89.10	-1,775.54	-2,408.25	4,467.55	4,285.19	182.36	24.498	
8,800.00	7,104.00	7,020.44	7,019.12	41.52	152.18	89.10	-1,775.54	-2,408.25	4,564.99	4,382.50	182.49	25.015	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	7,020.45	7,019.12	42.74	152.18	89.10	-1,775.54	-2,408.25	4,662.54	4,479.93	182.61	25.533	
9,000.00	7,104.00	7,020.46	7,019.13	43.99	152.18	89.10	-1,775.54	-2,408.25	4,760.19	4,577.46	182.73	26.050	
9,100.00	7,104.00	7,020.47	7,019.14	45.26	152.18	89.10	-1,775.54	-2,408.25	4,857.94	4,675.09	182.85	26.568	
9,200.00	7,104.00	7,020.47	7,019.15	46.55	152.18	89.11	-1,775.54	-2,408.25	4,955.78	4,772.82	182.96	27.086	
9,300.00	7,104.00	7,020.48	7,019.16	47.85	152.18	89.11	-1,775.54	-2,408.25	5,053.70	4,870.63	183.07	27.605	
9,400.00	7,104.00	7,020.49	7,019.16	49.18	152.18	89.11	-1,775.54	-2,408.25	5,151.70	4,968.52	183.18	28.123	
9,500.00	7,104.00	7,020.50	7,019.17	50.52	152.18	89.11	-1,775.54	-2,408.25	5,249.78	5,066.49	183.29	28.642	
9,600.00	7,104.00	7,020.51	7,019.18	51.88	152.18	89.11	-1,775.54	-2,408.25	5,347.93	5,164.53	183.40	29.160	
9,700.00	7,104.00	7,020.52	7,019.19	53.25	152.18	89.11	-1,775.54	-2,408.25	5,446.14	5,262.64	183.50	29.679	
9,800.00	7,104.00	7,020.52	7,019.20	54.63	152.18	89.11	-1,775.54	-2,408.25	5,544.42	5,360.82	183.60	30.198	
9,900.00	7,104.00	7,020.53	7,019.20	56.03	152.18	89.11	-1,775.54	-2,408.25	5,642.76	5,459.06	183.70	30.717	
10,000.00	7,104.00	7,020.54	7,019.21	57.43	152.18	89.11	-1,775.54	-2,408.25	5,741.16	5,557.36	183.80	31.236	
10,100.00	7,104.00	7,020.55	7,019.22	58.85	152.18	89.11	-1,775.54	-2,408.25	5,839.61	5,655.71	183.90	31.755	
10,200.00	7,104.00	7,020.56	7,019.23	60.27	152.18	89.11	-1,775.54	-2,408.25	5,938.12	5,754.12	183.99	32.273	
10,300.00	7,104.00	7,020.56	7,019.24	61.71	152.18	89.11	-1,775.54	-2,408.25	6,036.67	5,852.58	184.09	32.792	
10,400.00	7,104.00	7,020.57	7,019.24	63.15	152.18	89.11	-1,775.54	-2,408.25	6,135.27	5,951.09	184.18	33.311	
10,500.00	7,104.00	7,020.58	7,019.25	64.60	152.18	89.11	-1,775.54	-2,408.25	6,233.91	6,049.64	184.27	33.830	
10,600.00	7,104.00	7,020.59	7,019.26	66.05	152.18	89.11	-1,775.54	-2,408.25	6,332.60	6,148.23	184.36	34.348	
10,700.00	7,104.00	7,020.60	7,019.27	67.52	152.19	89.11	-1,775.54	-2,408.25	6,431.33	6,246.87	184.45	34.867	
10,800.00	7,104.00	7,020.60	7,019.28	68.99	152.19	89.11	-1,775.54	-2,408.25	6,530.09	6,345.55	184.54	35.385	
10,900.00	7,104.00	7,020.61	7,019.28	70.46	152.19	89.11	-1,775.54	-2,408.25	6,628.90	6,444.27	184.63	35.904	
11,000.00	7,104.00	7,020.62	7,019.29	71.94	152.19	89.11	-1,775.54	-2,408.25	6,727.73	6,543.02	184.72	36.422	
11,100.00	7,104.00	7,020.63	7,019.30	73.43	152.19	89.11	-1,775.54	-2,408.25	6,826.61	6,641.80	184.80	36.940	
11,200.00	7,104.00	7,020.64	7,019.31	74.92	152.19	89.11	-1,775.54	-2,408.25	6,925.51	6,740.62	184.89	37.458	
11,300.00	7,104.00	7,020.64	7,019.32	76.41	152.19	89.11	-1,775.54	-2,408.25	7,024.45	6,839.47	184.97	37.975	
11,400.00	7,104.00	7,020.65	7,019.32	77.91	152.19	89.11	-1,775.54	-2,408.25	7,123.41	6,938.35	185.06	38.493	
11,500.00	7,104.00	7,020.66	7,019.33	79.41	152.19	89.12	-1,775.54	-2,408.25	7,222.41	7,037.27	185.14	39.010	
11,600.00	7,104.00	7,020.67	7,019.34	80.92	152.19	89.12	-1,775.54	-2,408.25	7,321.43	7,136.20	185.22	39.528	
11,700.00	7,104.00	7,020.68	7,019.35	82.43	152.19	89.12	-1,775.54	-2,408.25	7,420.48	7,235.17	185.31	40.044	
11,800.00	7,104.00	7,020.68	7,019.36	83.94	152.19	89.12	-1,775.54	-2,408.25	7,519.55	7,334.16	185.39	40.561	
11,900.00	7,104.00	7,020.69	7,019.36	85.46	152.19	89.12	-1,775.54	-2,408.25	7,618.64	7,433.18	185.47	41.078	
12,000.00	7,104.00	7,020.70	7,019.37	86.98	152.19	89.12	-1,775.54	-2,408.25	7,717.76	7,532.22	185.55	41.594	
12,100.00	7,104.00	7,020.71	7,019.38	88.50	152.19	89.12	-1,775.54	-2,408.25	7,816.91	7,631.28	185.63	42.110	
12,200.00	7,104.00	7,020.72	7,019.39	90.03	152.19	89.12	-1,775.54	-2,408.25	7,916.07	7,730.36	185.71	42.626	
12,300.00	7,104.00	7,020.72	7,019.40	91.55	152.19	89.12	-1,775.54	-2,408.25	8,015.26	7,829.47	185.79	43.142	
12,400.00	7,104.00	7,020.73	7,019.40	93.08	152.19	89.12	-1,775.54	-2,408.25	8,114.46	7,928.59	185.87	43.657	
12,500.00	7,104.00	7,020.74	7,019.41	94.62	152.19	89.12	-1,775.54	-2,408.25	8,213.69	8,027.74	185.95	44.172	
12,600.00	7,104.00	7,020.75	7,019.42	96.15	152.19	89.12	-1,775.54	-2,408.25	8,312.93	8,126.90	186.03	44.687	
12,700.00	7,104.00	7,020.76	7,019.43	97.69	152.19	89.12	-1,775.54	-2,408.25	8,412.19	8,226.08	186.11	45.201	
12,800.00	7,104.00	7,020.76	7,019.44	99.23	152.19	89.12	-1,775.54	-2,408.25	8,511.47	8,325.28	186.18	45.715	
12,900.00	7,104.00	7,020.77	7,019.44	100.77	152.19	89.12	-1,775.54	-2,408.25	8,610.76	8,424.50	186.26	46.229	
13,000.00	7,104.00	7,020.78	7,019.45	102.31	152.19	89.12	-1,775.54	-2,408.25	8,710.07	8,523.73	186.34	46.743	
13,100.00	7,104.00	7,020.79	7,019.46	103.86	152.19	89.12	-1,775.54	-2,408.25	8,809.40	8,622.98	186.42	47.256	
13,200.00	7,104.00	7,020.80	7,019.47	105.40	152.19	89.12	-1,775.54	-2,408.25	8,908.74	8,722.25	186.50	47.769	
13,300.00	7,104.00	7,020.80	7,019.48	106.95	152.19	89.12	-1,775.54	-2,408.25	9,008.10	8,821.52	186.57	48.282	
13,400.00	7,104.00	7,020.81	7,019.49	108.50	152.19	89.12	-1,775.54	-2,408.25	9,107.47	8,920.82	186.65	48.794	
13,500.00	7,104.00	7,020.82	7,019.49	110.05	152.19	89.12	-1,775.54	-2,408.25	9,206.85	9,020.12	186.73	49.306	
13,600.00	7,104.00	7,020.83	7,019.50	111.60	152.19	89.12	-1,775.54	-2,408.25	9,306.25	9,119.44	186.81	49.818	
13,700.00	7,104.00	7,020.84	7,019.51	113.16	152.19	89.13	-1,775.54	-2,408.25	9,405.66	9,218.77	186.88	50.329	
13,800.00	7,104.00	7,020.84	7,019.52	114.71	152.19	89.13	-1,775.54	-2,408.25	9,505.08	9,318.12	186.96	50.840	
13,900.00	7,104.00	7,020.85	7,019.53	116.27	152.19	89.13	-1,775.54	-2,408.25	9,604.52	9,417.48	187.04	51.350	
14,000.00	7,104.00	7,020.86	7,019.53	117.83	152.19	89.13	-1,775.54	-2,408.25	9,703.96	9,516.84	187.12	51.860	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	7,020.87	7,019.54	119.38	152.19	89.13	-1,775.54	-2,408.25	9,803.42	9,616.22	187.19	52.370	
14,200.00	7,104.00	7,020.88	7,019.55	120.94	152.19	89.13	-1,775.54	-2,408.25	9,902.89	9,715.61	187.27	52.880	
14,300.00	7,104.00	7,020.89	7,019.56	122.50	152.19	89.13	-1,775.54	-2,408.25	10,002.37	9,815.02	187.35	53.389	
14,400.00	7,104.00	7,020.89	7,019.57	124.07	152.19	89.13	-1,775.54	-2,408.25	10,101.85	9,914.43	187.43	53.897	
14,500.00	7,104.00	7,020.90	7,019.57	125.63	152.19	89.13	-1,775.55	-2,408.25	10,201.35	10,013.85	187.51	54.406	
14,600.00	7,104.00	7,020.91	7,019.58	127.19	152.19	89.13	-1,775.55	-2,408.25	10,300.86	10,113.28	187.58	54.914	
14,700.00	7,104.00	7,020.92	7,019.59	128.76	152.19	89.13	-1,775.55	-2,408.25	10,400.38	10,212.72	187.66	55.421	
14,800.00	7,104.00	7,020.93	7,019.60	130.32	152.19	89.13	-1,775.55	-2,408.25	10,499.91	10,312.17	187.74	55.928	
14,900.00	7,104.00	7,020.93	7,019.61	131.89	152.19	89.13	-1,775.55	-2,408.25	10,599.44	10,411.63	187.82	56.435	
15,000.00	7,104.00	7,020.94	7,019.61	133.46	152.19	89.13	-1,775.55	-2,408.25	10,698.99	10,511.09	187.90	56.941	
15,100.00	7,104.00	7,020.95	7,019.62	135.02	152.19	89.13	-1,775.55	-2,408.25	10,798.54	10,610.57	187.97	57.447	
15,200.00	7,104.00	7,020.96	7,019.63	136.59	152.20	89.13	-1,775.55	-2,408.25	10,898.10	10,710.05	188.05	57.952	
15,300.00	7,104.00	7,020.97	7,019.64	138.16	152.20	89.13	-1,775.55	-2,408.25	10,997.67	10,809.54	188.13	58.457	
15,400.00	7,104.00	7,020.97	7,019.65	139.73	152.20	89.13	-1,775.55	-2,408.25	11,097.25	10,909.04	188.21	58.962	
15,500.00	7,104.00	7,020.98	7,019.65	141.30	152.20	89.13	-1,775.55	-2,408.25	11,196.83	11,008.54	188.29	59.466	
15,600.00	7,104.00	7,020.99	7,019.66	142.88	152.20	89.13	-1,775.55	-2,408.25	11,296.43	11,108.06	188.37	59.969	
15,700.00	7,104.00	7,021.00	7,019.67	144.45	152.20	89.13	-1,775.55	-2,408.25	11,396.03	11,207.58	188.45	60.472	
15,800.00	7,104.00	7,021.01	7,019.68	146.02	152.20	89.14	-1,775.55	-2,408.25	11,495.63	11,307.10	188.53	60.975	
15,900.00	7,104.00	7,021.01	7,019.69	147.60	152.20	89.14	-1,775.55	-2,408.25	11,595.24	11,406.63	188.61	61.477	
16,000.00	7,104.00	7,021.02	7,019.69	149.17	152.20	89.14	-1,775.55	-2,408.25	11,694.86	11,506.17	188.69	61.979	
16,100.00	7,104.00	7,021.03	7,019.70	150.74	152.20	89.14	-1,775.55	-2,408.25	11,794.49	11,605.72	188.77	62.481	
16,200.00	7,104.00	7,021.04	7,019.71	152.32	152.20	89.14	-1,775.55	-2,408.25	11,894.12	11,705.27	188.85	62.982	
16,300.00	7,104.00	7,021.05	7,019.72	153.89	152.20	89.14	-1,775.55	-2,408.25	11,993.76	11,804.83	188.93	63.482	
16,400.00	7,104.00	7,021.05	7,019.73	155.47	152.20	89.14	-1,775.55	-2,408.25	12,093.40	11,904.39	189.01	63.982	
16,500.00	7,104.00	7,021.06	7,019.74	157.05	152.20	89.14	-1,775.55	-2,408.25	12,193.05	12,003.96	189.09	64.481	
16,600.00	7,104.00	7,021.07	7,019.74	158.63	152.20	89.14	-1,775.55	-2,408.25	12,292.71	12,103.53	189.18	64.980	
16,700.00	7,104.00	7,021.08	7,019.75	160.20	152.20	89.14	-1,775.55	-2,408.25	12,392.37	12,203.11	189.26	65.479	
16,800.00	7,104.00	7,021.09	7,019.76	161.78	152.20	89.14	-1,775.55	-2,408.25	12,492.04	12,302.70	189.34	65.977	
16,900.00	7,104.00	7,021.10	7,019.77	163.36	152.20	89.14	-1,775.55	-2,408.25	12,591.71	12,402.29	189.42	66.475	
17,000.00	7,104.00	7,021.10	7,019.78	164.94	152.20	89.14	-1,775.55	-2,408.25	12,691.39	12,501.88	189.50	66.972	
17,100.00	7,104.00	7,021.11	7,019.78	166.52	152.20	89.14	-1,775.55	-2,408.25	12,791.07	12,601.48	189.59	67.468	
17,200.00	7,104.00	7,021.12	7,019.79	168.10	152.20	89.14	-1,775.55	-2,408.25	12,890.76	12,701.09	189.67	67.964	
17,300.00	7,104.00	7,021.13	7,019.80	169.68	152.20	89.14	-1,775.55	-2,408.25	12,990.45	12,800.70	189.75	68.460	
17,400.00	7,104.00	7,021.14	7,019.81	171.26	152.20	89.14	-1,775.55	-2,408.25	13,090.15	12,900.31	189.84	68.955	
17,500.00	7,104.00	7,021.14	7,019.82	172.84	152.20	89.14	-1,775.55	-2,408.25	13,189.85	12,999.93	189.92	69.449	
17,600.00	7,104.00	7,021.15	7,019.82	174.42	152.20	89.14	-1,775.55	-2,408.25	13,289.55	13,099.55	190.00	69.943	
17,700.00	7,104.00	7,021.16	7,019.83	176.00	152.20	89.14	-1,775.55	-2,408.25	13,389.26	13,199.17	190.09	70.437	
17,800.00	7,104.00	7,021.17	7,019.84	177.59	152.20	89.14	-1,775.55	-2,408.25	13,488.98	13,298.80	190.17	70.930	
17,900.00	7,104.00	7,021.18	7,019.85	179.17	152.20	89.14	-1,775.55	-2,408.25	13,588.70	13,398.44	190.26	71.422	
18,000.00	7,104.00	7,021.18	7,019.86	180.75	152.20	89.15	-1,775.55	-2,408.25	13,688.42	13,498.08	190.34	71.914	
18,100.00	7,104.00	7,021.19	7,019.86	182.33	152.20	89.15	-1,775.55	-2,408.25	13,788.15	13,597.72	190.43	72.406	
18,200.00	7,104.00	7,021.20	7,019.87	183.92	152.20	89.15	-1,775.55	-2,408.25	13,887.88	13,697.36	190.51	72.897	
18,300.00	7,104.00	7,021.21	7,019.88	185.50	152.20	89.15	-1,775.55	-2,408.25	13,987.61	13,797.01	190.60	73.387	
18,400.00	7,104.00	7,021.22	7,019.89	187.09	152.20	89.15	-1,775.55	-2,408.25	14,087.35	13,896.66	190.69	73.877	
18,500.00	7,104.00	7,021.22	7,019.90	188.67	152.20	89.15	-1,775.55	-2,408.25	14,187.09	13,996.32	190.77	74.366	
18,600.00	7,104.00	7,021.23	7,019.90	190.26	152.20	89.15	-1,775.55	-2,408.25	14,286.84	14,095.98	190.86	74.855	
18,700.00	7,104.00	7,021.24	7,019.91	191.84	152.20	89.15	-1,775.55	-2,408.25	14,386.59	14,195.64	190.95	75.344	
18,800.00	7,104.00	7,021.25	7,019.92	193.43	152.20	89.15	-1,775.55	-2,408.25	14,486.34	14,295.30	191.03	75.831	
18,900.00	7,104.00	7,021.26	7,019.93	195.01	152.20	89.15	-1,775.55	-2,408.25	14,586.09	14,394.97	191.12	76.318	
19,000.00	7,104.00	7,021.26	7,019.94	196.60	152.20	89.15	-1,775.55	-2,408.25	14,685.85	14,494.64	191.21	76.805	
19,100.00	7,104.00	7,021.27	7,019.95	198.18	152.20	89.15	-1,775.55	-2,408.25	14,785.62	14,594.32	191.30	77.291	
19,200.00	7,104.00	7,021.28	7,019.95	199.77	152.20	89.15	-1,775.55	-2,408.25	14,885.38	14,694.00	191.39	77.777	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 310-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	7,021.29	7,019.96	201.36	152.20	89.15	-1,775.55	-2,408.25	14,985.15	14,793.68	191.47	78.262	
19,400.00	7,104.00	7,021.30	7,019.97	202.94	152.20	89.15	-1,775.55	-2,408.25	15,084.92	14,893.36	191.56	78.746	
19,500.00	7,104.00	7,021.31	7,019.98	204.53	152.20	89.15	-1,775.55	-2,408.25	15,184.70	14,993.04	191.65	79.230	
19,600.00	7,104.00	7,021.31	7,019.99	206.12	152.20	89.15	-1,775.55	-2,408.25	15,284.48	15,092.73	191.74	79.713	
19,700.00	7,104.00	7,021.32	7,019.99	207.70	152.21	89.15	-1,775.55	-2,408.25	15,384.26	15,192.42	191.83	80.196	
19,800.00	7,104.00	7,021.33	7,020.00	209.29	152.21	89.15	-1,775.55	-2,408.25	15,484.04	15,292.12	191.92	80.678	
19,900.00	7,104.00	7,021.34	7,020.01	210.88	152.21	89.15	-1,775.55	-2,408.25	15,583.83	15,391.81	192.01	81.160	
20,000.00	7,104.00	7,021.35	7,020.02	212.47	152.21	89.15	-1,775.55	-2,408.25	15,683.61	15,491.51	192.10	81.641	
20,100.00	7,104.00	7,021.35	7,020.03	214.05	152.21	89.15	-1,775.55	-2,408.25	15,783.41	15,591.21	192.20	82.122	
20,200.00	7,104.00	7,021.36	7,020.03	215.64	152.21	89.16	-1,775.55	-2,408.25	15,883.20	15,690.91	192.29	82.602	
20,215.00	7,104.00	7,021.36	7,020.04	215.88	152.21	89.16	-1,775.55	-2,408.25	15,898.17	15,705.87	192.30	82.674	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026C - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	7.00	7.00	3.28	3.28	-91.64	-30.56	-1,064.35	1,064.79				
100.00	100.00	107.00	107.00	3.29	3.79	-91.64	-30.56	-1,064.35	1,064.79	1,057.71	7.08	150.436	
175.52	175.52	182.52	182.52	3.32	4.61	-91.64	-30.47	-1,064.35	1,064.79	1,056.86	7.93	134.320	CC
200.00	200.00	206.98	206.98	3.34	4.92	-91.64	-30.48	-1,064.35	1,064.79	1,056.53	8.26	128.970	
300.00	300.00	307.00	307.00	3.42	6.42	-91.64	-30.56	-1,064.35	1,064.79	1,054.95	9.84	108.222	
338.59	338.59	345.59	345.59	3.46	7.08	-91.64	-30.48	-1,064.35	1,064.79	1,054.25	10.54	101.013	
400.00	400.00	406.95	406.95	3.54	8.16	-91.64	-30.53	-1,064.35	1,064.79	1,053.09	11.70	90.994	
500.00	500.00	507.02	507.00	3.69	10.35	-91.64	-30.56	-1,064.35	1,064.79	1,050.75	14.04	75.861	
600.00	599.98	607.00	606.98	3.86	12.64	118.42	-30.56	-1,064.35	1,065.62	1,049.12	16.50	64.592	
700.00	699.84	706.74	706.69	4.04	14.96	118.67	-29.66	-1,064.35	1,068.10	1,049.10	19.00	56.207	ES
800.00	799.45	806.60	806.45	4.26	17.27	118.96	-30.56	-1,064.35	1,072.33	1,050.81	21.52	49.826	
849.50	848.63	855.79	855.63	4.37	18.26	119.17	-30.56	-1,064.35	1,075.07	1,052.44	22.62	47.521	
900.00	898.77	905.92	905.77	4.49	19.26	111.18	-30.56	-1,064.35	1,077.67	1,053.92	23.75	45.372	
973.84	972.07	979.23	979.06	4.68	20.74	99.55	-29.45	-1,064.35	1,080.03	1,054.62	25.41	42.497	
1,000.00	998.03	1,005.21	1,005.04	4.74	21.27	99.72	-29.49	-1,064.35	1,080.57	1,054.56	26.01	41.550	
1,100.00	1,097.29	1,104.69	1,104.51	5.02	23.28	100.31	-30.16	-1,064.35	1,082.69	1,054.41	28.29	38.273	
1,200.00	1,196.54	1,203.74	1,203.54	5.30	25.04	100.92	-30.56	-1,064.35	1,084.95	1,054.61	30.34	35.762	
1,300.00	1,295.80	1,303.00	1,302.80	5.61	26.68	101.55	-30.56	-1,064.35	1,087.33	1,055.06	32.28	33.689	
1,400.00	1,395.06	1,402.27	1,402.07	5.92	28.32	102.18	-30.31	-1,064.35	1,089.87	1,055.64	34.23	31.843	
1,500.00	1,494.31	1,501.59	1,501.39	6.24	29.96	102.80	-30.38	-1,064.35	1,092.52	1,056.33	36.19	30.189	
1,600.00	1,593.57	1,600.93	1,600.73	6.57	31.60	103.41	-30.54	-1,064.35	1,095.29	1,057.13	38.16	28.702	
1,700.00	1,692.82	1,700.03	1,699.82	6.91	33.34	104.02	-30.56	-1,064.35	1,098.19	1,057.96	40.23	27.298	
1,800.00	1,792.08	1,799.28	1,799.08	7.25	35.09	104.63	-30.56	-1,064.35	1,101.23	1,058.91	42.32	26.022	
1,900.00	1,891.33	1,898.58	1,898.37	7.60	36.84	105.25	-30.29	-1,064.35	1,104.41	1,060.00	44.41	24.866	
2,000.00	1,990.59	1,997.95	1,997.74	7.95	38.59	105.85	-30.37	-1,064.35	1,107.69	1,061.18	46.52	23.813	
2,100.00	2,089.85	2,097.34	2,097.13	8.30	40.35	106.44	-30.53	-1,064.35	1,111.08	1,062.46	48.62	22.851	
2,200.00	2,189.10	2,196.32	2,196.10	8.66	42.27	107.04	-30.56	-1,064.35	1,114.61	1,063.72	50.90	21.900	
2,300.00	2,288.36	2,295.57	2,295.36	9.02	44.21	107.63	-30.56	-1,064.35	1,118.27	1,065.06	53.20	21.019	
2,400.00	2,387.61	2,394.95	2,394.73	9.39	46.16	108.25	-30.04	-1,064.35	1,122.12	1,066.61	55.51	20.214	
2,500.00	2,486.87	2,494.55	2,494.33	9.76	48.12	108.82	-30.19	-1,064.35	1,125.99	1,068.16	57.83	19.471	
2,600.00	2,586.12	2,594.19	2,593.97	10.13	50.07	109.39	-30.53	-1,064.35	1,129.95	1,069.80	60.15	18.786	
2,700.00	2,685.38	2,692.64	2,692.38	10.50	52.19	109.96	-30.56	-1,064.35	1,134.07	1,071.44	62.63	18.107	
2,800.00	2,784.63	2,791.89	2,791.63	10.87	54.34	110.53	-30.56	-1,064.35	1,138.31	1,073.16	65.15	17.472	
2,900.00	2,883.89	2,891.68	2,891.41	11.24	56.50	111.15	-29.62	-1,064.35	1,142.86	1,075.18	67.68	16.886	
3,000.00	2,983.15	2,991.92	2,991.65	11.62	58.68	111.70	-30.04	-1,064.35	1,147.25	1,077.03	70.22	16.338	
3,100.00	3,082.40	3,089.75	3,089.40	12.00	60.74	112.22	-30.56	-1,064.35	1,151.72	1,079.06	72.66	15.851	
3,200.00	3,181.66	3,189.01	3,188.66	12.38	62.70	112.78	-30.56	-1,064.35	1,156.41	1,081.43	74.98	15.423	
3,300.00	3,280.91	3,288.26	3,287.91	12.75	64.65	113.33	-30.56	-1,064.35	1,161.21	1,083.90	77.30	15.021	
3,400.00	3,380.17	3,388.51	3,388.14	13.13	66.62	113.94	-29.32	-1,064.35	1,166.43	1,086.78	79.65	14.645	
3,500.00	3,479.42	3,489.18	3,488.81	13.52	68.60	114.46	-29.87	-1,064.35	1,171.31	1,089.31	82.00	14.284	
3,600.00	3,578.68	3,586.08	3,585.68	13.90	70.52	114.95	-30.56	-1,064.35	1,176.25	1,091.95	84.30	13.954	
3,700.00	3,677.94	3,685.33	3,684.94	14.28	72.55	115.49	-30.56	-1,064.35	1,181.47	1,094.78	86.69	13.628	
3,800.00	3,777.19	3,784.59	3,784.19	14.66	74.57	116.01	-30.56	-1,064.35	1,186.79	1,097.70	89.09	13.322	
3,900.00	3,876.45	3,884.16	3,883.76	15.05	76.60	116.55	-30.35	-1,064.35	1,192.28	1,100.79	91.49	13.032	
4,000.00	3,975.70	3,983.78	3,983.38	15.43	78.63	117.06	-30.49	-1,064.35	1,197.76	1,103.86	93.89	12.756	
4,100.00	4,074.96	4,082.42	4,081.96	15.82	80.78	117.57	-30.56	-1,064.35	1,203.36	1,106.94	96.42	12.481	
4,200.00	4,174.21	4,181.67	4,181.21	16.20	83.02	118.08	-30.56	-1,064.35	1,209.08	1,110.04	99.03	12.209	
4,300.00	4,273.47	4,281.45	4,280.97	16.59	85.28	118.65	-29.01	-1,064.35	1,215.40	1,113.74	101.66	11.955	
4,400.00	4,372.73	4,383.08	4,382.58	16.97	87.57	119.14	-29.42	-1,064.35	1,221.18	1,116.85	104.33	11.705	
4,500.00	4,471.98	4,484.85	4,484.34	17.36	89.87	119.61	-30.41	-1,064.35	1,226.86	1,119.85	107.01	11.465	
4,600.00	4,571.24	4,578.81	4,578.24	17.75	92.08	120.06	-30.56	-1,064.35	1,232.88	1,123.30	109.59	11.250	
4,700.00	4,670.49	4,678.07	4,677.49	18.13	94.43	120.55	-30.56	-1,064.35	1,239.06	1,126.76	112.31	11.033	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026C - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,777.32	4,776.75	18.52	96.78	121.03	-30.56	-1,064.35	1,245.33	1,130.30	115.03	10.826	
4,900.00	4,869.00	4,876.58	4,876.00	18.91	99.12	121.50	-30.56	-1,064.35	1,251.69	1,133.94	117.75	10.630	
5,000.00	4,968.26	4,975.83	4,975.26	19.30	101.47	121.97	-30.56	-1,064.35	1,258.13	1,137.66	120.47	10.443	
5,100.00	5,067.51	5,075.09	5,074.51	19.69	103.82	122.44	-30.56	-1,064.35	1,264.66	1,141.46	123.19	10.266	
5,200.00	5,166.77	5,174.34	5,173.77	20.07	106.17	122.90	-30.56	-1,064.35	1,271.26	1,145.35	125.91	10.096	
5,300.00	5,266.03	5,273.60	5,273.03	20.46	108.51	123.36	-30.56	-1,064.35	1,277.96	1,149.32	128.63	9.935	
5,400.00	5,365.28	5,373.04	5,372.43	20.85	110.87	123.96	-26.88	-1,064.35	1,286.26	1,154.90	131.35	9.792	
5,500.00	5,464.54	5,472.88	5,472.27	21.24	113.23	124.40	-26.97	-1,064.35	1,293.10	1,159.01	134.09	9.644	
5,600.00	5,563.79	5,572.75	5,572.13	21.63	115.59	124.84	-27.16	-1,064.35	1,299.97	1,163.15	136.82	9.501	
5,700.00	5,663.05	5,672.64	5,672.02	22.02	117.95	125.26	-27.45	-1,064.35	1,306.87	1,167.31	139.56	9.364	
5,800.00	5,762.30	5,772.57	5,771.94	22.41	120.32	125.68	-27.84	-1,064.35	1,313.80	1,171.51	142.30	9.233	
5,900.00	5,861.56	5,872.52	5,871.88	22.80	122.68	126.09	-28.34	-1,064.35	1,320.75	1,175.72	145.03	9.107	
6,000.00	5,960.82	5,972.49	5,971.85	23.19	125.05	126.50	-28.94	-1,064.35	1,327.72	1,179.95	147.77	8.985	
6,100.00	6,060.07	6,072.50	6,071.85	23.58	127.41	126.89	-29.65	-1,064.35	1,334.71	1,184.20	150.51	8.868	
6,200.00	6,159.33	6,172.53	6,171.87	23.97	129.78	127.28	-30.45	-1,064.35	1,341.71	1,188.46	153.25	8.755	
6,300.00	6,258.58	6,266.65	6,265.58	24.36	132.02	127.66	-30.56	-1,064.35	1,349.09	1,193.23	155.86	8.656	
6,400.00	6,357.84	6,365.91	6,364.84	24.76	134.39	128.07	-30.56	-1,064.35	1,356.60	1,198.00	158.60	8.554	
6,500.00	6,457.09	6,465.17	6,464.09	25.15	136.76	128.47	-30.56	-1,064.35	1,364.18	1,202.84	161.34	8.455	
6,528.17	6,485.05	6,493.13	6,492.05	25.26	137.43	128.58	-30.56	-1,064.35	1,366.32	1,204.21	162.11	8.428	
6,550.00	6,506.71	6,514.78	6,513.71	25.34	137.95	143.48	-30.56	-1,064.35	1,368.32	1,205.61	162.71	8.409	
6,600.00	6,556.11	6,564.19	6,563.11	25.54	139.13	167.22	-30.56	-1,064.35	1,375.34	1,211.26	164.07	8.382	
6,650.00	6,605.00	6,613.07	6,612.00	25.74	140.29	-179.89	-30.56	-1,064.35	1,385.72	1,220.31	165.42	8.377	SF
6,700.00	6,653.07	6,661.14	6,660.07	25.93	141.44	-172.29	-30.56	-1,064.35	1,399.41	1,232.68	166.73	8.393	
6,750.00	6,700.02	6,708.18	6,707.05	26.12	142.56	-167.08	-26.60	-1,064.35	1,418.26	1,250.25	168.01	8.441	
6,800.00	6,745.56	6,754.71	6,753.57	26.31	143.67	-163.34	-26.64	-1,064.35	1,438.27	1,268.99	169.28	8.497	
6,850.00	6,789.42	6,799.53	6,798.39	26.50	144.74	-160.31	-26.73	-1,064.35	1,461.26	1,290.77	170.49	8.571	
6,900.00	6,831.32	6,842.37	6,841.22	26.69	145.77	-157.65	-26.88	-1,064.35	1,487.13	1,315.49	171.64	8.664	
6,950.00	6,871.01	6,882.96	6,881.80	26.87	146.74	-155.15	-27.07	-1,064.35	1,515.75	1,343.02	172.73	8.775	
7,000.00	6,908.23	6,921.05	6,919.88	27.05	147.65	-152.65	-27.29	-1,064.35	1,546.99	1,373.23	173.75	8.903	
7,050.00	6,942.77	6,956.39	6,955.22	27.23	148.49	-150.01	-27.54	-1,064.35	1,580.67	1,405.98	174.69	9.048	
7,100.00	6,974.40	6,988.77	6,987.60	27.41	149.26	-147.10	-27.79	-1,064.35	1,616.64	1,441.09	175.54	9.209	
7,150.00	7,002.93	7,018.00	7,016.81	27.60	149.96	-143.78	-28.05	-1,064.35	1,654.70	1,478.39	176.31	9.385	
7,200.00	7,028.20	7,043.87	7,042.68	27.80	150.58	-139.89	-28.30	-1,064.35	1,694.66	1,517.67	176.99	9.575	
7,250.00	7,050.03	7,066.24	7,065.05	28.00	151.11	-135.23	-28.53	-1,064.35	1,736.29	1,558.72	177.56	9.778	
7,300.00	7,068.30	7,084.96	7,083.76	28.22	151.56	-129.59	-28.73	-1,064.35	1,779.35	1,601.32	178.04	9.994	
7,350.00	7,082.89	7,099.91	7,098.71	28.45	151.92	-122.71	-28.91	-1,064.35	1,823.62	1,645.20	178.41	10.221	
7,400.00	7,093.72	7,111.01	7,109.81	28.70	152.18	-114.43	-29.04	-1,064.35	1,868.81	1,690.12	178.69	10.459	
7,450.00	7,100.71	7,118.18	7,116.98	28.96	152.35	-104.76	-29.12	-1,064.35	1,914.67	1,735.82	178.86	10.705	
7,500.00	7,103.82	7,121.38	7,120.17	29.24	152.43	-94.05	-29.16	-1,064.35	1,960.92	1,782.00	178.92	10.960	
7,515.00	7,104.00	7,121.56	7,120.36	29.32	152.43	-90.73	-29.16	-1,064.35	1,974.83	1,795.91	178.92	11.038	
7,600.00	7,104.00	7,121.57	7,120.36	29.84	152.43	-90.73	-29.16	-1,064.35	2,053.90	1,875.01	178.89	11.481	
7,700.00	7,104.00	7,121.57	7,120.37	30.51	152.43	-90.73	-29.16	-1,064.35	2,147.51	1,968.64	178.87	12.006	
7,800.00	7,104.00	7,121.58	7,120.38	31.26	152.43	-90.73	-29.16	-1,064.35	2,241.66	2,062.81	178.85	12.534	
7,900.00	7,104.00	7,121.59	7,120.38	32.07	152.43	-90.73	-29.16	-1,064.35	2,336.31	2,157.47	178.84	13.064	
8,000.00	7,104.00	7,121.59	7,120.39	32.94	152.43	-90.73	-29.16	-1,064.35	2,431.38	2,252.54	178.84	13.596	
8,100.00	7,104.00	7,121.60	7,120.40	33.86	152.43	-90.73	-29.16	-1,064.35	2,526.83	2,348.00	178.83	14.130	
8,200.00	7,104.00	7,121.61	7,120.40	34.84	152.44	-90.73	-29.16	-1,064.35	2,622.62	2,443.79	178.84	14.665	
8,300.00	7,104.00	7,121.61	7,120.41	35.86	152.44	-90.73	-29.16	-1,064.35	2,718.72	2,539.88	178.84	15.202	
8,400.00	7,104.00	7,121.62	7,120.42	36.92	152.44	-90.73	-29.16	-1,064.35	2,815.09	2,636.24	178.85	15.740	
8,500.00	7,104.00	7,121.63	7,120.42	38.02	152.44	-90.73	-29.16	-1,064.35	2,911.70	2,732.84	178.86	16.279	
8,600.00	7,104.00	7,121.63	7,120.43	39.15	152.44	-90.73	-29.17	-1,064.35	3,008.53	2,829.66	178.87	16.820	
8,700.00	7,104.00	7,121.64	7,120.44	40.32	152.44	-90.73	-29.17	-1,064.35	3,105.56	2,926.68	178.89	17.361	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026C - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	7,121.65	7,120.44	41.52	152.44	-90.73	-29.17	-1,064.35	3,202.78	3,023.88	178.90	17.902	
8,900.00	7,104.00	7,121.65	7,120.45	42.74	152.44	-90.73	-29.17	-1,064.35	3,300.16	3,121.24	178.92	18.445	
9,000.00	7,104.00	7,121.66	7,120.46	43.99	152.44	-90.73	-29.17	-1,064.35	3,397.70	3,218.76	178.94	18.988	
9,100.00	7,104.00	7,121.67	7,120.46	45.26	152.44	-90.73	-29.17	-1,064.35	3,495.37	3,316.41	178.96	19.531	
9,200.00	7,104.00	7,121.68	7,120.47	46.55	152.44	-90.73	-29.17	-1,064.35	3,593.17	3,414.19	178.98	20.075	
9,300.00	7,104.00	7,121.68	7,120.48	47.85	152.44	-90.73	-29.17	-1,064.35	3,691.09	3,512.09	179.01	20.620	
9,400.00	7,104.00	7,121.69	7,120.48	49.18	152.44	-90.74	-29.17	-1,064.35	3,789.12	3,610.09	179.03	21.164	
9,500.00	7,104.00	7,121.70	7,120.49	50.52	152.44	-90.74	-29.17	-1,064.35	3,887.25	3,708.19	179.06	21.709	
9,600.00	7,104.00	7,121.70	7,120.50	51.88	152.44	-90.74	-29.17	-1,064.35	3,985.47	3,806.39	179.09	22.254	
9,700.00	7,104.00	7,121.71	7,120.50	53.25	152.44	-90.74	-29.17	-1,064.35	4,083.78	3,904.66	179.12	22.800	
9,800.00	7,104.00	7,121.72	7,120.51	54.63	152.44	-90.74	-29.17	-1,064.35	4,182.17	4,003.02	179.15	23.345	
9,900.00	7,104.00	7,121.72	7,120.52	56.03	152.44	-90.74	-29.17	-1,064.35	4,280.63	4,101.46	179.18	23.890	
10,000.00	7,104.00	7,121.73	7,120.52	57.43	152.44	-90.74	-29.17	-1,064.35	4,379.17	4,199.96	179.21	24.436	
10,100.00	7,104.00	7,121.74	7,120.53	58.85	152.44	-90.74	-29.17	-1,064.35	4,477.76	4,298.52	179.24	24.982	
10,200.00	7,104.00	7,121.74	7,120.54	60.27	152.44	-90.74	-29.17	-1,064.35	4,576.42	4,397.15	179.28	25.527	
10,300.00	7,104.00	7,121.75	7,120.55	61.71	152.44	-90.74	-29.17	-1,064.35	4,675.14	4,495.83	179.31	26.073	
10,400.00	7,104.00	7,121.76	7,120.55	63.15	152.44	-90.74	-29.17	-1,064.35	4,773.91	4,594.56	179.35	26.618	
10,500.00	7,104.00	7,121.76	7,120.56	64.60	152.44	-90.74	-29.17	-1,064.35	4,872.73	4,693.34	179.38	27.164	
10,600.00	7,104.00	7,121.77	7,120.57	66.05	152.44	-90.74	-29.17	-1,064.35	4,971.59	4,792.17	179.42	27.709	
10,700.00	7,104.00	7,121.78	7,120.57	67.52	152.44	-90.74	-29.17	-1,064.35	5,070.50	4,891.04	179.46	28.254	
10,800.00	7,104.00	7,121.78	7,120.58	68.99	152.44	-90.74	-29.17	-1,064.35	5,169.46	4,989.96	179.50	28.799	
10,900.00	7,104.00	7,121.79	7,120.59	70.46	152.44	-90.74	-29.17	-1,064.35	5,268.45	5,088.91	179.54	29.344	
11,000.00	7,104.00	7,121.80	7,120.59	71.94	152.44	-90.74	-29.17	-1,064.35	5,367.48	5,187.90	179.58	29.889	
11,100.00	7,104.00	7,121.80	7,120.60	73.43	152.44	-90.74	-29.17	-1,064.35	5,466.54	5,286.92	179.62	30.434	
11,200.00	7,104.00	7,121.81	7,120.61	74.92	152.44	-90.74	-29.17	-1,064.35	5,565.64	5,385.98	179.66	30.978	
11,300.00	7,104.00	7,121.82	7,120.61	76.41	152.44	-90.75	-29.17	-1,064.35	5,664.77	5,485.07	179.71	31.522	
11,400.00	7,104.00	7,121.82	7,120.62	77.91	152.44	-90.75	-29.17	-1,064.35	5,763.93	5,584.18	179.75	32.066	
11,500.00	7,104.00	7,121.83	7,120.63	79.41	152.44	-90.75	-29.17	-1,064.35	5,863.12	5,683.32	179.80	32.610	
11,600.00	7,104.00	7,121.84	7,120.63	80.92	152.44	-90.75	-29.17	-1,064.35	5,962.34	5,782.49	179.84	33.153	
11,700.00	7,104.00	7,121.85	7,120.64	82.43	152.44	-90.75	-29.17	-1,064.35	6,061.58	5,881.69	179.89	33.696	
11,800.00	7,104.00	7,121.85	7,120.65	83.94	152.44	-90.75	-29.17	-1,064.35	6,160.85	5,980.91	179.94	34.239	
11,900.00	7,104.00	7,121.86	7,120.65	85.46	152.44	-90.75	-29.17	-1,064.35	6,260.14	6,080.15	179.99	34.781	
12,000.00	7,104.00	7,121.87	7,120.66	86.98	152.44	-90.75	-29.17	-1,064.35	6,359.45	6,179.41	180.04	35.323	
12,100.00	7,104.00	7,121.87	7,120.67	88.50	152.44	-90.75	-29.17	-1,064.35	6,458.78	6,278.70	180.09	35.865	
12,200.00	7,104.00	7,121.88	7,120.67	90.03	152.44	-90.75	-29.17	-1,064.35	6,558.13	6,378.00	180.14	36.407	
12,300.00	7,104.00	7,121.89	7,120.68	91.55	152.44	-90.75	-29.17	-1,064.35	6,657.51	6,477.32	180.19	36.948	
12,400.00	7,104.00	7,121.89	7,120.69	93.08	152.44	-90.75	-29.17	-1,064.35	6,756.90	6,576.66	180.24	37.488	
12,500.00	7,104.00	7,121.90	7,120.69	94.62	152.44	-90.75	-29.17	-1,064.35	6,856.31	6,676.01	180.29	38.029	
12,600.00	7,104.00	7,121.91	7,120.70	96.15	152.44	-90.75	-29.17	-1,064.35	6,955.73	6,775.39	180.35	38.569	
12,700.00	7,104.00	7,121.91	7,120.71	97.69	152.44	-90.75	-29.17	-1,064.35	7,055.18	6,874.77	180.40	39.108	
12,800.00	7,104.00	7,121.92	7,120.72	99.23	152.44	-90.75	-29.17	-1,064.35	7,154.63	6,974.18	180.46	39.648	
12,900.00	7,104.00	7,121.93	7,120.72	100.77	152.44	-90.75	-29.17	-1,064.35	7,254.11	7,073.59	180.51	40.186	
13,000.00	7,104.00	7,121.93	7,120.73	102.31	152.44	-90.75	-29.17	-1,064.35	7,353.59	7,173.02	180.57	40.725	
13,100.00	7,104.00	7,121.94	7,120.74	103.86	152.44	-90.75	-29.17	-1,064.35	7,453.09	7,272.47	180.63	41.263	
13,200.00	7,104.00	7,121.95	7,120.74	105.40	152.44	-90.76	-29.17	-1,064.35	7,552.61	7,371.92	180.68	41.800	
13,300.00	7,104.00	7,121.95	7,120.75	106.95	152.44	-90.76	-29.17	-1,064.35	7,652.13	7,471.39	180.74	42.337	
13,400.00	7,104.00	7,121.96	7,120.76	108.50	152.44	-90.76	-29.17	-1,064.35	7,751.67	7,570.87	180.80	42.874	
13,500.00	7,104.00	7,121.97	7,120.76	110.05	152.44	-90.76	-29.17	-1,064.35	7,851.22	7,670.36	180.86	43.410	
13,600.00	7,104.00	7,121.97	7,120.77	111.60	152.44	-90.76	-29.17	-1,064.35	7,950.78	7,769.86	180.92	43.946	
13,700.00	7,104.00	7,121.98	7,120.78	113.16	152.44	-90.76	-29.17	-1,064.35	8,050.36	7,869.37	180.98	44.481	
13,800.00	7,104.00	7,121.99	7,120.78	114.71	152.44	-90.76	-29.17	-1,064.35	8,149.94	7,968.89	181.05	45.016	
13,900.00	7,104.00	7,122.00	7,120.79	116.27	152.44	-90.76	-29.17	-1,064.35	8,249.53	8,068.42	181.11	45.550	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026C - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	7,122.00	7,120.80	117.83	152.44	-90.76	-29.17	-1,064.35	8,349.14	8,167.96	181.17	46.084	
14,100.00	7,104.00	7,122.01	7,120.80	119.38	152.44	-90.76	-29.17	-1,064.35	8,448.75	8,267.51	181.24	46.617	
14,200.00	7,104.00	7,122.02	7,120.81	120.94	152.44	-90.76	-29.17	-1,064.35	8,548.37	8,367.07	181.30	47.150	
14,300.00	7,104.00	7,122.02	7,120.82	122.50	152.45	-90.76	-29.17	-1,064.35	8,648.00	8,466.63	181.37	47.682	
14,400.00	7,104.00	7,122.03	7,120.82	124.07	152.45	-90.76	-29.17	-1,064.35	8,747.64	8,566.20	181.43	48.214	
14,500.00	7,104.00	7,122.04	7,120.83	125.63	152.45	-90.76	-29.17	-1,064.35	8,847.28	8,665.78	181.50	48.745	
14,600.00	7,104.00	7,122.04	7,120.84	127.19	152.45	-90.76	-29.17	-1,064.35	8,946.94	8,765.37	181.57	49.276	
14,700.00	7,104.00	7,122.05	7,120.84	128.76	152.45	-90.76	-29.17	-1,064.35	9,046.60	8,864.96	181.64	49.806	
14,800.00	7,104.00	7,122.06	7,120.85	130.32	152.45	-90.76	-29.17	-1,064.35	9,146.27	8,964.56	181.71	50.335	
14,900.00	7,104.00	7,122.06	7,120.86	131.89	152.45	-90.76	-29.17	-1,064.35	9,245.95	9,064.17	181.78	50.864	
15,000.00	7,104.00	7,122.07	7,120.87	133.46	152.45	-90.76	-29.17	-1,064.35	9,345.63	9,163.78	181.85	51.393	
15,100.00	7,104.00	7,122.08	7,120.87	135.02	152.45	-90.77	-29.17	-1,064.35	9,445.32	9,263.40	181.92	51.921	
15,200.00	7,104.00	7,122.08	7,120.88	136.59	152.45	-90.77	-29.17	-1,064.35	9,545.02	9,363.03	181.99	52.448	
15,300.00	7,104.00	7,122.09	7,120.89	138.16	152.45	-90.77	-29.17	-1,064.35	9,644.72	9,462.66	182.06	52.975	
15,400.00	7,104.00	7,122.10	7,120.89	139.73	152.45	-90.77	-29.17	-1,064.35	9,744.43	9,562.30	182.13	53.501	
15,500.00	7,104.00	7,122.10	7,120.90	141.30	152.45	-90.77	-29.17	-1,064.35	9,844.14	9,661.94	182.21	54.027	
15,600.00	7,104.00	7,122.11	7,120.91	142.88	152.45	-90.77	-29.17	-1,064.35	9,943.87	9,761.58	182.28	54.552	
15,700.00	7,104.00	7,122.12	7,120.91	144.45	152.45	-90.77	-29.17	-1,064.35	10,043.59	9,861.24	182.36	55.077	
15,800.00	7,104.00	7,122.12	7,120.92	146.02	152.45	-90.77	-29.17	-1,064.35	10,143.32	9,960.89	182.43	55.601	
15,900.00	7,104.00	7,122.13	7,120.93	147.60	152.45	-90.77	-29.17	-1,064.35	10,243.06	10,060.55	182.51	56.124	
16,000.00	7,104.00	7,122.14	7,120.93	149.17	152.45	-90.77	-29.17	-1,064.35	10,342.80	10,160.22	182.58	56.647	
16,100.00	7,104.00	7,122.15	7,120.94	150.74	152.45	-90.77	-29.17	-1,064.35	10,442.55	10,259.89	182.66	57.169	
16,200.00	7,104.00	7,122.15	7,120.95	152.32	152.45	-90.77	-29.17	-1,064.35	10,542.30	10,359.56	182.74	57.690	
16,300.00	7,104.00	7,122.16	7,120.95	153.89	152.45	-90.77	-29.17	-1,064.35	10,642.06	10,459.24	182.82	58.211	
16,400.00	7,104.00	7,122.17	7,120.96	155.47	152.45	-90.77	-29.17	-1,064.35	10,741.82	10,558.92	182.90	58.732	
16,500.00	7,104.00	7,122.17	7,120.97	157.05	152.45	-90.77	-29.17	-1,064.35	10,841.58	10,658.61	182.98	59.252	
16,600.00	7,104.00	7,122.18	7,120.97	158.63	152.45	-90.77	-29.17	-1,064.35	10,941.35	10,758.30	183.06	59.771	
16,700.00	7,104.00	7,122.19	7,120.98	160.20	152.45	-90.77	-29.17	-1,064.35	11,041.13	10,857.99	183.14	60.289	
16,800.00	7,104.00	7,122.19	7,120.99	161.78	152.45	-90.77	-29.17	-1,064.35	11,140.90	10,957.69	183.22	60.807	
16,900.00	7,104.00	7,122.20	7,120.99	163.36	152.45	-90.77	-29.17	-1,064.35	11,240.69	11,057.39	183.30	61.324	
17,000.00	7,104.00	7,122.21	7,121.00	164.94	152.45	-90.78	-29.17	-1,064.35	11,340.47	11,157.09	183.38	61.841	
17,100.00	7,104.00	7,122.21	7,121.01	166.52	152.45	-90.78	-29.17	-1,064.35	11,440.26	11,256.80	183.46	62.357	
17,200.00	7,104.00	7,122.22	7,121.01	168.10	152.45	-90.78	-29.17	-1,064.35	11,540.05	11,356.51	183.55	62.872	
17,300.00	7,104.00	7,122.23	7,121.02	169.68	152.45	-90.78	-29.17	-1,064.35	11,639.85	11,456.22	183.63	63.387	
17,400.00	7,104.00	7,122.23	7,121.03	171.26	152.45	-90.78	-29.17	-1,064.35	11,739.65	11,555.93	183.72	63.901	
17,500.00	7,104.00	7,122.24	7,121.04	172.84	152.45	-90.78	-29.17	-1,064.35	11,839.45	11,655.65	183.80	64.415	
17,600.00	7,104.00	7,122.25	7,121.04	174.42	152.45	-90.78	-29.17	-1,064.35	11,939.26	11,755.37	183.89	64.927	
17,700.00	7,104.00	7,122.25	7,121.05	176.00	152.45	-90.78	-29.17	-1,064.35	12,039.07	11,855.10	183.97	65.440	
17,800.00	7,104.00	7,122.26	7,121.06	177.59	152.45	-90.78	-29.17	-1,064.35	12,138.88	11,954.82	184.06	65.951	
17,900.00	7,104.00	7,122.27	7,121.06	179.17	152.45	-90.78	-29.17	-1,064.35	12,238.70	12,054.55	184.15	66.462	
18,000.00	7,104.00	7,122.27	7,121.07	180.75	152.45	-90.78	-29.17	-1,064.35	12,338.52	12,154.29	184.23	66.972	
18,100.00	7,104.00	7,122.28	7,121.08	182.33	152.45	-90.78	-29.17	-1,064.35	12,438.34	12,254.02	184.32	67.482	
18,200.00	7,104.00	7,122.29	7,121.08	183.92	152.45	-90.78	-29.17	-1,064.35	12,538.17	12,353.76	184.41	67.991	
18,300.00	7,104.00	7,122.30	7,121.09	185.50	152.45	-90.78	-29.17	-1,064.35	12,637.99	12,453.49	184.50	68.499	
18,400.00	7,104.00	7,122.30	7,121.10	187.09	152.45	-90.78	-29.17	-1,064.35	12,737.82	12,553.23	184.59	69.006	
18,500.00	7,104.00	7,122.31	7,121.10	188.67	152.45	-90.78	-29.17	-1,064.35	12,837.66	12,652.98	184.68	69.513	
18,600.00	7,104.00	7,122.32	7,121.11	190.26	152.45	-90.78	-29.17	-1,064.35	12,937.49	12,752.72	184.77	70.019	
18,700.00	7,104.00	7,122.32	7,121.12	191.84	152.45	-90.78	-29.17	-1,064.35	13,037.33	12,852.47	184.86	70.525	
18,800.00	7,104.00	7,122.33	7,121.12	193.43	152.45	-90.79	-29.17	-1,064.35	13,137.17	12,952.22	184.95	71.030	
18,900.00	7,104.00	7,122.34	7,121.13	195.01	152.45	-90.79	-29.17	-1,064.35	13,237.01	13,051.97	185.04	71.534	
19,000.00	7,104.00	7,122.34	7,121.14	196.60	152.45	-90.79	-29.17	-1,064.35	13,336.86	13,151.72	185.14	72.038	
19,100.00	7,104.00	7,122.35	7,121.14	198.18	152.45	-90.79	-29.17	-1,064.35	13,436.71	13,251.48	185.23	72.541	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #026C - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 100-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	7,122.36	7,121.15	199.77	152.45	-90.79	-29.17	-1,064.35	13,536.56	13,351.23	185.32	73.043	
19,300.00	7,104.00	7,122.36	7,121.16	201.36	152.45	-90.79	-29.17	-1,064.35	13,636.41	13,450.99	185.42	73.544	
19,400.00	7,104.00	7,122.37	7,121.16	202.94	152.45	-90.79	-29.17	-1,064.35	13,736.26	13,550.75	185.51	74.045	
19,500.00	7,104.00	7,122.38	7,121.17	204.53	152.45	-90.79	-29.17	-1,064.35	13,836.12	13,650.51	185.61	74.545	
19,600.00	7,104.00	7,122.38	7,121.18	206.12	152.45	-90.79	-29.17	-1,064.35	13,935.98	13,750.27	185.70	75.045	
19,700.00	7,104.00	7,122.39	7,121.19	207.70	152.45	-90.79	-29.17	-1,064.35	14,035.84	13,850.04	185.80	75.543	
19,800.00	7,104.00	7,122.40	7,121.19	209.29	152.45	-90.79	-29.17	-1,064.35	14,135.70	13,949.80	185.89	76.042	
19,900.00	7,104.00	7,122.40	7,121.20	210.88	152.45	-90.79	-29.17	-1,064.35	14,235.56	14,049.57	185.99	76.539	
20,000.00	7,104.00	7,122.41	7,121.21	212.47	152.45	-90.79	-29.17	-1,064.35	14,335.43	14,149.34	186.09	77.036	
20,100.00	7,104.00	7,122.42	7,121.21	214.05	152.45	-90.79	-29.17	-1,064.35	14,435.30	14,249.11	186.19	77.532	
20,200.00	7,104.00	7,122.42	7,121.22	215.64	152.45	-90.79	-29.17	-1,064.35	14,535.17	14,348.88	186.28	78.027	
20,215.00	7,104.00	7,122.43	7,121.22	215.88	152.45	-90.79	-29.17	-1,064.35	14,550.15	14,363.85	186.30	78.101	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #055 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	24.68	24.68	3.28	3.28	97.68	-1,134.99	8,420.33	8,496.48				
100.00	100.00	123.69	123.69	3.29	3.28	97.68	-1,134.99	8,420.34	8,496.49	8,489.92	6.57	1,293.108	
200.00	200.00	222.51	222.51	3.34	3.29	97.68	-1,134.98	8,420.36	8,496.50	8,489.88	6.62	1,283.020	
300.00	300.00	322.38	322.38	3.42	3.30	97.68	-1,134.97	8,420.39	8,496.53	8,489.82	6.72	1,265.205	
400.00	400.00	421.07	421.07	3.54	3.32	97.68	-1,134.95	8,420.43	8,496.58	8,489.73	6.85	1,240.827	
500.00	500.00	519.76	519.76	3.69	3.34	97.68	-1,134.93	8,420.49	8,496.63	8,489.62	7.01	1,211.227	
600.00	599.98	618.76	618.76	3.86	3.36	-52.35	-1,134.90	8,420.56	8,495.63	8,488.42	7.21	1,179.019	
700.00	699.84	718.29	718.29	4.04	3.39	-52.43	-1,134.87	8,420.64	8,492.51	8,485.09	7.42	1,144.771	
800.00	799.45	816.60	816.60	4.26	3.43	-52.56	-1,134.84	8,420.73	8,487.28	8,479.62	7.66	1,108.069	
849.50	848.63	865.00	865.00	4.37	3.45	-52.64	-1,134.82	8,420.78	8,483.91	8,476.12	7.79	1,089.183	
900.00	898.77	914.61	914.61	4.49	3.47	-60.97	-1,134.80	8,420.84	8,480.61	8,472.69	7.93	1,069.892	
973.84	972.07	987.91	987.91	4.68	3.50	-73.18	-1,134.77	8,420.92	8,477.22	8,469.09	8.14	1,041.664	
1,000.00	998.03	1,013.18	1,013.18	4.74	3.51	-73.20	-1,134.76	8,420.95	8,476.33	8,468.11	8.22	1,031.724	
1,100.00	1,097.29	1,111.82	1,111.82	5.02	3.56	-73.27	-1,134.71	8,421.08	8,472.91	8,464.38	8.53	993.507	
1,200.00	1,196.54	1,209.76	1,209.76	5.30	3.62	-73.35	-1,134.66	8,421.22	8,469.53	8,460.67	8.86	955.978	
1,300.00	1,295.80	1,307.70	1,307.70	5.61	3.67	-73.43	-1,134.60	8,421.37	8,466.16	8,456.96	9.21	919.511	
1,400.00	1,395.06	1,406.61	1,406.61	5.92	3.73	-73.51	-1,134.54	8,421.53	8,462.83	8,453.26	9.57	884.323	
1,500.00	1,494.31	1,504.89	1,504.89	6.24	3.79	-73.59	-1,134.48	8,421.71	8,459.53	8,449.58	9.94	850.655	
1,600.00	1,593.57	1,602.83	1,602.83	6.57	3.86	-73.66	-1,134.41	8,421.89	8,456.25	8,445.92	10.33	818.571	
1,700.00	1,692.82	1,700.77	1,700.77	6.91	3.93	-73.74	-1,134.34	8,422.09	8,453.00	8,442.28	10.73	788.078	
1,800.00	1,792.08	1,800.00	1,800.00	7.25	4.00	-73.82	-1,134.26	8,422.30	8,449.78	8,438.65	11.13	759.103	
1,900.00	1,891.33	1,897.96	1,897.96	7.60	4.08	-73.90	-1,134.18	8,422.52	8,446.59	8,435.05	11.54	731.720	
2,000.00	1,990.59	1,995.90	1,995.89	7.95	4.16	-73.98	-1,134.09	8,422.75	8,443.42	8,431.46	11.96	705.814	
2,100.00	2,089.85	2,094.14	2,094.14	8.30	4.24	-74.06	-1,134.00	8,422.99	8,440.28	8,427.89	12.39	681.303	
2,200.00	2,189.10	2,193.08	2,193.08	8.66	4.32	-74.14	-1,133.91	8,423.25	8,437.17	8,424.35	12.82	658.101	
2,300.00	2,288.36	2,291.02	2,291.01	9.02	4.41	-74.22	-1,133.81	8,423.52	8,434.09	8,420.83	13.26	636.198	
2,400.00	2,387.61	2,388.95	2,388.95	9.39	4.49	-74.30	-1,133.70	8,423.80	8,431.04	8,417.34	13.70	615.478	
2,500.00	2,486.87	2,487.54	2,487.53	9.76	4.58	-74.38	-1,133.59	8,424.09	8,428.01	8,413.86	14.14	595.847	
2,600.00	2,586.12	2,586.13	2,586.12	10.13	4.68	-74.46	-1,133.48	8,424.39	8,425.01	8,410.42	14.59	577.259	
2,700.00	2,685.38	2,684.06	2,684.06	10.50	4.77	-74.53	-1,133.36	8,424.71	8,422.04	8,406.99	15.05	559.667	
2,800.00	2,784.63	2,781.99	2,781.99	10.87	4.86	-74.61	-1,133.24	8,425.03	8,419.10	8,403.59	15.51	542.986	
2,900.00	2,883.89	2,880.93	2,880.92	11.24	4.96	-74.69	-1,133.12	8,425.37	8,416.18	8,400.22	15.97	527.128	
3,000.00	2,983.15	2,979.17	2,979.16	11.62	5.06	-74.77	-1,132.99	8,425.73	8,413.30	8,396.87	16.43	512.087	
3,100.00	3,082.40	3,077.09	3,077.09	12.00	5.16	-74.85	-1,132.85	8,426.09	8,410.44	8,393.55	16.90	497.801	
3,200.00	3,181.66	3,175.02	3,175.01	12.38	5.26	-74.93	-1,132.72	8,426.46	8,407.61	8,390.25	17.36	484.211	
3,300.00	3,280.91	3,274.27	3,274.26	12.75	5.36	-75.01	-1,132.57	8,426.85	8,404.81	8,386.97	17.84	471.242	
3,400.00	3,380.17	3,372.19	3,372.18	13.13	5.46	-75.09	-1,132.42	8,427.24	8,402.04	8,383.73	18.31	458.917	
3,500.00	3,479.42	3,470.12	3,470.11	13.52	5.57	-75.17	-1,132.27	8,427.65	8,399.29	8,380.51	18.78	447.164	
3,600.00	3,578.68	3,568.39	3,568.38	13.90	5.67	-75.25	-1,132.12	8,428.07	8,396.58	8,377.31	19.26	435.940	
3,700.00	3,677.94	3,667.28	3,667.27	14.28	5.78	-75.33	-1,131.96	8,428.51	8,393.89	8,374.15	19.74	425.208	
3,800.00	3,777.19	3,765.21	3,765.19	14.66	5.88	-75.41	-1,131.79	8,428.95	8,391.23	8,371.01	20.22	414.969	
3,900.00	3,876.45	3,863.13	3,863.11	15.05	5.99	-75.50	-1,131.62	8,429.40	8,388.60	8,367.90	20.70	405.175	
4,000.00	3,975.70	3,961.75	3,961.73	15.43	6.10	-75.58	-1,131.45	8,429.87	8,386.00	8,364.81	21.19	395.787	
4,100.00	4,074.96	4,051.68	4,051.66	15.82	6.20	-75.65	-1,131.30	8,430.34	8,383.46	8,361.79	21.67	386.927	
4,200.00	4,174.21	4,153.92	4,153.90	16.20	6.31	-75.73	-1,131.04	8,430.90	8,380.95	8,358.80	22.15	378.300	
4,300.00	4,273.47	4,263.62	4,263.60	16.59	6.43	-75.82	-1,130.85	8,431.33	8,378.31	8,355.66	22.65	369.901	
4,400.00	4,372.73	4,382.67	4,382.65	16.97	6.56	-75.92	-1,130.78	8,431.69	8,375.61	8,352.45	23.16	361.637	
4,500.00	4,471.98	4,482.56	4,482.53	17.36	6.66	-76.00	-1,130.84	8,431.97	8,372.93	8,349.27	23.66	353.904	
4,600.00	4,571.24	4,575.78	4,575.75	17.75	6.71	-76.08	-1,131.00	8,432.04	8,370.07	8,345.95	24.11	347.107	
4,700.00	4,670.49	4,688.96	4,688.94	18.13	6.74	-76.17	-1,131.28	8,432.11	8,367.19	8,342.63	24.56	340.664	
4,800.00	4,769.75	4,787.36	4,787.34	18.52	6.75	-76.24	-1,131.59	8,432.10	8,364.29	8,339.30	24.99	334.686	
4,900.00	4,869.00	4,892.56	4,892.54	18.91	6.76	-76.33	-1,131.95	8,432.10	8,361.40	8,335.98	25.42	328.881	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #055 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	5,002.31	5,002.28	19.30	6.76	-76.41	-1,132.35	8,431.99	8,358.44	8,332.60	25.84	323.490	
5,100.00	5,067.51	5,100.00	5,099.97	19.69	6.75	-76.49	-1,132.78	8,431.82	8,355.42	8,329.18	26.24	318.413	
5,200.00	5,166.77	5,208.78	5,208.75	20.07	6.75	-76.57	-1,133.27	8,431.68	8,352.48	8,325.82	26.65	313.361	
5,300.00	5,266.03	5,318.33	5,318.30	20.46	6.74	-76.66	-1,133.88	8,431.31	8,349.34	8,322.29	27.05	308.690	
5,400.00	5,365.28	5,421.40	5,421.37	20.85	6.73	-76.74	-1,134.46	8,430.94	8,346.19	8,318.75	27.44	304.155	
5,500.00	5,464.54	5,518.32	5,518.28	21.24	6.71	-76.81	-1,135.00	8,430.53	8,343.00	8,315.17	27.83	299.775	
5,600.00	5,563.79	5,618.68	5,618.65	21.63	6.70	-76.89	-1,135.50	8,430.05	8,339.76	8,311.55	28.22	295.575	
5,700.00	5,663.05	5,725.00	5,724.96	22.02	6.68	-76.97	-1,136.04	8,429.58	8,336.58	8,307.98	28.60	291.475	
5,800.00	5,762.30	5,825.00	5,824.96	22.41	6.68	-77.05	-1,136.73	8,429.02	8,333.30	8,304.31	28.99	287.425	
5,900.00	5,861.56	5,941.26	5,941.21	22.80	6.66	-77.14	-1,137.50	8,428.17	8,329.85	8,300.47	29.38	283.551	
6,000.00	5,960.82	6,029.38	6,029.33	23.19	6.66	-77.21	-1,138.11	8,427.62	8,326.54	8,296.77	29.77	279.703	
6,100.00	6,060.07	6,125.00	6,124.94	23.58	6.66	-77.28	-1,138.75	8,426.94	8,323.17	8,293.01	30.16	275.943	
6,200.00	6,159.33	6,215.71	6,215.65	23.97	6.66	-77.35	-1,139.43	8,426.27	8,319.80	8,289.24	30.56	272.237	
6,300.00	6,258.58	6,323.09	6,323.02	24.36	6.67	-77.43	-1,140.51	8,425.68	8,316.62	8,285.65	30.97	268.536	
6,400.00	6,357.84	6,425.00	6,424.92	24.76	6.70	-77.51	-1,141.59	8,425.19	8,313.54	8,282.16	31.38	264.892	
6,500.00	6,457.09	6,522.49	6,522.41	25.15	6.72	-77.58	-1,142.89	8,424.73	8,310.49	8,278.69	31.80	261.306	
6,528.17	6,485.05	6,538.42	6,538.33	25.26	6.73	-77.59	-1,143.15	8,424.65	8,309.63	8,277.71	31.92	260.329	
6,550.00	6,506.71	6,550.00	6,549.91	25.34	6.73	-62.86	-1,143.35	8,424.61	8,308.62	8,276.61	32.01	259.565	
6,600.00	6,556.11	6,608.77	6,608.68	25.54	6.75	-39.57	-1,144.11	8,424.39	8,303.49	8,271.27	32.22	257.688	
6,650.00	6,605.00	6,640.86	6,640.76	25.74	6.77	-27.18	-1,144.57	8,424.31	8,294.53	8,262.10	32.43	255.789	
6,700.00	6,653.07	6,692.99	6,692.88	25.93	6.79	-20.16	-1,145.37	8,424.20	8,281.78	8,249.15	32.63	253.772	
6,750.00	6,700.02	6,736.77	6,736.66	26.12	6.81	-15.76	-1,145.96	8,424.12	8,265.30	8,232.46	32.83	251.733	
6,800.00	6,745.56	6,775.00	6,774.88	26.31	6.83	-12.77	-1,146.45	8,424.02	8,245.14	8,212.11	33.02	249.690	
6,850.00	6,789.42	6,800.00	6,799.88	26.50	6.84	-10.59	-1,146.75	8,424.03	8,221.57	8,188.37	33.20	247.642	
6,900.00	6,831.32	6,857.42	6,857.30	26.69	6.87	-8.95	-1,147.56	8,424.01	8,194.59	8,161.21	33.38	245.491	
6,950.00	6,871.01	6,897.08	6,896.96	26.87	6.90	-7.63	-1,148.19	8,424.00	8,164.42	8,130.88	33.54	243.405	
7,000.00	6,908.23	6,937.06	6,936.93	27.05	6.92	-6.51	-1,148.75	8,423.95	8,131.18	8,097.49	33.69	241.344	
7,050.00	6,942.77	6,959.50	6,959.37	27.23	6.93	-5.52	-1,149.07	8,423.94	8,095.14	8,061.32	33.82	239.349	
7,100.00	6,974.40	7,021.81	7,021.67	27.41	6.97	-4.62	-1,149.99	8,423.87	8,056.50	8,022.55	33.95	237.293	
7,150.00	7,002.93	7,035.02	7,034.88	27.60	6.97	-3.68	-1,150.19	8,423.83	8,015.44	7,981.39	34.05	235.402	
7,200.00	7,028.20	7,050.00	7,049.86	27.80	6.98	-2.67	-1,150.40	8,423.83	7,972.33	7,938.19	34.13	233.553	
7,250.00	7,050.03	7,097.48	7,097.33	28.00	7.01	-1.49	-1,150.98	8,423.74	7,927.33	7,893.12	34.21	231.703	
7,300.00	7,068.30	7,108.43	7,108.28	28.22	7.01	0.08	-1,151.11	8,423.71	7,880.76	7,846.49	34.27	229.979	
7,350.00	7,082.89	7,113.88	7,113.73	28.45	7.02	2.45	-1,151.17	8,423.70	7,832.93	7,798.62	34.31	228.325	
7,400.00	7,093.72	7,125.00	7,124.85	28.70	7.02	6.70	-1,151.30	8,423.70	7,784.14	7,749.81	34.33	226.723	
7,450.00	7,100.71	7,125.00	7,124.85	28.96	7.02	16.83	-1,151.30	8,423.70	7,734.66	7,700.31	34.35	225.200	
7,500.00	7,103.82	7,125.00	7,124.85	29.24	7.02	59.35	-1,151.30	8,423.70	7,684.80	7,650.45	34.35	223.737	
7,515.00	7,104.00	7,125.00	7,124.85	29.32	7.02	89.28	-1,151.30	8,423.70	7,669.81	7,635.47	34.35	223.308	
7,600.00	7,104.00	7,125.00	7,124.85	29.84	7.02	89.28	-1,151.30	8,423.70	7,584.90	7,550.56	34.34	220.903	
7,700.00	7,104.00	7,125.00	7,124.85	30.51	7.02	89.28	-1,151.30	8,423.70	7,484.99	7,450.67	34.32	218.069	
7,800.00	7,104.00	7,125.00	7,124.85	31.26	7.02	89.28	-1,151.30	8,423.70	7,385.09	7,350.78	34.31	215.230	
7,900.00	7,104.00	7,125.00	7,124.85	32.07	7.02	89.28	-1,151.30	8,423.70	7,285.19	7,250.89	34.30	212.386	
8,000.00	7,104.00	7,125.00	7,124.85	32.94	7.02	89.28	-1,151.30	8,423.70	7,185.30	7,151.01	34.29	209.536	
8,100.00	7,104.00	7,125.00	7,124.85	33.86	7.02	89.28	-1,151.30	8,423.70	7,085.41	7,051.13	34.28	206.682	
8,200.00	7,104.00	7,125.00	7,124.85	34.84	7.02	89.28	-1,151.30	8,423.70	6,985.52	6,951.25	34.27	203.824	
8,300.00	7,104.00	7,125.00	7,124.85	35.86	7.02	89.28	-1,151.30	8,423.70	6,885.63	6,851.37	34.26	200.960	
8,400.00	7,104.00	7,125.00	7,124.85	36.92	7.02	89.28	-1,151.30	8,423.70	6,785.75	6,751.50	34.26	198.093	
8,500.00	7,104.00	7,125.00	7,124.85	38.02	7.02	89.28	-1,151.30	8,423.70	6,685.87	6,651.62	34.25	195.221	
8,600.00	7,104.00	7,125.00	7,124.85	39.15	7.02	89.28	-1,151.30	8,423.70	6,586.00	6,551.76	34.24	192.345	
8,700.00	7,104.00	7,125.00	7,124.85	40.32	7.02	89.28	-1,151.30	8,423.70	6,486.13	6,451.89	34.23	189.465	
8,800.00	7,104.00	7,125.00	7,124.85	41.52	7.02	89.28	-1,151.30	8,423.70	6,386.26	6,352.03	34.23	186.581	
8,900.00	7,104.00	7,125.00	7,124.85	42.74	7.02	89.28	-1,151.30	8,423.70	6,286.40	6,252.17	34.22	183.693	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #055 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	7,125.00	7,124.85	43.99	7.02	89.28	-1,151.30	8,423.70	6,186.54	6,152.32	34.22	180.802	
9,100.00	7,104.00	7,125.00	7,124.85	45.26	7.02	89.28	-1,151.30	8,423.70	6,086.68	6,052.47	34.21	177.908	
9,200.00	7,104.00	7,125.00	7,124.85	46.55	7.02	89.28	-1,151.30	8,423.70	5,986.83	5,952.63	34.21	175.010	
9,300.00	7,104.00	7,125.00	7,124.85	47.85	7.02	89.28	-1,151.30	8,423.70	5,886.99	5,852.79	34.21	172.108	
9,400.00	7,104.00	7,125.00	7,124.85	49.18	7.02	89.28	-1,151.30	8,423.70	5,787.15	5,752.95	34.20	169.204	
9,500.00	7,104.00	7,125.00	7,124.85	50.52	7.02	89.28	-1,151.30	8,423.70	5,687.32	5,653.12	34.20	166.296	
9,600.00	7,104.00	7,125.00	7,124.85	51.88	7.02	89.28	-1,151.30	8,423.70	5,587.49	5,553.29	34.20	163.385	
9,700.00	7,104.00	7,125.00	7,124.85	53.25	7.02	89.28	-1,151.30	8,423.70	5,487.67	5,453.47	34.20	160.471	
9,800.00	7,104.00	7,125.00	7,124.85	54.63	7.02	89.28	-1,151.30	8,423.70	5,387.86	5,353.66	34.20	157.555	
9,900.00	7,104.00	7,125.00	7,124.85	56.03	7.02	89.28	-1,151.30	8,423.70	5,288.05	5,253.85	34.20	154.635	
10,000.00	7,104.00	7,125.00	7,124.85	57.43	7.02	89.28	-1,151.30	8,423.70	5,188.25	5,154.05	34.20	151.712	
10,100.00	7,104.00	7,125.00	7,124.85	58.85	7.02	89.28	-1,151.30	8,423.70	5,088.46	5,054.26	34.20	148.786	
10,200.00	7,104.00	7,125.00	7,124.85	60.27	7.02	89.28	-1,151.30	8,423.70	4,988.68	4,954.47	34.20	145.858	
10,300.00	7,104.00	7,125.00	7,124.85	61.71	7.02	89.28	-1,151.30	8,423.70	4,888.90	4,854.70	34.21	142.926	
10,400.00	7,104.00	7,125.00	7,124.85	63.15	7.02	89.28	-1,151.30	8,423.70	4,789.14	4,754.93	34.21	139.991	
10,500.00	7,104.00	7,125.00	7,124.85	64.60	7.02	89.28	-1,151.30	8,423.70	4,689.38	4,655.17	34.22	137.054	
10,600.00	7,104.00	7,125.00	7,124.85	66.05	7.02	89.28	-1,151.30	8,423.70	4,589.64	4,555.42	34.22	134.113	
10,700.00	7,104.00	7,125.00	7,124.85	67.52	7.02	89.28	-1,151.30	8,423.70	4,489.91	4,455.68	34.23	131.168	
10,800.00	7,104.00	7,125.00	7,124.85	68.99	7.02	89.28	-1,151.30	8,423.70	4,390.19	4,355.95	34.24	128.220	
10,900.00	7,104.00	7,125.00	7,124.85	70.46	7.02	89.28	-1,151.30	8,423.70	4,290.48	4,256.23	34.25	125.268	
11,000.00	7,104.00	7,125.00	7,124.85	71.94	7.02	89.28	-1,151.30	8,423.70	4,190.78	4,156.52	34.26	122.312	
11,100.00	7,104.00	7,125.00	7,124.85	73.43	7.02	89.28	-1,151.30	8,423.70	4,091.11	4,056.83	34.28	119.352	
11,200.00	7,104.00	7,125.00	7,124.85	74.92	7.02	89.28	-1,151.30	8,423.70	3,991.44	3,957.15	34.29	116.387	
11,300.00	7,104.00	7,125.00	7,124.85	76.41	7.02	89.28	-1,151.30	8,423.70	3,891.80	3,857.48	34.31	113.417	
11,400.00	7,104.00	7,125.00	7,124.85	77.91	7.02	89.28	-1,151.30	8,423.70	3,792.17	3,757.83	34.34	110.441	
11,500.00	7,104.00	7,125.00	7,124.85	79.41	7.02	89.28	-1,151.30	8,423.70	3,692.56	3,658.20	34.36	107.460	
11,600.00	7,104.00	7,125.00	7,124.85	80.92	7.02	89.28	-1,151.30	8,423.70	3,592.98	3,558.59	34.39	104.472	
11,700.00	7,104.00	7,125.00	7,124.85	82.43	7.02	89.28	-1,151.30	8,423.70	3,493.42	3,458.99	34.43	101.476	
11,800.00	7,104.00	7,125.00	7,124.85	83.94	7.02	89.28	-1,151.30	8,423.70	3,393.88	3,359.42	34.47	98.473	
11,900.00	7,104.00	7,125.00	7,124.85	85.46	7.02	89.28	-1,151.30	8,423.70	3,294.38	3,259.87	34.51	95.461	
12,000.00	7,104.00	7,125.00	7,124.85	86.98	7.02	89.28	-1,151.30	8,423.70	3,194.90	3,160.34	34.56	92.439	
12,100.00	7,104.00	7,125.00	7,124.85	88.50	7.02	89.28	-1,151.30	8,423.70	3,095.46	3,060.83	34.62	89.406	
12,200.00	7,104.00	7,125.00	7,124.85	90.03	7.02	89.28	-1,151.30	8,423.70	2,996.05	2,961.36	34.69	86.360	
12,300.00	7,104.00	7,125.00	7,124.85	91.55	7.02	89.28	-1,151.30	8,423.70	2,896.69	2,861.91	34.77	83.302	
12,400.00	7,104.00	7,125.00	7,124.85	93.08	7.02	89.28	-1,151.30	8,423.70	2,797.37	2,762.50	34.87	80.229	
12,500.00	7,104.00	7,125.00	7,124.85	94.62	7.02	89.28	-1,151.30	8,423.70	2,698.10	2,663.12	34.98	77.139	
12,600.00	7,104.00	7,125.00	7,124.85	96.15	7.02	89.28	-1,151.30	8,423.70	2,598.89	2,563.78	35.11	74.031	
12,700.00	7,104.00	7,125.00	7,124.85	97.69	7.02	89.28	-1,151.30	8,423.70	2,499.74	2,464.48	35.26	70.903	
12,800.00	7,104.00	7,125.00	7,124.85	99.23	7.02	89.28	-1,151.30	8,423.70	2,400.66	2,365.22	35.43	67.752	
12,900.00	7,104.00	7,125.00	7,124.85	100.77	7.02	89.28	-1,151.30	8,423.70	2,301.66	2,266.02	35.64	64.578	
13,000.00	7,104.00	7,125.00	7,124.85	102.31	7.02	89.28	-1,151.30	8,423.70	2,202.75	2,166.86	35.89	61.378	
13,100.00	7,104.00	7,125.00	7,124.85	103.86	7.02	89.28	-1,151.30	8,423.70	2,103.94	2,067.76	36.18	58.150	
13,200.00	7,104.00	7,125.00	7,124.85	105.40	7.02	89.28	-1,151.30	8,423.70	2,005.25	1,968.72	36.53	54.891	
13,300.00	7,104.00	7,125.00	7,124.85	106.95	7.02	89.28	-1,151.30	8,423.70	1,906.70	1,869.75	36.95	51.602	
13,400.00	7,104.00	7,125.00	7,124.85	108.50	7.02	89.28	-1,151.30	8,423.70	1,808.31	1,770.86	37.45	48.282	
13,500.00	7,104.00	7,125.00	7,124.85	110.05	7.02	89.28	-1,151.30	8,423.70	1,710.10	1,672.04	38.06	44.930	
13,600.00	7,104.00	7,125.00	7,124.85	111.60	7.02	89.28	-1,151.30	8,423.70	1,612.12	1,573.32	38.80	41.551	
13,700.00	7,104.00	7,125.00	7,124.85	113.16	7.02	89.28	-1,151.30	8,423.70	1,514.40	1,474.70	39.70	38.148	
13,800.00	7,104.00	7,125.00	7,124.85	114.71	7.02	89.28	-1,151.30	8,423.70	1,416.99	1,376.19	40.80	34.730	
13,900.00	7,104.00	7,125.00	7,124.85	116.27	7.02	89.28	-1,151.30	8,423.70	1,319.98	1,277.82	42.16	31.309	
14,000.00	7,104.00	7,125.00	7,124.85	117.83	7.02	89.28	-1,151.30	8,423.70	1,223.44	1,179.60	43.84	27.904	
14,100.00	7,104.00	7,125.00	7,124.85	119.38	7.02	89.28	-1,151.30	8,423.70	1,127.51	1,081.57	45.95	24.540	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #055 - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	7,125.00	7,124.85	120.94	7.02	89.28	-1,151.30	8,423.70	1,032.35	983.77	48.59	21.248	
14,300.00	7,104.00	7,125.00	7,124.85	122.50	7.02	89.28	-1,151.30	8,423.70	938.20	886.28	51.92	18.068	
14,400.00	7,104.00	7,125.00	7,124.85	124.07	7.02	89.28	-1,151.30	8,423.70	845.40	789.22	56.18	15.048	
14,500.00	7,104.00	7,125.00	7,124.85	125.63	7.02	89.28	-1,151.30	8,423.70	754.43	692.79	61.65	12.238	
14,600.00	7,104.00	7,125.00	7,124.85	127.19	7.02	89.28	-1,151.30	8,423.70	666.06	597.35	68.72	9.693	
14,700.00	7,104.00	7,125.00	7,124.85	128.76	7.02	89.28	-1,151.30	8,423.70	581.47	503.59	77.88	7.466	
14,800.00	7,104.00	7,125.00	7,124.85	130.32	7.02	89.28	-1,151.30	8,423.70	502.58	412.90	89.68	5.604	
14,900.00	7,104.00	7,125.00	7,124.85	131.89	7.02	89.28	-1,151.30	8,423.70	432.50	328.13	104.37	4.144	
15,000.00	7,104.00	7,125.00	7,124.85	133.46	7.02	89.28	-1,151.30	8,423.70	376.20	255.21	120.99	3.109	
15,100.00	7,104.00	7,125.42	7,125.27	135.02	7.02	89.36	-1,151.30	8,423.70	340.58	204.80	135.79	2.508	
15,177.65	7,104.00	7,125.51	7,125.36	136.24	7.02	89.37	-1,151.30	8,423.70	331.62	189.60	142.01	2.335	CC, ES
15,200.00	7,104.00	7,125.53	7,125.38	136.59	7.02	89.38	-1,151.30	8,423.70	332.37	189.80	142.57	2.331	SF
15,300.00	7,104.00	7,125.65	7,125.50	138.16	7.02	89.40	-1,151.30	8,423.70	353.47	214.98	138.49	2.552	
15,400.00	7,104.00	7,125.76	7,125.61	139.73	7.02	89.42	-1,151.30	8,423.70	399.26	271.78	127.48	3.132	
15,500.00	7,104.00	7,125.97	7,125.82	141.30	7.02	89.45	-1,151.31	8,423.70	462.47	347.57	114.91	4.025	
15,600.00	7,104.00	7,126.12	7,125.97	142.88	7.02	89.48	-1,151.31	8,423.70	536.99	433.42	103.57	5.185	
15,700.00	7,104.00	7,126.28	7,126.13	144.45	7.02	89.50	-1,151.31	8,423.70	618.73	524.55	94.18	6.570	
15,800.00	7,104.00	7,126.45	7,126.30	146.02	7.02	89.53	-1,151.31	8,423.70	705.19	618.58	86.61	8.142	
15,900.00	7,104.00	7,126.62	7,126.47	147.60	7.02	89.56	-1,151.31	8,423.70	794.84	714.30	80.54	9.869	
16,000.00	7,104.00	7,126.80	7,126.65	149.17	7.02	89.59	-1,151.32	8,423.70	886.70	811.07	75.64	11.723	
16,100.00	7,104.00	7,127.00	7,126.85	150.74	7.02	89.63	-1,151.32	8,423.70	980.16	908.52	71.64	13.682	
16,200.00	7,104.00	7,127.20	7,127.05	152.32	7.02	89.66	-1,151.32	8,423.70	1,074.79	1,006.44	68.35	15.725	
16,300.00	7,104.00	7,127.42	7,127.27	153.89	7.02	89.70	-1,151.32	8,423.70	1,170.32	1,104.71	65.61	17.837	
16,400.00	7,104.00	7,127.65	7,127.50	155.47	7.02	89.74	-1,151.32	8,423.70	1,266.54	1,203.23	63.31	20.005	
16,500.00	7,104.00	7,127.89	7,127.74	157.05	7.02	89.78	-1,151.33	8,423.70	1,363.30	1,301.94	61.36	22.218	
16,600.00	7,104.00	7,128.15	7,128.00	158.63	7.02	89.83	-1,151.33	8,423.70	1,460.50	1,400.81	59.69	24.467	
16,700.00	7,104.00	7,128.42	7,128.27	160.20	7.02	89.87	-1,151.33	8,423.70	1,558.05	1,499.80	58.26	26.745	
16,800.00	7,104.00	7,128.71	7,128.56	161.78	7.02	89.92	-1,151.34	8,423.70	1,655.90	1,598.89	57.01	29.045	
16,900.00	7,104.00	7,129.03	7,128.88	163.36	7.02	89.98	-1,151.34	8,423.70	1,753.99	1,698.06	55.93	31.362	
17,000.00	7,104.00	7,129.36	7,129.21	164.94	7.02	90.04	-1,151.34	8,423.70	1,852.28	1,797.31	54.98	33.693	
17,100.00	7,104.00	7,129.72	7,129.57	166.52	7.02	90.10	-1,151.35	8,423.70	1,950.75	1,896.61	54.14	36.033	
17,200.00	7,104.00	7,130.11	7,129.96	168.10	7.02	90.17	-1,151.35	8,423.70	2,049.36	1,995.96	53.40	38.380	
17,300.00	7,104.00	7,128.17	7,128.02	169.68	7.02	89.83	-1,151.33	8,423.70	2,148.11	2,095.37	52.74	40.733	
17,400.00	7,104.00	7,128.31	7,128.16	171.26	7.02	89.86	-1,151.33	8,423.70	2,246.96	2,194.81	52.15	43.087	
17,500.00	7,104.00	7,128.45	7,128.30	172.84	7.02	89.88	-1,151.33	8,423.70	2,345.91	2,294.29	51.63	45.441	
17,600.00	7,104.00	7,128.60	7,128.45	174.42	7.02	89.90	-1,151.34	8,423.70	2,444.95	2,393.79	51.16	47.793	
17,700.00	7,104.00	7,128.74	7,128.59	176.00	7.02	89.93	-1,151.34	8,423.70	2,544.06	2,493.32	50.74	50.143	
17,800.00	7,104.00	7,128.88	7,128.73	177.59	7.02	89.95	-1,151.34	8,423.70	2,643.24	2,592.88	50.36	52.490	
17,900.00	7,104.00	7,129.03	7,128.88	179.17	7.02	89.98	-1,151.34	8,423.70	2,742.48	2,692.46	50.02	54.832	
18,000.00	7,104.00	7,129.18	7,129.03	180.75	7.03	90.00	-1,151.34	8,423.70	2,841.77	2,792.06	49.71	57.169	
18,100.00	7,104.00	7,129.33	7,129.18	182.33	7.03	90.03	-1,151.34	8,423.70	2,941.11	2,891.68	49.43	59.501	
18,200.00	7,104.00	7,120.76	7,120.61	183.92	7.02	88.55	-1,151.25	8,423.70	3,040.49	2,991.33	49.16	61.843	
18,300.00	7,104.00	7,120.61	7,120.46	185.50	7.02	88.52	-1,151.25	8,423.70	3,139.91	3,090.98	48.94	64.162	
18,400.00	7,104.00	7,120.46	7,120.31	187.09	7.02	88.50	-1,151.24	8,423.70	3,239.37	3,190.64	48.73	66.474	
18,500.00	7,104.00	7,120.31	7,120.16	188.67	7.02	88.47	-1,151.24	8,423.70	3,338.86	3,290.32	48.55	68.778	
18,600.00	7,104.00	7,120.15	7,120.01	190.26	7.02	88.45	-1,151.24	8,423.70	3,438.38	3,390.00	48.38	71.074	
18,700.00	7,104.00	7,120.00	7,119.85	191.84	7.02	88.42	-1,151.24	8,423.70	3,537.93	3,489.70	48.23	73.361	
18,800.00	7,104.00	7,119.85	7,119.70	193.43	7.02	88.39	-1,151.24	8,423.70	3,637.50	3,589.41	48.09	75.640	
18,900.00	7,104.00	7,119.70	7,119.55	195.01	7.02	88.37	-1,151.24	8,423.70	3,737.10	3,689.13	47.97	77.910	
19,000.00	7,104.00	7,119.54	7,119.40	196.60	7.02	88.34	-1,151.23	8,423.70	3,836.71	3,788.85	47.86	80.171	
19,100.00	7,104.00	7,119.39	7,119.24	198.18	7.02	88.31	-1,151.23	8,423.70	3,936.35	3,888.59	47.76	82.423	
19,200.00	7,104.00	7,119.24	7,119.09	199.77	7.02	88.29	-1,151.23	8,423.71	4,036.00	3,988.33	47.67	84.665	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #055 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	7,119.09	7,118.94	201.36	7.02	88.26	-1,151.23	8,423.71	4,135.67	4,088.08	47.59	86.898	
19,400.00	7,104.00	7,118.94	7,118.79	202.94	7.02	88.24	-1,151.23	8,423.71	4,235.36	4,187.83	47.52	89.122	
19,500.00	7,104.00	7,118.78	7,118.63	204.53	7.02	88.21	-1,151.23	8,423.71	4,335.05	4,287.59	47.46	91.336	
19,600.00	7,104.00	7,118.63	7,118.48	206.12	7.02	88.18	-1,151.22	8,423.71	4,434.77	4,387.36	47.41	93.540	
19,700.00	7,104.00	7,131.95	7,131.80	207.70	7.03	90.48	-1,151.37	8,423.70	4,534.49	4,487.11	47.39	95.695	
19,800.00	7,104.00	7,132.13	7,131.98	209.29	7.03	90.51	-1,151.38	8,423.70	4,634.23	4,586.89	47.35	97.877	
19,900.00	7,104.00	7,132.31	7,132.16	210.88	7.03	90.55	-1,151.38	8,423.71	4,733.98	4,686.67	47.32	100.050	
20,000.00	7,104.00	7,118.02	7,117.87	212.47	7.02	88.08	-1,151.22	8,423.71	4,833.74	4,786.47	47.27	102.258	
20,100.00	7,104.00	7,117.87	7,117.72	214.05	7.02	88.05	-1,151.21	8,423.71	4,933.51	4,886.26	47.25	104.412	
20,200.00	7,104.00	7,117.72	7,117.57	215.64	7.02	88.02	-1,151.21	8,423.71	5,033.29	4,986.05	47.24	106.557	
20,215.00	7,104.00	7,117.69	7,117.54	215.88	7.02	88.02	-1,151.21	8,423.71	5,048.26	5,001.03	47.23	106.878	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-170.25	-813.69	-139.85	825.82				
100.00	100.00	80.89	80.89	3.29	3.28	-170.25	-813.75	-139.85	825.67	819.11	6.57	125.676	
200.00	200.00	179.60	179.60	3.34	3.28	-170.25	-813.96	-139.81	825.89	819.27	6.62	124.761	
300.00	300.00	278.27	278.27	3.42	3.29	-170.26	-814.35	-139.75	826.26	819.55	6.71	123.108	
400.00	400.00	376.92	376.91	3.54	3.31	-170.27	-814.89	-139.67	826.79	819.95	6.84	120.826	
500.00	500.00	475.55	475.55	3.69	3.33	-170.29	-815.61	-139.56	827.49	820.48	7.01	118.047	
600.00	599.98	573.47	573.46	3.86	3.35	39.76	-816.58	-139.31	827.08	819.88	7.20	114.877	
700.00	699.84	672.19	672.17	4.04	3.38	39.98	-817.77	-138.81	824.16	816.75	7.41	111.212	
800.00	799.45	772.52	772.48	4.26	3.41	40.38	-819.11	-138.13	818.68	811.04	7.65	107.031	
849.50	848.63	821.77	821.73	4.37	3.43	40.65	-819.74	-137.71	814.97	807.19	7.78	104.805	
900.00	898.77	871.73	871.68	4.49	3.45	32.53	-820.40	-137.25	810.64	802.73	7.91	102.483	
973.84	972.07	945.55	945.50	4.68	3.48	20.50	-821.35	-136.57	803.49	795.38	8.11	99.029	
1,000.00	998.03	971.71	971.66	4.74	3.49	20.56	-821.68	-136.34	800.78	792.59	8.19	97.795	
1,100.00	1,097.29	1,073.95	1,073.89	5.02	3.53	20.80	-822.82	-135.42	790.30	781.82	8.48	93.183	
1,200.00	1,196.54	1,172.88	1,172.80	5.30	3.58	21.02	-823.73	-134.26	779.57	770.79	8.78	88.766	
1,300.00	1,295.80	1,270.12	1,270.03	5.61	3.63	21.22	-824.86	-132.94	769.07	759.97	9.10	84.540	
1,400.00	1,395.06	1,371.96	1,371.85	5.92	3.68	21.48	-825.96	-131.98	758.58	749.15	9.43	80.455	
1,500.00	1,494.31	1,468.25	1,468.13	6.24	3.74	21.73	-826.96	-131.20	748.08	738.31	9.77	76.573	
1,600.00	1,593.57	1,568.08	1,567.97	6.57	3.81	22.03	-828.16	-130.81	737.86	727.73	10.13	72.843	
1,700.00	1,692.82	1,666.62	1,666.49	6.91	3.87	22.35	-829.32	-130.61	727.67	717.17	10.50	69.302	
1,800.00	1,792.08	1,769.87	1,769.74	7.25	3.93	22.74	-830.19	-130.80	717.27	706.39	10.88	65.904	
1,900.00	1,891.33	1,870.23	1,870.10	7.60	4.01	23.11	-830.76	-130.77	706.58	695.31	11.27	62.683	
2,000.00	1,990.59	1,968.02	1,967.89	7.95	4.08	23.48	-831.30	-130.64	695.88	684.22	11.66	59.661	
2,100.00	2,089.85	2,065.95	2,065.82	8.30	4.15	23.84	-831.97	-130.37	685.31	673.25	12.06	56.827	
2,200.00	2,189.10	2,168.72	2,168.59	8.66	4.22	24.27	-832.46	-130.44	674.65	662.18	12.47	54.109	
2,300.00	2,288.36	2,268.82	2,268.68	9.02	4.26	24.72	-832.67	-130.74	663.83	650.96	12.87	51.589	
2,400.00	2,387.61	2,367.97	2,367.83	9.39	4.28	25.22	-832.73	-131.39	653.01	639.76	13.25	49.272	
2,500.00	2,486.87	2,466.39	2,466.24	9.76	4.30	25.75	-832.86	-132.28	642.37	628.72	13.64	47.080	
2,600.00	2,586.12	2,567.43	2,567.28	10.13	4.32	26.33	-832.86	-133.32	631.71	617.67	14.03	45.019	
2,700.00	2,685.38	2,667.56	2,667.40	10.50	4.33	26.92	-832.63	-134.22	620.85	606.44	14.41	43.080	
2,800.00	2,784.63	2,766.23	2,766.08	10.87	4.34	27.48	-832.52	-134.70	610.03	595.23	14.80	41.223	
2,900.00	2,883.89	2,865.35	2,865.19	11.24	4.38	28.05	-832.57	-135.04	599.39	584.19	15.20	39.421	
3,000.00	2,983.15	2,964.30	2,964.14	11.62	4.41	28.63	-832.55	-135.36	588.74	573.13	15.61	37.722	
3,100.00	3,082.40	3,061.78	3,061.62	12.00	4.48	29.22	-832.81	-135.63	578.40	562.36	16.04	36.055	
3,200.00	3,181.66	3,161.12	3,160.96	12.38	4.57	29.82	-833.24	-135.83	568.26	551.77	16.49	34.465	
3,300.00	3,280.91	3,257.83	3,257.67	12.75	4.65	30.41	-833.98	-135.96	558.46	541.53	16.94	32.975	
3,400.00	3,380.17	3,357.17	3,357.01	13.13	4.74	31.00	-834.86	-135.82	548.75	531.37	17.38	31.574	
3,500.00	3,479.42	3,456.62	3,456.45	13.52	4.83	31.62	-835.93	-135.74	539.29	521.46	17.83	30.249	
3,600.00	3,578.68	3,556.06	3,555.88	13.90	4.93	32.27	-837.01	-135.75	529.94	511.66	18.28	28.989	
3,700.00	3,677.94	3,654.53	3,654.34	14.28	5.02	32.93	-838.13	-135.75	520.70	501.96	18.74	27.792	
3,800.00	3,777.19	3,753.60	3,753.41	14.66	5.12	33.62	-839.17	-135.75	511.46	492.27	19.19	26.650	
3,900.00	3,876.45	3,854.24	3,854.05	15.05	5.22	34.34	-840.34	-135.70	502.37	482.72	19.65	25.569	
4,000.00	3,975.70	3,952.97	3,952.76	15.43	5.32	35.08	-841.43	-135.78	493.36	473.25	20.11	24.535	
4,100.00	4,074.96	4,052.55	4,052.34	15.82	5.42	35.86	-842.45	-135.83	484.37	463.80	20.57	23.547	
4,200.00	4,174.21	4,150.84	4,150.63	16.20	5.53	36.66	-843.55	-135.92	475.56	454.53	21.04	22.608	
4,300.00	4,273.47	4,248.23	4,248.01	16.59	5.63	37.47	-845.04	-136.10	467.26	445.75	21.50	21.731	
4,400.00	4,372.73	4,345.41	4,345.16	16.97	5.73	38.29	-846.92	-136.35	459.43	437.46	21.97	20.911	
4,500.00	4,471.98	4,442.94	4,442.67	17.36	5.83	39.14	-849.24	-136.90	452.25	429.81	22.44	20.152	
4,600.00	4,571.24	4,541.77	4,541.45	17.75	5.94	40.02	-851.89	-137.45	445.44	422.53	22.91	19.441	
4,700.00	4,670.49	4,641.12	4,640.76	18.13	6.05	40.92	-854.65	-138.01	438.82	415.43	23.38	18.766	
4,800.00	4,769.75	4,740.70	4,740.31	18.52	6.16	41.84	-857.42	-138.54	432.29	408.44	23.85	18.122	
4,900.00	4,869.00	4,839.74	4,839.31	18.91	6.26	42.80	-860.17	-139.17	425.95	401.62	24.33	17.509	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077 - OH - OH-SVY — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,939.09	4,938.62	19.30	6.37	43.79	-862.97	-139.80	419.75	394.95	24.80	16.926	
5,100.00	5,067.51	5,038.49	5,037.97	19.69	6.48	44.80	-865.85	-140.48	413.77	388.50	25.27	16.373	
5,200.00	5,166.77	5,138.23	5,137.67	20.07	6.59	45.85	-868.77	-141.17	407.96	382.22	25.74	15.847	
5,300.00	5,266.03	5,237.44	5,236.83	20.46	6.70	46.92	-871.72	-141.87	402.33	376.12	26.22	15.347	
5,400.00	5,365.28	5,336.50	5,335.84	20.85	6.82	48.02	-874.75	-142.63	396.95	370.27	26.69	14.874	
5,500.00	5,464.54	5,435.83	5,435.11	21.24	6.93	49.14	-877.86	-143.39	391.78	364.62	27.16	14.426	
5,600.00	5,563.79	5,534.85	5,534.09	21.63	7.04	50.28	-881.01	-144.14	386.80	359.17	27.63	14.000	
5,700.00	5,663.05	5,634.11	5,633.29	22.02	7.15	51.45	-884.22	-144.91	382.03	353.93	28.10	13.597	
5,800.00	5,762.30	5,733.29	5,732.42	22.41	7.27	52.64	-887.54	-145.73	377.54	348.97	28.56	13.217	
5,900.00	5,861.56	5,833.16	5,832.22	22.80	7.38	53.85	-891.01	-146.52	373.28	344.25	29.03	12.858	
6,000.00	5,960.82	5,932.86	5,931.86	23.19	7.50	55.12	-894.28	-147.39	369.12	339.63	29.49	12.515	
6,100.00	6,060.07	6,032.72	6,031.66	23.58	7.62	56.42	-897.52	-148.24	365.11	335.15	29.96	12.188	
6,200.00	6,159.33	6,131.57	6,130.45	23.97	7.73	57.73	-900.79	-149.18	361.39	330.98	30.42	11.881	
6,300.00	6,258.58	6,231.10	6,229.92	24.36	7.85	59.08	-904.13	-150.17	357.94	327.07	30.87	11.593	
6,400.00	6,357.84	6,330.68	6,329.45	24.76	7.96	60.47	-907.48	-151.22	354.76	323.43	31.33	11.323	
6,500.00	6,457.09	6,430.85	6,429.55	25.15	8.08	61.90	-910.75	-152.32	351.76	319.97	31.78	11.067	
6,528.17	6,485.05	6,459.31	6,457.99	25.26	8.11	62.31	-911.63	-152.61	350.90	318.99	31.91	10.996	
6,550.00	6,506.71	6,481.70	6,480.38	25.34	8.14	77.43	-912.31	-152.79	350.50	318.50	32.01	10.951	
6,554.10	6,510.77	6,485.89	6,484.57	25.36	8.14	79.98	-912.44	-152.82	350.49	318.47	32.03	10.944	CC, ES
6,600.00	6,556.11	6,532.01	6,530.67	25.54	8.20	101.77	-913.72	-153.15	351.82	319.60	32.23	10.917	SF
6,650.00	6,605.00	6,581.72	6,580.36	25.74	8.26	115.34	-915.03	-153.40	356.36	323.92	32.44	10.986	
6,700.00	6,653.07	6,630.94	6,629.56	25.93	8.32	123.68	-916.26	-153.60	364.29	331.65	32.64	11.161	
6,750.00	6,700.02	6,677.74	6,676.34	26.12	8.37	129.38	-917.33	-153.78	375.75	342.92	32.83	11.445	
6,800.00	6,745.56	6,724.38	6,722.98	26.31	8.43	133.69	-918.32	-153.94	390.82	357.81	33.01	11.840	
6,850.00	6,789.42	6,768.01	6,766.60	26.50	8.48	137.03	-919.11	-154.10	409.56	376.38	33.18	12.345	
6,900.00	6,831.32	6,810.83	6,809.41	26.69	8.53	139.75	-919.85	-154.25	431.95	398.61	33.33	12.959	
6,950.00	6,871.01	6,850.00	6,848.58	26.87	8.58	141.83	-920.45	-154.37	457.90	424.42	33.47	13.679	
7,000.00	6,908.23	6,887.12	6,885.69	27.05	8.62	143.44	-921.05	-154.52	487.34	453.73	33.61	14.502	
7,050.00	6,942.77	6,922.01	6,920.58	27.23	8.67	144.58	-921.63	-154.64	520.01	486.29	33.72	15.420	
7,100.00	6,974.40	6,953.23	6,951.79	27.41	8.70	145.18	-922.12	-154.74	555.70	521.87	33.83	16.427	
7,150.00	7,002.93	6,980.92	6,979.49	27.60	8.74	145.20	-922.56	-154.88	594.19	560.27	33.92	17.517	
7,200.00	7,028.20	7,007.33	7,005.89	27.80	8.77	144.71	-923.01	-154.97	635.12	601.12	34.00	18.678	
7,250.00	7,050.03	7,029.71	7,028.26	28.00	8.80	143.36	-923.40	-155.02	678.19	644.11	34.07	19.905	
7,300.00	7,068.30	7,048.25	7,046.80	28.22	8.82	140.84	-923.70	-155.05	723.10	688.97	34.13	21.188	
7,350.00	7,082.89	7,062.52	7,061.07	28.45	8.84	136.49	-923.92	-155.08	769.55	735.38	34.17	22.522	
7,400.00	7,093.72	7,073.00	7,071.55	28.70	8.85	129.19	-924.07	-155.10	817.22	783.02	34.20	23.895	
7,450.00	7,100.71	7,079.70	7,078.25	28.96	8.86	116.74	-924.17	-155.12	865.77	831.55	34.22	25.300	
7,500.00	7,103.82	7,082.60	7,081.15	29.24	8.86	96.10	-924.21	-155.12	914.89	880.65	34.23	26.726	
7,515.00	7,104.00	7,082.74	7,081.28	29.32	8.86	88.21	-924.22	-155.13	929.68	895.45	34.23	27.157	
7,600.00	7,104.00	7,082.51	7,081.06	29.84	8.86	88.13	-924.21	-155.12	1,013.64	979.40	34.24	29.603	
7,700.00	7,104.00	7,082.25	7,080.80	30.51	8.86	88.03	-924.21	-155.12	1,112.62	1,078.37	34.25	32.484	
7,800.00	7,104.00	7,081.99	7,080.54	31.26	8.86	87.93	-924.20	-155.12	1,211.77	1,177.51	34.26	35.367	
7,900.00	7,104.00	7,081.73	7,080.28	32.07	8.86	87.83	-924.20	-155.12	1,311.04	1,276.77	34.27	38.252	
8,000.00	7,104.00	7,081.47	7,080.02	32.94	8.86	87.73	-924.20	-155.12	1,410.42	1,376.14	34.29	41.136	
8,100.00	7,104.00	7,081.21	7,079.76	33.86	8.86	87.64	-924.19	-155.12	1,509.88	1,475.58	34.30	44.020	
8,200.00	7,104.00	7,080.96	7,079.51	34.84	8.86	87.54	-924.19	-155.12	1,609.41	1,575.10	34.31	46.902	
8,300.00	7,104.00	7,080.70	7,079.25	35.86	8.86	87.44	-924.19	-155.12	1,708.99	1,674.67	34.33	49.782	
8,400.00	7,104.00	7,080.45	7,079.00	36.92	8.86	87.35	-924.18	-155.12	1,808.62	1,774.28	34.35	52.660	
8,500.00	7,104.00	7,080.20	7,078.75	38.02	8.86	87.25	-924.18	-155.12	1,908.29	1,873.93	34.36	55.535	
8,600.00	7,104.00	7,079.95	7,078.50	39.15	8.86	87.16	-924.18	-155.12	2,007.99	1,973.61	34.38	58.407	
8,700.00	7,104.00	7,079.71	7,078.25	40.32	8.86	87.07	-924.17	-155.12	2,107.72	2,073.32	34.40	61.276	
8,800.00	7,104.00	7,079.46	7,078.01	41.52	8.86	86.97	-924.17	-155.12	2,207.47	2,173.06	34.42	64.140	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	7,079.22	7,077.76	42.74	8.86	86.88	-924.16	-155.12	2,307.25	2,272.81	34.44	67.001	
9,000.00	7,104.00	7,078.97	7,077.52	43.99	8.86	86.79	-924.16	-155.11	2,407.04	2,372.59	34.46	69.857	
9,100.00	7,104.00	7,078.73	7,077.28	45.26	8.86	86.70	-924.16	-155.11	2,506.85	2,472.37	34.48	72.709	
9,200.00	7,104.00	7,078.49	7,077.04	46.55	8.86	86.61	-924.15	-155.11	2,606.68	2,572.18	34.50	75.556	
9,300.00	7,104.00	7,078.25	7,076.80	47.85	8.86	86.52	-924.15	-155.11	2,706.51	2,671.99	34.52	78.397	
9,400.00	7,104.00	7,078.02	7,076.56	49.18	8.86	86.43	-924.15	-155.11	2,806.36	2,771.82	34.55	81.234	
9,500.00	7,104.00	7,077.78	7,076.33	50.52	8.85	86.34	-924.14	-155.11	2,906.22	2,871.65	34.57	84.065	
9,600.00	7,104.00	7,077.55	7,076.09	51.88	8.85	86.25	-924.14	-155.11	3,006.09	2,971.49	34.60	86.890	
9,700.00	7,104.00	7,077.31	7,075.86	53.25	8.85	86.16	-924.14	-155.11	3,105.97	3,071.35	34.62	89.709	
9,800.00	7,104.00	7,077.08	7,075.63	54.63	8.85	86.07	-924.13	-155.11	3,205.85	3,171.20	34.65	92.522	
9,900.00	7,104.00	7,076.85	7,075.40	56.03	8.85	85.99	-924.13	-155.11	3,305.74	3,271.07	34.68	95.329	
10,000.00	7,104.00	7,076.62	7,075.17	57.43	8.85	85.90	-924.13	-155.11	3,405.64	3,370.94	34.71	98.129	
10,100.00	7,104.00	7,076.39	7,074.94	58.85	8.85	85.81	-924.12	-155.11	3,505.55	3,470.81	34.73	100.923	
10,200.00	7,104.00	7,075.00	7,073.55	60.27	8.85	85.29	-924.10	-155.10	3,605.46	3,570.69	34.76	103.714	
10,300.00	7,104.00	7,075.00	7,073.55	61.71	8.85	85.29	-924.10	-155.10	3,705.37	3,670.58	34.79	106.492	
10,400.00	7,104.00	7,075.00	7,073.55	63.15	8.85	85.29	-924.10	-155.10	3,805.29	3,770.46	34.83	109.264	
10,500.00	7,104.00	7,075.00	7,073.55	64.60	8.85	85.29	-924.10	-155.10	3,905.21	3,870.35	34.86	112.027	
10,600.00	7,104.00	7,075.00	7,073.55	66.05	8.85	85.29	-924.10	-155.10	4,005.14	3,970.24	34.89	114.783	
10,700.00	7,104.00	7,075.00	7,073.55	67.52	8.85	85.29	-924.10	-155.10	4,105.07	4,070.14	34.93	117.532	
10,800.00	7,104.00	7,075.00	7,073.55	68.99	8.85	85.29	-924.10	-155.10	4,205.00	4,170.04	34.96	120.272	
10,900.00	7,104.00	7,075.00	7,073.55	70.46	8.85	85.29	-924.10	-155.10	4,304.94	4,269.94	35.00	123.004	
11,000.00	7,104.00	7,075.00	7,073.55	71.94	8.85	85.29	-924.10	-155.10	4,404.88	4,369.84	35.03	125.728	
11,100.00	7,104.00	7,075.00	7,073.55	73.43	8.85	85.29	-924.10	-155.10	4,504.82	4,469.75	35.07	128.444	
11,200.00	7,104.00	7,075.00	7,073.55	74.92	8.85	85.29	-924.10	-155.10	4,604.76	4,569.65	35.11	131.151	
11,300.00	7,104.00	7,075.00	7,073.55	76.41	8.85	85.29	-924.10	-155.10	4,704.71	4,669.56	35.15	133.849	
11,400.00	7,104.00	7,075.00	7,073.55	77.91	8.85	85.29	-924.10	-155.10	4,804.66	4,769.47	35.19	136.538	
11,500.00	7,104.00	7,075.00	7,073.55	79.41	8.85	85.29	-924.10	-155.10	4,904.61	4,869.38	35.23	139.218	
11,600.00	7,104.00	7,075.00	7,073.55	80.92	8.85	85.29	-924.10	-155.10	5,004.56	4,969.29	35.27	141.889	
11,700.00	7,104.00	7,075.00	7,073.55	82.43	8.85	85.29	-924.10	-155.10	5,104.52	5,069.21	35.31	144.551	
11,800.00	7,104.00	7,072.78	7,071.33	83.94	8.85	84.45	-924.07	-155.10	5,204.48	5,169.12	35.35	147.214	
11,900.00	7,104.00	7,072.58	7,071.13	85.46	8.85	84.38	-924.07	-155.10	5,304.43	5,269.04	35.40	149.858	
12,000.00	7,104.00	7,072.38	7,070.93	86.98	8.85	84.30	-924.06	-155.10	5,404.39	5,368.95	35.44	152.492	
12,100.00	7,104.00	7,072.19	7,070.74	88.50	8.85	84.23	-924.06	-155.10	5,504.35	5,468.87	35.49	155.116	
12,200.00	7,104.00	7,071.99	7,070.54	90.03	8.85	84.16	-924.06	-155.10	5,604.32	5,568.79	35.53	157.731	
12,300.00	7,104.00	7,071.80	7,070.35	91.55	8.85	84.09	-924.06	-155.10	5,704.28	5,668.70	35.58	160.335	
12,400.00	7,104.00	7,071.61	7,070.16	93.08	8.85	84.01	-924.05	-155.10	5,804.25	5,768.62	35.62	162.930	
12,500.00	7,104.00	7,071.42	7,069.97	94.62	8.85	83.94	-924.05	-155.10	5,904.21	5,868.54	35.67	165.514	
12,600.00	7,104.00	7,071.23	7,069.78	96.15	8.85	83.87	-924.05	-155.10	6,004.18	5,968.46	35.72	168.088	
12,700.00	7,104.00	7,071.04	7,069.59	97.69	8.85	83.80	-924.04	-155.09	6,104.15	6,068.38	35.77	170.651	
12,800.00	7,104.00	7,070.85	7,069.40	99.23	8.85	83.73	-924.04	-155.09	6,204.12	6,168.30	35.82	173.204	
12,900.00	7,104.00	7,070.67	7,069.22	100.77	8.85	83.66	-924.04	-155.09	6,304.09	6,268.22	35.87	175.746	
13,000.00	7,104.00	7,070.48	7,069.03	102.31	8.85	83.59	-924.04	-155.09	6,404.06	6,368.14	35.92	178.277	
13,100.00	7,104.00	7,070.30	7,068.85	103.86	8.85	83.52	-924.03	-155.09	6,504.03	6,468.06	35.97	180.798	
13,200.00	7,104.00	7,070.12	7,068.67	105.40	8.85	83.45	-924.03	-155.09	6,604.01	6,567.98	36.03	183.308	
13,300.00	7,104.00	7,069.94	7,068.49	106.95	8.85	83.39	-924.03	-155.09	6,703.98	6,667.90	36.08	185.807	
13,400.00	7,104.00	7,069.76	7,068.31	108.50	8.85	83.32	-924.03	-155.09	6,803.95	6,767.82	36.13	188.294	
13,500.00	7,104.00	7,069.58	7,068.13	110.05	8.84	83.25	-924.02	-155.09	6,903.93	6,867.74	36.19	190.771	
13,600.00	7,104.00	7,069.40	7,067.95	111.60	8.84	83.18	-924.02	-155.09	7,003.91	6,967.66	36.25	193.236	
13,700.00	7,104.00	7,069.22	7,067.77	113.16	8.84	83.12	-924.02	-155.09	7,103.88	7,067.58	36.30	195.690	
13,800.00	7,104.00	7,069.05	7,067.60	114.71	8.84	83.05	-924.02	-155.09	7,203.86	7,167.50	36.36	198.133	
13,900.00	7,104.00	7,068.87	7,067.42	116.27	8.84	82.99	-924.01	-155.09	7,303.84	7,267.42	36.42	200.564	
14,000.00	7,104.00	7,068.70	7,067.25	117.83	8.84	82.92	-924.01	-155.09	7,403.82	7,367.34	36.47	202.984	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	7,068.53	7,067.08	119.38	8.84	82.86	-924.01	-155.09	7,503.80	7,467.26	36.53	205.392	
14,200.00	7,104.00	7,068.36	7,066.91	120.94	8.84	82.79	-924.00	-155.09	7,603.77	7,567.18	36.59	207.788	
14,300.00	7,104.00	7,068.19	7,066.74	122.50	8.84	82.73	-924.00	-155.09	7,703.76	7,667.10	36.65	210.173	
14,400.00	7,104.00	7,068.02	7,066.57	124.07	8.84	82.67	-924.00	-155.09	7,803.74	7,767.02	36.72	212.546	
14,500.00	7,104.00	7,067.85	7,066.40	125.63	8.84	82.60	-924.00	-155.09	7,903.72	7,866.94	36.78	214.908	
14,600.00	7,104.00	7,067.68	7,066.23	127.19	8.84	82.54	-923.99	-155.09	8,003.70	7,966.86	36.84	217.257	
14,700.00	7,104.00	7,067.52	7,066.07	128.76	8.84	82.48	-923.99	-155.09	8,103.68	8,066.78	36.90	219.595	
14,800.00	7,104.00	7,067.35	7,065.90	130.32	8.84	82.42	-923.99	-155.09	8,203.66	8,166.70	36.97	221.921	
14,900.00	7,104.00	7,067.19	7,065.74	131.89	8.84	82.36	-923.99	-155.09	8,303.65	8,266.62	37.03	224.235	
15,000.00	7,104.00	7,067.03	7,065.58	133.46	8.84	82.30	-923.98	-155.09	8,403.63	8,366.53	37.10	226.537	
15,100.00	7,104.00	7,066.86	7,065.41	135.02	8.84	82.24	-923.98	-155.08	8,503.61	8,466.45	37.16	228.827	
15,200.00	7,104.00	7,066.70	7,065.25	136.59	8.84	82.18	-923.98	-155.08	8,603.60	8,566.37	37.23	231.105	
15,300.00	7,104.00	7,066.54	7,065.09	138.16	8.84	82.12	-923.98	-155.08	8,703.58	8,666.29	37.30	233.371	
15,400.00	7,104.00	7,066.38	7,064.93	139.73	8.84	82.06	-923.98	-155.08	8,803.57	8,766.20	37.36	235.625	
15,500.00	7,104.00	7,066.22	7,064.77	141.30	8.84	82.00	-923.97	-155.08	8,903.55	8,866.12	37.43	237.866	
15,600.00	7,104.00	7,066.07	7,064.62	142.88	8.84	81.94	-923.97	-155.08	9,003.54	8,966.04	37.50	240.096	
15,700.00	7,104.00	7,065.91	7,064.46	144.45	8.84	81.88	-923.97	-155.08	9,103.52	9,065.95	37.57	242.313	
15,800.00	7,104.00	7,065.76	7,064.31	146.02	8.84	81.82	-923.97	-155.08	9,203.51	9,165.87	37.64	244.519	
15,900.00	7,104.00	7,065.60	7,064.15	147.60	8.84	81.76	-923.96	-155.08	9,303.50	9,265.79	37.71	246.712	
16,000.00	7,104.00	7,065.45	7,064.00	149.17	8.84	81.71	-923.96	-155.08	9,403.48	9,365.70	37.78	248.893	
16,100.00	7,104.00	7,065.29	7,063.84	150.74	8.84	81.65	-923.96	-155.08	9,503.47	9,465.62	37.85	251.062	
16,200.00	7,104.00	7,065.14	7,063.69	152.32	8.84	81.59	-923.96	-155.08	9,603.46	9,565.53	37.93	253.218	
16,300.00	7,104.00	7,064.99	7,063.54	153.89	8.84	81.54	-923.95	-155.08	9,703.44	9,665.45	38.00	255.362	
16,400.00	7,104.00	7,064.84	7,063.39	155.47	8.84	81.48	-923.95	-155.08	9,803.43	9,765.36	38.07	257.495	
16,500.00	7,104.00	7,064.69	7,063.24	157.05	8.84	81.43	-923.95	-155.08	9,903.42	9,865.27	38.15	259.615	
16,600.00	7,104.00	7,064.54	7,063.09	158.63	8.84	81.37	-923.95	-155.08	10,003.41	9,965.19	38.22	261.722	
16,700.00	7,104.00	7,064.40	7,062.95	160.20	8.84	81.32	-923.95	-155.08	10,103.40	10,065.10	38.30	263.818	
16,800.00	7,104.00	7,064.25	7,062.80	161.78	8.84	81.26	-923.94	-155.08	10,203.39	10,165.01	38.37	265.901	
16,900.00	7,104.00	7,064.10	7,062.65	163.36	8.84	81.21	-923.94	-155.08	10,303.37	10,264.93	38.45	267.972	
17,000.00	7,104.00	7,063.96	7,062.51	164.94	8.84	81.15	-923.94	-155.08	10,403.36	10,364.84	38.53	270.031	
17,100.00	7,104.00	7,063.81	7,062.37	166.52	8.84	81.10	-923.94	-155.08	10,503.35	10,464.75	38.60	272.078	
17,200.00	7,104.00	7,063.67	7,062.22	168.10	8.84	81.05	-923.93	-155.08	10,603.34	10,564.66	38.68	274.113	
17,300.00	7,104.00	7,063.53	7,062.08	169.68	8.84	80.99	-923.93	-155.08	10,703.33	10,664.57	38.76	276.135	
17,400.00	7,104.00	7,063.39	7,061.94	171.26	8.84	80.94	-923.93	-155.08	10,803.32	10,764.48	38.84	278.145	
17,500.00	7,104.00	7,063.25	7,061.80	172.84	8.84	80.89	-923.93	-155.08	10,903.31	10,864.39	38.92	280.144	
17,600.00	7,104.00	7,063.11	7,061.66	174.42	8.84	80.84	-923.93	-155.08	11,003.30	10,964.30	39.00	282.130	
17,700.00	7,104.00	7,062.97	7,061.52	176.00	8.84	80.79	-923.92	-155.08	11,103.29	11,064.21	39.08	284.104	
17,800.00	7,104.00	7,062.83	7,061.38	177.59	8.84	80.73	-923.92	-155.08	11,203.28	11,164.12	39.16	286.066	
17,900.00	7,104.00	7,062.69	7,061.24	179.17	8.84	80.68	-923.92	-155.08	11,303.27	11,264.03	39.25	288.016	
18,000.00	7,104.00	7,062.55	7,061.10	180.75	8.84	80.63	-923.92	-155.08	11,403.27	11,363.94	39.33	289.954	
18,100.00	7,104.00	7,062.42	7,060.97	182.33	8.84	80.58	-923.92	-155.08	11,503.26	11,463.85	39.41	291.880	
18,200.00	7,104.00	7,062.28	7,060.83	183.92	8.84	80.53	-923.91	-155.08	11,603.25	11,563.75	39.49	293.794	
18,300.00	7,104.00	7,062.15	7,060.70	185.50	8.84	80.48	-923.91	-155.07	11,703.24	11,663.66	39.58	295.696	
18,400.00	7,104.00	7,062.01	7,060.56	187.09	8.84	80.43	-923.91	-155.07	11,803.23	11,763.57	39.66	297.586	
18,500.00	7,104.00	7,061.88	7,060.43	188.67	8.84	80.38	-923.91	-155.07	11,903.22	11,863.47	39.75	299.465	
18,600.00	7,104.00	7,061.75	7,060.30	190.26	8.84	80.33	-923.91	-155.07	12,003.21	11,963.38	39.83	301.331	
18,700.00	7,104.00	7,061.61	7,060.16	191.84	8.84	80.28	-923.90	-155.07	12,103.21	12,063.29	39.92	303.186	
18,800.00	7,104.00	7,061.48	7,060.03	193.43	8.84	80.24	-923.90	-155.07	12,203.20	12,163.19	40.01	305.029	
18,900.00	7,104.00	7,061.35	7,059.90	195.01	8.83	80.19	-923.90	-155.07	12,303.19	12,263.10	40.09	306.860	
19,000.00	7,104.00	7,061.22	7,059.77	196.60	8.83	80.14	-923.90	-155.07	12,403.18	12,363.00	40.18	308.680	
19,100.00	7,104.00	7,061.09	7,059.64	198.18	8.83	80.09	-923.90	-155.07	12,503.17	12,462.91	40.27	310.488	
19,200.00	7,104.00	7,060.96	7,059.52	199.77	8.83	80.04	-923.89	-155.07	12,603.17	12,562.81	40.36	312.284	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077 - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	7,060.84	7,059.39	201.36	8.83	80.00	-923.89	-155.07	12,703.16	12,662.71	40.45	314.069	
19,400.00	7,104.00	7,060.71	7,059.26	202.94	8.83	79.95	-923.89	-155.07	12,803.15	12,762.62	40.54	315.842	
19,500.00	7,104.00	7,060.58	7,059.13	204.53	8.83	79.90	-923.89	-155.07	12,903.15	12,862.52	40.63	317.604	
19,600.00	7,104.00	7,060.46	7,059.01	206.12	8.83	79.86	-923.89	-155.07	13,003.14	12,962.42	40.72	319.355	
19,700.00	7,104.00	7,060.33	7,058.88	207.70	8.83	79.81	-923.88	-155.07	13,103.13	13,062.32	40.81	321.094	
19,800.00	7,104.00	7,060.21	7,058.76	209.29	8.83	79.77	-923.88	-155.07	13,203.12	13,162.23	40.90	322.821	
19,900.00	7,104.00	7,060.08	7,058.64	210.88	8.83	79.72	-923.88	-155.07	13,303.12	13,262.13	40.99	324.538	
20,000.00	7,104.00	7,059.96	7,058.51	212.47	8.83	79.67	-923.88	-155.07	13,403.11	13,362.03	41.08	326.243	
20,100.00	7,104.00	7,059.84	7,058.39	214.05	8.83	79.63	-923.88	-155.07	13,503.11	13,461.93	41.18	327.937	
20,200.00	7,104.00	7,059.72	7,058.27	215.64	8.83	79.58	-923.87	-155.07	13,603.10	13,561.83	41.27	329.619	
20,215.00	7,104.00	7,059.70	7,058.25	215.88	8.83	79.58	-923.87	-155.07	13,618.10	13,576.82	41.28	329.871	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
0.00	0.00	0.00	0.00	3.28	3.28	108.56	-1,065.45	3,173.85	3,348.46				
100.00	100.00	39.00	39.00	3.29	3.37	108.56	-1,065.45	3,173.85	3,347.91	3,341.25	6.66	502.810	
200.00	200.00	139.00	139.00	3.34	4.27	108.56	-1,065.45	3,173.85	3,347.91	3,340.30	7.61	439.997	
277.11	277.11	215.97	215.96	3.40	5.37	108.55	-1,065.14	3,173.85	3,347.81	3,339.04	8.77	381.752	
300.00	300.00	237.28	237.27	3.42	5.71	108.55	-1,065.16	3,173.85	3,347.81	3,338.68	9.13	366.679	
400.00	400.00	339.02	339.00	3.54	7.42	108.56	-1,065.45	3,173.85	3,347.91	3,336.95	10.96	305.481	
492.18	492.18	431.02	431.00	3.67	9.02	108.55	-1,065.05	3,173.85	3,347.78	3,335.08	12.70	263.636	
500.00	500.00	438.41	438.39	3.69	9.15	108.55	-1,065.06	3,173.85	3,347.78	3,334.94	12.84	260.683	
600.00	599.98	532.92	532.90	3.86	10.85	-41.48	-1,065.35	3,173.85	3,346.57	3,331.87	14.71	227.539	
700.00	699.84	638.87	638.84	4.04	12.79	-41.59	-1,065.45	3,173.85	3,342.68	3,325.85	16.83	198.604	
800.00	799.45	738.49	738.45	4.26	14.63	-41.78	-1,065.45	3,173.85	3,336.16	3,317.28	18.88	176.683	
849.50	848.63	787.67	787.63	4.37	15.54	-41.90	-1,065.45	3,173.85	3,331.97	3,312.07	19.91	167.359	
900.00	898.77	837.00	836.96	4.49	16.46	-50.30	-1,064.93	3,173.85	3,327.57	3,306.63	20.95	158.857	
973.84	972.07	908.99	908.95	4.68	17.81	-62.60	-1,065.03	3,173.85	3,322.69	3,300.21	22.47	147.849	
1,000.00	998.03	934.49	934.46	4.74	18.28	-62.65	-1,065.09	3,173.85	3,321.23	3,298.21	23.02	144.291	
1,100.00	1,097.29	1,032.02	1,031.98	5.02	20.11	-62.83	-1,065.42	3,173.85	3,315.72	3,290.61	25.11	132.022	
1,200.00	1,196.54	1,135.61	1,135.54	5.30	22.19	-63.02	-1,065.45	3,173.85	3,310.15	3,282.68	27.47	120.488	
1,300.00	1,295.80	1,234.86	1,234.80	5.61	24.19	-63.21	-1,065.45	3,173.85	3,304.61	3,274.84	29.77	111.004	
1,400.00	1,395.06	1,332.92	1,332.85	5.92	26.17	-63.40	-1,064.66	3,173.85	3,298.88	3,266.82	32.06	102.906	
1,500.00	1,494.31	1,429.72	1,429.64	6.24	28.12	-63.58	-1,064.91	3,173.85	3,293.48	3,259.15	34.33	95.934	
1,600.00	1,593.57	1,526.58	1,526.50	6.57	30.08	-63.76	-1,065.40	3,173.85	3,288.20	3,251.58	36.62	89.804	
1,700.00	1,692.82	1,631.94	1,631.82	6.91	32.22	-63.96	-1,065.45	3,173.85	3,282.81	3,243.73	39.08	83.992	
1,800.00	1,792.08	1,731.20	1,731.08	7.25	34.24	-64.15	-1,065.45	3,173.85	3,277.45	3,236.01	41.44	79.092	
1,900.00	1,891.33	1,829.19	1,829.06	7.60	36.23	-64.36	-1,064.36	3,173.85	3,271.82	3,228.05	43.77	74.746	
2,000.00	1,990.59	1,925.49	1,925.35	7.95	38.18	-64.54	-1,064.65	3,173.85	3,266.62	3,220.54	46.08	70.894	
2,100.00	2,089.85	2,021.87	2,021.72	8.30	40.14	-64.71	-1,065.26	3,173.85	3,261.55	3,213.16	48.39	67.402	
2,200.00	2,189.10	2,128.28	2,128.10	8.66	42.19	-64.92	-1,065.45	3,173.85	3,256.38	3,205.59	50.79	64.114	
2,300.00	2,288.36	2,227.54	2,227.36	9.02	44.07	-65.11	-1,065.45	3,173.85	3,251.20	3,198.17	53.03	61.311	
2,400.00	2,387.61	2,325.88	2,325.69	9.39	45.93	-65.32	-1,064.67	3,173.85	3,245.86	3,190.60	55.25	58.746	
2,500.00	2,486.87	2,422.94	2,422.75	9.76	47.77	-65.50	-1,064.90	3,173.85	3,240.82	3,183.37	57.45	56.406	
2,600.00	2,586.12	2,520.06	2,519.86	10.13	49.61	-65.68	-1,065.39	3,173.85	3,235.89	3,176.23	59.66	54.238	
2,700.00	2,685.38	2,624.59	2,624.38	10.50	51.59	-65.89	-1,065.45	3,173.85	3,230.87	3,168.86	62.01	52.101	
2,800.00	2,784.63	2,723.85	2,723.63	10.87	53.48	-66.09	-1,065.45	3,173.85	3,225.89	3,161.62	64.26	50.197	
2,900.00	2,883.89	2,822.55	2,822.34	11.24	55.35	-66.29	-1,064.91	3,173.85	3,220.80	3,154.30	66.51	48.427	
3,000.00	2,983.15	2,920.49	2,920.27	11.62	57.21	-66.48	-1,065.06	3,173.85	3,215.93	3,147.19	68.74	46.784	
3,100.00	3,082.40	3,018.47	3,018.25	12.00	59.07	-66.67	-1,065.37	3,173.85	3,211.14	3,140.17	70.97	45.244	
3,200.00	3,181.66	3,120.90	3,120.66	12.38	61.13	-66.88	-1,065.45	3,173.85	3,206.32	3,132.91	73.41	43.677	
3,300.00	3,280.91	3,220.15	3,219.91	12.75	63.15	-67.08	-1,065.45	3,173.85	3,201.53	3,125.72	75.81	42.232	
3,400.00	3,380.17	3,317.37	3,317.13	13.13	65.13	-67.28	-1,064.91	3,173.85	3,196.65	3,118.49	78.17	40.896	
3,500.00	3,479.42	3,414.34	3,414.09	13.52	67.10	-67.47	-1,065.34	3,173.85	3,192.04	3,111.52	80.52	39.643	
3,600.00	3,578.68	3,517.97	3,517.68	13.90	69.34	-67.68	-1,065.45	3,173.85	3,187.39	3,104.25	83.13	38.341	
3,700.00	3,677.94	3,616.79	3,616.49	14.28	71.49	-67.89	-1,064.70	3,173.85	3,182.59	3,096.92	85.67	37.150	
3,800.00	3,777.19	3,712.70	3,712.40	14.66	73.58	-68.08	-1,064.99	3,173.85	3,178.06	3,089.92	88.14	36.056	
3,900.00	3,876.45	3,815.80	3,815.45	15.05	75.81	-68.28	-1,065.45	3,173.85	3,173.60	3,082.85	90.75	34.973	
4,000.00	3,975.70	3,915.08	3,914.70	15.43	77.88	-68.49	-1,065.45	3,173.85	3,169.08	3,075.88	93.20	34.002	
4,100.00	4,074.96	4,013.75	4,013.37	15.82	79.68	-68.69	-1,065.14	3,173.85	3,164.55	3,069.16	95.39	33.177	
4,200.00	4,174.21	4,113.60	4,113.21	16.20	81.47	-68.89	-1,065.45	3,173.85	3,160.18	3,062.61	97.56	32.391	
4,300.00	4,273.47	4,212.85	4,212.47	16.59	83.15	-69.10	-1,065.45	3,173.85	3,155.78	3,056.16	99.62	31.678	
4,400.00	4,372.73	4,311.38	4,310.99	16.97	84.81	-69.31	-1,065.34	3,173.85	3,151.41	3,049.74	101.67	30.997	
4,500.00	4,471.98	4,411.37	4,410.98	17.36	86.50	-69.51	-1,065.45	3,173.85	3,147.12	3,043.38	103.74	30.336	
4,600.00	4,571.24	4,510.52	4,510.14	17.75	88.18	-69.72	-1,065.31	3,173.85	3,142.82	3,037.01	105.81	29.703	
4,700.00	4,670.49	4,608.78	4,608.39	18.13	89.84	-69.92	-1,065.41	3,173.85	3,138.61	3,030.75	107.86	29.099	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,709.14	4,708.75	18.52	91.60	-70.13	-1,065.45	3,173.85	3,134.43	3,024.42	110.01	28.493	
4,900.00	4,869.00	4,807.92	4,807.53	18.91	93.35	-70.34	-1,065.32	3,173.85	3,130.27	3,018.12	112.14	27.913	
5,000.00	4,968.26	4,907.65	4,907.26	19.30	95.14	-70.55	-1,065.45	3,173.85	3,126.18	3,011.86	114.32	27.346	
5,100.00	5,067.51	5,006.91	5,006.51	19.69	97.03	-70.76	-1,065.45	3,173.85	3,122.12	3,005.53	116.60	26.777	
5,200.00	5,166.77	5,104.49	5,104.09	20.07	98.88	-70.97	-1,065.32	3,173.85	3,118.08	2,999.24	118.84	26.238	
5,300.00	5,266.03	5,205.43	5,205.03	20.46	100.85	-71.18	-1,065.45	3,173.85	3,114.13	2,992.93	121.19	25.696	
5,400.00	5,365.28	5,303.58	5,303.16	20.85	102.78	-71.39	-1,065.09	3,173.85	3,110.14	2,986.62	123.51	25.180	
5,500.00	5,464.54	5,403.97	5,403.54	21.24	104.78	-71.60	-1,065.45	3,173.85	3,106.30	2,980.40	125.90	24.672	
5,600.00	5,563.79	5,503.22	5,502.79	21.63	106.86	-71.81	-1,065.45	3,173.85	3,102.45	2,974.07	128.38	24.166	
5,700.00	5,663.05	5,600.31	5,599.87	22.02	108.90	-72.03	-1,065.25	3,173.85	3,098.62	2,967.81	130.81	23.688	
5,800.00	5,762.30	5,701.77	5,701.30	22.41	111.13	-72.24	-1,065.45	3,173.85	3,094.89	2,961.46	133.42	23.196	
5,900.00	5,861.56	5,799.38	5,798.90	22.80	113.32	-72.46	-1,064.86	3,173.85	3,091.08	2,955.08	136.00	22.728	
6,000.00	5,960.82	5,900.34	5,899.82	23.19	115.59	-72.67	-1,065.45	3,173.85	3,087.49	2,948.82	138.67	22.265	
6,100.00	6,060.07	5,999.60	5,999.07	23.58	117.90	-72.88	-1,065.45	3,173.85	3,083.86	2,942.50	141.36	21.815	
6,200.00	6,159.33	6,095.70	6,095.16	23.97	120.12	-73.10	-1,065.11	3,173.85	3,080.23	2,936.25	143.98	21.393	
6,300.00	6,258.58	6,198.18	6,197.58	24.36	122.46	-73.31	-1,065.45	3,173.85	3,076.73	2,930.02	146.71	20.972	
6,400.00	6,357.84	6,296.06	6,295.44	24.76	124.66	-73.54	-1,064.67	3,173.85	3,073.14	2,923.83	149.31	20.582	
6,500.00	6,457.09	6,396.76	6,396.09	25.15	126.92	-73.74	-1,065.45	3,173.85	3,069.78	2,917.82	151.96	20.201	
6,528.17	6,485.05	6,424.72	6,424.05	25.26	127.52	-73.81	-1,065.45	3,173.85	3,068.81	2,916.15	152.66	20.102	
6,550.00	6,506.71	6,446.37	6,445.71	25.34	127.97	-59.11	-1,065.45	3,173.85	3,067.69	2,914.49	153.21	20.023	
6,600.00	6,556.11	6,495.78	6,495.11	25.54	129.02	-35.84	-1,065.45	3,173.85	3,062.35	2,907.91	154.44	19.828	
6,650.00	6,605.00	6,543.98	6,543.31	25.74	130.04	-23.48	-1,064.92	3,173.85	3,053.10	2,897.44	155.65	19.615	
6,700.00	6,653.07	6,590.95	6,590.28	25.93	131.03	-16.43	-1,065.09	3,173.85	3,040.13	2,883.30	156.83	19.385	
6,750.00	6,700.02	6,636.86	6,636.19	26.12	132.00	-11.96	-1,065.40	3,173.85	3,023.46	2,865.48	157.98	19.138	
6,800.00	6,745.56	6,685.26	6,684.56	26.31	133.03	-8.88	-1,065.45	3,173.85	3,003.13	2,843.96	159.17	18.867	
6,850.00	6,789.42	6,729.12	6,728.42	26.50	133.95	-6.58	-1,065.45	3,173.85	2,979.32	2,819.06	160.26	18.591	
6,900.00	6,831.32	6,770.95	6,770.25	26.69	134.84	-4.76	-1,064.90	3,173.85	2,952.09	2,790.80	161.29	18.303	
6,950.00	6,871.01	6,809.79	6,809.08	26.87	135.66	-3.19	-1,064.96	3,173.85	2,921.75	2,759.49	162.25	18.008	
7,000.00	6,908.23	6,846.25	6,845.54	27.05	136.43	-1.75	-1,065.11	3,173.85	2,888.42	2,725.27	163.15	17.704	
7,050.00	6,942.77	6,880.09	6,879.38	27.23	137.15	-0.34	-1,065.33	3,173.85	2,852.31	2,688.33	163.97	17.395	
7,100.00	6,974.40	6,914.14	6,913.40	27.41	137.88	1.13	-1,065.45	3,173.85	2,813.61	2,648.81	164.80	17.073	
7,150.00	7,002.93	6,942.67	6,941.93	27.60	138.51	2.78	-1,065.45	3,173.85	2,772.58	2,607.07	165.51	16.752	
7,200.00	7,028.20	6,967.93	6,967.20	27.80	139.06	4.78	-1,065.45	3,173.85	2,729.47	2,563.34	166.13	16.430	
7,250.00	7,050.03	6,989.77	6,989.03	28.00	139.54	7.36	-1,065.45	3,173.85	2,684.55	2,517.89	166.65	16.108	
7,300.00	7,068.30	7,008.04	7,007.30	28.22	139.94	10.97	-1,065.45	3,173.85	2,638.10	2,471.01	167.09	15.789	
7,350.00	7,082.89	7,022.54	7,021.79	28.45	140.26	16.46	-1,064.91	3,173.85	2,590.34	2,422.91	167.43	15.471	
7,400.00	7,093.72	7,033.15	7,032.40	28.70	140.49	25.91	-1,064.91	3,173.85	2,541.70	2,374.03	167.67	15.159	
7,450.00	7,100.71	7,040.00	7,039.26	28.96	140.64	44.10	-1,064.92	3,173.85	2,492.42	2,324.60	167.81	14.852	
7,500.00	7,103.82	7,043.06	7,042.32	29.24	140.71	77.88	-1,064.93	3,173.85	2,442.80	2,274.93	167.86	14.552	
7,515.00	7,104.00	7,043.23	7,042.49	29.32	140.71	89.89	-1,064.93	3,173.85	2,427.89	2,260.03	167.86	14.464	
7,600.00	7,104.00	7,043.23	7,042.49	29.84	140.71	89.89	-1,064.93	3,173.85	2,343.45	2,175.64	167.81	13.964	
7,700.00	7,104.00	7,043.23	7,042.49	30.51	140.71	89.89	-1,064.93	3,173.85	2,244.17	2,076.41	167.76	13.377	
7,800.00	7,104.00	7,043.23	7,042.49	31.26	140.71	89.89	-1,064.93	3,173.85	2,144.95	1,977.24	167.71	12.790	
7,900.00	7,104.00	7,043.24	7,042.49	32.07	140.71	89.89	-1,064.93	3,173.85	2,045.81	1,878.16	167.65	12.203	
8,000.00	7,104.00	7,043.24	7,042.49	32.94	140.71	89.89	-1,064.93	3,173.85	1,946.75	1,779.16	167.59	11.616	
8,100.00	7,104.00	7,043.24	7,042.49	33.86	140.71	89.89	-1,064.93	3,173.85	1,847.80	1,680.27	167.52	11.030	
8,200.00	7,104.00	7,043.24	7,042.49	34.84	140.71	89.89	-1,064.93	3,173.85	1,748.97	1,581.50	167.46	10.444	
8,300.00	7,104.00	7,043.24	7,042.50	35.86	140.71	89.89	-1,064.93	3,173.85	1,650.27	1,482.88	167.40	9.858	
8,400.00	7,104.00	7,043.24	7,042.50	36.92	140.71	89.89	-1,064.93	3,173.85	1,551.75	1,384.41	167.33	9.273	
8,500.00	7,104.00	7,043.24	7,042.50	38.02	140.71	89.89	-1,064.93	3,173.85	1,453.42	1,286.15	167.27	8.689	
8,600.00	7,104.00	7,043.24	7,042.50	39.15	140.71	89.89	-1,064.93	3,173.85	1,355.35	1,188.12	167.22	8.105	
8,700.00	7,104.00	7,043.24	7,042.50	40.32	140.71	89.90	-1,064.93	3,173.85	1,257.57	1,090.39	167.18	7.522	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	7,043.24	7,042.50	41.52	140.71	89.90	-1,064.93	3,173.85	1,160.17	993.01	167.16	6.940	
8,900.00	7,104.00	7,043.25	7,042.50	42.74	140.71	89.90	-1,064.93	3,173.85	1,063.26	896.07	167.18	6.360	
9,000.00	7,104.00	7,043.25	7,042.50	43.99	140.71	89.90	-1,064.93	3,173.85	966.97	799.71	167.27	5.781	
9,100.00	7,104.00	7,043.25	7,042.50	45.26	140.71	89.90	-1,064.93	3,173.85	871.53	704.07	167.46	5.204	
9,200.00	7,104.00	7,043.25	7,042.50	46.55	140.71	89.90	-1,064.93	3,173.85	777.23	609.40	167.83	4.631	
9,300.00	7,104.00	7,043.25	7,042.50	47.85	140.71	89.90	-1,064.93	3,173.85	684.54	516.05	168.50	4.063	
9,400.00	7,104.00	7,043.25	7,042.51	49.18	140.71	89.90	-1,064.93	3,173.85	594.24	424.56	169.68	3.502	
9,500.00	7,104.00	7,043.25	7,042.51	50.52	140.71	89.90	-1,064.93	3,173.85	507.58	335.86	171.73	2.956	
9,600.00	7,104.00	7,043.25	7,042.51	51.88	140.71	89.90	-1,064.93	3,173.85	426.80	251.62	175.18	2.436	
9,700.00	7,104.00	7,043.25	7,042.51	53.25	140.71	89.90	-1,064.93	3,173.85	355.92	175.27	180.65	1.970	
9,800.00	7,104.00	7,043.25	7,042.51	54.63	140.71	89.90	-1,064.93	3,173.85	301.99	113.87	188.12	1.605	
9,900.00	7,104.00	7,043.25	7,042.51	56.03	140.71	89.90	-1,064.93	3,173.85	275.17	79.93	195.24	1.409	Level 3
9,927.40	7,104.00	7,043.26	7,042.51	56.41	140.71	89.90	-1,064.93	3,173.85	273.80	77.26	196.54	1.393	Level 3, CC, ES, SF
10,000.00	7,104.00	7,043.26	7,042.51	57.43	140.71	89.90	-1,064.93	3,173.85	283.26	85.33	197.93	1.431	Level 3
10,100.00	7,104.00	7,043.26	7,042.51	58.85	140.71	89.90	-1,064.93	3,173.85	323.66	127.88	195.78	1.653	
10,200.00	7,104.00	7,043.26	7,042.51	60.27	140.71	89.90	-1,064.93	3,173.85	386.36	194.51	191.85	2.014	
10,300.00	7,104.00	7,043.26	7,042.51	61.71	140.71	89.90	-1,064.93	3,173.85	462.38	274.25	188.13	2.458	
10,400.00	7,104.00	7,043.26	7,042.52	63.15	140.71	89.90	-1,064.93	3,173.85	546.18	361.04	185.14	2.950	
10,500.00	7,104.00	7,043.26	7,042.52	64.60	140.71	89.90	-1,064.93	3,173.85	634.69	451.86	182.84	3.471	
10,600.00	7,104.00	7,043.26	7,042.52	66.05	140.71	89.90	-1,064.93	3,173.85	726.19	545.12	181.07	4.011	
10,700.00	7,104.00	7,043.26	7,042.52	67.52	140.71	89.90	-1,064.93	3,173.85	819.68	639.98	179.70	4.561	
10,800.00	7,104.00	7,043.26	7,042.52	68.99	140.71	89.90	-1,064.93	3,173.85	914.55	735.93	178.62	5.120	
10,900.00	7,104.00	7,043.26	7,042.52	70.46	140.71	89.90	-1,064.93	3,173.85	1,010.40	832.65	177.76	5.684	
11,000.00	7,104.00	7,043.27	7,042.52	71.94	140.71	89.90	-1,064.93	3,173.85	1,106.99	929.94	177.06	6.252	
11,100.00	7,104.00	7,043.27	7,042.52	73.43	140.71	89.90	-1,064.93	3,173.85	1,204.14	1,027.66	176.48	6.823	
11,200.00	7,104.00	7,043.27	7,042.52	74.92	140.71	89.90	-1,064.93	3,173.85	1,301.72	1,125.71	176.01	7.396	
11,300.00	7,104.00	7,043.27	7,042.52	76.41	140.71	89.90	-1,064.93	3,173.85	1,399.64	1,224.03	175.61	7.970	
11,400.00	7,104.00	7,043.27	7,042.53	77.91	140.71	89.90	-1,064.93	3,173.85	1,497.84	1,322.57	175.27	8.546	
11,500.00	7,104.00	7,043.27	7,042.53	79.41	140.71	89.90	-1,064.93	3,173.85	1,596.26	1,421.27	174.98	9.122	
11,600.00	7,104.00	7,043.27	7,042.53	80.92	140.71	89.90	-1,064.93	3,173.85	1,694.86	1,520.12	174.74	9.699	
11,700.00	7,104.00	7,043.27	7,042.53	82.43	140.71	89.90	-1,064.93	3,173.85	1,793.62	1,619.09	174.53	10.277	
11,800.00	7,104.00	7,043.27	7,042.53	83.94	140.71	89.90	-1,064.93	3,173.85	1,892.51	1,718.17	174.34	10.855	
11,900.00	7,104.00	7,043.27	7,042.53	85.46	140.71	89.90	-1,064.93	3,173.85	1,991.51	1,817.32	174.19	11.433	
12,000.00	7,104.00	7,043.28	7,042.53	86.98	140.71	89.90	-1,064.93	3,173.85	2,090.61	1,916.55	174.05	12.011	
12,100.00	7,104.00	7,043.28	7,042.53	88.50	140.71	89.90	-1,064.93	3,173.85	2,189.78	2,015.85	173.93	12.590	
12,200.00	7,104.00	7,043.28	7,042.53	90.03	140.71	89.90	-1,064.93	3,173.85	2,289.03	2,115.20	173.83	13.168	
12,300.00	7,104.00	7,043.28	7,042.53	91.55	140.71	89.90	-1,064.93	3,173.85	2,388.34	2,214.60	173.74	13.746	
12,400.00	7,104.00	7,043.28	7,042.53	93.08	140.71	89.90	-1,064.93	3,173.85	2,487.71	2,314.05	173.67	14.325	
12,500.00	7,104.00	7,043.28	7,042.54	94.62	140.71	89.90	-1,064.93	3,173.85	2,587.13	2,413.53	173.60	14.903	
12,600.00	7,104.00	7,043.28	7,042.54	96.15	140.71	89.90	-1,064.93	3,173.85	2,686.59	2,513.04	173.55	15.481	
12,700.00	7,104.00	7,043.28	7,042.54	97.69	140.71	89.90	-1,064.93	3,173.85	2,786.09	2,612.59	173.50	16.058	
12,800.00	7,104.00	7,043.28	7,042.54	99.23	140.71	89.90	-1,064.93	3,173.85	2,885.62	2,712.16	173.46	16.636	
12,900.00	7,104.00	7,043.28	7,042.54	100.77	140.71	89.90	-1,064.93	3,173.85	2,985.18	2,811.75	173.43	17.213	
13,000.00	7,104.00	7,043.28	7,042.54	102.31	140.71	89.90	-1,064.93	3,173.85	3,084.77	2,911.37	173.40	17.790	
13,100.00	7,104.00	7,043.29	7,042.54	103.86	140.71	89.90	-1,064.93	3,173.85	3,184.39	3,011.01	173.38	18.366	
13,200.00	7,104.00	7,043.29	7,042.54	105.40	140.71	89.90	-1,064.93	3,173.85	3,284.03	3,110.67	173.37	18.943	
13,300.00	7,104.00	7,043.29	7,042.54	106.95	140.71	89.90	-1,064.93	3,173.85	3,383.69	3,210.34	173.36	19.519	
13,400.00	7,104.00	7,043.29	7,042.54	108.50	140.71	89.90	-1,064.93	3,173.85	3,483.38	3,310.03	173.35	20.094	
13,500.00	7,104.00	7,043.29	7,042.55	110.05	140.71	89.90	-1,064.93	3,173.85	3,583.08	3,409.73	173.35	20.670	
13,600.00	7,104.00	7,043.29	7,042.55	111.60	140.71	89.91	-1,064.93	3,173.85	3,682.79	3,509.44	173.35	21.245	
13,700.00	7,104.00	7,043.29	7,042.55	113.16	140.71	89.91	-1,064.93	3,173.85	3,782.52	3,609.16	173.36	21.819	
13,800.00	7,104.00	7,043.29	7,042.55	114.71	140.71	89.91	-1,064.93	3,173.85	3,882.27	3,708.90	173.37	22.393	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	7,043.29	7,042.55	116.27	140.71	89.91	-1,064.93	3,173.85	3,982.02	3,808.64	173.38	22.967	
14,000.00	7,104.00	7,043.29	7,042.55	117.83	140.71	89.91	-1,064.93	3,173.85	4,081.79	3,908.40	173.40	23.540	
14,100.00	7,104.00	7,043.30	7,042.55	119.38	140.71	89.91	-1,064.93	3,173.85	4,181.57	4,008.16	173.41	24.113	
14,200.00	7,104.00	7,043.30	7,042.55	120.94	140.71	89.91	-1,064.93	3,173.85	4,281.36	4,107.93	173.43	24.686	
14,300.00	7,104.00	7,043.30	7,042.55	122.50	140.71	89.91	-1,064.93	3,173.85	4,381.16	4,207.71	173.46	25.258	
14,400.00	7,104.00	7,043.30	7,042.55	124.07	140.71	89.91	-1,064.93	3,173.85	4,480.97	4,307.49	173.48	25.829	
14,500.00	7,104.00	7,043.30	7,042.56	125.63	140.71	89.91	-1,064.93	3,173.85	4,580.79	4,407.28	173.51	26.401	
14,600.00	7,104.00	7,043.30	7,042.56	127.19	140.71	89.91	-1,064.93	3,173.85	4,680.61	4,507.07	173.54	26.971	
14,700.00	7,104.00	7,043.30	7,042.56	128.76	140.71	89.91	-1,064.93	3,173.85	4,780.45	4,606.87	173.57	27.541	
14,800.00	7,104.00	7,043.30	7,042.56	130.32	140.71	89.91	-1,064.93	3,173.85	4,880.29	4,706.68	173.61	28.111	
14,900.00	7,104.00	7,043.30	7,042.56	131.89	140.71	89.91	-1,064.93	3,173.85	4,980.13	4,806.49	173.64	28.680	
15,000.00	7,104.00	7,043.30	7,042.56	133.46	140.71	89.91	-1,064.93	3,173.85	5,079.98	4,906.30	173.68	29.249	
15,100.00	7,104.00	7,043.31	7,042.56	135.02	140.71	89.91	-1,064.93	3,173.85	5,179.84	5,006.12	173.72	29.817	
15,200.00	7,104.00	7,043.31	7,042.56	136.59	140.71	89.91	-1,064.93	3,173.85	5,279.70	5,105.94	173.76	30.385	
15,300.00	7,104.00	7,043.31	7,042.56	138.16	140.71	89.91	-1,064.93	3,173.85	5,379.57	5,205.77	173.80	30.952	
15,400.00	7,104.00	7,043.31	7,042.56	139.73	140.71	89.91	-1,064.93	3,173.85	5,479.44	5,305.60	173.85	31.519	
15,500.00	7,104.00	7,043.31	7,042.56	141.30	140.71	89.91	-1,064.93	3,173.85	5,579.32	5,405.43	173.89	32.085	
15,600.00	7,104.00	7,043.31	7,042.57	142.88	140.71	89.91	-1,064.93	3,173.85	5,679.20	5,505.26	173.94	32.651	
15,700.00	7,104.00	7,043.31	7,042.57	144.45	140.71	89.91	-1,064.93	3,173.85	5,779.09	5,605.10	173.99	33.216	
15,800.00	7,104.00	7,043.31	7,042.57	146.02	140.71	89.91	-1,064.93	3,173.85	5,878.98	5,704.94	174.04	33.780	
15,900.00	7,104.00	7,043.31	7,042.57	147.60	140.71	89.91	-1,064.93	3,173.85	5,978.87	5,804.79	174.09	34.344	
16,000.00	7,104.00	7,043.31	7,042.57	149.17	140.71	89.91	-1,064.93	3,173.85	6,078.77	5,904.63	174.14	34.908	
16,100.00	7,104.00	7,043.32	7,042.57	150.74	140.71	89.91	-1,064.93	3,173.85	6,178.67	6,004.48	174.19	35.471	
16,200.00	7,104.00	7,043.32	7,042.57	152.32	140.71	89.91	-1,064.93	3,173.85	6,278.57	6,104.33	174.25	36.033	
16,300.00	7,104.00	7,043.32	7,042.57	153.89	140.71	89.91	-1,064.93	3,173.85	6,378.48	6,204.18	174.30	36.595	
16,400.00	7,104.00	7,043.32	7,042.57	155.47	140.71	89.91	-1,064.93	3,173.85	6,478.39	6,304.03	174.36	37.156	
16,500.00	7,104.00	7,043.32	7,042.57	157.05	140.71	89.91	-1,064.93	3,173.85	6,578.30	6,403.88	174.41	37.716	
16,600.00	7,104.00	7,043.32	7,042.58	158.63	140.71	89.91	-1,064.93	3,173.85	6,678.21	6,503.74	174.47	38.276	
16,700.00	7,104.00	7,043.32	7,042.58	160.20	140.71	89.91	-1,064.93	3,173.85	6,778.13	6,603.60	174.53	38.836	
16,800.00	7,104.00	7,043.32	7,042.58	161.78	140.71	89.91	-1,064.93	3,173.85	6,878.05	6,703.46	174.59	39.395	
16,900.00	7,104.00	7,043.32	7,042.58	163.36	140.71	89.91	-1,064.93	3,173.85	6,977.97	6,803.32	174.65	39.953	
17,000.00	7,104.00	7,043.32	7,042.58	164.94	140.71	89.91	-1,064.93	3,173.85	7,077.90	6,903.18	174.72	40.511	
17,100.00	7,104.00	7,043.32	7,042.58	166.52	140.71	89.91	-1,064.93	3,173.85	7,177.82	7,003.04	174.78	41.068	
17,200.00	7,104.00	7,043.33	7,042.58	168.10	140.71	89.91	-1,064.93	3,173.85	7,277.75	7,102.91	174.85	41.624	
17,300.00	7,104.00	7,043.33	7,042.58	169.68	140.71	89.91	-1,064.93	3,173.85	7,377.68	7,202.77	174.91	42.180	
17,400.00	7,104.00	7,043.33	7,042.58	171.26	140.71	89.91	-1,064.93	3,173.85	7,477.61	7,302.64	174.98	42.735	
17,500.00	7,104.00	7,043.33	7,042.58	172.84	140.71	89.91	-1,064.93	3,173.85	7,577.55	7,402.50	175.04	43.289	
17,600.00	7,104.00	7,043.33	7,042.59	174.42	140.71	89.91	-1,064.93	3,173.85	7,677.48	7,502.37	175.11	43.843	
17,700.00	7,104.00	7,043.33	7,042.59	176.00	140.71	89.91	-1,064.93	3,173.85	7,777.42	7,602.24	175.18	44.397	
17,800.00	7,104.00	7,043.33	7,042.59	177.59	140.71	89.91	-1,064.93	3,173.85	7,877.36	7,702.11	175.25	44.949	
17,900.00	7,104.00	7,043.33	7,042.59	179.17	140.71	89.91	-1,064.93	3,173.85	7,977.30	7,801.98	175.32	45.501	
18,000.00	7,104.00	7,043.33	7,042.59	180.75	140.71	89.91	-1,064.93	3,173.85	8,077.24	7,901.85	175.39	46.053	
18,100.00	7,104.00	7,043.33	7,042.59	182.33	140.71	89.91	-1,064.93	3,173.85	8,177.18	8,001.72	175.46	46.604	
18,200.00	7,104.00	7,043.34	7,042.59	183.92	140.71	89.91	-1,064.93	3,173.85	8,277.13	8,101.59	175.54	47.154	
18,300.00	7,104.00	7,043.34	7,042.59	185.50	140.71	89.91	-1,064.93	3,173.85	8,377.07	8,201.47	175.61	47.703	
18,400.00	7,104.00	7,043.34	7,042.59	187.09	140.71	89.91	-1,064.93	3,173.85	8,477.02	8,301.34	175.68	48.252	
18,500.00	7,104.00	7,043.34	7,042.59	188.67	140.71	89.92	-1,064.93	3,173.85	8,576.97	8,401.21	175.76	48.800	
18,600.00	7,104.00	7,043.34	7,042.60	190.26	140.71	89.92	-1,064.93	3,173.85	8,676.92	8,501.09	175.83	49.348	
18,700.00	7,104.00	7,043.34	7,042.60	191.84	140.71	89.92	-1,064.93	3,173.85	8,776.87	8,600.96	175.91	49.894	
18,800.00	7,104.00	7,043.34	7,042.60	193.43	140.71	89.92	-1,064.93	3,173.85	8,876.82	8,700.84	175.99	50.441	
18,900.00	7,104.00	7,043.34	7,042.60	195.01	140.71	89.92	-1,064.93	3,173.85	8,976.78	8,800.71	176.06	50.986	
19,000.00	7,104.00	7,043.34	7,042.60	196.60	140.71	89.92	-1,064.93	3,173.85	9,076.73	8,900.59	176.14	51.531	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077A - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 120-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	7,043.34	7,042.60	198.18	140.71	89.92	-1,064.93	3,173.85	9,176.68	9,000.46	176.22	52.075	
19,200.00	7,104.00	7,043.35	7,042.60	199.77	140.71	89.92	-1,064.93	3,173.85	9,276.64	9,100.34	176.30	52.618	
19,300.00	7,104.00	7,043.35	7,042.60	201.36	140.71	89.92	-1,064.93	3,173.85	9,376.60	9,200.22	176.38	53.161	
19,400.00	7,104.00	7,043.35	7,042.60	202.94	140.71	89.92	-1,064.93	3,173.85	9,476.56	9,300.09	176.46	53.703	
19,500.00	7,104.00	7,043.35	7,042.60	204.53	140.71	89.92	-1,064.93	3,173.85	9,576.51	9,399.97	176.54	54.245	
19,600.00	7,104.00	7,043.35	7,042.60	206.12	140.71	89.92	-1,064.93	3,173.85	9,676.47	9,499.85	176.62	54.786	
19,700.00	7,104.00	7,043.35	7,042.61	207.70	140.71	89.92	-1,064.93	3,173.85	9,776.43	9,599.73	176.71	55.326	
19,800.00	7,104.00	7,043.35	7,042.61	209.29	140.71	89.92	-1,064.93	3,173.85	9,876.39	9,699.60	176.79	55.865	
19,900.00	7,104.00	7,043.35	7,042.61	210.88	140.71	89.92	-1,064.93	3,173.85	9,976.36	9,799.48	176.87	56.404	
20,000.00	7,104.00	7,043.35	7,042.61	212.47	140.71	89.92	-1,064.93	3,173.85	10,076.32	9,899.36	176.96	56.942	
20,100.00	7,104.00	7,043.35	7,042.61	214.05	140.71	89.92	-1,064.93	3,173.85	10,176.28	9,999.24	177.04	57.479	
20,200.00	7,104.00	7,043.36	7,042.61	215.64	140.71	89.92	-1,064.93	3,173.85	10,276.25	10,099.12	177.13	58.016	
20,215.00	7,104.00	7,043.36	7,042.61	215.88	140.71	89.92	-1,064.93	3,173.85	10,291.25	10,114.10	177.14	58.096	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
0.00	0.00	0.00	0.00	3.28	0.00	137.95	-1,745.88	1,574.76	2,351.98				
100.00	100.00	38.00	38.00	3.29	0.34	137.95	-1,745.88	1,574.76	2,351.16	2,347.53	3.63	648.348	
200.00	200.00	138.00	138.00	3.34	1.22	137.95	-1,745.88	1,574.76	2,351.16	2,346.60	4.56	515.751	
300.00	300.00	238.00	238.00	3.42	2.11	137.95	-1,745.88	1,574.76	2,351.16	2,345.63	5.53	425.304	
400.00	400.00	338.00	338.00	3.54	3.41	137.95	-1,745.88	1,574.76	2,351.16	2,344.22	6.94	338.597	
500.00	500.00	438.00	438.00	3.69	5.25	137.95	-1,745.88	1,574.76	2,351.16	2,342.22	8.94	263.101	
600.00	599.98	537.98	537.98	3.86	7.09	-12.07	-1,745.88	1,574.76	2,349.45	2,338.50	10.95	214.602	
700.00	699.84	636.45	636.45	4.04	8.91	-12.12	-1,745.64	1,574.76	2,344.16	2,331.21	12.95	181.014	
800.00	799.45	734.59	734.59	4.26	10.72	-12.20	-1,745.76	1,574.76	2,335.73	2,320.76	14.97	156.030	
849.50	848.63	783.05	783.05	4.37	11.61	-12.25	-1,745.85	1,574.76	2,330.32	2,314.35	15.98	145.863	
900.00	898.77	836.79	836.77	4.49	12.62	-20.66	-1,745.88	1,574.76	2,324.50	2,307.39	17.11	135.881	
973.84	972.07	910.09	910.07	4.68	14.01	-33.03	-1,745.88	1,574.76	2,316.58	2,297.90	18.68	124.043	
1,000.00	998.03	936.06	936.03	4.74	14.51	-33.07	-1,745.88	1,574.76	2,313.90	2,294.67	19.23	120.308	
1,100.00	1,097.29	1,035.31	1,035.29	5.02	16.39	-33.24	-1,745.88	1,574.76	2,303.68	2,282.30	21.38	107.764	
1,200.00	1,196.54	1,130.41	1,130.38	5.30	18.19	-33.41	-1,745.19	1,574.76	2,292.98	2,269.53	23.46	97.755	
1,300.00	1,295.80	1,225.43	1,225.40	5.61	20.00	-33.56	-1,745.55	1,574.76	2,283.08	2,257.53	25.55	89.370	
1,400.00	1,395.06	1,333.11	1,333.06	5.92	22.04	-33.74	-1,745.88	1,574.76	2,273.14	2,245.25	27.89	81.509	
1,500.00	1,494.31	1,432.36	1,432.31	6.24	23.93	-33.91	-1,745.88	1,574.76	2,263.00	2,232.92	30.08	75.230	
1,600.00	1,593.57	1,531.61	1,531.56	6.57	25.82	-34.09	-1,745.33	1,574.76	2,252.49	2,220.20	32.28	69.776	
1,700.00	1,692.82	1,628.13	1,628.08	6.91	27.65	-34.26	-1,745.41	1,574.76	2,242.45	2,208.01	34.44	65.117	
1,800.00	1,792.08	1,724.69	1,724.63	7.25	29.49	-34.43	-1,745.66	1,574.76	2,232.55	2,195.95	36.60	61.000	
1,900.00	1,891.33	1,829.42	1,829.33	7.60	31.51	-34.61	-1,745.88	1,574.76	2,222.65	2,183.70	38.95	57.066	
2,000.00	1,990.59	1,928.67	1,928.59	7.95	33.45	-34.79	-1,745.88	1,574.76	2,212.61	2,171.38	41.23	53.666	
2,100.00	2,089.85	2,027.93	2,027.85	8.30	35.40	-34.97	-1,745.88	1,574.76	2,202.59	2,159.08	43.51	50.618	
2,200.00	2,189.10	2,123.40	2,123.31	8.66	37.27	-35.16	-1,745.17	1,574.76	2,192.10	2,146.37	45.73	47.937	
2,300.00	2,288.36	2,218.82	2,218.73	9.02	39.14	-35.33	-1,745.52	1,574.76	2,182.39	2,134.44	47.94	45.519	
2,400.00	2,387.61	2,325.74	2,325.61	9.39	41.24	-35.52	-1,745.88	1,574.76	2,172.68	2,122.29	50.39	43.118	
2,500.00	2,486.87	2,424.99	2,424.87	9.76	43.19	-35.71	-1,745.88	1,574.76	2,162.76	2,110.07	52.69	41.048	
2,600.00	2,586.12	2,524.25	2,524.12	10.13	45.14	-35.90	-1,745.88	1,574.76	2,152.85	2,097.86	54.99	39.149	
2,700.00	2,685.38	2,619.98	2,619.85	10.50	47.02	-36.09	-1,745.17	1,574.76	2,142.48	2,085.25	57.23	37.438	
2,800.00	2,784.63	2,715.53	2,715.40	10.87	48.89	-36.27	-1,745.51	1,574.76	2,132.87	2,073.41	59.46	35.870	
2,900.00	2,883.89	2,822.06	2,821.89	11.24	51.01	-36.47	-1,745.88	1,574.76	2,123.29	2,061.35	61.94	34.282	
3,000.00	2,983.15	2,921.31	2,921.15	11.62	53.03	-36.67	-1,745.88	1,574.76	2,113.48	2,049.17	64.31	32.864	
3,100.00	3,082.40	3,020.57	3,020.40	12.00	55.04	-36.87	-1,745.88	1,574.76	2,103.70	2,037.01	66.69	31.546	
3,200.00	3,181.66	3,116.56	3,116.38	12.38	56.99	-37.07	-1,745.16	1,574.76	2,093.45	2,024.45	69.00	30.341	
3,300.00	3,280.91	3,212.26	3,212.08	12.75	58.93	-37.26	-1,745.49	1,574.76	2,083.96	2,012.65	71.31	29.226	
3,400.00	3,380.17	3,318.39	3,318.17	13.13	61.12	-37.47	-1,745.88	1,574.76	2,074.51	2,000.65	73.85	28.090	
3,500.00	3,479.42	3,417.65	3,417.42	13.52	63.21	-37.68	-1,745.88	1,574.76	2,064.83	1,988.52	76.31	27.058	
3,600.00	3,578.68	3,516.91	3,516.68	13.90	65.30	-37.88	-1,745.88	1,574.76	2,055.17	1,976.40	78.77	26.091	
3,700.00	3,677.94	3,616.16	3,615.94	14.28	67.40	-38.09	-1,745.88	1,574.76	2,045.55	1,964.32	81.23	25.182	
3,800.00	3,777.19	3,715.42	3,715.19	14.66	69.49	-38.30	-1,745.88	1,574.76	2,035.95	1,952.26	83.69	24.326	
3,900.00	3,876.45	3,814.67	3,814.45	15.05	71.58	-38.52	-1,745.88	1,574.76	2,026.38	1,940.22	86.16	23.520	
4,000.00	3,975.70	3,913.93	3,913.70	15.43	73.67	-38.73	-1,745.88	1,574.76	2,016.84	1,928.22	88.62	22.759	
4,100.00	4,074.96	4,013.18	4,012.96	15.82	75.77	-38.95	-1,745.88	1,574.76	2,007.32	1,916.24	91.08	22.039	
4,200.00	4,174.21	4,112.44	4,112.21	16.20	77.86	-39.17	-1,745.88	1,574.76	1,997.84	1,904.29	93.55	21.356	
4,300.00	4,273.47	4,210.91	4,210.65	16.59	79.94	-39.47	-1,742.10	1,574.76	1,985.89	1,889.89	96.00	20.687	
4,400.00	4,372.73	4,308.91	4,308.64	16.97	82.00	-39.69	-1,742.21	1,574.76	1,976.54	1,878.11	98.44	20.079	
4,500.00	4,471.98	4,406.94	4,406.67	17.36	84.07	-39.90	-1,742.41	1,574.76	1,967.30	1,866.42	100.88	19.501	
4,600.00	4,571.24	4,504.99	4,504.72	17.75	86.14	-40.12	-1,742.71	1,574.76	1,958.14	1,854.82	103.32	18.952	
4,700.00	4,670.49	4,603.07	4,602.79	18.13	88.20	-40.34	-1,743.11	1,574.76	1,949.07	1,843.31	105.77	18.428	
4,800.00	4,769.75	4,701.17	4,700.89	18.52	90.27	-40.56	-1,743.60	1,574.76	1,940.10	1,831.89	108.21	17.929	
4,900.00	4,869.00	4,799.30	4,799.01	18.91	92.34	-40.78	-1,744.19	1,574.76	1,931.22	1,820.57	110.66	17.452	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077B - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,897.45	4,897.15	19.30	94.41	-41.00	-1,744.88	1,574.76	1,922.43	1,809.33	113.10	16.997	
5,100.00	5,067.51	4,995.63	4,995.32	19.69	96.48	-41.21	-1,745.66	1,574.76	1,913.74	1,798.18	115.55	16.562	
5,200.00	5,166.77	5,105.26	5,104.77	20.07	98.80	-41.47	-1,745.88	1,574.76	1,904.67	1,786.43	118.24	16.108	
5,300.00	5,266.03	5,204.52	5,204.03	20.46	100.90	-41.72	-1,745.88	1,574.76	1,895.54	1,774.81	120.73	15.701	
5,400.00	5,365.28	5,303.77	5,303.28	20.85	103.01	-41.96	-1,745.88	1,574.76	1,886.43	1,763.23	123.21	15.311	
5,500.00	5,464.54	5,403.03	5,402.54	21.24	105.11	-42.21	-1,745.88	1,574.76	1,877.36	1,751.67	125.69	14.936	
5,600.00	5,563.79	5,502.28	5,501.79	21.63	107.21	-42.46	-1,745.88	1,574.76	1,868.33	1,740.16	128.17	14.577	
5,700.00	5,663.05	5,601.54	5,601.05	22.02	109.32	-42.71	-1,745.88	1,574.76	1,859.33	1,728.68	130.66	14.231	
5,800.00	5,762.30	5,700.79	5,700.30	22.41	111.42	-42.97	-1,745.88	1,574.76	1,850.37	1,717.23	133.14	13.898	
5,900.00	5,861.56	5,800.05	5,799.56	22.80	113.52	-43.22	-1,745.88	1,574.76	1,841.45	1,705.82	135.63	13.577	
6,000.00	5,960.82	5,899.31	5,898.82	23.19	115.62	-43.48	-1,745.88	1,574.76	1,832.56	1,694.45	138.11	13.269	
6,100.00	6,060.07	5,998.56	5,998.07	23.58	117.73	-43.75	-1,745.88	1,574.76	1,823.71	1,683.12	140.60	12.971	
6,200.00	6,159.33	6,097.82	6,097.33	23.97	119.83	-44.01	-1,745.88	1,574.76	1,814.90	1,671.82	143.08	12.684	
6,300.00	6,258.58	6,197.07	6,196.58	24.36	121.93	-44.28	-1,745.88	1,574.76	1,806.13	1,660.56	145.57	12.407	
6,400.00	6,357.84	6,219.00	6,218.33	24.76	122.40	-44.34	-1,745.88	1,574.76	1,799.07	1,652.72	146.35	12.293	
6,479.64	6,436.88	6,219.00	6,218.33	25.07	122.40	-44.34	-1,745.88	1,574.76	1,797.31	1,650.98	146.33	12.283	
6,500.00	6,457.09	6,219.00	6,218.33	25.15	122.40	-44.34	-1,745.88	1,574.76	1,797.42	1,651.15	146.28	12.288	
6,528.17	6,485.05	6,219.00	6,218.33	25.26	122.40	-44.34	-1,745.88	1,574.76	1,797.96	1,651.79	146.18	12.300	
6,550.00	6,506.71	6,219.00	6,218.33	25.34	122.40	-29.63	-1,745.88	1,574.76	1,798.38	1,652.31	146.08	12.311	
6,600.00	6,556.11	6,219.00	6,218.33	25.54	122.40	-6.30	-1,745.88	1,574.76	1,798.06	1,652.30	145.76	12.336	
6,650.00	6,605.00	6,219.00	6,218.33	25.74	122.40	6.19	-1,745.88	1,574.76	1,795.94	1,650.61	145.33	12.358	
6,700.00	6,653.07	6,219.00	6,218.33	25.93	122.40	13.39	-1,745.88	1,574.76	1,792.05	1,647.26	144.78	12.377	
6,750.00	6,700.02	6,219.00	6,218.33	26.12	122.40	18.05	-1,745.88	1,574.76	1,786.38	1,642.26	144.13	12.395	
6,800.00	6,745.56	6,219.00	6,218.33	26.31	122.40	21.37	-1,745.88	1,574.76	1,778.97	1,635.60	143.36	12.409	
6,850.00	6,789.42	6,219.00	6,218.33	26.50	122.40	23.95	-1,745.88	1,574.76	1,769.83	1,627.33	142.50	12.420	
6,900.00	6,831.32	6,219.00	6,218.33	26.69	122.40	26.09	-1,745.88	1,574.76	1,758.99	1,617.44	141.55	12.427	
6,950.00	6,871.01	6,219.00	6,218.33	26.87	122.40	27.98	-1,745.88	1,574.76	1,746.49	1,605.98	140.51	12.430	
7,000.00	6,908.23	6,219.00	6,218.33	27.05	122.40	29.72	-1,745.88	1,574.76	1,732.38	1,592.98	139.40	12.428	
7,050.00	6,942.77	6,219.00	6,218.33	27.23	122.40	31.40	-1,745.88	1,574.76	1,716.69	1,578.46	138.23	12.419	
7,100.00	6,974.40	6,219.00	6,218.33	27.41	122.40	33.06	-1,745.88	1,574.76	1,699.49	1,562.48	137.01	12.404	
7,150.00	7,002.93	6,219.00	6,218.33	27.60	122.40	34.73	-1,745.88	1,574.76	1,680.83	1,545.06	135.77	12.380	
7,200.00	7,028.20	6,219.00	6,218.33	27.80	122.40	36.46	-1,745.88	1,574.76	1,660.79	1,526.28	134.51	12.347	
7,250.00	7,050.03	6,219.00	6,218.33	28.00	122.40	38.25	-1,745.88	1,574.76	1,639.43	1,506.17	133.27	12.302	
7,300.00	7,068.30	6,219.00	6,218.33	28.22	122.40	40.14	-1,745.88	1,574.76	1,616.85	1,484.79	132.05	12.244	
7,350.00	7,082.89	6,219.00	6,218.33	28.45	122.40	42.12	-1,745.88	1,574.76	1,593.13	1,462.23	130.90	12.171	
7,400.00	7,093.72	6,219.00	6,218.33	28.70	122.40	44.22	-1,745.88	1,574.76	1,568.36	1,438.54	129.82	12.081	
7,450.00	7,100.71	6,219.00	6,218.33	28.96	122.40	46.43	-1,745.88	1,574.76	1,542.67	1,413.81	128.86	11.972	
7,500.00	7,103.82	6,219.00	6,218.33	29.24	122.40	48.75	-1,745.88	1,574.76	1,516.15	1,388.12	128.03	11.842	
7,515.00	7,104.00	6,219.00	6,218.33	29.32	122.40	49.47	-1,745.88	1,574.76	1,508.05	1,380.24	127.81	11.799	
7,600.00	7,104.00	6,219.00	6,218.33	29.84	122.40	49.47	-1,745.88	1,574.76	1,463.74	1,337.10	126.65	11.558	
7,700.00	7,104.00	6,219.00	6,218.33	30.51	122.40	49.47	-1,745.88	1,574.76	1,416.38	1,290.99	125.39	11.296	
7,800.00	7,104.00	6,219.00	6,218.33	31.26	122.40	49.47	-1,745.88	1,574.76	1,374.67	1,250.34	124.33	11.056	
7,900.00	7,104.00	6,219.00	6,218.33	32.07	122.40	49.47	-1,745.88	1,574.76	1,339.15	1,215.61	123.54	10.840	
8,000.00	7,104.00	6,219.00	6,218.33	32.94	122.40	49.47	-1,745.88	1,574.76	1,310.31	1,187.23	123.08	10.646	
8,100.00	7,104.00	6,219.00	6,218.33	33.86	122.40	49.47	-1,745.88	1,574.76	1,288.61	1,165.58	123.02	10.475	
8,200.00	7,104.00	6,219.00	6,218.33	34.84	122.40	49.47	-1,745.88	1,574.76	1,274.40	1,151.00	123.40	10.327	
8,300.00	7,104.00	6,219.00	6,218.33	35.86	122.40	49.47	-1,745.88	1,574.76	1,267.95	1,143.70	124.24	10.205	
8,332.04	7,104.00	6,219.00	6,218.33	36.20	122.40	49.47	-1,745.88	1,574.76	1,267.54	1,142.93	124.61	10.172	CC, ES
8,400.00	7,104.00	6,219.00	6,218.33	36.92	122.40	49.47	-1,745.88	1,574.76	1,269.36	1,143.84	125.52	10.113	
8,500.00	7,104.00	6,219.00	6,218.33	38.02	122.40	49.47	-1,745.88	1,574.76	1,278.62	1,151.44	127.18	10.054	
8,600.00	7,104.00	6,219.00	6,218.33	39.15	122.40	49.47	-1,745.88	1,574.76	1,295.55	1,166.40	129.15	10.031	SF
8,700.00	7,104.00	6,219.00	6,218.33	40.32	122.40	49.47	-1,745.88	1,574.76	1,319.87	1,188.54	131.33	10.050	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	6,219.00	6,218.33	41.52	122.40	49.47	-1,745.88	1,574.76	1,351.16	1,217.54	133.63	10.112	
8,900.00	7,104.00	6,219.00	6,218.33	42.74	122.40	49.47	-1,745.88	1,574.76	1,388.97	1,253.02	135.94	10.217	
9,000.00	7,104.00	6,219.00	6,218.33	43.99	122.40	49.47	-1,745.88	1,574.76	1,432.77	1,294.56	138.21	10.366	
9,100.00	7,104.00	6,219.00	6,218.33	45.26	122.40	49.47	-1,745.88	1,574.76	1,482.03	1,341.65	140.38	10.557	
9,200.00	7,104.00	6,219.00	6,218.33	46.55	122.40	49.47	-1,745.88	1,574.76	1,536.23	1,393.83	142.40	10.788	
9,300.00	7,104.00	6,219.00	6,218.33	47.85	122.40	49.47	-1,745.88	1,574.76	1,594.87	1,450.60	144.26	11.055	
9,400.00	7,104.00	6,219.00	6,218.33	49.18	122.40	49.47	-1,745.88	1,574.76	1,657.47	1,511.51	145.96	11.356	
9,500.00	7,104.00	6,219.00	6,218.33	50.52	122.40	49.47	-1,745.88	1,574.76	1,723.60	1,576.11	147.49	11.687	
9,600.00	7,104.00	6,219.00	6,218.33	51.88	122.40	49.47	-1,745.88	1,574.76	1,792.87	1,644.01	148.85	12.045	
9,700.00	7,104.00	6,219.00	6,218.33	53.25	122.40	49.47	-1,745.88	1,574.76	1,864.93	1,714.86	150.07	12.427	
9,800.00	7,104.00	6,219.00	6,218.33	54.63	122.40	49.47	-1,745.88	1,574.76	1,939.47	1,788.31	151.16	12.831	
9,900.00	7,104.00	6,219.00	6,218.33	56.03	122.40	49.47	-1,745.88	1,574.76	2,016.22	1,864.10	152.12	13.254	
10,000.00	7,104.00	6,219.00	6,218.33	57.43	122.40	49.47	-1,745.88	1,574.76	2,094.93	1,941.96	152.98	13.694	
10,100.00	7,104.00	6,219.00	6,218.33	58.85	122.40	49.47	-1,745.88	1,574.76	2,175.39	2,021.66	153.73	14.150	
10,200.00	7,104.00	6,219.00	6,218.33	60.27	122.40	49.47	-1,745.88	1,574.76	2,257.42	2,103.01	154.41	14.620	
10,300.00	7,104.00	6,219.00	6,218.33	61.71	122.40	49.47	-1,745.88	1,574.76	2,340.84	2,185.83	155.00	15.102	
10,400.00	7,104.00	6,219.00	6,218.33	63.15	122.40	49.47	-1,745.88	1,574.76	2,425.51	2,269.98	155.53	15.595	
10,500.00	7,104.00	6,219.00	6,218.33	64.60	122.40	49.47	-1,745.88	1,574.76	2,511.31	2,355.31	156.01	16.097	
10,600.00	7,104.00	6,219.00	6,218.33	66.05	122.40	49.47	-1,745.88	1,574.76	2,598.13	2,441.70	156.43	16.609	
10,700.00	7,104.00	6,219.00	6,218.33	67.52	122.40	49.47	-1,745.88	1,574.76	2,685.87	2,529.06	156.81	17.128	
10,800.00	7,104.00	6,219.00	6,218.33	68.99	122.40	49.47	-1,745.88	1,574.76	2,774.43	2,617.29	157.15	17.655	
10,900.00	7,104.00	6,219.00	6,218.33	70.46	122.40	49.47	-1,745.88	1,574.76	2,863.75	2,706.30	157.45	18.188	
11,000.00	7,104.00	6,219.00	6,218.33	71.94	122.40	49.47	-1,745.88	1,574.76	2,953.75	2,796.03	157.73	18.727	
11,100.00	7,104.00	6,219.00	6,218.33	73.43	122.40	49.47	-1,745.88	1,574.76	3,044.38	2,886.40	157.98	19.271	
11,200.00	7,104.00	6,219.00	6,218.33	74.92	122.40	49.47	-1,745.88	1,574.76	3,135.58	2,977.38	158.20	19.820	
11,300.00	7,104.00	6,219.00	6,218.33	76.41	122.40	49.47	-1,745.88	1,574.76	3,227.29	3,068.89	158.41	20.374	
11,400.00	7,104.00	6,219.00	6,218.33	77.91	122.40	49.47	-1,745.88	1,574.76	3,319.49	3,160.90	158.59	20.931	
11,500.00	7,104.00	6,219.00	6,218.33	79.41	122.40	49.47	-1,745.88	1,574.76	3,412.13	3,253.36	158.76	21.492	
11,600.00	7,104.00	6,219.00	6,218.33	80.92	122.40	49.47	-1,745.88	1,574.76	3,505.17	3,346.25	158.92	22.056	
11,700.00	7,104.00	6,219.00	6,218.33	82.43	122.40	49.47	-1,745.88	1,574.76	3,598.58	3,439.52	159.06	22.623	
11,800.00	7,104.00	6,219.00	6,218.33	83.94	122.40	49.47	-1,745.88	1,574.76	3,692.34	3,533.14	159.20	23.193	
11,900.00	7,104.00	6,219.00	6,218.33	85.46	122.40	49.47	-1,745.88	1,574.76	3,786.42	3,627.10	159.32	23.766	
12,000.00	7,104.00	6,219.00	6,218.33	86.98	122.40	49.47	-1,745.88	1,574.76	3,880.80	3,721.36	159.44	24.341	
12,100.00	7,104.00	6,219.00	6,218.33	88.50	122.40	49.47	-1,745.88	1,574.76	3,975.44	3,815.90	159.54	24.918	
12,200.00	7,104.00	6,219.00	6,218.33	90.03	122.40	49.47	-1,745.88	1,574.76	4,070.35	3,910.71	159.64	25.496	
12,300.00	7,104.00	6,219.00	6,218.33	91.55	122.40	49.47	-1,745.88	1,574.76	4,165.49	4,005.76	159.74	26.077	
12,400.00	7,104.00	6,219.00	6,218.33	93.08	122.40	49.47	-1,745.88	1,574.76	4,260.86	4,101.03	159.83	26.659	
12,500.00	7,104.00	6,219.00	6,218.33	94.62	122.40	49.47	-1,745.88	1,574.76	4,356.44	4,196.52	159.91	27.243	
12,600.00	7,104.00	6,219.00	6,218.33	96.15	122.40	49.47	-1,745.88	1,574.76	4,452.20	4,292.21	159.99	27.828	
12,700.00	7,104.00	6,219.00	6,218.33	97.69	122.40	49.47	-1,745.88	1,574.76	4,548.15	4,388.09	160.07	28.414	
12,800.00	7,104.00	6,219.00	6,218.33	99.23	122.40	49.47	-1,745.88	1,574.76	4,644.28	4,484.14	160.14	29.001	
12,900.00	7,104.00	6,219.00	6,218.33	100.77	122.40	49.47	-1,745.88	1,574.76	4,740.56	4,580.35	160.21	29.590	
13,000.00	7,104.00	6,219.00	6,218.33	102.31	122.40	49.47	-1,745.88	1,574.76	4,836.99	4,676.71	160.28	30.179	
13,100.00	7,104.00	6,219.00	6,218.33	103.86	122.40	49.47	-1,745.88	1,574.76	4,933.57	4,773.22	160.34	30.769	
13,200.00	7,104.00	6,219.00	6,218.33	105.40	122.40	49.47	-1,745.88	1,574.76	5,030.28	4,869.87	160.40	31.360	
13,300.00	7,104.00	6,219.00	6,218.33	106.95	122.40	49.47	-1,745.88	1,574.76	5,127.11	4,966.64	160.47	31.951	
13,400.00	7,104.00	6,219.00	6,218.33	108.50	122.40	49.47	-1,745.88	1,574.76	5,224.06	5,063.54	160.52	32.544	
13,500.00	7,104.00	6,219.00	6,218.33	110.05	122.40	49.47	-1,745.88	1,574.76	5,321.13	5,160.55	160.58	33.136	
13,600.00	7,104.00	6,219.00	6,218.33	111.60	122.40	49.47	-1,745.88	1,574.76	5,418.31	5,257.67	160.64	33.730	
13,700.00	7,104.00	6,219.00	6,218.33	113.16	122.40	49.47	-1,745.88	1,574.76	5,515.58	5,354.89	160.69	34.323	
13,800.00	7,104.00	6,219.00	6,218.33	114.71	122.40	49.47	-1,745.88	1,574.76	5,612.95	5,452.20	160.75	34.917	
13,900.00	7,104.00	6,219.00	6,218.33	116.27	122.40	49.47	-1,745.88	1,574.76	5,710.41	5,549.61	160.80	35.512	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	6,219.00	6,218.33	117.83	122.40	49.47	-1,745.88	1,574.76	5,807.96	5,647.10	160.86	36.107	
14,100.00	7,104.00	6,219.00	6,218.33	119.38	122.40	49.47	-1,745.88	1,574.76	5,905.59	5,744.68	160.91	36.701	
14,200.00	7,104.00	6,219.00	6,218.33	120.94	122.40	49.47	-1,745.88	1,574.76	6,003.30	5,842.34	160.96	37.297	
14,300.00	7,104.00	6,219.00	6,218.33	122.50	122.40	49.47	-1,745.88	1,574.76	6,101.08	5,940.07	161.01	37.892	
14,400.00	7,104.00	6,219.00	6,218.33	124.07	122.40	49.47	-1,745.88	1,574.76	6,198.93	6,037.87	161.06	38.487	
14,500.00	7,104.00	6,219.00	6,218.33	125.63	122.40	49.47	-1,745.88	1,574.76	6,296.85	6,135.74	161.12	39.083	
14,600.00	7,104.00	6,219.00	6,218.33	127.19	122.40	49.47	-1,745.88	1,574.76	6,394.84	6,233.67	161.17	39.678	
14,700.00	7,104.00	6,219.00	6,218.33	128.76	122.40	49.47	-1,745.88	1,574.76	6,492.88	6,331.67	161.22	40.274	
14,800.00	7,104.00	6,219.00	6,218.33	130.32	122.40	49.47	-1,745.88	1,574.76	6,590.99	6,429.72	161.27	40.870	
14,900.00	7,104.00	6,219.00	6,218.33	131.89	122.40	49.47	-1,745.88	1,574.76	6,689.15	6,527.83	161.32	41.465	
15,000.00	7,104.00	6,219.00	6,218.33	133.46	122.40	49.47	-1,745.88	1,574.76	6,787.36	6,625.99	161.37	42.061	
15,100.00	7,104.00	6,219.00	6,218.33	135.02	122.40	49.47	-1,745.88	1,574.76	6,885.63	6,724.21	161.42	42.656	
15,200.00	7,104.00	6,219.00	6,218.33	136.59	122.40	49.47	-1,745.88	1,574.76	6,983.95	6,822.47	161.47	43.251	
15,300.00	7,104.00	6,219.00	6,218.33	138.16	122.40	49.47	-1,745.88	1,574.76	7,082.31	6,920.78	161.52	43.847	
15,400.00	7,104.00	6,219.00	6,218.33	139.73	122.40	49.47	-1,745.88	1,574.76	7,180.72	7,019.14	161.58	44.442	
15,500.00	7,104.00	6,219.00	6,218.33	141.30	122.40	49.47	-1,745.88	1,574.76	7,279.17	7,117.54	161.63	45.036	
15,600.00	7,104.00	6,219.00	6,218.33	142.88	122.40	49.47	-1,745.88	1,574.76	7,377.66	7,215.98	161.68	45.631	
15,700.00	7,104.00	6,219.00	6,218.33	144.45	122.40	49.47	-1,745.88	1,574.76	7,476.19	7,314.46	161.73	46.225	
15,800.00	7,104.00	6,219.00	6,218.33	146.02	122.40	49.47	-1,745.88	1,574.76	7,574.76	7,412.98	161.79	46.820	
15,900.00	7,104.00	6,219.00	6,218.33	147.60	122.40	49.47	-1,745.88	1,574.76	7,673.37	7,511.53	161.84	47.413	
16,000.00	7,104.00	6,219.00	6,218.33	149.17	122.40	49.47	-1,745.88	1,574.76	7,772.02	7,610.12	161.89	48.007	
16,100.00	7,104.00	6,219.00	6,218.33	150.74	122.40	49.47	-1,745.88	1,574.76	7,870.69	7,708.75	161.95	48.600	
16,200.00	7,104.00	6,219.00	6,218.33	152.32	122.40	49.47	-1,745.88	1,574.76	7,969.40	7,807.40	162.00	49.194	
16,300.00	7,104.00	6,219.00	6,218.33	153.89	122.40	49.47	-1,745.88	1,574.76	8,068.15	7,906.09	162.06	49.786	
16,400.00	7,104.00	6,219.00	6,218.33	155.47	122.40	49.47	-1,745.88	1,574.76	8,166.92	8,004.81	162.11	50.379	
16,500.00	7,104.00	6,219.00	6,218.33	157.05	122.40	49.47	-1,745.88	1,574.76	8,265.72	8,103.56	162.17	50.971	
16,600.00	7,104.00	6,219.00	6,218.33	158.63	122.40	49.47	-1,745.88	1,574.76	8,364.55	8,202.33	162.22	51.562	
16,700.00	7,104.00	6,219.00	6,218.33	160.20	122.40	49.47	-1,745.88	1,574.76	8,463.41	8,301.13	162.28	52.154	
16,800.00	7,104.00	6,219.00	6,218.33	161.78	122.40	49.47	-1,745.88	1,574.76	8,562.30	8,399.96	162.34	52.744	
16,900.00	7,104.00	6,219.00	6,218.33	163.36	122.40	49.47	-1,745.88	1,574.76	8,661.21	8,498.82	162.39	53.335	
17,000.00	7,104.00	6,219.00	6,218.33	164.94	122.40	49.47	-1,745.88	1,574.76	8,760.15	8,597.69	162.45	53.925	
17,100.00	7,104.00	6,219.00	6,218.33	166.52	122.40	49.47	-1,745.88	1,574.76	8,859.10	8,696.60	162.51	54.515	
17,200.00	7,104.00	6,219.00	6,218.33	168.10	122.40	49.47	-1,745.88	1,574.76	8,958.09	8,795.52	162.57	55.104	
17,300.00	7,104.00	6,219.00	6,218.33	169.68	122.40	49.47	-1,745.88	1,574.76	9,057.09	8,894.47	162.63	55.693	
17,400.00	7,104.00	6,219.00	6,218.33	171.26	122.40	49.47	-1,745.88	1,574.76	9,156.12	8,993.43	162.69	56.281	
17,500.00	7,104.00	6,219.00	6,218.33	172.84	122.40	49.47	-1,745.88	1,574.76	9,255.17	9,092.42	162.75	56.869	
17,600.00	7,104.00	6,219.00	6,218.33	174.42	122.40	49.47	-1,745.88	1,574.76	9,354.23	9,191.43	162.81	57.456	
17,700.00	7,104.00	6,219.00	6,218.33	176.00	122.40	49.47	-1,745.88	1,574.76	9,453.32	9,290.45	162.87	58.043	
17,800.00	7,104.00	6,219.00	6,218.33	177.59	122.40	49.47	-1,745.88	1,574.76	9,552.43	9,389.50	162.93	58.629	
17,900.00	7,104.00	6,219.00	6,218.33	179.17	122.40	49.47	-1,745.88	1,574.76	9,651.55	9,488.56	162.99	59.215	
18,000.00	7,104.00	6,219.00	6,218.33	180.75	122.40	49.47	-1,745.88	1,574.76	9,750.70	9,587.64	163.05	59.800	
18,100.00	7,104.00	6,219.00	6,218.33	182.33	122.40	49.47	-1,745.88	1,574.76	9,849.86	9,686.74	163.12	60.385	
18,200.00	7,104.00	6,219.00	6,218.33	183.92	122.40	49.47	-1,745.88	1,574.76	9,949.03	9,785.85	163.18	60.969	
18,300.00	7,104.00	6,219.00	6,218.33	185.50	122.40	49.47	-1,745.88	1,574.76	10,048.23	9,884.98	163.25	61.553	
18,400.00	7,104.00	6,219.00	6,218.33	187.09	122.40	49.47	-1,745.88	1,574.76	10,147.43	9,984.12	163.31	62.136	
18,500.00	7,104.00	6,219.00	6,218.33	188.67	122.40	49.47	-1,745.88	1,574.76	10,246.66	10,083.28	163.37	62.719	
18,600.00	7,104.00	6,219.00	6,218.33	190.26	122.40	49.47	-1,745.88	1,574.76	10,345.90	10,182.46	163.44	63.301	
18,700.00	7,104.00	6,219.00	6,218.33	191.84	122.40	49.47	-1,745.88	1,574.76	10,445.15	10,281.65	163.51	63.882	
18,800.00	7,104.00	6,219.00	6,218.33	193.43	122.40	49.47	-1,745.88	1,574.76	10,544.42	10,380.85	163.57	64.463	
18,900.00	7,104.00	6,219.00	6,218.33	195.01	122.40	49.47	-1,745.88	1,574.76	10,643.70	10,480.06	163.64	65.043	
19,000.00	7,104.00	6,219.00	6,218.33	196.60	122.40	49.47	-1,745.88	1,574.76	10,743.00	10,579.29	163.71	65.623	
19,100.00	7,104.00	6,219.00	6,218.33	198.18	122.40	49.47	-1,745.88	1,574.76	10,842.30	10,678.53	163.78	66.202	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 295-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	6,219.00	6,218.33	199.77	122.40	49.47	-1,745.88	1,574.76	10,941.62	10,777.78	163.84	66.781	
19,300.00	7,104.00	6,219.00	6,218.33	201.36	122.40	49.47	-1,745.88	1,574.76	11,040.96	10,877.04	163.91	67.358	
19,400.00	7,104.00	6,219.00	6,218.33	202.94	122.40	49.47	-1,745.88	1,574.76	11,140.30	10,976.32	163.98	67.936	
19,500.00	7,104.00	6,219.00	6,218.33	204.53	122.40	49.47	-1,745.88	1,574.76	11,239.66	11,075.61	164.05	68.512	
19,600.00	7,104.00	6,219.00	6,218.33	206.12	122.40	49.47	-1,745.88	1,574.76	11,339.03	11,174.90	164.12	69.088	
19,700.00	7,104.00	6,219.00	6,218.33	207.70	122.40	49.47	-1,745.88	1,574.76	11,438.41	11,274.21	164.19	69.664	
19,800.00	7,104.00	6,219.00	6,218.33	209.29	122.40	49.47	-1,745.88	1,574.76	11,537.79	11,373.53	164.27	70.238	
19,900.00	7,104.00	6,219.00	6,218.33	210.88	122.40	49.47	-1,745.88	1,574.76	11,637.19	11,472.86	164.34	70.812	
20,000.00	7,104.00	6,219.00	6,218.33	212.47	122.40	49.47	-1,745.88	1,574.76	11,736.60	11,572.19	164.41	71.386	
20,100.00	7,104.00	6,219.00	6,218.33	214.05	122.40	49.47	-1,745.88	1,574.76	11,836.02	11,671.54	164.48	71.959	
20,200.00	7,104.00	6,219.00	6,218.33	215.64	122.40	49.47	-1,745.88	1,574.76	11,935.45	11,770.90	164.56	72.531	
20,215.00	7,104.00	6,219.00	6,218.33	215.88	122.40	49.47	-1,745.88	1,574.76	11,950.37	11,785.81	164.57	72.616	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	148.44	148.44	3.28	3.28	117.58	-1,972.49	3,776.37	4,260.48				
100.00	100.00	245.13	245.13	3.29	3.29	117.58	-1,972.89	3,776.35	4,260.65	4,254.08	6.57	648.167	
200.00	200.00	341.52	341.51	3.34	3.30	117.59	-1,973.46	3,776.32	4,260.91	4,254.28	6.62	643.173	
300.00	300.00	437.90	437.90	3.42	3.32	117.60	-1,974.23	3,776.29	4,261.24	4,254.53	6.72	634.549	
400.00	400.00	540.37	540.36	3.54	3.34	117.61	-1,974.92	3,776.35	4,261.61	4,254.77	6.84	622.675	
500.00	500.00	644.91	644.90	3.69	3.34	117.60	-1,974.58	3,776.85	4,261.89	4,254.88	7.01	608.271	
600.00	599.98	787.21	787.19	3.86	3.34	-32.46	-1,972.84	3,777.18	4,260.01	4,252.83	7.19	592.833	
700.00	699.84	896.71	896.66	4.04	3.34	-32.58	-1,970.64	3,777.14	4,254.64	4,247.25	7.38	576.397	
800.00	799.45	986.59	986.53	4.26	3.35	-32.75	-1,968.89	3,777.15	4,246.40	4,238.80	7.60	558.633	
849.50	848.63	1,031.79	1,031.72	4.37	3.35	-32.85	-1,968.02	3,777.23	4,241.33	4,233.61	7.72	549.382	
900.00	898.77	1,087.20	1,087.12	4.49	3.36	-41.26	-1,966.86	3,777.36	4,236.08	4,228.23	7.85	539.928	
973.84	972.07	1,167.69	1,167.58	4.68	3.38	-53.60	-1,965.07	3,777.45	4,229.38	4,221.34	8.04	526.246	
1,000.00	998.03	1,190.40	1,190.29	4.74	3.38	-53.64	-1,964.61	3,777.44	4,227.23	4,219.13	8.11	521.480	
1,100.00	1,097.29	1,286.55	1,286.42	5.02	3.40	-53.79	-1,962.69	3,777.59	4,219.21	4,210.82	8.39	503.010	
1,200.00	1,196.54	1,386.14	1,385.99	5.30	3.43	-53.95	-1,960.65	3,777.59	4,211.07	4,202.38	8.69	484.761	
1,300.00	1,295.80	1,494.78	1,494.61	5.61	3.47	-54.12	-1,958.54	3,777.57	4,202.99	4,193.99	9.00	466.884	
1,400.00	1,395.06	1,585.39	1,585.21	5.92	3.50	-54.26	-1,956.93	3,777.41	4,194.88	4,185.55	9.33	449.744	
1,500.00	1,494.31	1,692.24	1,692.03	6.24	3.54	-54.43	-1,954.86	3,777.18	4,186.68	4,177.01	9.67	433.090	
1,600.00	1,593.57	1,797.85	1,797.62	6.57	3.59	-54.60	-1,952.77	3,777.03	4,178.57	4,168.55	10.02	417.170	
1,700.00	1,692.82	1,886.88	1,886.63	6.91	3.64	-54.74	-1,950.93	3,776.86	4,170.41	4,160.04	10.37	402.121	
1,800.00	1,792.08	1,996.49	1,996.22	7.25	3.70	-54.92	-1,948.57	3,776.57	4,162.17	4,151.43	10.74	387.586	
1,900.00	1,891.33	2,111.25	2,110.95	7.60	3.76	-55.11	-1,946.17	3,775.93	4,153.73	4,142.61	11.12	373.649	
2,000.00	1,990.59	2,204.68	2,204.36	7.95	3.82	-55.26	-1,944.26	3,775.29	4,145.24	4,133.74	11.50	360.577	
2,100.00	2,089.85	2,271.03	2,270.70	8.30	3.86	-55.36	-1,942.92	3,775.21	4,137.27	4,125.40	11.87	348.535	
2,200.00	2,189.10	2,366.26	2,365.91	8.66	3.92	-55.52	-1,941.05	3,775.37	4,129.64	4,117.39	12.26	336.957	
2,300.00	2,288.36	2,467.37	2,467.01	9.02	3.99	-55.69	-1,939.27	3,775.49	4,122.08	4,109.43	12.65	325.927	
2,400.00	2,387.61	2,577.23	2,576.84	9.39	4.07	-55.86	-1,937.47	3,775.40	4,114.43	4,101.38	13.05	315.341	
2,500.00	2,486.87	2,680.66	2,680.27	9.76	4.15	-56.03	-1,935.69	3,775.20	4,106.68	4,093.23	13.45	305.311	
2,600.00	2,586.12	2,763.31	2,762.89	10.13	4.22	-56.17	-1,934.11	3,775.28	4,099.12	4,085.27	13.85	296.004	
2,700.00	2,685.38	2,858.35	2,857.92	10.50	4.29	-56.33	-1,932.20	3,775.65	4,091.84	4,077.59	14.25	287.158	
2,800.00	2,784.63	2,950.00	2,949.55	10.87	4.37	-56.48	-1,930.43	3,776.10	4,084.71	4,070.06	14.65	278.795	
2,900.00	2,883.89	3,050.00	3,049.53	11.24	4.45	-56.65	-1,928.71	3,776.55	4,077.67	4,062.61	15.06	270.804	
3,000.00	2,983.15	3,150.00	3,149.52	11.62	4.54	-56.82	-1,927.08	3,776.97	4,070.68	4,055.21	15.47	263.196	
3,100.00	3,082.40	3,243.29	3,242.80	12.00	4.62	-56.97	-1,925.75	3,777.37	4,063.80	4,047.93	15.87	255.997	
3,200.00	3,181.66	3,339.51	3,339.01	12.38	4.71	-57.13	-1,924.48	3,777.78	4,057.00	4,040.71	16.28	249.128	
3,300.00	3,280.91	3,437.25	3,436.74	12.75	4.80	-57.29	-1,923.34	3,778.13	4,050.24	4,033.54	16.70	242.563	
3,400.00	3,380.17	3,538.66	3,538.14	13.13	4.89	-57.45	-1,922.06	3,778.57	4,043.54	4,026.43	17.11	236.284	
3,500.00	3,479.42	3,635.12	3,634.59	13.52	4.99	-57.61	-1,920.97	3,778.94	4,036.87	4,019.34	17.53	230.306	
3,600.00	3,578.68	3,725.00	3,724.47	13.90	5.07	-57.76	-1,920.13	3,779.36	4,030.39	4,012.45	17.94	224.652	
3,700.00	3,677.94	3,828.62	3,828.09	14.28	5.17	-57.92	-1,919.16	3,779.89	4,023.98	4,005.62	18.36	219.204	
3,800.00	3,777.19	3,909.68	3,909.14	14.66	5.23	-58.05	-1,918.85	3,780.33	4,017.84	3,999.08	18.76	214.140	
3,900.00	3,876.45	3,987.38	3,986.84	15.05	5.23	-58.16	-1,919.30	3,780.85	4,012.21	3,993.05	19.16	209.362	
4,000.00	3,975.70	4,058.41	4,057.85	15.43	5.23	-58.26	-1,920.37	3,781.58	4,007.26	3,987.69	19.57	204.789	
4,100.00	4,074.96	4,155.26	4,154.68	15.82	5.22	-58.38	-1,922.20	3,782.75	4,002.67	3,982.69	19.98	200.334	
4,200.00	4,174.21	4,250.00	4,249.40	16.20	5.22	-58.51	-1,924.05	3,783.94	3,998.17	3,977.77	20.40	196.036	
4,300.00	4,273.47	4,374.20	4,373.56	16.59	5.22	-58.67	-1,926.28	3,785.40	3,993.59	3,972.77	20.82	191.798	
4,400.00	4,372.73	4,504.40	4,503.76	16.97	5.22	-58.85	-1,927.82	3,786.00	3,988.08	3,966.82	21.26	187.628	
4,500.00	4,471.98	4,617.67	4,617.02	17.36	5.21	-59.00	-1,928.97	3,786.01	3,982.14	3,960.45	21.69	183.615	
4,600.00	4,571.24	4,718.29	4,717.64	17.75	5.20	-59.14	-1,929.74	3,785.89	3,976.03	3,953.91	22.12	179.766	
4,700.00	4,670.49	4,820.51	4,819.86	18.13	5.19	-59.29	-1,930.55	3,785.76	3,969.93	3,947.38	22.55	176.051	
4,800.00	4,769.75	4,915.96	4,915.31	18.52	5.19	-59.42	-1,931.39	3,785.65	3,963.89	3,940.91	22.98	172.485	
4,900.00	4,869.00	5,013.56	5,012.90	18.91	5.19	-59.55	-1,932.31	3,785.52	3,957.90	3,934.49	23.41	169.040	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,000.00	4,968.26	5,111.26	5,110.59	19.30	5.20	-59.69	-1,933.36	3,785.39	3,951.97	3,928.12	23.85	165.715	
5,100.00	5,067.51	5,208.76	5,208.08	19.69	5.21	-59.82	-1,934.40	3,785.32	3,946.12	3,921.83	24.28	162.504	
5,200.00	5,166.77	5,304.84	5,304.16	20.07	5.22	-59.96	-1,935.41	3,785.31	3,940.34	3,915.62	24.72	159.405	
5,300.00	5,266.03	5,393.18	5,392.49	20.46	5.24	-60.08	-1,936.37	3,785.48	3,934.78	3,909.63	25.15	156.429	
5,400.00	5,365.28	5,491.33	5,490.64	20.85	5.27	-60.22	-1,937.44	3,785.85	3,929.43	3,903.83	25.59	153.528	
5,500.00	5,464.54	5,588.37	5,587.68	21.24	5.29	-60.36	-1,938.54	3,786.28	3,924.16	3,898.13	26.04	150.721	
5,600.00	5,563.79	5,684.40	5,683.69	21.63	5.33	-60.49	-1,939.79	3,786.67	3,918.96	3,892.48	26.48	148.005	
5,700.00	5,663.05	5,804.79	5,804.06	22.02	5.36	-60.65	-1,941.73	3,786.77	3,913.58	3,886.65	26.93	145.329	
5,800.00	5,762.30	5,914.26	5,913.53	22.41	5.39	-60.80	-1,943.32	3,786.41	3,907.78	3,880.40	27.37	142.756	
5,900.00	5,861.56	6,016.85	6,016.11	22.80	5.42	-60.94	-1,944.40	3,786.08	3,901.87	3,874.05	27.82	140.272	
6,000.00	5,960.82	6,117.87	6,117.12	23.19	5.46	-61.09	-1,945.33	3,785.73	3,895.91	3,867.66	28.26	137.867	
6,100.00	6,060.07	6,213.80	6,213.05	23.58	5.49	-61.22	-1,946.25	3,785.36	3,889.97	3,861.27	28.70	135.542	
6,200.00	6,159.33	6,307.42	6,306.66	23.97	5.53	-61.35	-1,947.32	3,785.09	3,884.19	3,855.05	29.14	133.288	
6,300.00	6,258.58	6,400.00	6,399.24	24.36	5.57	-61.49	-1,948.39	3,784.95	3,878.57	3,848.99	29.58	131.102	
6,400.00	6,357.84	6,495.53	6,494.75	24.76	5.62	-61.62	-1,949.50	3,784.92	3,873.10	3,843.07	30.03	128.973	
6,500.00	6,457.09	6,603.89	6,603.12	25.15	5.67	-61.78	-1,950.65	3,784.93	3,867.64	3,837.16	30.48	126.885	
6,528.17	6,485.05	6,630.00	6,629.22	25.26	5.68	-61.82	-1,950.89	3,784.92	3,866.08	3,835.48	30.61	126.314	
6,550.00	6,506.71	6,656.14	6,655.36	25.34	5.70	-47.07	-1,951.14	3,784.88	3,864.51	3,833.80	30.71	125.856	
6,600.00	6,556.11	6,707.88	6,707.10	25.54	5.72	-23.64	-1,951.56	3,784.80	3,858.20	3,827.27	30.92	124.760	
6,650.00	6,605.00	6,757.71	6,756.92	25.74	5.75	-11.01	-1,951.98	3,784.66	3,848.18	3,817.05	31.14	123.592	
6,700.00	6,653.07	6,808.75	6,807.96	25.93	5.78	-3.61	-1,952.39	3,784.55	3,834.58	3,803.24	31.34	122.357	
6,750.00	6,700.02	6,853.58	6,852.79	26.12	5.80	1.29	-1,952.78	3,784.43	3,817.44	3,785.91	31.53	121.071	
6,800.00	6,745.56	6,900.27	6,899.48	26.31	5.83	4.94	-1,953.20	3,784.29	3,796.86	3,765.15	31.71	119.734	
6,850.00	6,789.42	6,941.80	6,941.01	26.50	5.85	7.93	-1,953.58	3,784.16	3,773.00	3,741.12	31.88	118.360	
6,900.00	6,831.32	6,983.25	6,982.46	26.69	5.87	10.62	-1,953.96	3,784.06	3,746.03	3,714.00	32.03	116.953	
6,950.00	6,871.01	7,020.67	7,019.88	26.87	5.90	13.21	-1,954.31	3,783.99	3,716.10	3,683.93	32.17	115.524	
7,000.00	6,908.23	7,056.03	7,055.23	27.05	5.92	15.89	-1,954.60	3,783.95	3,683.40	3,651.11	32.29	114.078	
7,050.00	6,942.77	7,089.99	7,089.20	27.23	5.94	18.80	-1,954.90	3,783.92	3,648.15	3,615.75	32.39	112.622	
7,100.00	6,974.40	7,120.52	7,119.72	27.41	5.96	22.09	-1,955.14	3,783.91	3,610.54	3,578.06	32.48	111.163	
7,150.00	7,002.93	7,148.56	7,147.76	27.60	5.98	25.96	-1,955.38	3,783.90	3,570.84	3,538.29	32.55	109.708	
7,200.00	7,028.20	7,170.00	7,169.20	27.80	5.99	30.56	-1,955.56	3,783.90	3,529.30	3,496.70	32.60	108.263	
7,250.00	7,050.03	7,192.28	7,191.48	28.00	6.01	36.25	-1,955.76	3,783.92	3,486.18	3,453.54	32.63	106.830	
7,300.00	7,068.30	7,209.48	7,208.68	28.22	6.02	43.25	-1,955.92	3,783.93	3,441.74	3,409.09	32.65	105.415	
7,350.00	7,082.89	7,221.95	7,221.14	28.45	6.03	51.79	-1,956.04	3,783.95	3,396.28	3,363.63	32.65	104.022	
7,400.00	7,093.72	7,231.74	7,230.94	28.70	6.03	62.01	-1,956.12	3,783.96	3,350.09	3,317.46	32.64	102.652	
7,450.00	7,100.71	7,238.27	7,237.46	28.96	6.04	73.57	-1,956.18	3,783.98	3,303.47	3,270.86	32.61	101.308	
7,500.00	7,103.82	7,241.23	7,240.43	29.24	6.04	85.60	-1,956.21	3,783.98	3,256.70	3,224.13	32.57	99.992	
7,515.00	7,104.00	7,241.42	7,240.62	29.32	6.04	89.14	-1,956.21	3,783.99	3,242.68	3,210.12	32.56	99.603	
7,600.00	7,104.00	7,241.59	7,240.79	29.84	6.04	89.15	-1,956.21	3,783.99	3,163.47	3,130.99	32.48	97.390	
7,700.00	7,104.00	7,241.80	7,240.99	30.51	6.04	89.16	-1,956.21	3,783.99	3,070.68	3,038.27	32.41	94.739	
7,800.00	7,104.00	7,242.00	7,241.19	31.26	6.04	89.17	-1,956.21	3,783.99	2,978.36	2,946.00	32.36	92.033	
7,900.00	7,104.00	7,242.20	7,241.40	32.07	6.04	89.18	-1,956.21	3,783.99	2,886.54	2,854.21	32.34	89.265	
8,000.00	7,104.00	7,242.40	7,241.60	32.94	6.04	89.19	-1,956.22	3,783.99	2,795.29	2,762.95	32.34	86.429	
8,100.00	7,104.00	7,242.60	7,241.80	33.86	6.04	89.20	-1,956.22	3,783.99	2,704.66	2,672.28	32.38	83.518	
8,200.00	7,104.00	7,242.81	7,242.00	34.84	6.04	89.21	-1,956.22	3,783.99	2,614.71	2,582.24	32.47	80.526	
8,300.00	7,104.00	7,243.01	7,242.21	35.86	6.04	89.22	-1,956.22	3,783.99	2,525.52	2,492.91	32.61	77.449	
8,400.00	7,104.00	7,243.21	7,242.41	36.92	6.04	89.23	-1,956.22	3,783.99	2,437.16	2,404.35	32.81	74.281	
8,500.00	7,104.00	7,243.42	7,242.61	38.02	6.04	89.24	-1,956.23	3,783.99	2,349.74	2,316.65	33.09	71.021	
8,600.00	7,104.00	7,243.62	7,242.82	39.15	6.04	89.25	-1,956.23	3,783.99	2,263.36	2,229.91	33.45	67.670	
8,700.00	7,104.00	7,243.83	7,243.02	40.32	6.04	89.26	-1,956.23	3,783.99	2,178.15	2,144.24	33.91	64.235	
8,800.00	7,104.00	7,244.03	7,243.23	41.52	6.04	89.27	-1,956.23	3,783.99	2,094.24	2,059.75	34.49	60.723	
8,900.00	7,104.00	7,244.24	7,243.44	42.74	6.04	89.28	-1,956.23	3,783.99	2,011.81	1,976.61	35.20	57.152	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	7,244.45	7,243.64	43.99	6.04	89.29	-1,956.24	3,783.99	1,931.03	1,894.97	36.06	53.543	
9,100.00	7,104.00	7,244.65	7,243.85	45.26	6.04	89.30	-1,956.24	3,783.99	1,852.14	1,815.04	37.10	49.925	
9,200.00	7,104.00	7,244.86	7,244.06	46.55	6.04	89.31	-1,956.24	3,783.99	1,775.37	1,737.05	38.32	46.331	
9,300.00	7,104.00	7,245.07	7,244.26	47.85	6.04	89.32	-1,956.24	3,783.99	1,701.02	1,661.27	39.75	42.798	
9,400.00	7,104.00	7,245.27	7,244.47	49.18	6.04	89.33	-1,956.24	3,783.99	1,629.41	1,588.02	41.39	39.368	
9,500.00	7,104.00	7,245.48	7,244.68	50.52	6.04	89.34	-1,956.25	3,783.99	1,560.93	1,517.66	43.26	36.079	
9,600.00	7,104.00	7,245.69	7,244.89	51.88	6.04	89.35	-1,956.25	3,783.99	1,496.00	1,450.63	45.37	32.972	
9,700.00	7,104.00	7,245.90	7,245.10	53.25	6.04	89.36	-1,956.25	3,783.99	1,435.11	1,387.40	47.71	30.079	
9,800.00	7,104.00	7,246.11	7,245.31	54.63	6.04	89.37	-1,956.25	3,784.00	1,378.79	1,328.52	50.27	27.430	
9,900.00	7,104.00	7,246.32	7,245.52	56.03	6.04	89.38	-1,956.25	3,784.00	1,327.62	1,274.61	53.01	25.045	
10,000.00	7,104.00	7,246.53	7,245.73	57.43	6.04	89.39	-1,956.26	3,784.00	1,282.23	1,226.33	55.90	22.940	
10,100.00	7,104.00	7,246.74	7,245.94	58.85	6.04	89.41	-1,956.26	3,784.00	1,243.23	1,184.37	58.86	21.121	
10,200.00	7,104.00	7,246.95	7,246.15	60.27	6.04	89.42	-1,956.26	3,784.00	1,211.26	1,149.43	61.83	19.589	
10,300.00	7,104.00	7,247.16	7,246.36	61.71	6.04	89.43	-1,956.26	3,784.00	1,186.87	1,122.16	64.72	18.340	
10,400.00	7,104.00	7,247.38	7,246.57	63.15	6.04	89.44	-1,956.26	3,784.00	1,170.55	1,103.14	67.41	17.364	
10,500.00	7,104.00	7,247.59	7,246.79	64.60	6.04	89.45	-1,956.27	3,784.00	1,162.63	1,092.80	69.83	16.649	
10,542.40	7,104.00	7,247.68	7,246.88	65.22	6.04	89.45	-1,956.27	3,784.00	1,161.86	1,091.10	70.75	16.421	CC, ES
10,600.00	7,104.00	7,247.80	7,247.00	66.05	6.04	89.46	-1,956.27	3,784.00	1,163.28	1,091.39	71.90	16.180	
10,700.00	7,104.00	7,248.02	7,247.21	67.52	6.04	89.47	-1,956.27	3,784.00	1,172.50	1,098.95	73.55	15.941	
10,800.00	7,104.00	7,248.23	7,247.43	68.99	6.04	89.48	-1,956.27	3,784.00	1,190.07	1,115.29	74.78	15.915	SF
10,900.00	7,104.00	7,248.44	7,247.64	70.46	6.04	89.49	-1,956.27	3,784.00	1,215.65	1,140.06	75.58	16.084	
11,000.00	7,104.00	7,248.66	7,247.86	71.94	6.04	89.50	-1,956.28	3,784.00	1,248.72	1,172.73	76.00	16.431	
11,100.00	7,104.00	7,248.87	7,248.07	73.43	6.04	89.51	-1,956.28	3,784.00	1,288.73	1,212.67	76.07	16.942	
11,200.00	7,104.00	7,249.09	7,248.29	74.92	6.04	89.52	-1,956.28	3,784.00	1,335.05	1,259.19	75.86	17.600	
11,300.00	7,104.00	7,249.31	7,248.50	76.41	6.04	89.53	-1,956.28	3,784.00	1,387.04	1,311.62	75.42	18.391	
11,400.00	7,104.00	7,250.00	7,249.20	77.91	6.05	89.57	-1,956.29	3,784.00	1,444.09	1,369.28	74.81	19.303	
11,500.00	7,104.00	7,250.00	7,249.20	79.41	6.05	89.57	-1,956.29	3,784.00	1,505.63	1,431.55	74.08	20.324	
11,600.00	7,104.00	7,250.00	7,249.20	80.92	6.05	89.57	-1,956.29	3,784.00	1,571.13	1,497.85	73.27	21.443	
11,700.00	7,104.00	7,250.00	7,249.20	82.43	6.05	89.57	-1,956.29	3,784.00	1,640.11	1,567.69	72.41	22.649	
11,800.00	7,104.00	7,250.00	7,249.20	83.94	6.05	89.57	-1,956.29	3,784.00	1,712.15	1,640.62	71.53	23.936	
11,900.00	7,104.00	7,250.00	7,249.20	85.46	6.05	89.57	-1,956.29	3,784.00	1,786.89	1,716.25	70.65	25.294	
12,000.00	7,104.00	7,250.00	7,249.20	86.98	6.05	89.57	-1,956.29	3,784.00	1,864.00	1,794.23	69.77	26.716	
12,100.00	7,104.00	7,250.00	7,249.20	88.50	6.05	89.57	-1,956.29	3,784.00	1,943.20	1,874.29	68.92	28.197	
12,200.00	7,104.00	7,251.20	7,250.40	90.03	6.05	89.63	-1,956.30	3,784.01	2,024.24	1,956.15	68.09	29.730	
12,300.00	7,104.00	7,251.41	7,250.61	91.55	6.05	89.64	-1,956.30	3,784.01	2,106.91	2,039.62	67.29	31.311	
12,400.00	7,104.00	7,251.62	7,250.81	93.08	6.05	89.65	-1,956.30	3,784.01	2,191.02	2,124.50	66.53	32.934	
12,500.00	7,104.00	7,251.82	7,251.02	94.62	6.05	89.66	-1,956.31	3,784.01	2,276.42	2,210.63	65.80	34.597	
12,600.00	7,104.00	7,252.03	7,251.22	96.15	6.05	89.67	-1,956.31	3,784.01	2,362.97	2,297.86	65.11	36.294	
12,700.00	7,104.00	7,252.23	7,251.43	97.69	6.05	89.68	-1,956.31	3,784.01	2,450.54	2,386.09	64.45	38.023	
12,800.00	7,104.00	7,252.43	7,251.63	99.23	6.05	89.69	-1,956.31	3,784.01	2,539.03	2,475.20	63.82	39.781	
12,900.00	7,104.00	7,252.64	7,251.83	100.77	6.05	89.70	-1,956.31	3,784.01	2,628.34	2,565.11	63.23	41.565	
13,000.00	7,104.00	7,252.84	7,252.04	102.31	6.05	89.71	-1,956.32	3,784.01	2,718.40	2,655.73	62.67	43.373	
13,100.00	7,104.00	7,253.04	7,252.24	103.86	6.05	89.72	-1,956.32	3,784.01	2,809.13	2,746.99	62.15	45.202	
13,200.00	7,104.00	7,253.24	7,252.44	105.40	6.05	89.73	-1,956.32	3,784.01	2,900.47	2,838.83	61.65	47.050	
13,300.00	7,104.00	7,253.45	7,252.64	106.95	6.05	89.74	-1,956.32	3,784.01	2,992.37	2,931.19	61.17	48.916	
13,400.00	7,104.00	7,253.65	7,252.84	108.50	6.05	89.75	-1,956.32	3,784.01	3,084.76	3,024.04	60.73	50.797	
13,500.00	7,104.00	7,253.85	7,253.04	110.05	6.05	89.76	-1,956.33	3,784.01	3,177.62	3,117.32	60.30	52.693	
13,600.00	7,104.00	7,254.05	7,253.25	111.60	6.05	89.77	-1,956.33	3,784.01	3,270.90	3,211.00	59.90	54.602	
13,700.00	7,104.00	7,254.25	7,253.45	113.16	6.05	89.78	-1,956.33	3,784.01	3,364.57	3,305.04	59.53	56.522	
13,800.00	7,104.00	7,254.45	7,253.65	114.71	6.05	89.79	-1,956.33	3,784.01	3,458.59	3,399.42	59.17	58.452	
13,900.00	7,104.00	7,254.65	7,253.84	116.27	6.05	89.80	-1,956.33	3,784.01	3,552.94	3,494.11	58.83	60.392	
14,000.00	7,104.00	7,254.85	7,254.04	117.83	6.05	89.80	-1,956.34	3,784.01	3,647.59	3,589.08	58.51	62.341	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	7,255.05	7,254.24	119.38	6.05	89.81	-1,956.34	3,784.01	3,742.51	3,684.31	58.21	64.296	
14,200.00	7,104.00	7,255.24	7,254.44	120.94	6.05	89.82	-1,956.34	3,784.02	3,837.70	3,779.78	57.92	66.258	
14,300.00	7,104.00	7,255.44	7,254.64	122.50	6.05	89.83	-1,956.34	3,784.02	3,933.12	3,875.47	57.65	68.226	
14,400.00	7,104.00	7,255.64	7,254.84	124.07	6.05	89.84	-1,956.34	3,784.02	4,028.77	3,971.38	57.39	70.199	
14,500.00	7,104.00	7,255.84	7,255.03	125.63	6.05	89.85	-1,956.35	3,784.02	4,124.62	4,067.47	57.15	72.177	
14,600.00	7,104.00	7,256.03	7,255.23	127.19	6.05	89.86	-1,956.35	3,784.02	4,220.66	4,163.75	56.91	74.158	
14,700.00	7,104.00	7,256.23	7,255.42	128.76	6.05	89.87	-1,956.35	3,784.02	4,316.89	4,260.19	56.70	76.142	
14,800.00	7,104.00	7,256.42	7,255.62	130.32	6.05	89.88	-1,956.35	3,784.02	4,413.28	4,356.79	56.49	78.129	
14,900.00	7,104.00	7,256.62	7,255.82	131.89	6.05	89.89	-1,956.35	3,784.02	4,509.83	4,453.54	56.29	80.118	
15,000.00	7,104.00	7,256.81	7,256.01	133.46	6.05	89.90	-1,956.36	3,784.02	4,606.52	4,550.42	56.10	82.109	
15,100.00	7,104.00	7,257.01	7,256.21	135.02	6.05	89.91	-1,956.36	3,784.02	4,703.36	4,647.43	55.93	84.100	
15,200.00	7,104.00	7,257.20	7,256.40	136.59	6.05	89.92	-1,956.36	3,784.02	4,800.32	4,744.56	55.76	86.093	
15,300.00	7,104.00	7,257.40	7,256.59	138.16	6.05	89.93	-1,956.36	3,784.02	4,897.41	4,841.81	55.60	88.086	
15,400.00	7,104.00	7,257.59	7,256.79	139.73	6.05	89.94	-1,956.36	3,784.02	4,994.61	4,939.16	55.45	90.079	
15,500.00	7,104.00	7,257.78	7,256.98	141.30	6.05	89.95	-1,956.37	3,784.02	5,091.92	5,036.61	55.30	92.071	
15,600.00	7,104.00	7,257.98	7,257.17	142.88	6.05	89.96	-1,956.37	3,784.02	5,189.33	5,134.16	55.17	94.063	
15,700.00	7,104.00	7,258.17	7,257.36	144.45	6.05	89.97	-1,956.37	3,784.02	5,286.84	5,231.80	55.04	96.054	
15,800.00	7,104.00	7,258.36	7,257.56	146.02	6.05	89.98	-1,956.37	3,784.02	5,384.44	5,329.52	54.92	98.044	
15,900.00	7,104.00	7,258.55	7,257.75	147.60	6.05	89.99	-1,956.37	3,784.02	5,482.13	5,427.32	54.80	100.032	
16,000.00	7,104.00	7,258.74	7,257.94	149.17	6.05	90.00	-1,956.38	3,784.02	5,579.89	5,525.20	54.70	102.018	
16,100.00	7,104.00	7,258.93	7,258.13	150.74	6.05	90.01	-1,956.38	3,784.02	5,677.74	5,623.15	54.59	104.002	
16,200.00	7,104.00	7,259.12	7,258.32	152.32	6.05	90.02	-1,956.38	3,784.02	5,775.66	5,721.16	54.50	105.984	
16,300.00	7,104.00	7,259.31	7,258.51	153.89	6.05	90.03	-1,956.38	3,784.02	5,873.65	5,819.25	54.40	107.963	
16,400.00	7,104.00	7,259.50	7,258.70	155.47	6.05	90.03	-1,956.38	3,784.02	5,971.71	5,917.39	54.32	109.940	
16,500.00	7,104.00	7,259.69	7,258.89	157.05	6.05	90.04	-1,956.39	3,784.02	6,069.83	6,015.59	54.24	111.914	
16,600.00	7,104.00	7,259.88	7,259.08	158.63	6.05	90.05	-1,956.39	3,784.03	6,168.01	6,113.85	54.16	113.885	
16,700.00	7,104.00	7,260.07	7,259.27	160.20	6.05	90.06	-1,956.39	3,784.03	6,266.24	6,212.16	54.09	115.852	
16,800.00	7,104.00	7,260.26	7,259.45	161.78	6.05	90.07	-1,956.39	3,784.03	6,364.54	6,310.52	54.02	117.816	
16,900.00	7,104.00	7,260.45	7,259.64	163.36	6.05	90.08	-1,956.39	3,784.03	6,462.88	6,408.93	53.96	119.776	
17,000.00	7,104.00	7,260.63	7,259.83	164.94	6.05	90.09	-1,956.40	3,784.03	6,561.28	6,507.38	53.90	121.733	
17,100.00	7,104.00	7,260.82	7,260.02	166.52	6.05	90.10	-1,956.40	3,784.03	6,659.72	6,605.88	53.84	123.685	
17,200.00	7,104.00	7,261.01	7,260.20	168.10	6.05	90.11	-1,956.40	3,784.03	6,758.21	6,704.42	53.79	125.634	
17,300.00	7,104.00	7,261.19	7,260.39	169.68	6.05	90.12	-1,956.40	3,784.03	6,856.74	6,803.00	53.75	127.578	
17,400.00	7,104.00	7,261.38	7,260.57	171.26	6.05	90.13	-1,956.40	3,784.03	6,955.32	6,901.62	53.70	129.518	
17,500.00	7,104.00	7,261.56	7,260.76	172.84	6.05	90.14	-1,956.41	3,784.03	7,053.93	7,000.27	53.66	131.454	
17,600.00	7,104.00	7,261.75	7,260.95	174.42	6.05	90.15	-1,956.41	3,784.03	7,152.58	7,098.96	53.62	133.385	
17,700.00	7,104.00	7,261.93	7,261.13	176.00	6.05	90.15	-1,956.41	3,784.03	7,251.27	7,197.68	53.59	135.311	
17,800.00	7,104.00	7,262.12	7,261.31	177.59	6.05	90.16	-1,956.41	3,784.03	7,350.00	7,296.44	53.56	137.233	
17,900.00	7,104.00	7,262.30	7,261.50	179.17	6.05	90.17	-1,956.41	3,784.03	7,448.76	7,395.23	53.53	139.149	
18,000.00	7,104.00	7,262.49	7,261.68	180.75	6.05	90.18	-1,956.42	3,784.03	7,547.55	7,494.04	53.51	141.061	
18,100.00	7,104.00	7,262.67	7,261.87	182.33	6.05	90.19	-1,956.42	3,784.03	7,646.37	7,592.89	53.48	142.967	
18,200.00	7,104.00	7,262.85	7,262.05	183.92	6.05	90.20	-1,956.42	3,784.03	7,745.23	7,691.76	53.46	144.869	
18,300.00	7,104.00	7,263.04	7,262.23	185.50	6.05	90.21	-1,956.42	3,784.03	7,844.11	7,790.66	53.45	146.765	
18,400.00	7,104.00	7,263.22	7,262.41	187.09	6.05	90.22	-1,956.42	3,784.03	7,943.02	7,889.59	53.43	148.656	
18,500.00	7,104.00	7,263.40	7,262.60	188.67	6.05	90.23	-1,956.42	3,784.03	8,041.96	7,988.54	53.42	150.541	
18,600.00	7,104.00	7,263.58	7,262.78	190.26	6.05	90.24	-1,956.43	3,784.03	8,140.92	8,087.51	53.41	152.421	
18,700.00	7,104.00	7,263.76	7,262.96	191.84	6.05	90.24	-1,956.43	3,784.03	8,239.91	8,186.51	53.40	154.295	
18,800.00	7,104.00	7,263.94	7,263.14	193.43	6.05	90.25	-1,956.43	3,784.03	8,338.92	8,285.52	53.40	156.164	
18,900.00	7,104.00	7,264.12	7,263.32	195.01	6.05	90.26	-1,956.43	3,784.03	8,437.96	8,384.56	53.40	158.026	
19,000.00	7,104.00	7,264.30	7,263.50	196.60	6.05	90.27	-1,956.43	3,784.03	8,537.02	8,483.62	53.40	159.883	
19,100.00	7,104.00	7,264.48	7,263.68	198.18	6.06	90.28	-1,956.44	3,784.03	8,636.10	8,582.70	53.40	161.735	
19,200.00	7,104.00	7,264.66	7,263.86	199.77	6.06	90.29	-1,956.44	3,784.03	8,735.20	8,681.80	53.40	163.580	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #077C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	7,264.84	7,264.04	201.36	6.06	90.30	-1,956.44	3,784.04	8,834.32	8,780.91	53.41	165.419	
19,400.00	7,104.00	7,265.02	7,264.22	202.94	6.06	90.31	-1,956.44	3,784.04	8,933.46	8,880.05	53.41	167.253	
19,500.00	7,104.00	7,265.20	7,264.40	204.53	6.06	90.32	-1,956.44	3,784.04	9,032.62	8,979.20	53.42	169.080	
19,600.00	7,104.00	7,265.38	7,264.57	206.12	6.06	90.32	-1,956.45	3,784.04	9,131.80	9,078.36	53.43	170.901	
19,700.00	7,104.00	7,265.56	7,264.75	207.70	6.06	90.33	-1,956.45	3,784.04	9,230.99	9,177.55	53.45	172.716	
19,800.00	7,104.00	7,265.73	7,264.93	209.29	6.06	90.34	-1,956.45	3,784.04	9,330.21	9,276.75	53.46	174.525	
19,900.00	7,104.00	7,265.91	7,265.11	210.88	6.06	90.35	-1,956.45	3,784.04	9,429.44	9,375.96	53.48	176.328	
20,000.00	7,104.00	7,266.09	7,265.28	212.47	6.06	90.36	-1,956.45	3,784.04	9,528.68	9,475.19	53.49	178.124	
20,100.00	7,104.00	7,266.26	7,265.46	214.05	6.06	90.37	-1,956.46	3,784.04	9,627.94	9,574.43	53.51	179.914	
20,200.00	7,104.00	7,266.44	7,265.63	215.64	6.06	90.38	-1,956.46	3,784.04	9,727.22	9,673.69	53.54	181.698	
20,215.00	7,104.00	7,266.47	7,265.66	215.88	6.06	90.38	-1,956.46	3,784.04	9,742.12	9,688.58	53.54	181.965	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #097 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-94.75	-773.18	-9,304.35	9,336.44				
100.00	100.00	81.00	81.00	3.29	3.58	-94.75	-773.18	-9,304.35	9,336.42	9,329.55	6.87	1,359.053	
200.00	200.00	181.00	181.00	3.34	4.60	-94.75	-773.18	-9,304.35	9,336.42	9,328.48	7.94	1,175.711	
212.31	212.31	193.24	193.24	3.34	4.76	-94.75	-773.08	-9,304.35	9,336.42	9,328.31	8.11	1,151.668	CC
300.00	300.00	279.36	279.36	3.42	5.98	-94.75	-773.17	-9,304.35	9,336.42	9,327.02	9.40	992.869	
400.00	400.00	381.01	381.00	3.54	7.66	-94.75	-773.18	-9,304.35	9,336.42	9,325.23	11.20	833.856	
500.00	500.00	481.01	481.00	3.69	9.52	-94.75	-773.18	-9,304.35	9,336.42	9,323.22	13.21	707.005	
600.00	599.98	580.99	580.98	3.86	11.43	115.25	-773.18	-9,304.35	9,337.17	9,321.88	15.29	610.838	
700.00	699.84	679.70	679.68	4.04	13.35	115.24	-772.41	-9,304.35	9,339.34	9,321.95	17.39	537.086	
800.00	799.45	777.36	777.34	4.26	15.26	115.22	-772.69	-9,304.35	9,343.09	9,323.57	19.51	478.775	
849.50	848.63	825.60	825.58	4.37	16.21	115.20	-772.92	-9,304.35	9,345.51	9,324.93	20.58	454.139	
900.00	898.77	879.83	879.77	4.49	17.31	106.96	-773.18	-9,304.35	9,347.73	9,325.94	21.79	428.914	
973.84	972.07	953.14	953.07	4.68	18.94	94.88	-773.18	-9,304.35	9,349.42	9,325.81	23.61	396.029	
1,000.00	998.03	979.10	979.03	4.74	19.51	94.90	-773.18	-9,304.35	9,349.69	9,325.44	24.25	385.492	
1,100.00	1,097.29	1,078.36	1,078.29	5.02	21.73	94.98	-773.18	-9,304.35	9,350.75	9,324.01	26.74	349.692	
1,200.00	1,196.54	1,174.74	1,174.66	5.30	23.88	95.05	-772.46	-9,304.35	9,351.77	9,322.58	29.18	320.458	
1,300.00	1,295.80	1,271.23	1,271.14	5.61	26.04	95.12	-773.05	-9,304.35	9,352.90	9,321.26	31.64	295.566	
1,400.00	1,395.06	1,376.22	1,376.06	5.92	28.35	95.20	-773.18	-9,304.35	9,354.01	9,319.75	34.26	273.001	
1,500.00	1,494.31	1,475.48	1,475.31	6.24	30.53	95.27	-773.18	-9,304.35	9,355.13	9,318.37	36.76	254.485	
1,600.00	1,593.57	1,571.84	1,571.65	6.57	32.64	95.35	-771.94	-9,304.35	9,356.18	9,316.97	39.20	238.649	
1,700.00	1,692.82	1,667.36	1,667.15	6.91	34.74	95.42	-772.64	-9,304.35	9,357.38	9,315.74	41.64	224.731	
1,800.00	1,792.08	1,773.33	1,773.08	7.25	36.92	95.49	-773.18	-9,304.35	9,358.58	9,314.42	44.17	211.897	
1,900.00	1,891.33	1,872.59	1,872.33	7.60	38.87	95.57	-773.18	-9,304.35	9,359.77	9,313.31	46.46	201.477	
2,000.00	1,990.59	1,971.84	1,971.59	7.95	40.81	95.64	-773.18	-9,304.35	9,360.96	9,312.21	48.75	192.016	
2,100.00	2,089.85	2,071.10	2,070.85	8.30	42.75	95.71	-773.18	-9,304.35	9,362.18	9,311.13	51.05	183.390	
2,200.00	2,189.10	2,170.36	2,170.10	8.66	44.70	95.79	-773.18	-9,304.35	9,363.41	9,310.05	53.35	175.495	
2,300.00	2,288.36	2,269.33	2,269.06	9.02	46.64	95.87	-771.50	-9,304.35	9,364.55	9,308.89	55.66	168.259	
2,400.00	2,387.61	2,367.89	2,367.62	9.39	48.57	95.94	-771.61	-9,304.35	9,365.82	9,307.87	57.95	161.613	
2,500.00	2,486.87	2,466.48	2,466.21	9.76	50.50	96.02	-771.84	-9,304.35	9,367.11	9,306.86	60.25	155.466	
2,600.00	2,586.12	2,565.10	2,564.82	10.13	52.44	96.09	-772.19	-9,304.35	9,368.43	9,305.87	62.55	149.764	
2,700.00	2,685.38	2,663.75	2,663.47	10.50	54.37	96.16	-772.67	-9,304.35	9,369.76	9,304.90	64.86	144.462	
2,800.00	2,784.63	2,765.98	2,765.63	10.87	56.39	96.23	-773.18	-9,304.35	9,371.11	9,303.86	67.25	139.344	
2,900.00	2,883.89	2,865.23	2,864.89	11.24	58.42	96.30	-773.18	-9,304.35	9,372.45	9,302.80	69.65	134.561	
3,000.00	2,983.15	2,964.49	2,964.15	11.62	60.44	96.38	-773.18	-9,304.35	9,373.81	9,301.75	72.05	130.094	
3,100.00	3,082.40	3,063.74	3,063.40	12.00	62.47	96.45	-773.18	-9,304.35	9,375.18	9,300.72	74.46	125.913	
3,200.00	3,181.66	3,163.00	3,162.66	12.38	64.50	96.52	-773.18	-9,304.35	9,376.56	9,299.70	76.86	121.992	
3,300.00	3,280.91	3,262.26	3,261.91	12.75	66.52	96.60	-773.18	-9,304.35	9,377.96	9,298.70	79.27	118.307	
3,400.00	3,380.17	3,361.51	3,361.17	13.13	68.55	96.67	-773.18	-9,304.35	9,379.38	9,297.71	81.68	114.837	
3,500.00	3,479.42	3,460.77	3,460.42	13.52	70.58	96.74	-773.18	-9,304.35	9,380.81	9,296.73	84.08	111.566	
3,600.00	3,578.68	3,559.79	3,559.43	13.90	72.60	96.83	-770.75	-9,304.35	9,382.15	9,295.67	86.49	108.480	
3,700.00	3,677.94	3,658.70	3,658.33	14.28	74.62	96.90	-770.85	-9,304.35	9,383.62	9,294.73	88.89	105.564	
3,800.00	3,777.19	3,757.63	3,757.27	14.66	76.64	96.98	-771.04	-9,304.35	9,385.11	9,293.82	91.29	102.801	
3,900.00	3,876.45	3,856.59	3,856.22	15.05	78.67	97.05	-771.31	-9,304.35	9,386.62	9,292.92	93.70	100.179	
4,000.00	3,975.70	3,955.57	3,955.20	15.43	80.69	97.12	-771.67	-9,304.35	9,388.15	9,292.05	96.11	97.686	
4,100.00	4,074.96	4,054.57	4,054.19	15.82	82.71	97.19	-772.11	-9,304.35	9,389.70	9,291.18	98.51	95.315	
4,200.00	4,174.21	4,153.59	4,153.21	16.20	84.73	97.26	-772.64	-9,304.35	9,391.26	9,290.34	100.92	93.056	
4,300.00	4,273.47	4,254.99	4,254.47	16.59	86.81	97.33	-773.18	-9,304.35	9,392.84	9,289.46	103.38	90.859	
4,400.00	4,372.73	4,354.24	4,353.73	16.97	88.83	97.40	-773.18	-9,304.35	9,394.41	9,288.62	105.79	88.801	
4,500.00	4,471.98	4,452.37	4,451.85	17.36	90.84	97.48	-772.64	-9,304.35	9,395.98	9,287.80	108.18	86.853	
4,600.00	4,571.24	4,552.79	4,552.24	17.75	92.92	97.55	-773.18	-9,304.35	9,397.60	9,286.95	110.65	84.931	
4,700.00	4,670.49	4,652.05	4,651.49	18.13	95.19	97.62	-773.18	-9,304.35	9,399.22	9,285.92	113.30	82.957	
4,800.00	4,769.75	4,751.30	4,750.75	18.52	97.45	97.69	-773.18	-9,304.35	9,400.86	9,284.90	115.96	81.073	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #097 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,869.00	4,849.88	4,849.32	18.91	99.70	97.77	-772.56	-9,304.35	9,402.49	9,283.89	118.59	79.283	
5,000.00	4,968.26	4,948.43	4,947.87	19.30	101.95	97.84	-772.94	-9,304.35	9,404.17	9,282.93	121.23	77.572	
5,100.00	5,067.51	5,049.18	5,048.51	19.69	104.31	97.91	-773.18	-9,304.35	9,405.85	9,281.88	123.97	75.870	
5,200.00	5,166.77	5,146.65	5,145.97	20.07	106.62	97.99	-772.58	-9,304.35	9,407.54	9,280.86	126.67	74.268	
5,300.00	5,266.03	5,247.75	5,247.03	20.46	108.93	98.06	-773.18	-9,304.35	9,409.26	9,279.89	129.38	72.728	
5,400.00	5,365.28	5,347.01	5,346.28	20.85	111.13	98.13	-773.18	-9,304.35	9,410.99	9,279.03	131.96	71.318	
5,500.00	5,464.54	5,446.26	5,445.54	21.24	113.32	98.20	-773.18	-9,304.35	9,412.73	9,278.19	134.54	69.962	
5,600.00	5,563.79	5,545.52	5,544.79	21.63	115.51	98.28	-773.18	-9,304.35	9,414.49	9,277.37	137.12	68.657	
5,700.00	5,663.05	5,644.78	5,644.05	22.02	117.71	98.35	-773.18	-9,304.35	9,416.27	9,276.56	139.71	67.401	
5,800.00	5,762.30	5,744.03	5,743.30	22.41	119.90	98.42	-773.18	-9,304.35	9,418.05	9,275.77	142.29	66.190	
5,900.00	5,861.56	5,843.15	5,842.40	22.80	122.09	98.51	-770.68	-9,304.35	9,419.82	9,274.95	144.87	65.023	
6,000.00	5,960.82	5,942.23	5,941.47	23.19	124.28	98.58	-770.85	-9,304.35	9,421.65	9,274.20	147.45	63.898	
6,100.00	6,060.07	6,041.35	6,040.58	23.58	126.47	98.65	-771.17	-9,304.35	9,423.49	9,273.46	150.03	62.812	
6,200.00	6,159.33	6,140.50	6,139.73	23.97	128.66	98.72	-771.64	-9,304.35	9,425.35	9,272.74	152.61	61.762	
6,300.00	6,258.58	6,239.70	6,238.92	24.36	130.86	98.79	-772.25	-9,304.35	9,427.22	9,272.03	155.19	60.746	
6,400.00	6,357.84	6,338.93	6,338.15	24.76	133.05	98.86	-773.02	-9,304.35	9,429.11	9,271.34	157.77	59.763	
6,500.00	6,457.09	6,439.05	6,438.09	25.15	135.47	98.93	-773.18	-9,304.35	9,431.01	9,270.42	160.59	58.728	
6,528.17	6,485.05	6,467.01	6,466.05	25.26	136.16	98.95	-773.18	-9,304.35	9,431.55	9,270.16	161.39	58.440 ES	
6,550.00	6,506.71	6,488.66	6,487.71	25.34	136.70	113.70	-773.18	-9,304.35	9,432.34	9,270.33	162.01	58.221	
6,600.00	6,556.11	6,538.07	6,537.11	25.54	137.92	137.04	-773.18	-9,304.35	9,436.97	9,273.54	163.42	57.745	
6,650.00	6,605.00	6,586.95	6,586.00	25.74	139.13	149.44	-773.18	-9,304.35	9,445.49	9,280.67	164.82	57.307	
6,700.00	6,653.07	6,634.96	6,633.99	25.93	140.31	156.47	-771.83	-9,304.35	9,457.85	9,291.65	166.20	56.907	
6,750.00	6,700.02	6,681.83	6,680.86	26.12	141.47	160.84	-771.93	-9,304.35	9,473.98	9,306.44	167.54	56.548	
6,800.00	6,745.56	6,727.32	6,726.35	26.31	142.60	163.78	-772.12	-9,304.35	9,493.77	9,324.94	168.84	56.230	
6,850.00	6,789.42	6,771.15	6,770.17	26.50	143.68	165.86	-772.38	-9,304.35	9,517.11	9,347.03	170.09	55.954	
6,900.00	6,831.32	6,813.05	6,812.06	26.69	144.71	167.40	-772.72	-9,304.35	9,543.85	9,372.57	171.28	55.721	
6,950.00	6,871.01	6,852.74	6,851.75	26.87	145.69	168.56	-773.10	-9,304.35	9,573.83	9,401.42	172.41	55.530	
7,000.00	6,908.23	6,890.36	6,889.23	27.05	146.65	169.46	-773.18	-9,304.35	9,606.85	9,433.34	173.50	55.370	
7,050.00	6,942.77	6,924.89	6,923.77	27.23	147.54	170.17	-773.18	-9,304.35	9,642.71	9,468.20	174.51	55.255	
7,100.00	6,974.40	6,956.52	6,955.40	27.41	148.35	170.72	-773.18	-9,304.35	9,681.20	9,505.76	175.44	55.183	
7,150.00	7,002.93	6,985.06	6,983.93	27.60	149.08	171.14	-773.18	-9,304.35	9,722.07	9,545.80	176.27	55.155 SF	
7,200.00	7,028.20	7,010.32	7,009.20	27.80	149.73	171.45	-773.18	-9,304.35	9,765.08	9,588.08	177.00	55.169	
7,250.00	7,050.03	7,032.15	7,031.03	28.00	150.29	171.66	-773.18	-9,304.35	9,809.95	9,632.32	177.63	55.226	
7,300.00	7,068.30	7,050.42	7,049.30	28.22	150.76	171.75	-773.18	-9,304.35	9,856.42	9,678.26	178.16	55.324	
7,350.00	7,082.89	7,065.02	7,063.89	28.45	151.14	171.70	-773.18	-9,304.35	9,904.18	9,725.60	178.58	55.461	
7,400.00	7,093.72	7,075.84	7,074.72	28.70	151.42	171.37	-773.18	-9,304.35	9,952.96	9,774.07	178.89	55.638	
7,450.00	7,100.71	7,082.83	7,081.71	28.96	151.60	170.28	-773.18	-9,304.35	10,002.44	9,823.35	179.09	55.851	
7,500.00	7,103.82	7,085.95	7,084.82	29.24	151.68	161.55	-773.18	-9,304.35	10,052.33	9,873.15	179.18	56.101	
7,515.00	7,104.00	7,086.13	7,085.00	29.32	151.68	90.00	-773.18	-9,304.35	10,067.33	9,888.14	179.19	56.183	
7,600.00	7,104.00	7,086.13	7,085.00	29.84	151.68	90.00	-773.18	-9,304.35	10,152.33	9,973.13	179.20	56.654	
7,700.00	7,104.00	7,086.13	7,085.00	30.51	151.68	90.00	-773.18	-9,304.35	10,252.32	10,073.11	179.21	57.209	
7,800.00	7,104.00	7,086.13	7,085.00	31.26	151.68	90.00	-773.18	-9,304.35	10,352.32	10,173.10	179.22	57.763	
7,900.00	7,104.00	7,086.13	7,085.00	32.07	151.68	90.00	-773.18	-9,304.35	10,452.32	10,273.09	179.23	58.316	
8,000.00	7,104.00	7,086.13	7,085.00	32.94	151.68	90.00	-773.18	-9,304.35	10,552.32	10,373.07	179.25	58.870	
8,100.00	7,104.00	7,086.13	7,085.00	33.86	151.68	90.00	-773.18	-9,304.35	10,652.32	10,473.06	179.26	59.423	
8,200.00	7,104.00	7,086.13	7,085.00	34.84	151.68	90.00	-773.18	-9,304.35	10,752.32	10,573.04	179.28	59.975	
8,300.00	7,104.00	7,086.13	7,085.00	35.86	151.68	90.00	-773.18	-9,304.35	10,852.32	10,673.02	179.30	60.528	
8,400.00	7,104.00	7,086.13	7,085.00	36.92	151.68	90.00	-773.18	-9,304.35	10,952.32	10,773.00	179.31	61.080	
8,500.00	7,104.00	7,086.13	7,085.00	38.02	151.68	90.00	-773.18	-9,304.35	11,052.32	10,872.98	179.33	61.631	
8,600.00	7,104.00	7,086.13	7,085.00	39.15	151.68	90.00	-773.18	-9,304.35	11,152.31	10,972.96	179.35	62.182	
8,700.00	7,104.00	7,086.13	7,085.00	40.32	151.68	90.00	-773.18	-9,304.35	11,252.31	11,072.94	179.37	62.733	
8,800.00	7,104.00	7,086.13	7,085.00	41.52	151.68	90.00	-773.18	-9,304.35	11,352.31	11,172.92	179.39	63.283	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #097 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	7,086.13	7,085.00	42.74	151.68	90.00	-773.18	-9,304.35	11,452.31	11,272.90	179.41	63.833	
9,000.00	7,104.00	7,086.13	7,085.00	43.99	151.68	90.00	-773.18	-9,304.35	11,552.31	11,372.88	179.43	64.382	
9,100.00	7,104.00	7,086.13	7,085.00	45.26	151.68	90.00	-773.18	-9,304.35	11,652.31	11,472.85	179.46	64.931	
9,200.00	7,104.00	7,086.13	7,085.00	46.55	151.68	90.00	-773.18	-9,304.35	11,752.31	11,572.83	179.48	65.480	
9,300.00	7,104.00	7,086.13	7,085.00	47.85	151.68	90.00	-773.18	-9,304.35	11,852.31	11,672.80	179.50	66.028	
9,400.00	7,104.00	7,086.13	7,085.00	49.18	151.68	90.00	-773.18	-9,304.35	11,952.31	11,772.78	179.53	66.576	
9,500.00	7,104.00	7,086.13	7,085.00	50.52	151.68	90.00	-773.18	-9,304.35	12,052.31	11,872.75	179.56	67.123	
9,600.00	7,104.00	7,086.13	7,085.00	51.88	151.68	90.00	-773.18	-9,304.35	12,152.30	11,972.72	179.58	67.669	
9,700.00	7,104.00	7,086.13	7,085.00	53.25	151.68	90.00	-773.18	-9,304.35	12,252.30	12,072.69	179.61	68.216	
9,800.00	7,104.00	7,086.13	7,085.00	54.63	151.68	90.00	-773.18	-9,304.35	12,352.30	12,172.66	179.64	68.761	
9,900.00	7,104.00	7,086.13	7,085.00	56.03	151.68	90.00	-773.18	-9,304.35	12,452.30	12,272.63	179.67	69.307	
10,000.00	7,104.00	7,086.13	7,085.00	57.43	151.68	90.00	-773.18	-9,304.35	12,552.30	12,372.60	179.70	69.851	
10,100.00	7,104.00	7,086.13	7,085.00	58.85	151.68	90.00	-773.18	-9,304.35	12,652.30	12,472.57	179.73	70.396	
10,200.00	7,104.00	7,086.13	7,085.00	60.27	151.68	90.00	-773.18	-9,304.35	12,752.30	12,572.54	179.76	70.939	
10,300.00	7,104.00	7,086.13	7,085.00	61.71	151.68	90.00	-773.18	-9,304.35	12,852.30	12,672.50	179.80	71.483	
10,400.00	7,104.00	7,086.13	7,085.00	63.15	151.68	90.00	-773.18	-9,304.35	12,952.30	12,772.47	179.83	72.025	
10,500.00	7,104.00	7,086.13	7,085.00	64.60	151.68	90.00	-773.18	-9,304.35	13,052.30	12,872.43	179.86	72.567	
10,600.00	7,104.00	7,086.13	7,085.00	66.05	151.68	90.00	-773.18	-9,304.35	13,152.30	12,972.40	179.90	73.109	
10,700.00	7,104.00	7,086.13	7,085.00	67.52	151.68	90.00	-773.18	-9,304.35	13,252.30	13,072.36	179.94	73.650	
10,800.00	7,104.00	7,086.13	7,085.00	68.99	151.68	90.00	-773.18	-9,304.35	13,352.30	13,172.32	179.97	74.191	
10,900.00	7,104.00	7,086.13	7,085.00	70.46	151.68	90.00	-773.18	-9,304.35	13,452.29	13,272.29	180.01	74.731	
11,000.00	7,104.00	7,086.13	7,085.00	71.94	151.68	90.00	-773.18	-9,304.35	13,552.29	13,372.25	180.05	75.270	
11,100.00	7,104.00	7,086.13	7,085.00	73.43	151.68	90.00	-773.18	-9,304.35	13,652.29	13,472.21	180.09	75.809	
11,200.00	7,104.00	7,086.13	7,085.00	74.92	151.68	90.00	-773.18	-9,304.35	13,752.29	13,572.17	180.13	76.348	
11,300.00	7,104.00	7,086.13	7,085.00	76.41	151.68	90.00	-773.18	-9,304.35	13,852.29	13,672.12	180.17	76.885	
11,400.00	7,104.00	7,086.13	7,085.00	77.91	151.68	90.00	-773.18	-9,304.35	13,952.29	13,772.08	180.21	77.423	
11,500.00	7,104.00	7,086.13	7,085.00	79.41	151.68	90.00	-773.18	-9,304.35	14,052.29	13,872.04	180.25	77.959	
11,600.00	7,104.00	7,086.13	7,085.00	80.92	151.68	90.00	-773.18	-9,304.35	14,152.29	13,972.00	180.29	78.495	
11,700.00	7,104.00	7,086.13	7,085.00	82.43	151.68	90.00	-773.18	-9,304.35	14,252.29	14,071.95	180.34	79.031	
11,800.00	7,104.00	7,086.13	7,085.00	83.94	151.68	90.00	-773.18	-9,304.35	14,352.29	14,171.91	180.38	79.565	
11,900.00	7,104.00	7,086.13	7,085.00	85.46	151.68	90.00	-773.18	-9,304.35	14,452.29	14,271.86	180.43	80.100	
12,000.00	7,104.00	7,086.13	7,085.00	86.98	151.68	90.00	-773.18	-9,304.35	14,552.29	14,371.81	180.47	80.633	
12,100.00	7,104.00	7,086.13	7,085.00	88.50	151.68	90.00	-773.18	-9,304.35	14,652.29	14,471.77	180.52	81.166	
12,200.00	7,104.00	7,086.13	7,085.00	90.03	151.68	90.00	-773.18	-9,304.35	14,752.29	14,571.72	180.57	81.699	
12,300.00	7,104.00	7,086.13	7,085.00	91.55	151.68	90.00	-773.18	-9,304.35	14,852.29	14,671.67	180.62	82.231	
12,400.00	7,104.00	7,086.13	7,085.00	93.08	151.68	90.00	-773.18	-9,304.35	14,952.29	14,771.62	180.67	82.762	
12,500.00	7,104.00	7,086.13	7,085.00	94.62	151.68	90.00	-773.18	-9,304.35	15,052.29	14,871.57	180.72	83.292	
12,600.00	7,104.00	7,086.13	7,085.00	96.15	151.68	90.00	-773.18	-9,304.35	15,152.28	14,971.52	180.77	83.822	
12,700.00	7,104.00	7,086.13	7,085.00	97.69	151.68	90.00	-773.18	-9,304.35	15,252.28	15,071.47	180.82	84.351	
12,800.00	7,104.00	7,086.13	7,085.00	99.23	151.68	90.00	-773.18	-9,304.35	15,352.28	15,171.41	180.87	84.880	
12,900.00	7,104.00	7,086.13	7,085.00	100.77	151.68	90.00	-773.18	-9,304.35	15,452.28	15,271.36	180.92	85.408	
13,000.00	7,104.00	7,086.13	7,085.00	102.31	151.68	90.00	-773.18	-9,304.35	15,552.28	15,371.31	180.98	85.935	
13,100.00	7,104.00	7,086.13	7,085.00	103.86	151.68	90.00	-773.18	-9,304.35	15,652.28	15,471.25	181.03	86.462	
13,200.00	7,104.00	7,086.13	7,085.00	105.40	151.68	90.00	-773.18	-9,304.35	15,752.28	15,571.20	181.09	86.988	
13,300.00	7,104.00	7,086.13	7,085.00	106.95	151.68	90.00	-773.18	-9,304.35	15,852.28	15,671.14	181.14	87.513	
13,400.00	7,104.00	7,086.13	7,085.00	108.50	151.68	90.00	-773.18	-9,304.35	15,952.28	15,771.08	181.20	88.038	
13,500.00	7,104.00	7,086.13	7,085.00	110.05	151.68	90.00	-773.18	-9,304.35	16,052.28	15,871.03	181.25	88.562	
13,600.00	7,104.00	7,086.13	7,085.00	111.60	151.68	90.00	-773.18	-9,304.35	16,152.28	15,970.97	181.31	89.085	
13,700.00	7,104.00	7,086.13	7,085.00	113.16	151.68	90.00	-773.18	-9,304.35	16,252.28	16,070.91	181.37	89.608	
13,800.00	7,104.00	7,086.13	7,085.00	114.71	151.68	90.00	-773.18	-9,304.35	16,352.28	16,170.85	181.43	90.130	
13,900.00	7,104.00	7,086.13	7,085.00	116.27	151.68	90.00	-773.18	-9,304.35	16,452.28	16,270.79	181.49	90.651	
14,000.00	7,104.00	7,086.13	7,085.00	117.83	151.68	90.00	-773.18	-9,304.35	16,552.28	16,370.73	181.55	91.172	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #097 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	7,086.13	7,085.00	119.38	151.68	90.00	-773.18	-9,304.35	16,652.28	16,470.67	181.61	91.692	
14,200.00	7,104.00	7,086.13	7,085.00	120.94	151.68	90.00	-773.18	-9,304.35	16,752.28	16,570.60	181.67	92.211	
14,300.00	7,104.00	7,086.13	7,085.00	122.50	151.68	90.00	-773.18	-9,304.35	16,852.28	16,670.54	181.74	92.729	
14,400.00	7,104.00	7,086.13	7,085.00	124.07	151.68	90.00	-773.18	-9,304.35	16,952.28	16,770.48	181.80	93.247	
14,500.00	7,104.00	7,086.13	7,085.00	125.63	151.68	90.00	-773.18	-9,304.35	17,052.28	16,870.41	181.86	93.764	
14,600.00	7,104.00	7,086.13	7,085.00	127.19	151.68	90.00	-773.18	-9,304.35	17,152.28	16,970.35	181.93	94.281	
14,700.00	7,104.00	7,086.13	7,085.00	128.76	151.68	90.00	-773.18	-9,304.35	17,252.27	17,070.28	181.99	94.796	
14,800.00	7,104.00	7,086.13	7,085.00	130.32	151.68	90.00	-773.18	-9,304.35	17,352.27	17,170.22	182.06	95.311	
14,900.00	7,104.00	7,086.13	7,085.00	131.89	151.68	90.00	-773.18	-9,304.35	17,452.27	17,270.15	182.13	95.826	
15,000.00	7,104.00	7,086.13	7,085.00	133.46	151.68	90.00	-773.18	-9,304.35	17,552.27	17,370.08	182.19	96.339	
15,100.00	7,104.00	7,086.13	7,085.00	135.02	151.68	90.00	-773.18	-9,304.35	17,652.27	17,470.01	182.26	96.852	
15,200.00	7,104.00	7,086.13	7,085.00	136.59	151.68	90.00	-773.18	-9,304.35	17,752.27	17,569.94	182.33	97.364	
15,300.00	7,104.00	7,086.13	7,085.00	138.16	151.68	90.00	-773.18	-9,304.35	17,852.27	17,669.87	182.40	97.876	
15,400.00	7,104.00	7,086.13	7,085.00	139.73	151.68	90.00	-773.18	-9,304.35	17,952.27	17,769.80	182.47	98.386	
15,500.00	7,104.00	7,086.13	7,085.00	141.30	151.68	90.00	-773.18	-9,304.35	18,052.27	17,869.73	182.54	98.896	
15,600.00	7,104.00	7,086.13	7,085.00	142.88	151.68	90.00	-773.18	-9,304.35	18,152.27	17,969.66	182.61	99.406	
15,700.00	7,104.00	7,086.13	7,085.00	144.45	151.68	90.00	-773.18	-9,304.35	18,252.27	18,069.59	182.68	99.914	
15,800.00	7,104.00	7,086.13	7,085.00	146.02	151.68	90.00	-773.18	-9,304.35	18,352.27	18,169.52	182.75	100.422	
15,900.00	7,104.00	7,086.13	7,085.00	147.60	151.68	90.00	-773.18	-9,304.35	18,452.27	18,269.45	182.82	100.929	
16,000.00	7,104.00	7,086.13	7,085.00	149.17	151.68	90.00	-773.18	-9,304.35	18,552.27	18,369.37	182.90	101.435	
16,100.00	7,104.00	7,086.13	7,085.00	150.74	151.68	90.00	-773.18	-9,304.35	18,652.27	18,469.30	182.97	101.941	
16,200.00	7,104.00	7,086.13	7,085.00	152.32	151.68	90.00	-773.18	-9,304.35	18,752.27	18,569.22	183.05	102.446	
16,300.00	7,104.00	7,086.13	7,085.00	153.89	151.68	90.00	-773.18	-9,304.35	18,852.27	18,669.15	183.12	102.950	
16,400.00	7,104.00	7,086.13	7,085.00	155.47	151.68	90.00	-773.18	-9,304.35	18,952.27	18,769.07	183.20	103.453	
16,500.00	7,104.00	7,086.13	7,085.00	157.05	151.68	90.00	-773.18	-9,304.35	19,052.27	18,868.99	183.27	103.956	
16,600.00	7,104.00	7,086.13	7,085.00	158.63	151.68	90.00	-773.18	-9,304.35	19,152.27	18,968.92	183.35	104.457	
16,700.00	7,104.00	7,086.13	7,085.00	160.20	151.68	90.00	-773.18	-9,304.35	19,252.27	19,068.84	183.43	104.959	
16,800.00	7,104.00	7,086.13	7,085.00	161.78	151.68	90.00	-773.18	-9,304.35	19,352.27	19,168.76	183.51	105.459	
16,900.00	7,104.00	7,086.13	7,085.00	163.36	151.68	90.00	-773.18	-9,304.35	19,452.27	19,268.68	183.58	105.958	
17,000.00	7,104.00	7,086.13	7,085.00	164.94	151.68	90.00	-773.18	-9,304.35	19,552.27	19,368.60	183.66	106.457	
17,100.00	7,104.00	7,086.13	7,085.00	166.52	151.68	90.00	-773.18	-9,304.35	19,652.27	19,468.52	183.74	106.955	
17,200.00	7,104.00	7,086.13	7,085.00	168.10	151.68	90.00	-773.18	-9,304.35	19,752.27	19,568.44	183.82	107.453	
17,300.00	7,104.00	7,086.13	7,085.00	169.68	151.68	90.00	-773.18	-9,304.35	19,852.27	19,668.36	183.90	107.949	
17,400.00	7,104.00	7,086.13	7,085.00	171.26	151.68	90.00	-773.18	-9,304.35	19,952.26	19,768.28	183.98	108.445	
17,500.00	7,104.00	7,086.13	7,085.00	172.84	151.68	90.00	-773.18	-9,304.35	20,052.26	19,868.20	184.07	108.940	
17,600.00	7,104.00	7,086.13	7,085.00	174.42	151.68	90.00	-773.18	-9,304.35	20,152.26	19,968.12	184.15	109.435	
17,700.00	7,104.00	7,086.13	7,085.00	176.00	151.68	90.00	-773.18	-9,304.35	20,252.26	20,068.03	184.23	109.928	
17,800.00	7,104.00	7,086.13	7,085.00	177.59	151.68	90.00	-773.18	-9,304.35	20,352.26	20,167.95	184.32	110.421	
17,900.00	7,104.00	7,086.13	7,085.00	179.17	151.68	90.00	-773.18	-9,304.35	20,452.26	20,267.86	184.40	110.913	
18,000.00	7,104.00	7,086.13	7,085.00	180.75	151.68	90.00	-773.18	-9,304.35	20,552.26	20,367.78	184.48	111.404	
18,100.00	7,104.00	7,086.13	7,085.00	182.33	151.68	90.00	-773.18	-9,304.35	20,652.26	20,467.69	184.57	111.895	
18,200.00	7,104.00	7,086.13	7,085.00	183.92	151.68	90.00	-773.18	-9,304.35	20,752.26	20,567.61	184.65	112.384	
18,300.00	7,104.00	7,086.13	7,085.00	185.50	151.68	90.00	-773.18	-9,304.35	20,852.26	20,667.52	184.74	112.873	
18,400.00	7,104.00	7,086.13	7,085.00	187.09	151.68	90.00	-773.18	-9,304.35	20,952.26	20,767.43	184.83	113.362	
18,500.00	7,104.00	7,086.13	7,085.00	188.67	151.68	90.00	-773.18	-9,304.35	21,052.26	20,867.35	184.91	113.849	
18,600.00	7,104.00	7,086.13	7,085.00	190.26	151.68	90.00	-773.18	-9,304.35	21,152.26	20,967.26	185.00	114.336	
18,700.00	7,104.00	7,086.13	7,085.00	191.84	151.68	90.00	-773.18	-9,304.35	21,252.26	21,067.17	185.09	114.822	
18,800.00	7,104.00	7,086.13	7,085.00	193.43	151.68	90.00	-773.18	-9,304.35	21,352.26	21,167.08	185.18	115.307	
18,900.00	7,104.00	7,086.13	7,085.00	195.01	151.68	90.00	-773.18	-9,304.35	21,452.26	21,266.99	185.27	115.791	
19,000.00	7,104.00	7,086.13	7,085.00	196.60	151.68	90.00	-773.18	-9,304.35	21,552.26	21,366.90	185.36	116.275	
19,100.00	7,104.00	7,086.13	7,085.00	198.18	151.68	90.00	-773.18	-9,304.35	21,652.26	21,466.81	185.45	116.758	
19,200.00	7,104.00	7,086.13	7,085.00	199.77	151.68	90.00	-773.18	-9,304.35	21,752.26	21,566.72	185.54	117.240	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #097 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 97-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	7,086.13	7,085.00	201.36	151.68	90.00	-773.18	-9,304.35	21,852.26	21,666.63	185.63	117.721	
19,400.00	7,104.00	7,086.13	7,085.00	202.94	151.68	90.00	-773.18	-9,304.35	21,952.26	21,766.54	185.72	118.201	
19,500.00	7,104.00	7,086.13	7,085.00	204.53	151.68	90.00	-773.18	-9,304.35	22,052.26	21,866.45	185.81	118.681	
19,600.00	7,104.00	7,086.13	7,085.00	206.12	151.68	90.00	-773.18	-9,304.35	22,152.26	21,966.36	185.90	119.160	
19,700.00	7,104.00	7,086.13	7,085.00	207.70	151.68	90.00	-773.18	-9,304.35	22,252.26	22,066.26	186.00	119.638	
19,800.00	7,104.00	7,086.13	7,085.00	209.29	151.68	90.00	-773.18	-9,304.35	22,352.26	22,166.17	186.09	120.116	
19,900.00	7,104.00	7,086.13	7,085.00	210.88	151.68	90.00	-773.18	-9,304.35	22,452.26	22,266.08	186.18	120.593	
20,000.00	7,104.00	7,086.13	7,085.00	212.47	151.68	90.00	-773.18	-9,304.35	22,552.26	22,365.98	186.28	121.069	
20,100.00	7,104.00	7,086.13	7,085.00	214.05	151.68	90.00	-773.18	-9,304.35	22,652.26	22,465.89	186.37	121.544	
20,200.00	7,104.00	7,086.13	7,085.00	215.64	151.68	90.00	-773.18	-9,304.35	22,752.26	22,565.79	186.47	122.018	
20,215.00	7,104.00	7,086.13	7,085.00	215.88	151.68	90.00	-773.18	-9,304.35	22,767.26	22,580.78	186.48	122.089	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-98.13	-1,320.83	-9,244.68	9,338.57				
100.00	100.00	84.00	84.00	3.29	0.89	-98.13	-1,320.83	-9,244.68	9,338.55	9,334.37	4.18	2,232.211	
197.57	197.57	181.56	181.55	3.33	2.47	-98.13	-1,320.57	-9,244.68	9,338.52	9,332.72	5.80	1,609.316	
200.00	200.00	183.60	183.59	3.34	2.51	-98.13	-1,320.57	-9,244.68	9,338.52	9,332.67	5.84	1,597.868	
300.00	300.00	284.02	284.00	3.42	4.55	-98.13	-1,320.83	-9,244.68	9,338.55	9,330.59	7.97	1,171.738	
381.47	381.47	365.49	365.47	3.51	6.28	-98.13	-1,320.56	-9,244.68	9,338.52	9,328.72	9.80	953.377 CC	
400.00	400.00	383.20	383.18	3.54	6.66	-98.13	-1,320.56	-9,244.68	9,338.52	9,328.32	10.20	915.907	
500.00	500.00	478.77	478.75	3.69	8.69	-98.13	-1,320.78	-9,244.68	9,338.55	9,326.17	12.38	754.537	
600.00	599.98	584.04	583.98	3.86	11.01	111.87	-1,320.83	-9,244.68	9,339.21	9,324.34	14.87	628.253	
700.00	699.84	677.16	677.09	4.04	13.07	111.86	-1,320.08	-9,244.68	9,341.05	9,323.94	17.11	545.850	
800.00	799.45	783.56	783.45	4.26	15.43	111.85	-1,320.83	-9,244.68	9,344.41	9,324.73	19.68	474.818	
849.50	848.63	832.75	832.63	4.37	16.52	111.84	-1,320.83	-9,244.68	9,346.51	9,325.62	20.88	447.545	
900.00	898.77	882.88	882.77	4.49	17.63	103.61	-1,320.83	-9,244.68	9,348.37	9,326.26	22.12	422.693	
973.84	972.07	956.18	956.07	4.68	19.25	91.53	-1,320.83	-9,244.68	9,349.54	9,325.62	23.93	390.749	
1,000.00	998.03	982.15	982.03	4.74	19.83	91.55	-1,320.83	-9,244.68	9,349.63	9,325.06	24.57	380.512	
1,100.00	1,097.29	1,079.04	1,078.93	5.02	21.98	91.63	-1,320.08	-9,244.68	9,349.87	9,322.88	26.99	346.391	
1,200.00	1,196.54	1,175.15	1,175.03	5.30	24.11	91.70	-1,320.38	-9,244.68	9,350.27	9,320.86	29.41	317.917	
1,300.00	1,295.80	1,280.01	1,279.80	5.61	26.50	91.77	-1,320.83	-9,244.68	9,350.70	9,318.60	32.10	291.305	
1,400.00	1,395.06	1,379.27	1,379.06	5.92	28.98	91.85	-1,320.83	-9,244.68	9,351.09	9,316.19	34.89	267.997	
1,500.00	1,494.31	1,477.70	1,477.47	6.24	31.44	91.93	-1,319.46	-9,244.67	9,351.31	9,313.64	37.67	248.213	
1,600.00	1,593.57	1,569.98	1,569.74	6.57	33.74	92.00	-1,319.79	-9,244.67	9,351.78	9,311.47	40.31	231.992	
1,700.00	1,692.82	1,677.18	1,676.82	6.91	36.42	92.07	-1,320.83	-9,244.68	9,352.35	9,309.02	43.33	215.855	
1,800.00	1,792.08	1,776.43	1,776.08	7.25	38.92	92.14	-1,320.83	-9,244.68	9,352.80	9,306.63	46.16	202.611	
1,900.00	1,891.33	1,870.69	1,870.32	7.60	41.28	92.22	-1,319.97	-9,244.67	9,353.16	9,304.28	48.88	191.368	
2,000.00	1,990.59	1,975.05	1,974.59	7.95	43.89	92.29	-1,320.83	-9,244.68	9,353.75	9,301.91	51.83	180.461	
2,100.00	2,089.85	2,074.30	2,073.85	8.30	46.09	92.37	-1,320.83	-9,244.68	9,354.24	9,299.86	54.39	171.987	
2,200.00	2,189.10	2,173.56	2,173.10	8.66	48.29	92.44	-1,320.83	-9,244.68	9,354.76	9,297.81	56.95	164.264	
2,300.00	2,288.36	2,271.03	2,270.54	9.02	50.45	92.52	-1,319.10	-9,244.67	9,355.08	9,295.61	59.47	157.300	
2,400.00	2,387.61	2,365.21	2,364.71	9.39	52.54	92.59	-1,319.46	-9,244.67	9,355.67	9,293.75	61.93	151.078	
2,500.00	2,486.87	2,459.50	2,459.00	9.76	54.63	92.66	-1,320.26	-9,244.68	9,356.34	9,291.95	64.38	145.320	
2,600.00	2,586.12	2,570.69	2,570.12	10.13	56.91	92.74	-1,320.83	-9,244.68	9,356.98	9,289.94	67.04	139.580	
2,700.00	2,685.38	2,669.94	2,669.38	10.50	58.83	92.81	-1,320.83	-9,244.68	9,357.57	9,288.24	69.32	134.982	
2,800.00	2,784.63	2,768.72	2,768.15	10.87	60.74	92.89	-1,320.03	-9,244.67	9,358.09	9,286.48	71.61	130.690	
2,900.00	2,883.89	2,865.26	2,864.69	11.24	62.60	92.96	-1,320.20	-9,244.68	9,358.73	9,284.89	73.84	126.737	
3,000.00	2,983.15	2,961.86	2,961.29	11.62	64.47	93.03	-1,320.62	-9,244.68	9,359.42	9,283.34	76.09	123.013	
3,100.00	3,082.40	3,067.01	3,066.40	12.00	66.57	93.11	-1,320.83	-9,244.68	9,360.10	9,281.54	78.56	119.140	
3,200.00	3,181.66	3,166.26	3,165.66	12.38	68.59	93.18	-1,320.83	-9,244.68	9,360.77	9,279.81	80.96	115.623	
3,300.00	3,280.91	3,265.20	3,264.59	12.75	70.60	93.26	-1,319.99	-9,244.67	9,361.37	9,278.02	83.35	112.314	
3,400.00	3,380.17	3,362.00	3,361.39	13.13	72.57	93.33	-1,320.14	-9,244.68	9,362.09	9,276.40	85.70	109.246	
3,500.00	3,479.42	3,458.86	3,458.24	13.52	74.54	93.40	-1,320.53	-9,244.68	9,362.86	9,274.81	88.05	106.339	
3,600.00	3,578.68	3,563.34	3,562.68	13.90	76.61	93.47	-1,320.83	-9,244.68	9,363.62	9,273.12	90.50	103.460	
3,700.00	3,677.94	3,661.58	3,660.91	14.28	78.52	93.55	-1,320.24	-9,244.68	9,364.31	9,271.52	92.80	100.912	
3,800.00	3,777.19	3,755.15	3,754.48	14.66	80.34	93.62	-1,320.62	-9,244.68	9,365.12	9,270.12	95.00	98.581	
3,900.00	3,876.45	3,861.14	3,860.45	15.05	82.33	93.70	-1,320.83	-9,244.68	9,365.92	9,268.55	97.37	96.184	
4,000.00	3,975.70	3,959.23	3,958.54	15.43	84.16	93.77	-1,320.55	-9,244.68	9,366.70	9,267.11	99.58	94.060	
4,100.00	4,074.96	4,059.66	4,058.96	15.82	86.04	93.84	-1,320.83	-9,244.68	9,367.54	9,265.69	101.85	91.976	
4,200.00	4,174.21	4,158.92	4,158.21	16.20	88.78	93.92	-1,320.83	-9,244.68	9,368.37	9,263.39	104.98	89.240	
4,300.00	4,273.47	4,258.18	4,257.47	16.59	91.53	93.99	-1,320.83	-9,244.68	9,369.21	9,261.10	108.11	86.661	
4,400.00	4,372.73	4,356.35	4,355.63	16.97	94.25	94.07	-1,320.04	-9,244.67	9,370.00	9,258.79	111.22	84.251	
4,500.00	4,471.98	4,453.43	4,452.72	17.36	96.94	94.14	-1,320.28	-9,244.68	9,370.90	9,256.61	114.29	81.993	
4,600.00	4,571.24	4,550.58	4,549.86	17.75	99.62	94.21	-1,320.77	-9,244.68	9,371.84	9,254.48	117.36	79.852	
4,700.00	4,670.49	4,654.49	4,653.39	18.13	103.27	94.29	-1,320.42	-9,244.68	9,372.72	9,251.33	121.39	77.209	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,753.01	4,751.83	18.52	106.69	94.36	-1,320.16	-9,244.68	9,373.62	9,248.41	125.21	74.864	
4,900.00	4,869.00	4,854.31	4,853.00	18.91	110.23	94.43	-1,320.83	-9,244.68	9,374.62	9,245.49	129.14	72.595	
5,000.00	4,968.26	4,953.67	4,952.26	19.30	113.67	94.51	-1,320.83	-9,244.68	9,375.58	9,242.62	132.96	70.513	
5,100.00	5,067.51	5,053.06	5,051.51	19.69	117.10	94.58	-1,320.83	-9,244.68	9,376.55	9,239.77	136.78	68.550	
5,200.00	5,166.77	5,152.45	5,150.77	20.07	120.61	94.65	-1,320.83	-9,244.68	9,377.54	9,236.86	140.68	66.658	
5,300.00	5,266.03	5,247.07	5,245.36	20.46	123.88	94.73	-1,319.89	-9,244.67	9,378.46	9,234.13	144.34	64.975	
5,400.00	5,365.28	5,351.14	5,349.28	20.85	127.44	94.80	-1,320.83	-9,244.68	9,379.56	9,231.27	148.29	63.253	
5,500.00	5,464.54	5,437.32	5,435.42	21.24	130.34	94.87	-1,320.56	-9,244.68	9,380.58	9,229.01	151.58	61.887	
5,600.00	5,563.79	5,547.94	5,545.93	21.63	134.18	94.95	-1,319.89	-9,244.67	9,381.57	9,225.77	155.80	60.214	
5,700.00	5,663.05	5,649.22	5,647.05	22.02	137.74	95.02	-1,320.83	-9,244.68	9,382.71	9,222.96	159.75	58.734	
5,800.00	5,762.30	5,740.47	5,738.26	22.41	141.03	95.09	-1,320.10	-9,244.68	9,383.74	9,220.31	163.43	57.418	
5,900.00	5,861.56	5,847.91	5,845.56	22.80	144.84	95.17	-1,320.83	-9,244.68	9,384.89	9,217.26	167.63	55.986	
6,000.00	5,960.82	5,936.61	5,934.21	23.19	147.95	95.24	-1,320.17	-9,244.68	9,385.96	9,214.83	171.13	54.846	
6,100.00	6,060.07	6,046.62	6,044.07	23.58	151.82	95.32	-1,320.83	-9,244.68	9,387.13	9,211.74	175.39	53.521	
6,200.00	6,159.33	6,146.05	6,143.33	23.97	155.33	95.39	-1,320.83	-9,244.68	9,388.28	9,208.99	179.29	52.363 ES	
6,300.00	6,258.58	6,170.00	6,167.24	24.36	156.20	95.41	-1,320.83	-9,244.68	9,389.74	9,209.19	180.55	52.007	
6,400.00	6,357.84	6,170.00	6,167.24	24.76	156.20	95.41	-1,320.83	-9,244.68	9,392.24	9,211.33	180.91	51.916	
6,500.00	6,457.09	6,170.00	6,167.24	25.15	156.20	95.41	-1,320.83	-9,244.68	9,395.80	9,214.54	181.26	51.837	
6,528.17	6,485.05	6,170.00	6,167.24	25.26	156.20	95.41	-1,320.83	-9,244.68	9,396.99	9,215.64	181.35	51.817	
6,550.00	6,506.71	6,170.00	6,167.24	25.34	156.20	110.13	-1,320.83	-9,244.68	9,398.35	9,216.93	181.42	51.804	
6,600.00	6,556.11	6,170.00	6,167.24	25.54	156.20	133.40	-1,320.83	-9,244.68	9,404.44	9,222.86	181.58	51.792 SF	
6,650.00	6,605.00	6,170.00	6,167.24	25.74	156.20	145.70	-1,320.83	-9,244.68	9,414.66	9,232.92	181.73	51.805	
6,700.00	6,653.07	6,170.00	6,167.24	25.93	156.20	152.59	-1,320.83	-9,244.68	9,428.92	9,247.04	181.88	51.841	
6,750.00	6,700.02	6,170.00	6,167.24	26.12	156.20	156.81	-1,320.83	-9,244.68	9,447.11	9,265.09	182.02	51.902	
6,800.00	6,745.56	6,170.00	6,167.24	26.31	156.20	159.54	-1,320.83	-9,244.68	9,469.11	9,286.96	182.15	51.986	
6,850.00	6,789.42	6,170.00	6,167.24	26.50	156.20	161.38	-1,320.83	-9,244.68	9,494.75	9,312.48	182.27	52.093	
6,900.00	6,831.32	6,170.00	6,167.24	26.69	156.20	162.62	-1,320.83	-9,244.68	9,523.84	9,341.46	182.38	52.221	
6,950.00	6,871.01	6,170.00	6,167.24	26.87	156.20	163.41	-1,320.83	-9,244.68	9,556.18	9,373.70	182.48	52.370	
7,000.00	6,908.23	6,170.00	6,167.24	27.05	156.20	163.85	-1,320.83	-9,244.68	9,591.53	9,408.96	182.56	52.538	
7,050.00	6,942.77	6,170.00	6,167.24	27.23	156.20	163.96	-1,320.83	-9,244.68	9,629.64	9,446.99	182.64	52.723	
7,100.00	6,974.40	6,170.00	6,167.24	27.41	156.20	163.75	-1,320.83	-9,244.68	9,670.25	9,487.53	182.71	52.926	
7,150.00	7,002.93	6,170.00	6,167.24	27.60	156.20	163.15	-1,320.83	-9,244.68	9,713.08	9,530.30	182.77	53.142	
7,200.00	7,028.20	6,170.00	6,167.24	27.80	156.20	162.04	-1,320.83	-9,244.68	9,757.83	9,575.00	182.83	53.372	
7,250.00	7,050.03	6,170.00	6,167.24	28.00	156.20	160.15	-1,320.83	-9,244.68	9,804.21	9,621.34	182.87	53.612	
7,300.00	7,068.30	6,170.00	6,167.24	28.22	156.20	156.89	-1,320.83	-9,244.68	9,851.90	9,668.99	182.91	53.862	
7,350.00	7,082.89	6,170.00	6,167.24	28.45	156.20	150.72	-1,320.83	-9,244.68	9,900.61	9,717.67	182.94	54.119	
7,400.00	7,093.72	6,170.00	6,167.24	28.70	156.20	136.71	-1,320.83	-9,244.68	9,950.01	9,767.04	182.97	54.380	
7,450.00	7,100.71	6,170.00	6,167.24	28.96	156.20	97.30	-1,320.83	-9,244.68	9,999.79	9,816.79	183.00	54.645	
7,500.00	7,103.82	6,170.00	6,167.24	29.24	156.20	42.33	-1,320.83	-9,244.68	10,049.64	9,866.62	183.02	54.910	
7,515.00	7,104.00	6,170.00	6,167.24	29.32	156.20	32.97	-1,320.83	-9,244.68	10,064.57	9,881.54	183.03	54.989	
7,600.00	7,104.00	6,170.00	6,167.24	29.84	156.20	32.97	-1,320.83	-9,244.68	10,149.06	9,965.99	183.07	55.438	
7,700.00	7,104.00	6,170.00	6,167.24	30.51	156.20	32.97	-1,320.83	-9,244.68	10,248.48	10,065.36	183.12	55.966	
7,800.00	7,104.00	6,170.00	6,167.24	31.26	156.20	32.97	-1,320.83	-9,244.68	10,347.91	10,164.74	183.17	56.493	
7,900.00	7,104.00	6,170.00	6,167.24	32.07	156.20	32.97	-1,320.83	-9,244.68	10,447.35	10,264.13	183.22	57.020	
8,000.00	7,104.00	6,170.00	6,167.24	32.94	156.20	32.97	-1,320.83	-9,244.68	10,546.80	10,363.53	183.27	57.546	
8,100.00	7,104.00	6,170.00	6,167.24	33.86	156.20	32.97	-1,320.83	-9,244.68	10,646.27	10,462.94	183.33	58.073	
8,200.00	7,104.00	6,170.00	6,167.24	34.84	156.20	32.97	-1,320.83	-9,244.68	10,745.74	10,562.36	183.38	58.599	
8,300.00	7,104.00	6,170.00	6,167.24	35.86	156.20	32.97	-1,320.83	-9,244.68	10,845.22	10,661.79	183.43	59.124	
8,400.00	7,104.00	6,170.00	6,167.24	36.92	156.20	32.97	-1,320.83	-9,244.68	10,944.71	10,761.23	183.48	59.650	
8,500.00	7,104.00	6,170.00	6,167.24	38.02	156.20	32.97	-1,320.83	-9,244.68	11,044.21	10,860.68	183.54	60.175	
8,600.00	7,104.00	6,170.00	6,167.24	39.15	156.20	32.97	-1,320.83	-9,244.68	11,143.72	10,960.13	183.59	60.699	
8,700.00	7,104.00	6,170.00	6,167.24	40.32	156.20	32.97	-1,320.83	-9,244.68	11,243.24	11,059.60	183.64	61.223	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	6,170.00	6,167.24	41.52	156.20	32.97	-1,320.83	-9,244.68	11,342.77	11,159.07	183.70	61.747	
8,900.00	7,104.00	6,170.00	6,167.24	42.74	156.20	32.97	-1,320.83	-9,244.68	11,442.30	11,258.55	183.75	62.270	
9,000.00	7,104.00	6,170.00	6,167.24	43.99	156.20	32.97	-1,320.83	-9,244.68	11,541.84	11,358.04	183.81	62.793	
9,100.00	7,104.00	6,170.00	6,167.24	45.26	156.20	32.97	-1,320.83	-9,244.68	11,641.40	11,457.53	183.86	63.316	
9,200.00	7,104.00	6,170.00	6,167.24	46.55	156.20	32.97	-1,320.83	-9,244.68	11,740.95	11,557.04	183.92	63.838	
9,300.00	7,104.00	6,170.00	6,167.24	47.85	156.20	32.97	-1,320.83	-9,244.68	11,840.52	11,656.55	183.97	64.360	
9,400.00	7,104.00	6,170.00	6,167.24	49.18	156.20	32.97	-1,320.83	-9,244.68	11,940.09	11,756.06	184.03	64.882	
9,500.00	7,104.00	6,170.00	6,167.24	50.52	156.20	32.97	-1,320.83	-9,244.68	12,039.67	11,855.59	184.09	65.403	
9,600.00	7,104.00	6,170.00	6,167.24	51.88	156.20	32.97	-1,320.83	-9,244.68	12,139.26	11,955.12	184.14	65.923	
9,700.00	7,104.00	6,170.00	6,167.24	53.25	156.20	32.97	-1,320.83	-9,244.68	12,238.85	12,054.65	184.20	66.443	
9,800.00	7,104.00	6,170.00	6,167.24	54.63	156.20	32.97	-1,320.83	-9,244.68	12,338.45	12,154.20	184.26	66.963	
9,900.00	7,104.00	6,170.00	6,167.24	56.03	156.20	32.97	-1,320.83	-9,244.68	12,438.06	12,253.75	184.32	67.482	
10,000.00	7,104.00	6,170.00	6,167.24	57.43	156.20	32.97	-1,320.83	-9,244.68	12,537.67	12,353.30	184.37	68.001	
10,100.00	7,104.00	6,170.00	6,167.24	58.85	156.20	32.97	-1,320.83	-9,244.68	12,637.29	12,452.86	184.43	68.520	
10,200.00	7,104.00	6,170.00	6,167.24	60.27	156.20	32.97	-1,320.83	-9,244.68	12,736.92	12,552.43	184.49	69.038	
10,300.00	7,104.00	6,170.00	6,167.24	61.71	156.20	32.97	-1,320.83	-9,244.68	12,836.55	12,652.00	184.55	69.555	
10,400.00	7,104.00	6,170.00	6,167.24	63.15	156.20	32.97	-1,320.83	-9,244.68	12,936.19	12,751.57	184.61	70.072	
10,500.00	7,104.00	6,170.00	6,167.24	64.60	156.20	32.97	-1,320.83	-9,244.68	13,035.83	12,851.16	184.67	70.589	
10,600.00	7,104.00	6,170.00	6,167.24	66.05	156.20	32.97	-1,320.83	-9,244.68	13,135.48	12,950.74	184.73	71.105	
10,700.00	7,104.00	6,170.00	6,167.24	67.52	156.20	32.97	-1,320.83	-9,244.68	13,235.13	13,050.33	184.79	71.621	
10,800.00	7,104.00	6,170.00	6,167.24	68.99	156.20	32.97	-1,320.83	-9,244.68	13,334.79	13,149.93	184.86	72.136	
10,900.00	7,104.00	6,170.00	6,167.24	70.46	156.20	32.97	-1,320.83	-9,244.68	13,434.45	13,249.53	184.92	72.651	
11,000.00	7,104.00	6,170.00	6,167.24	71.94	156.20	32.97	-1,320.83	-9,244.68	13,534.12	13,349.14	184.98	73.165	
11,100.00	7,104.00	6,170.00	6,167.24	73.43	156.20	32.97	-1,320.83	-9,244.68	13,633.79	13,448.75	185.04	73.679	
11,200.00	7,104.00	6,170.00	6,167.24	74.92	156.20	32.97	-1,320.83	-9,244.68	13,733.47	13,548.36	185.11	74.192	
11,300.00	7,104.00	6,170.00	6,167.24	76.41	156.20	32.97	-1,320.83	-9,244.68	13,833.15	13,647.98	185.17	74.705	
11,400.00	7,104.00	6,170.00	6,167.24	77.91	156.20	32.97	-1,320.83	-9,244.68	13,932.84	13,747.60	185.23	75.217	
11,500.00	7,104.00	6,170.00	6,167.24	79.41	156.20	32.97	-1,320.83	-9,244.68	14,032.53	13,847.23	185.30	75.729	
11,600.00	7,104.00	6,170.00	6,167.24	80.92	156.20	32.97	-1,320.83	-9,244.68	14,132.23	13,946.86	185.36	76.241	
11,700.00	7,104.00	6,170.00	6,167.24	82.43	156.20	32.97	-1,320.83	-9,244.68	14,231.93	14,046.50	185.43	76.751	
11,800.00	7,104.00	6,170.00	6,167.24	83.94	156.20	32.97	-1,320.83	-9,244.68	14,331.63	14,146.14	185.49	77.262	
11,900.00	7,104.00	6,170.00	6,167.24	85.46	156.20	32.97	-1,320.83	-9,244.68	14,431.34	14,245.78	185.56	77.771	
12,000.00	7,104.00	6,170.00	6,167.24	86.98	156.20	32.97	-1,320.83	-9,244.68	14,531.05	14,345.42	185.63	78.281	
12,100.00	7,104.00	6,170.00	6,167.24	88.50	156.20	32.97	-1,320.83	-9,244.68	14,630.77	14,445.07	185.69	78.789	
12,200.00	7,104.00	6,170.00	6,167.24	90.03	156.20	32.97	-1,320.83	-9,244.68	14,730.49	14,544.72	185.76	79.297	
12,300.00	7,104.00	6,170.00	6,167.24	91.55	156.20	32.97	-1,320.83	-9,244.68	14,830.21	14,644.38	185.83	79.805	
12,400.00	7,104.00	6,170.00	6,167.24	93.08	156.20	32.97	-1,320.83	-9,244.68	14,929.94	14,744.04	185.90	80.312	
12,500.00	7,104.00	6,170.00	6,167.24	94.62	156.20	32.97	-1,320.83	-9,244.68	15,029.67	14,843.70	185.97	80.819	
12,600.00	7,104.00	6,170.00	6,167.24	96.15	156.20	32.97	-1,320.83	-9,244.68	15,129.40	14,943.37	186.04	81.325	
12,700.00	7,104.00	6,170.00	6,167.24	97.69	156.20	32.97	-1,320.83	-9,244.68	15,229.14	15,043.04	186.11	81.830	
12,800.00	7,104.00	6,170.00	6,167.24	99.23	156.20	32.97	-1,320.83	-9,244.68	15,328.88	15,142.71	186.18	82.335	
12,900.00	7,104.00	6,170.00	6,167.24	100.77	156.20	32.97	-1,320.83	-9,244.68	15,428.63	15,242.38	186.25	82.840	
13,000.00	7,104.00	6,170.00	6,167.24	102.31	156.20	32.97	-1,320.83	-9,244.68	15,528.38	15,342.06	186.32	83.343	
13,100.00	7,104.00	6,170.00	6,167.24	103.86	156.20	32.97	-1,320.83	-9,244.68	15,628.13	15,441.74	186.39	83.847	
13,200.00	7,104.00	6,170.00	6,167.24	105.40	156.20	32.97	-1,320.83	-9,244.68	15,727.88	15,541.42	186.46	84.349	
13,300.00	7,104.00	6,170.00	6,167.24	106.95	156.20	32.97	-1,320.83	-9,244.68	15,827.64	15,641.11	186.53	84.851	
13,400.00	7,104.00	6,170.00	6,167.24	108.50	156.20	32.97	-1,320.83	-9,244.68	15,927.40	15,740.80	186.61	85.353	
13,500.00	7,104.00	6,170.00	6,167.24	110.05	156.20	32.97	-1,320.83	-9,244.68	16,027.17	15,840.49	186.68	85.854	
13,600.00	7,104.00	6,170.00	6,167.24	111.60	156.20	32.97	-1,320.83	-9,244.68	16,126.93	15,940.18	186.75	86.354	
13,700.00	7,104.00	6,170.00	6,167.24	113.16	156.20	32.97	-1,320.83	-9,244.68	16,226.70	16,039.88	186.83	86.854	
13,800.00	7,104.00	6,170.00	6,167.24	114.71	156.20	32.97	-1,320.83	-9,244.68	16,326.48	16,139.57	186.90	87.353	
13,900.00	7,104.00	6,170.00	6,167.24	116.27	156.20	32.97	-1,320.83	-9,244.68	16,426.25	16,239.27	186.98	87.852	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	6,170.00	6,167.24	117.83	156.20	32.97	-1,320.83	-9,244.68	16,526.03	16,338.98	187.05	88.350	
14,100.00	7,104.00	6,170.00	6,167.24	119.38	156.20	32.97	-1,320.83	-9,244.68	16,625.81	16,438.68	187.13	88.848	
14,200.00	7,104.00	6,170.00	6,167.24	120.94	156.20	32.97	-1,320.83	-9,244.68	16,725.59	16,538.39	187.20	89.345	
14,300.00	7,104.00	6,170.00	6,167.24	122.50	156.20	32.97	-1,320.83	-9,244.68	16,825.38	16,638.10	187.28	89.841	
14,400.00	7,104.00	6,170.00	6,167.24	124.07	156.20	32.97	-1,320.83	-9,244.68	16,925.17	16,737.81	187.36	90.336	
14,500.00	7,104.00	6,170.00	6,167.24	125.63	156.20	32.97	-1,320.83	-9,244.68	17,024.96	16,837.52	187.43	90.832	
14,600.00	7,104.00	6,170.00	6,167.24	127.19	156.20	32.97	-1,320.83	-9,244.68	17,124.75	16,937.24	187.51	91.326	
14,700.00	7,104.00	6,170.00	6,167.24	128.76	156.20	32.97	-1,320.83	-9,244.68	17,224.55	17,036.96	187.59	91.820	
14,800.00	7,104.00	6,170.00	6,167.24	130.32	156.20	32.97	-1,320.83	-9,244.68	17,324.34	17,136.67	187.67	92.313	
14,900.00	7,104.00	6,170.00	6,167.24	131.89	156.20	32.97	-1,320.83	-9,244.68	17,424.14	17,236.40	187.75	92.806	
15,000.00	7,104.00	6,170.00	6,167.24	133.46	156.20	32.97	-1,320.83	-9,244.68	17,523.95	17,336.12	187.83	93.298	
15,100.00	7,104.00	6,170.00	6,167.24	135.02	156.20	32.97	-1,320.83	-9,244.68	17,623.75	17,435.84	187.91	93.789	
15,200.00	7,104.00	6,170.00	6,167.24	136.59	156.20	32.97	-1,320.83	-9,244.68	17,723.56	17,535.57	187.99	94.280	
15,300.00	7,104.00	6,170.00	6,167.24	138.16	156.20	32.97	-1,320.83	-9,244.68	17,823.37	17,635.30	188.07	94.771	
15,400.00	7,104.00	6,170.00	6,167.24	139.73	156.20	32.97	-1,320.83	-9,244.68	17,923.18	17,735.03	188.15	95.260	
15,500.00	7,104.00	6,170.00	6,167.24	141.30	156.20	32.97	-1,320.83	-9,244.68	18,022.99	17,834.76	188.23	95.749	
15,600.00	7,104.00	6,170.00	6,167.24	142.88	156.20	32.97	-1,320.83	-9,244.68	18,122.81	17,934.49	188.31	96.237	
15,700.00	7,104.00	6,170.00	6,167.24	144.45	156.20	32.97	-1,320.83	-9,244.68	18,222.63	18,034.23	188.40	96.725	
15,800.00	7,104.00	6,170.00	6,167.24	146.02	156.20	32.97	-1,320.83	-9,244.68	18,322.44	18,133.97	188.48	97.212	
15,900.00	7,104.00	6,170.00	6,167.24	147.60	156.20	32.97	-1,320.83	-9,244.68	18,422.27	18,233.70	188.56	97.699	
16,000.00	7,104.00	6,170.00	6,167.24	149.17	156.20	32.97	-1,320.83	-9,244.68	18,522.09	18,333.44	188.65	98.185	
16,100.00	7,104.00	6,170.00	6,167.24	150.74	156.20	32.97	-1,320.83	-9,244.68	18,621.91	18,433.18	188.73	98.670	
16,200.00	7,104.00	6,170.00	6,167.24	152.32	156.20	32.97	-1,320.83	-9,244.68	18,721.74	18,532.93	188.81	99.154	
16,300.00	7,104.00	6,170.00	6,167.24	153.89	156.20	32.97	-1,320.83	-9,244.68	18,821.57	18,632.67	188.90	99.638	
16,400.00	7,104.00	6,170.00	6,167.24	155.47	156.20	32.97	-1,320.83	-9,244.68	18,921.40	18,732.42	188.98	100.122	
16,500.00	7,104.00	6,170.00	6,167.24	157.05	156.20	32.97	-1,320.83	-9,244.68	19,021.23	18,832.16	189.07	100.604	
16,600.00	7,104.00	6,170.00	6,167.24	158.63	156.20	32.97	-1,320.83	-9,244.68	19,121.07	18,931.91	189.16	101.086	
16,700.00	7,104.00	6,170.00	6,167.24	160.20	156.20	32.97	-1,320.83	-9,244.68	19,220.90	19,031.66	189.24	101.568	
16,800.00	7,104.00	6,170.00	6,167.24	161.78	156.20	32.97	-1,320.83	-9,244.68	19,320.74	19,131.41	189.33	102.048	
16,900.00	7,104.00	6,170.00	6,167.24	163.36	156.20	32.97	-1,320.83	-9,244.68	19,420.58	19,231.16	189.42	102.528	
17,000.00	7,104.00	6,170.00	6,167.24	164.94	156.20	32.97	-1,320.83	-9,244.68	19,520.42	19,330.92	189.50	103.008	
17,100.00	7,104.00	6,170.00	6,167.24	166.52	156.20	32.97	-1,320.83	-9,244.68	19,620.26	19,430.67	189.59	103.487	
17,200.00	7,104.00	6,170.00	6,167.24	168.10	156.20	32.97	-1,320.83	-9,244.68	19,720.11	19,530.43	189.68	103.965	
17,300.00	7,104.00	6,170.00	6,167.24	169.68	156.20	32.97	-1,320.83	-9,244.68	19,819.95	19,630.19	189.77	104.442	
17,400.00	7,104.00	6,170.00	6,167.24	171.26	156.20	32.97	-1,320.83	-9,244.68	19,919.80	19,729.94	189.86	104.919	
17,500.00	7,104.00	6,170.00	6,167.24	172.84	156.20	32.97	-1,320.83	-9,244.68	20,019.65	19,829.70	189.95	105.395	
17,600.00	7,104.00	6,170.00	6,167.24	174.42	156.20	32.97	-1,320.83	-9,244.68	20,119.50	19,929.46	190.04	105.871	
17,700.00	7,104.00	6,170.00	6,167.24	176.00	156.20	32.97	-1,320.83	-9,244.68	20,219.35	20,029.22	190.13	106.346	
17,800.00	7,104.00	6,170.00	6,167.24	177.59	156.20	32.97	-1,320.83	-9,244.68	20,319.21	20,128.99	190.22	106.820	
17,900.00	7,104.00	6,170.00	6,167.24	179.17	156.20	32.97	-1,320.83	-9,244.68	20,419.06	20,228.75	190.31	107.294	
18,000.00	7,104.00	6,170.00	6,167.24	180.75	156.20	32.97	-1,320.83	-9,244.68	20,518.92	20,328.52	190.40	107.766	
18,100.00	7,104.00	6,170.00	6,167.24	182.33	156.20	32.97	-1,320.83	-9,244.68	20,618.77	20,428.28	190.49	108.239	
18,200.00	7,104.00	6,170.00	6,167.24	183.92	156.20	32.97	-1,320.83	-9,244.68	20,718.63	20,528.05	190.59	108.710	
18,300.00	7,104.00	6,170.00	6,167.24	185.50	156.20	32.97	-1,320.83	-9,244.68	20,818.49	20,627.82	190.68	109.181	
18,400.00	7,104.00	6,170.00	6,167.24	187.09	156.20	32.97	-1,320.83	-9,244.68	20,918.36	20,727.58	190.77	109.651	
18,500.00	7,104.00	6,170.00	6,167.24	188.67	156.20	32.97	-1,320.83	-9,244.68	21,018.22	20,827.35	190.86	110.121	
18,600.00	7,104.00	6,170.00	6,167.24	190.26	156.20	32.97	-1,320.83	-9,244.68	21,118.08	20,927.12	190.96	110.590	
18,700.00	7,104.00	6,170.00	6,167.24	191.84	156.20	32.97	-1,320.83	-9,244.68	21,217.95	21,026.90	191.05	111.058	
18,800.00	7,104.00	6,170.00	6,167.24	193.43	156.20	32.97	-1,320.83	-9,244.68	21,317.82	21,126.67	191.15	111.526	
18,900.00	7,104.00	6,170.00	6,167.24	195.01	156.20	32.97	-1,320.83	-9,244.68	21,417.68	21,226.44	191.24	111.993	
19,000.00	7,104.00	6,170.00	6,167.24	196.60	156.20	32.97	-1,320.83	-9,244.68	21,517.55	21,326.22	191.34	112.459	
19,100.00	7,104.00	6,170.00	6,167.24	198.18	156.20	32.97	-1,320.83	-9,244.68	21,617.42	21,425.99	191.43	112.925	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 122-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	6,170.00	6,167.24	199.77	156.20	32.97	-1,320.83	-9,244.68	21,717.29	21,525.77	191.53	113.390	
19,300.00	7,104.00	6,170.00	6,167.24	201.36	156.20	32.97	-1,320.83	-9,244.68	21,817.17	21,625.54	191.62	113.854	
19,400.00	7,104.00	6,170.00	6,167.24	202.94	156.20	32.97	-1,320.83	-9,244.68	21,917.04	21,725.32	191.72	114.318	
19,500.00	7,104.00	6,170.00	6,167.24	204.53	156.20	32.97	-1,320.83	-9,244.68	22,016.92	21,825.10	191.82	114.781	
19,600.00	7,104.00	6,170.00	6,167.24	206.12	156.20	32.97	-1,320.83	-9,244.68	22,116.79	21,924.88	191.91	115.243	
19,700.00	7,104.00	6,170.00	6,167.24	207.70	156.20	32.97	-1,320.83	-9,244.68	22,216.67	22,024.66	192.01	115.705	
19,800.00	7,104.00	6,170.00	6,167.24	209.29	156.20	32.97	-1,320.83	-9,244.68	22,316.55	22,124.44	192.11	116.166	
19,900.00	7,104.00	6,170.00	6,167.24	210.88	156.20	32.97	-1,320.83	-9,244.68	22,416.43	22,224.22	192.21	116.626	
20,000.00	7,104.00	6,170.00	6,167.24	212.47	156.20	32.97	-1,320.83	-9,244.68	22,516.31	22,324.00	192.31	117.085	
20,100.00	7,104.00	6,170.00	6,167.24	214.05	156.20	32.97	-1,320.83	-9,244.68	22,616.19	22,423.78	192.41	117.544	
20,200.00	7,104.00	6,170.00	6,167.24	215.64	156.20	32.97	-1,320.83	-9,244.68	22,716.07	22,523.57	192.50	118.003	
20,215.00	7,104.00	6,170.00	6,167.24	215.88	156.20	32.97	-1,320.83	-9,244.68	22,731.06	22,538.54	192.52	118.071	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-96.30	-797.82	-7,226.64	7,270.79				
100.00	100.00	40.00	40.00	3.29	0.37	-96.30	-797.82	-7,226.64	7,270.55	7,266.89	3.66	1,986.778	
200.00	200.00	140.00	140.00	3.34	1.29	-96.30	-797.82	-7,226.64	7,270.55	7,265.92	4.63	1,570.240	
300.00	300.00	240.00	240.00	3.42	2.22	-96.30	-797.82	-7,226.64	7,270.55	7,264.91	5.64	1,289.537	
400.00	400.00	340.00	340.00	3.54	3.60	-96.30	-797.82	-7,226.64	7,270.55	7,263.40	7.14	1,018.202	
500.00	500.00	440.00	440.00	3.69	5.51	-96.30	-797.82	-7,226.64	7,270.55	7,261.35	9.19	790.888	CC
600.00	599.98	539.98	539.98	3.86	7.41	113.70	-797.82	-7,226.64	7,271.25	7,259.98	11.26	645.534	
700.00	699.84	638.48	638.47	4.04	9.28	113.70	-797.37	-7,226.64	7,273.30	7,259.98	13.32	545.868	
800.00	799.45	736.75	736.74	4.26	11.15	113.70	-797.62	-7,226.64	7,276.85	7,261.44	15.41	472.360	
849.50	848.63	788.67	788.63	4.37	12.14	113.70	-797.82	-7,226.64	7,279.13	7,262.62	16.51	440.954	
900.00	898.77	838.80	838.77	4.49	13.16	105.47	-797.82	-7,226.64	7,281.19	7,263.54	17.65	412.603	
973.84	972.07	912.10	912.07	4.68	14.65	93.41	-797.82	-7,226.64	7,282.64	7,263.32	19.32	376.911	
1,000.00	998.03	938.07	938.03	4.74	15.18	93.43	-797.82	-7,226.64	7,282.83	7,262.92	19.92	365.647	
1,100.00	1,097.29	1,037.27	1,037.23	5.02	17.19	93.53	-797.02	-7,226.64	7,283.50	7,261.29	22.21	328.000	
1,200.00	1,196.54	1,134.62	1,134.58	5.30	19.17	93.62	-797.15	-7,226.64	7,284.28	7,259.80	24.47	297.660	
1,300.00	1,295.80	1,232.04	1,232.00	5.61	21.15	93.71	-797.54	-7,226.64	7,285.10	7,258.35	26.75	272.318	
1,400.00	1,395.06	1,335.15	1,335.06	5.92	23.29	93.81	-797.82	-7,226.64	7,285.93	7,256.73	29.20	249.490	
1,500.00	1,494.31	1,434.40	1,434.31	6.24	25.39	93.91	-797.82	-7,226.64	7,286.76	7,255.14	31.62	230.432	
1,600.00	1,593.57	1,533.60	1,533.49	6.57	27.48	94.01	-796.73	-7,226.64	7,287.50	7,253.45	34.05	214.037	
1,700.00	1,692.82	1,630.57	1,630.46	6.91	29.53	94.10	-796.91	-7,226.64	7,288.39	7,251.95	36.43	200.047	
1,800.00	1,792.08	1,727.63	1,727.52	7.25	31.58	94.19	-797.41	-7,226.64	7,289.32	7,250.49	38.83	187.740	
1,900.00	1,891.33	1,831.50	1,831.33	7.60	33.78	94.28	-797.82	-7,226.64	7,290.26	7,248.89	41.37	176.209	
2,000.00	1,990.59	1,930.76	1,930.59	7.95	35.89	94.38	-797.82	-7,226.64	7,291.19	7,247.36	43.83	166.353	
2,100.00	2,089.85	2,030.01	2,029.85	8.30	37.99	94.47	-797.82	-7,226.64	7,292.14	7,245.85	46.29	157.531	
2,200.00	2,189.10	2,127.44	2,127.26	8.66	40.06	94.58	-796.83	-7,226.64	7,293.02	7,244.31	48.72	149.707	
2,300.00	2,288.36	2,224.76	2,224.58	9.02	42.12	94.66	-797.28	-7,226.64	7,294.05	7,242.91	51.14	142.626	
2,400.00	2,387.61	2,327.86	2,327.61	9.39	44.31	94.76	-797.82	-7,226.64	7,295.10	7,241.41	53.69	135.867	
2,500.00	2,486.87	2,427.11	2,426.87	9.76	46.42	94.85	-797.82	-7,226.64	7,296.13	7,239.96	56.17	129.899	
2,600.00	2,586.12	2,526.37	2,526.12	10.13	48.52	94.95	-797.82	-7,226.64	7,297.18	7,238.53	58.64	124.430	
2,700.00	2,685.38	2,624.18	2,623.92	10.50	50.60	95.05	-796.83	-7,226.64	7,298.17	7,237.08	61.09	119.460	
2,800.00	2,784.63	2,721.63	2,721.37	10.87	52.67	95.14	-797.25	-7,226.64	7,299.29	7,235.76	63.54	114.886	
2,900.00	2,883.89	2,824.21	2,823.89	11.24	54.87	95.23	-797.82	-7,226.64	7,300.44	7,234.33	66.11	110.432	
3,000.00	2,983.15	2,923.47	2,923.15	11.62	57.06	95.33	-797.82	-7,226.64	7,301.57	7,232.90	68.67	106.323	
3,100.00	3,082.40	3,022.72	3,022.40	12.00	59.25	95.42	-797.82	-7,226.64	7,302.72	7,231.48	71.24	102.508	
3,200.00	3,181.66	3,120.67	3,120.33	12.38	61.41	95.52	-796.85	-7,226.64	7,303.82	7,230.04	73.78	98.995	
3,300.00	3,280.91	3,218.29	3,217.95	12.75	63.57	95.61	-797.28	-7,226.64	7,305.04	7,228.73	76.31	95.725	
3,400.00	3,380.17	3,320.59	3,320.17	13.13	65.82	95.70	-797.82	-7,226.64	7,306.29	7,227.34	78.95	92.542	
3,500.00	3,479.42	3,419.84	3,419.42	13.52	68.02	95.80	-797.82	-7,226.64	7,307.52	7,225.99	81.53	89.635	
3,600.00	3,578.68	3,519.10	3,518.68	13.90	70.21	95.89	-797.82	-7,226.64	7,308.77	7,224.67	84.10	86.905	
3,700.00	3,677.94	3,616.97	3,616.53	14.28	72.38	95.99	-796.57	-7,226.64	7,309.96	7,223.31	86.65	84.366	
3,800.00	3,777.19	3,714.50	3,714.05	14.66	74.53	96.08	-797.09	-7,226.64	7,311.28	7,222.10	89.18	81.980	
3,900.00	3,876.45	3,816.96	3,816.45	15.05	76.74	96.17	-797.82	-7,226.64	7,312.63	7,220.86	91.78	79.678	
4,000.00	3,975.70	3,916.22	3,915.70	15.43	78.69	96.27	-797.82	-7,226.64	7,313.96	7,219.86	94.11	77.720	
4,100.00	4,074.96	4,015.47	4,014.96	15.82	80.63	96.36	-797.82	-7,226.64	7,315.31	7,218.88	96.44	75.855	
4,200.00	4,174.21	4,113.79	4,113.26	16.20	82.56	96.46	-796.83	-7,226.64	7,316.63	7,217.88	98.75	74.092	
4,300.00	4,273.47	4,211.83	4,211.29	16.59	84.48	96.55	-797.25	-7,226.64	7,318.04	7,216.99	101.06	72.414	
4,400.00	4,372.73	4,313.28	4,312.73	16.97	86.51	96.64	-797.82	-7,226.64	7,319.48	7,216.01	103.47	70.739	
4,500.00	4,471.98	4,412.54	4,411.98	17.36	88.62	96.74	-797.82	-7,226.64	7,320.91	7,214.94	105.97	69.085	
4,600.00	4,571.24	4,511.80	4,511.24	17.75	90.73	96.83	-797.82	-7,226.64	7,322.36	7,213.90	108.47	67.508	
4,700.00	4,670.49	4,610.79	4,610.23	18.13	92.84	96.93	-797.26	-7,226.64	7,323.81	7,212.85	110.96	66.005	
4,800.00	4,769.75	4,709.57	4,709.01	18.52	94.94	97.02	-797.42	-7,226.64	7,325.30	7,211.86	113.45	64.570	
4,900.00	4,869.00	4,808.39	4,807.83	18.91	97.04	97.11	-797.73	-7,226.64	7,326.83	7,210.89	115.94	63.197	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,908.91	4,908.26	19.30	99.52	97.21	-797.82	-7,226.64	7,328.36	7,209.56	118.80	61.688	
5,100.00	5,067.51	5,008.16	5,007.51	19.69	102.05	97.30	-797.82	-7,226.64	7,329.91	7,208.19	121.72	60.220	
5,200.00	5,166.77	5,106.89	5,106.22	20.07	104.57	97.41	-796.30	-7,226.64	7,331.42	7,206.80	124.63	58.827	
5,300.00	5,266.03	5,204.90	5,204.21	20.46	107.07	97.50	-796.77	-7,226.64	7,333.03	7,205.51	127.52	57.506	
5,400.00	5,365.28	5,303.04	5,302.34	20.85	109.58	97.58	-797.76	-7,226.64	7,334.68	7,204.26	130.41	56.242	
5,500.00	5,464.54	5,405.38	5,404.54	21.24	112.56	97.68	-797.82	-7,226.64	7,336.31	7,202.52	133.79	54.836	
5,600.00	5,563.79	5,504.63	5,503.79	21.63	115.48	97.77	-797.82	-7,226.64	7,337.95	7,200.87	137.09	53.528	
5,700.00	5,663.05	5,603.30	5,602.42	22.02	118.37	97.88	-796.03	-7,226.64	7,339.57	7,199.20	140.37	52.287	
5,800.00	5,762.30	5,701.52	5,700.62	22.41	121.25	97.96	-796.63	-7,226.64	7,341.28	7,197.64	143.64	51.108	
5,900.00	5,861.56	5,802.74	5,801.56	22.80	124.24	98.05	-797.82	-7,226.64	7,343.02	7,196.00	147.02	49.947	
6,000.00	5,960.82	5,902.00	5,900.82	23.19	127.48	98.14	-797.82	-7,226.64	7,344.75	7,194.10	150.64	48.756	
6,100.00	6,060.07	6,001.25	6,000.07	23.58	130.71	98.24	-797.82	-7,226.64	7,346.49	7,192.22	154.27	47.621	
6,200.00	6,159.33	6,100.51	6,099.33	23.97	133.95	98.33	-797.82	-7,226.64	7,348.26	7,190.36	157.90	46.538	
6,300.00	6,258.58	6,199.76	6,198.58	24.36	137.19	98.42	-797.82	-7,226.64	7,350.05	7,188.52	161.52	45.504 ES	
6,400.00	6,357.84	6,210.00	6,208.43	24.76	137.52	98.43	-797.82	-7,226.64	7,352.40	7,190.17	162.23	45.320	
6,500.00	6,457.09	6,210.00	6,208.43	25.15	137.52	98.43	-797.82	-7,226.64	7,356.10	7,193.52	162.58	45.246	
6,528.17	6,485.05	6,210.00	6,208.43	25.26	137.52	98.43	-797.82	-7,226.64	7,357.39	7,194.72	162.67	45.229	
6,550.00	6,506.71	6,210.00	6,208.43	25.34	137.52	113.16	-797.82	-7,226.64	7,358.84	7,196.10	162.74	45.218	
6,600.00	6,556.11	6,210.00	6,208.43	25.54	137.52	136.46	-797.82	-7,226.64	7,365.19	7,202.30	162.90	45.214 SF	
6,650.00	6,605.00	6,210.00	6,208.43	25.74	137.52	148.81	-797.82	-7,226.64	7,375.75	7,212.71	163.04	45.238	
6,700.00	6,653.07	6,210.00	6,208.43	25.93	137.52	155.78	-797.82	-7,226.64	7,390.42	7,227.24	163.18	45.291	
6,750.00	6,700.02	6,210.00	6,208.43	26.12	137.52	160.09	-797.82	-7,226.64	7,409.08	7,245.78	163.30	45.370	
6,800.00	6,745.56	6,210.00	6,208.43	26.31	137.52	162.95	-797.82	-7,226.64	7,431.60	7,268.19	163.42	45.477	
6,850.00	6,789.42	6,210.00	6,208.43	26.50	137.52	164.95	-797.82	-7,226.64	7,457.80	7,294.28	163.52	45.609	
6,900.00	6,831.32	6,210.00	6,208.43	26.69	137.52	166.39	-797.82	-7,226.64	7,487.49	7,323.88	163.61	45.765	
6,950.00	6,871.01	6,210.00	6,208.43	26.87	137.52	167.44	-797.82	-7,226.64	7,520.43	7,356.74	163.69	45.944	
7,000.00	6,908.23	6,210.00	6,208.43	27.05	137.52	168.20	-797.82	-7,226.64	7,556.38	7,392.63	163.76	46.144	
7,050.00	6,942.77	6,210.00	6,208.43	27.23	137.52	168.73	-797.82	-7,226.64	7,595.09	7,431.28	163.81	46.364	
7,100.00	6,974.40	6,210.00	6,208.43	27.41	137.52	169.05	-797.82	-7,226.64	7,636.27	7,472.41	163.86	46.602	
7,150.00	7,002.93	6,210.00	6,208.43	27.60	137.52	169.17	-797.82	-7,226.64	7,679.63	7,515.73	163.90	46.855	
7,200.00	7,028.20	6,210.00	6,208.43	27.80	137.52	169.06	-797.82	-7,226.64	7,724.88	7,560.94	163.94	47.122	
7,250.00	7,050.03	6,210.00	6,208.43	28.00	137.52	168.62	-797.82	-7,226.64	7,771.69	7,607.73	163.96	47.400	
7,300.00	7,068.30	6,210.00	6,208.43	28.22	137.52	167.62	-797.82	-7,226.64	7,819.76	7,655.78	163.98	47.687	
7,350.00	7,082.89	6,210.00	6,208.43	28.45	137.52	165.32	-797.82	-7,226.64	7,868.77	7,704.77	164.00	47.981	
7,400.00	7,093.72	6,210.00	6,208.43	28.70	137.52	158.17	-797.82	-7,226.64	7,918.40	7,754.39	164.01	48.280	
7,450.00	7,100.71	6,210.00	6,208.43	28.96	137.52	80.75	-797.82	-7,226.64	7,968.34	7,804.31	164.02	48.581	
7,500.00	7,103.82	6,210.00	6,208.43	29.24	137.52	7.54	-797.82	-7,226.64	8,018.27	7,854.24	164.04	48.881	
7,515.00	7,104.00	6,210.00	6,208.43	29.32	137.52	4.33	-797.82	-7,226.64	8,033.21	7,869.17	164.04	48.971	
7,600.00	7,104.00	6,210.00	6,208.43	29.84	137.52	4.33	-797.82	-7,226.64	8,117.75	7,953.68	164.07	49.478	
7,700.00	7,104.00	6,210.00	6,208.43	30.51	137.52	4.33	-797.82	-7,226.64	8,217.22	8,053.12	164.10	50.074	
7,800.00	7,104.00	6,210.00	6,208.43	31.26	137.52	4.33	-797.82	-7,226.64	8,316.71	8,152.57	164.13	50.671	
7,900.00	7,104.00	6,210.00	6,208.43	32.07	137.52	4.33	-797.82	-7,226.64	8,416.20	8,252.04	164.17	51.267	
8,000.00	7,104.00	6,210.00	6,208.43	32.94	137.52	4.33	-797.82	-7,226.64	8,515.71	8,351.51	164.20	51.862	
8,100.00	7,104.00	6,210.00	6,208.43	33.86	137.52	4.33	-797.82	-7,226.64	8,615.23	8,451.00	164.23	52.458	
8,200.00	7,104.00	6,210.00	6,208.43	34.84	137.52	4.33	-797.82	-7,226.64	8,714.76	8,550.50	164.27	53.053	
8,300.00	7,104.00	6,210.00	6,208.43	35.86	137.52	4.33	-797.82	-7,226.64	8,814.31	8,650.01	164.30	53.647	
8,400.00	7,104.00	6,210.00	6,208.43	36.92	137.52	4.33	-797.82	-7,226.64	8,913.86	8,749.52	164.34	54.242	
8,500.00	7,104.00	6,210.00	6,208.43	38.02	137.52	4.33	-797.82	-7,226.64	9,013.42	8,849.05	164.37	54.836	
8,600.00	7,104.00	6,210.00	6,208.43	39.15	137.52	4.33	-797.82	-7,226.64	9,112.99	8,948.59	164.41	55.430	
8,700.00	7,104.00	6,210.00	6,208.43	40.32	137.52	4.33	-797.82	-7,226.64	9,212.57	9,048.13	164.44	56.023	
8,800.00	7,104.00	6,210.00	6,208.43	41.52	137.52	4.33	-797.82	-7,226.64	9,312.16	9,147.68	164.48	56.616	
8,900.00	7,104.00	6,210.00	6,208.43	42.74	137.52	4.33	-797.82	-7,226.64	9,411.76	9,247.25	164.52	57.209	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	6,210.00	6,208.43	43.99	137.52	4.33	-797.82	-7,226.64	9,511.37	9,346.82	164.55	57.801	
9,100.00	7,104.00	6,210.00	6,208.43	45.26	137.52	4.33	-797.82	-7,226.64	9,610.98	9,446.39	164.59	58.393	
9,200.00	7,104.00	6,210.00	6,208.43	46.55	137.52	4.33	-797.82	-7,226.64	9,710.61	9,545.98	164.63	58.985	
9,300.00	7,104.00	6,210.00	6,208.43	47.85	137.52	4.33	-797.82	-7,226.64	9,810.24	9,645.57	164.67	59.576	
9,400.00	7,104.00	6,210.00	6,208.43	49.18	137.52	4.33	-797.82	-7,226.64	9,909.88	9,745.17	164.71	60.167	
9,500.00	7,104.00	6,210.00	6,208.43	50.52	137.52	4.33	-797.82	-7,226.64	10,009.52	9,844.78	164.75	60.757	
9,600.00	7,104.00	6,210.00	6,208.43	51.88	137.52	4.33	-797.82	-7,226.64	10,109.17	9,944.39	164.79	61.347	
9,700.00	7,104.00	6,210.00	6,208.43	53.25	137.52	4.33	-797.82	-7,226.64	10,208.83	10,044.01	164.83	61.936	
9,800.00	7,104.00	6,210.00	6,208.43	54.63	137.52	4.33	-797.82	-7,226.64	10,308.50	10,143.63	164.87	62.525	
9,900.00	7,104.00	6,210.00	6,208.43	56.03	137.52	4.33	-797.82	-7,226.64	10,408.17	10,243.26	164.91	63.114	
10,000.00	7,104.00	6,210.00	6,208.43	57.43	137.52	4.33	-797.82	-7,226.64	10,507.85	10,342.90	164.95	63.702	
10,100.00	7,104.00	6,210.00	6,208.43	58.85	137.52	4.33	-797.82	-7,226.64	10,607.53	10,442.54	165.00	64.289	
10,200.00	7,104.00	6,210.00	6,208.43	60.27	137.52	4.33	-797.82	-7,226.64	10,707.22	10,542.18	165.04	64.877	
10,300.00	7,104.00	6,210.00	6,208.43	61.71	137.52	4.33	-797.82	-7,226.64	10,806.92	10,641.84	165.08	65.463	
10,400.00	7,104.00	6,210.00	6,208.43	63.15	137.52	4.33	-797.82	-7,226.64	10,906.62	10,741.49	165.13	66.049	
10,500.00	7,104.00	6,210.00	6,208.43	64.60	137.52	4.33	-797.82	-7,226.64	11,006.33	10,841.16	165.17	66.635	
10,600.00	7,104.00	6,210.00	6,208.43	66.05	137.52	4.33	-797.82	-7,226.64	11,106.04	10,940.82	165.22	67.220	
10,700.00	7,104.00	6,210.00	6,208.43	67.52	137.52	4.33	-797.82	-7,226.64	11,205.76	11,040.49	165.27	67.804	
10,800.00	7,104.00	6,210.00	6,208.43	68.99	137.52	4.33	-797.82	-7,226.64	11,305.48	11,140.17	165.31	68.388	
10,900.00	7,104.00	6,210.00	6,208.43	70.46	137.52	4.33	-797.82	-7,226.64	11,405.21	11,239.85	165.36	68.971	
11,000.00	7,104.00	6,210.00	6,208.43	71.94	137.52	4.33	-797.82	-7,226.64	11,504.94	11,339.53	165.41	69.554	
11,100.00	7,104.00	6,210.00	6,208.43	73.43	137.52	4.33	-797.82	-7,226.64	11,604.68	11,439.22	165.46	70.136	
11,200.00	7,104.00	6,210.00	6,208.43	74.92	137.52	4.33	-797.82	-7,226.64	11,704.42	11,538.91	165.51	70.718	
11,300.00	7,104.00	6,210.00	6,208.43	76.41	137.52	4.33	-797.82	-7,226.64	11,804.16	11,638.61	165.56	71.299	
11,400.00	7,104.00	6,210.00	6,208.43	77.91	137.52	4.33	-797.82	-7,226.64	11,903.91	11,738.31	165.61	71.880	
11,500.00	7,104.00	6,210.00	6,208.43	79.41	137.52	4.33	-797.82	-7,226.64	12,003.67	11,838.01	165.66	72.460	
11,600.00	7,104.00	6,210.00	6,208.43	80.92	137.52	4.33	-797.82	-7,226.64	12,103.43	11,937.71	165.71	73.039	
11,700.00	7,104.00	6,210.00	6,208.43	82.43	137.52	4.33	-797.82	-7,226.64	12,203.19	12,037.42	165.76	73.618	
11,800.00	7,104.00	6,210.00	6,208.43	83.94	137.52	4.33	-797.82	-7,226.64	12,302.95	12,137.14	165.82	74.196	
11,900.00	7,104.00	6,210.00	6,208.43	85.46	137.52	4.33	-797.82	-7,226.64	12,402.72	12,236.85	165.87	74.773	
12,000.00	7,104.00	6,210.00	6,208.43	86.98	137.52	4.33	-797.82	-7,226.64	12,502.50	12,336.57	165.92	75.350	
12,100.00	7,104.00	6,210.00	6,208.43	88.50	137.52	4.33	-797.82	-7,226.64	12,602.27	12,436.29	165.98	75.927	
12,200.00	7,104.00	6,210.00	6,208.43	90.03	137.52	4.33	-797.82	-7,226.64	12,702.05	12,536.02	166.04	76.502	
12,300.00	7,104.00	6,210.00	6,208.43	91.55	137.52	4.33	-797.82	-7,226.64	12,801.84	12,635.75	166.09	77.077	
12,400.00	7,104.00	6,210.00	6,208.43	93.08	137.52	4.33	-797.82	-7,226.64	12,901.63	12,735.48	166.15	77.651	
12,500.00	7,104.00	6,210.00	6,208.43	94.62	137.52	4.33	-797.82	-7,226.64	13,001.42	12,835.21	166.21	78.225	
12,600.00	7,104.00	6,210.00	6,208.43	96.15	137.52	4.33	-797.82	-7,226.64	13,101.21	12,934.95	166.26	78.798	
12,700.00	7,104.00	6,210.00	6,208.43	97.69	137.52	4.33	-797.82	-7,226.64	13,201.01	13,034.69	166.32	79.370	
12,800.00	7,104.00	6,210.00	6,208.43	99.23	137.52	4.33	-797.82	-7,226.64	13,300.81	13,134.43	166.38	79.942	
12,900.00	7,104.00	6,210.00	6,208.43	100.77	137.52	4.33	-797.82	-7,226.64	13,400.61	13,234.17	166.44	80.513	
13,000.00	7,104.00	6,210.00	6,208.43	102.31	137.52	4.33	-797.82	-7,226.64	13,500.42	13,333.91	166.50	81.083	
13,100.00	7,104.00	6,210.00	6,208.43	103.86	137.52	4.33	-797.82	-7,226.64	13,600.22	13,433.66	166.56	81.653	
13,200.00	7,104.00	6,210.00	6,208.43	105.40	137.52	4.33	-797.82	-7,226.64	13,700.04	13,533.41	166.62	82.222	
13,300.00	7,104.00	6,210.00	6,208.43	106.95	137.52	4.33	-797.82	-7,226.64	13,799.85	13,633.16	166.69	82.790	
13,400.00	7,104.00	6,210.00	6,208.43	108.50	137.52	4.33	-797.82	-7,226.64	13,899.67	13,732.92	166.75	83.357	
13,500.00	7,104.00	6,210.00	6,208.43	110.05	137.52	4.33	-797.82	-7,226.64	13,999.49	13,832.67	166.81	83.924	
13,600.00	7,104.00	6,210.00	6,208.43	111.60	137.52	4.33	-797.82	-7,226.64	14,099.31	13,932.43	166.87	84.490	
13,700.00	7,104.00	6,210.00	6,208.43	113.16	137.52	4.33	-797.82	-7,226.64	14,199.13	14,032.19	166.94	85.056	
13,800.00	7,104.00	6,210.00	6,208.43	114.71	137.52	4.33	-797.82	-7,226.64	14,298.96	14,131.95	167.00	85.620	
13,900.00	7,104.00	6,210.00	6,208.43	116.27	137.52	4.33	-797.82	-7,226.64	14,398.79	14,231.72	167.07	86.184	
14,000.00	7,104.00	6,210.00	6,208.43	117.83	137.52	4.33	-797.82	-7,226.64	14,498.62	14,331.48	167.14	86.747	
14,100.00	7,104.00	6,210.00	6,208.43	119.38	137.52	4.33	-797.82	-7,226.64	14,598.45	14,431.25	167.20	87.310	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137A - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	6,210.00	6,208.43	120.94	137.52	4.33	-797.82	-7,226.64	14,698.29	14,531.02	167.27	87.871	
14,300.00	7,104.00	6,210.00	6,208.43	122.50	137.52	4.33	-797.82	-7,226.64	14,798.13	14,630.79	167.34	88.432	
14,400.00	7,104.00	6,210.00	6,208.43	124.07	137.52	4.33	-797.82	-7,226.64	14,897.97	14,730.56	167.41	88.993	
14,500.00	7,104.00	6,210.00	6,208.43	125.63	137.52	4.33	-797.82	-7,226.64	14,997.81	14,830.34	167.48	89.552	
14,600.00	7,104.00	6,210.00	6,208.43	127.19	137.52	4.33	-797.82	-7,226.64	15,097.66	14,930.11	167.55	90.111	
14,700.00	7,104.00	6,210.00	6,208.43	128.76	137.52	4.33	-797.82	-7,226.64	15,197.50	15,029.89	167.62	90.669	
14,800.00	7,104.00	6,210.00	6,208.43	130.32	137.52	4.33	-797.82	-7,226.64	15,297.35	15,129.67	167.69	91.226	
14,900.00	7,104.00	6,210.00	6,208.43	131.89	137.52	4.33	-797.82	-7,226.64	15,397.20	15,229.45	167.76	91.782	
15,000.00	7,104.00	6,210.00	6,208.43	133.46	137.52	4.33	-797.82	-7,226.64	15,497.06	15,329.23	167.83	92.338	
15,100.00	7,104.00	6,210.00	6,208.43	135.02	137.52	4.33	-797.82	-7,226.64	15,596.91	15,429.01	167.90	92.893	
15,200.00	7,104.00	6,210.00	6,208.43	136.59	137.52	4.33	-797.82	-7,226.64	15,696.77	15,528.79	167.98	93.447	
15,300.00	7,104.00	6,210.00	6,208.43	138.16	137.52	4.33	-797.82	-7,226.64	15,796.63	15,628.58	168.05	94.000	
15,400.00	7,104.00	6,210.00	6,208.43	139.73	137.52	4.33	-797.82	-7,226.64	15,896.49	15,728.36	168.12	94.553	
15,500.00	7,104.00	6,210.00	6,208.43	141.30	137.52	4.33	-797.82	-7,226.64	15,996.35	15,828.15	168.20	95.104	
15,600.00	7,104.00	6,210.00	6,208.43	142.88	137.52	4.33	-797.82	-7,226.64	16,096.21	15,927.94	168.27	95.655	
15,700.00	7,104.00	6,210.00	6,208.43	144.45	137.52	4.33	-797.82	-7,226.64	16,196.08	16,027.73	168.35	96.205	
15,800.00	7,104.00	6,210.00	6,208.43	146.02	137.52	4.33	-797.82	-7,226.64	16,295.94	16,127.52	168.43	96.755	
15,900.00	7,104.00	6,210.00	6,208.43	147.60	137.52	4.33	-797.82	-7,226.64	16,395.81	16,227.31	168.50	97.303	
16,000.00	7,104.00	6,210.00	6,208.43	149.17	137.52	4.33	-797.82	-7,226.64	16,495.68	16,327.10	168.58	97.851	
16,100.00	7,104.00	6,210.00	6,208.43	150.74	137.52	4.33	-797.82	-7,226.64	16,595.55	16,426.90	168.66	98.398	
16,200.00	7,104.00	6,210.00	6,208.43	152.32	137.52	4.33	-797.82	-7,226.64	16,695.43	16,526.69	168.74	98.944	
16,300.00	7,104.00	6,210.00	6,208.43	153.89	137.52	4.33	-797.82	-7,226.64	16,795.30	16,626.49	168.82	99.489	
16,400.00	7,104.00	6,210.00	6,208.43	155.47	137.52	4.33	-797.82	-7,226.64	16,895.18	16,726.28	168.89	100.034	
16,500.00	7,104.00	6,210.00	6,208.43	157.05	137.52	4.33	-797.82	-7,226.64	16,995.06	16,826.08	168.97	100.577	
16,600.00	7,104.00	6,210.00	6,208.43	158.63	137.52	4.33	-797.82	-7,226.64	17,094.93	16,925.88	169.06	101.120	
16,700.00	7,104.00	6,210.00	6,208.43	160.20	137.52	4.33	-797.82	-7,226.64	17,194.81	17,025.68	169.14	101.662	
16,800.00	7,104.00	6,210.00	6,208.43	161.78	137.52	4.33	-797.82	-7,226.64	17,294.70	17,125.48	169.22	102.204	
16,900.00	7,104.00	6,210.00	6,208.43	163.36	137.52	4.33	-797.82	-7,226.64	17,394.58	17,225.28	169.30	102.744	
17,000.00	7,104.00	6,210.00	6,208.43	164.94	137.52	4.33	-797.82	-7,226.64	17,494.46	17,325.08	169.38	103.284	
17,100.00	7,104.00	6,210.00	6,208.43	166.52	137.52	4.33	-797.82	-7,226.64	17,594.35	17,424.88	169.47	103.822	
17,200.00	7,104.00	6,210.00	6,208.43	168.10	137.52	4.33	-797.82	-7,226.64	17,694.24	17,524.69	169.55	104.360	
17,300.00	7,104.00	6,210.00	6,208.43	169.68	137.52	4.33	-797.82	-7,226.64	17,794.13	17,624.49	169.63	104.897	
17,400.00	7,104.00	6,210.00	6,208.43	171.26	137.52	4.33	-797.82	-7,226.64	17,894.02	17,724.30	169.72	105.434	
17,500.00	7,104.00	6,210.00	6,208.43	172.84	137.52	4.33	-797.82	-7,226.64	17,993.91	17,824.10	169.80	105.969	
17,600.00	7,104.00	6,210.00	6,208.43	174.42	137.52	4.33	-797.82	-7,226.64	18,093.80	17,923.91	169.89	106.504	
17,700.00	7,104.00	6,210.00	6,208.43	176.00	137.52	4.33	-797.82	-7,226.64	18,193.69	18,023.72	169.97	107.037	
17,800.00	7,104.00	6,210.00	6,208.43	177.59	137.52	4.33	-797.82	-7,226.64	18,293.59	18,123.52	170.06	107.570	
17,900.00	7,104.00	6,210.00	6,208.43	179.17	137.52	4.33	-797.82	-7,226.64	18,393.48	18,223.33	170.15	108.102	
18,000.00	7,104.00	6,210.00	6,208.43	180.75	137.52	4.33	-797.82	-7,226.64	18,493.38	18,323.14	170.24	108.634	
18,100.00	7,104.00	6,210.00	6,208.43	182.33	137.52	4.33	-797.82	-7,226.64	18,593.28	18,422.95	170.32	109.164	
18,200.00	7,104.00	6,210.00	6,208.43	183.92	137.52	4.33	-797.82	-7,226.64	18,693.18	18,522.76	170.41	109.694	
18,300.00	7,104.00	6,210.00	6,208.43	185.50	137.52	4.33	-797.82	-7,226.64	18,793.08	18,622.57	170.50	110.222	
18,400.00	7,104.00	6,210.00	6,208.43	187.09	137.52	4.33	-797.82	-7,226.64	18,892.98	18,722.39	170.59	110.750	
18,500.00	7,104.00	6,210.00	6,208.43	188.67	137.52	4.33	-797.82	-7,226.64	18,992.88	18,822.20	170.68	111.277	
18,600.00	7,104.00	6,210.00	6,208.43	190.26	137.52	4.33	-797.82	-7,226.64	19,092.78	18,922.01	170.77	111.804	
18,700.00	7,104.00	6,210.00	6,208.43	191.84	137.52	4.33	-797.82	-7,226.64	19,192.69	19,021.82	170.86	112.329	
18,800.00	7,104.00	6,210.00	6,208.43	193.43	137.52	4.33	-797.82	-7,226.64	19,292.59	19,121.64	170.95	112.853	
18,900.00	7,104.00	6,210.00	6,208.43	195.01	137.52	4.33	-797.82	-7,226.64	19,392.50	19,221.45	171.04	113.377	
19,000.00	7,104.00	6,210.00	6,208.43	196.60	137.52	4.33	-797.82	-7,226.64	19,492.40	19,321.27	171.14	113.900	
19,100.00	7,104.00	6,210.00	6,208.43	198.18	137.52	4.33	-797.82	-7,226.64	19,592.31	19,421.08	171.23	114.422	
19,200.00	7,104.00	6,210.00	6,208.43	199.77	137.52	4.33	-797.82	-7,226.64	19,692.22	19,520.90	171.32	114.943	
19,300.00	7,104.00	6,210.00	6,208.43	201.36	137.52	4.33	-797.82	-7,226.64	19,792.13	19,620.72	171.42	115.463	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	7,104.00	6,210.00	6,208.43	202.94	137.52	4.33	-797.82	-7,226.64	19,892.04	19,720.53	171.51	115.983	
19,500.00	7,104.00	6,210.00	6,208.43	204.53	137.52	4.33	-797.82	-7,226.64	19,991.95	19,820.35	171.60	116.501	
19,600.00	7,104.00	6,210.00	6,208.43	206.12	137.52	4.33	-797.82	-7,226.64	20,091.87	19,920.17	171.70	117.019	
19,700.00	7,104.00	6,210.00	6,208.43	207.70	137.52	4.33	-797.82	-7,226.64	20,191.78	20,019.99	171.79	117.536	
19,800.00	7,104.00	6,210.00	6,208.43	209.29	137.52	4.33	-797.82	-7,226.64	20,291.69	20,119.81	171.89	118.052	
19,900.00	7,104.00	6,210.00	6,208.43	210.88	137.52	4.33	-797.82	-7,226.64	20,391.61	20,219.62	171.98	118.567	
20,000.00	7,104.00	6,210.00	6,208.43	212.47	137.52	4.33	-797.82	-7,226.64	20,491.52	20,319.44	172.08	119.081	
20,100.00	7,104.00	6,210.00	6,208.43	214.05	137.52	4.33	-797.82	-7,226.64	20,591.44	20,419.26	172.18	119.594	
20,200.00	7,104.00	6,210.00	6,208.43	215.64	137.52	4.33	-797.82	-7,226.64	20,691.36	20,519.08	172.27	120.107	
20,215.00	7,104.00	6,210.00	6,208.43	215.88	137.52	4.33	-797.82	-7,226.64	20,706.35	20,534.06	172.29	120.184	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137B - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-106.99	-1,982.68	-6,488.08	6,785.11				
100.00	100.00	0.00	0.00	3.29	0.00	-106.99	-1,982.68	-6,488.08	6,784.27	6,780.98	3.29	2,062.223	
135.84	135.84	28.84	28.84	3.30	0.27	-106.99	-1,982.68	-6,488.08	6,784.27	6,780.70	3.57	1,901.082	
200.00	200.00	93.00	93.00	3.34	0.86	-106.99	-1,982.68	-6,488.08	6,784.27	6,780.07	4.20	1,616.902	
300.00	300.00	193.00	193.00	3.42	1.78	-106.99	-1,982.68	-6,488.08	6,784.27	6,779.06	5.20	1,303.730	
400.00	400.00	293.00	293.00	3.54	2.71	-106.99	-1,982.68	-6,488.08	6,784.27	6,778.02	6.25	1,086.153	
500.00	500.00	393.00	393.00	3.69	4.49	-106.99	-1,982.68	-6,488.08	6,784.27	6,776.09	8.18	829.429	
600.00	599.98	492.98	492.98	3.86	6.34	103.01	-1,982.68	-6,488.08	6,784.66	6,774.46	10.20	665.417	
700.00	699.84	590.29	590.28	4.04	8.14	103.04	-1,982.23	-6,488.08	6,785.71	6,773.53	12.18	557.076	
800.00	799.45	686.24	686.23	4.26	9.91	103.06	-1,982.45	-6,488.08	6,787.75	6,773.58	14.17	479.169	
849.50	848.63	733.62	733.61	4.37	10.79	103.08	-1,982.62	-6,488.08	6,789.08	6,773.92	15.16	447.968	
900.00	898.77	791.79	791.77	4.49	11.89	94.87	-1,982.68	-6,488.08	6,790.05	6,773.67	16.37	414.665	
973.84	972.07	865.09	865.07	4.68	13.28	82.83	-1,982.68	-6,488.08	6,789.86	6,771.91	17.96	378.157	
1,000.00	998.03	891.05	891.03	4.74	13.77	82.85	-1,982.68	-6,488.08	6,789.46	6,770.94	18.52	366.654	
1,100.00	1,097.29	990.31	990.29	5.02	15.66	82.95	-1,982.68	-6,488.08	6,787.95	6,767.27	20.68	328.281	
1,200.00	1,196.54	1,086.41	1,086.39	5.30	17.49	83.06	-1,982.22	-6,488.08	6,786.32	6,763.53	22.79	297.743	
1,300.00	1,295.80	1,182.44	1,182.41	5.61	19.31	83.15	-1,982.46	-6,488.08	6,784.92	6,760.00	24.92	272.275	
1,400.00	1,395.06	1,288.11	1,288.06	5.92	21.35	83.26	-1,982.68	-6,488.08	6,783.53	6,756.26	27.27	248.758	
1,500.00	1,494.31	1,387.36	1,387.31	6.24	23.30	83.36	-1,982.68	-6,488.08	6,782.10	6,752.56	29.54	229.605	
1,600.00	1,593.57	1,486.62	1,486.57	6.57	25.25	83.46	-1,982.68	-6,488.08	6,780.69	6,748.88	31.81	213.131	
1,700.00	1,692.82	1,581.70	1,581.64	6.91	27.11	83.56	-1,981.94	-6,488.08	6,779.10	6,745.09	34.02	199.290	
1,800.00	1,792.08	1,676.48	1,676.42	7.25	28.97	83.66	-1,982.27	-6,488.08	6,777.83	6,741.62	36.22	187.141	
1,900.00	1,891.33	1,784.43	1,784.33	7.60	31.09	83.77	-1,982.68	-6,488.08	6,776.60	6,737.91	38.68	175.178	
2,000.00	1,990.59	1,883.68	1,883.59	7.95	33.04	83.87	-1,982.68	-6,488.08	6,775.27	6,734.29	40.99	165.303	
2,100.00	2,089.85	1,982.94	1,982.85	8.30	34.99	83.97	-1,982.68	-6,488.08	6,773.97	6,730.68	43.29	156.465	
2,200.00	2,189.10	2,078.45	2,078.35	8.66	36.87	84.07	-1,981.94	-6,488.08	6,772.50	6,726.97	45.53	148.747	
2,300.00	2,288.36	2,173.29	2,173.19	9.02	38.73	84.17	-1,982.26	-6,488.08	6,771.33	6,723.58	47.76	141.788	
2,400.00	2,387.61	2,280.75	2,280.61	9.39	40.87	84.27	-1,982.68	-6,488.08	6,770.20	6,719.95	50.26	134.717	
2,500.00	2,486.87	2,380.01	2,379.87	9.76	42.89	84.38	-1,982.68	-6,488.08	6,768.99	6,716.35	52.64	128.591	
2,600.00	2,586.12	2,479.26	2,479.12	10.13	44.90	84.48	-1,982.68	-6,488.08	6,767.80	6,712.77	55.03	122.991	
2,700.00	2,685.38	2,575.91	2,575.76	10.50	46.87	84.58	-1,981.85	-6,488.08	6,766.42	6,709.06	57.36	117.959	
2,800.00	2,784.63	2,671.13	2,670.99	10.87	48.80	84.68	-1,982.11	-6,488.08	6,765.34	6,705.67	59.67	113.377	
2,900.00	2,883.89	2,766.42	2,766.27	11.24	50.74	84.77	-1,982.59	-6,488.08	6,764.34	6,702.36	61.98	109.133	
3,000.00	2,983.15	2,876.35	2,876.15	11.62	53.18	84.89	-1,982.68	-6,488.08	6,763.25	6,698.45	64.80	104.373	
3,100.00	3,082.40	2,975.60	2,975.40	12.00	55.41	84.99	-1,982.68	-6,488.08	6,762.17	6,694.76	67.41	100.318	
3,200.00	3,181.66	3,071.51	3,071.30	12.38	57.57	85.09	-1,981.70	-6,488.08	6,760.86	6,690.92	69.94	96.663	
3,300.00	3,280.91	3,165.04	3,164.82	12.75	59.67	85.19	-1,982.05	-6,488.08	6,759.92	6,687.49	72.42	93.337	
3,400.00	3,380.17	3,273.48	3,273.17	13.13	62.10	85.29	-1,982.68	-6,488.08	6,759.05	6,683.82	75.23	89.842	
3,500.00	3,479.42	3,372.74	3,372.42	13.52	64.28	85.40	-1,982.68	-6,488.08	6,758.05	6,680.26	77.79	86.876	
3,600.00	3,578.68	3,471.99	3,471.68	13.90	66.45	85.50	-1,982.68	-6,488.08	6,757.08	6,676.73	80.35	84.098	
3,700.00	3,677.94	3,564.45	3,564.11	14.28	68.48	85.60	-1,981.30	-6,488.08	6,755.80	6,673.04	82.76	81.634	
3,800.00	3,777.19	3,655.63	3,655.27	14.66	70.48	85.69	-1,981.91	-6,488.08	6,755.03	6,669.89	85.14	79.342	
3,900.00	3,876.45	3,769.85	3,769.45	15.05	72.95	85.80	-1,982.68	-6,488.08	6,754.29	6,666.29	87.99	76.758	
4,000.00	3,975.70	3,869.11	3,868.70	15.43	75.06	85.91	-1,982.68	-6,488.08	6,753.40	6,662.92	90.49	74.635	
4,100.00	4,074.96	3,968.37	3,967.96	15.82	77.17	86.01	-1,982.68	-6,488.08	6,752.54	6,659.56	92.98	72.626	
4,200.00	4,174.21	4,067.62	4,067.21	16.20	79.27	86.11	-1,982.68	-6,488.08	6,751.69	6,656.23	95.47	70.722	
4,300.00	4,273.47	4,166.88	4,166.47	16.59	81.38	86.21	-1,982.68	-6,488.08	6,750.87	6,652.91	97.96	68.914	
4,400.00	4,372.73	4,266.13	4,265.73	16.97	83.48	86.32	-1,982.68	-6,488.08	6,750.07	6,649.62	100.45	67.196	
4,500.00	4,471.98	4,364.46	4,364.04	17.36	85.57	86.43	-1,980.78	-6,488.08	6,748.87	6,645.94	102.93	65.569	
4,600.00	4,571.24	4,462.08	4,461.66	17.75	87.64	86.53	-1,980.89	-6,488.08	6,748.14	6,642.75	105.39	64.033	
4,700.00	4,670.49	4,559.73	4,559.30	18.13	89.72	86.63	-1,981.11	-6,488.08	6,747.46	6,639.61	107.85	62.566	
4,800.00	4,769.75	4,657.41	4,656.98	18.52	91.79	86.73	-1,981.44	-6,488.08	6,746.82	6,636.52	110.31	61.164	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137B - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,869.00	4,755.11	4,754.68	18.91	93.86	86.83	-1,981.87	-6,488.08	6,746.23	6,633.46	112.77	59.824	
5,000.00	4,968.26	4,852.84	4,852.40	19.30	95.94	86.92	-1,982.41	-6,488.08	6,745.68	6,630.45	115.23	58.541	
5,100.00	5,067.51	4,961.10	4,960.51	19.69	98.29	87.03	-1,982.68	-6,488.08	6,745.09	6,627.12	117.97	57.175	
5,200.00	5,166.77	5,060.36	5,059.77	20.07	100.48	87.14	-1,982.68	-6,488.08	6,744.47	6,623.92	120.55	55.947	
5,300.00	5,266.03	5,159.62	5,159.03	20.46	102.67	87.24	-1,982.68	-6,488.08	6,743.87	6,620.74	123.13	54.770	
5,400.00	5,365.28	5,258.87	5,258.28	20.85	104.86	87.34	-1,982.68	-6,488.08	6,743.29	6,617.58	125.71	53.642	
5,500.00	5,464.54	5,358.13	5,357.54	21.24	107.05	87.44	-1,982.68	-6,488.08	6,742.73	6,614.44	128.29	52.559	
5,600.00	5,563.79	5,457.38	5,456.79	21.63	109.24	87.55	-1,982.68	-6,488.08	6,742.19	6,611.32	130.87	51.519	
5,700.00	5,663.05	5,556.64	5,556.05	22.02	111.43	87.65	-1,982.68	-6,488.08	6,741.68	6,608.23	133.45	50.519	
5,800.00	5,762.30	5,655.89	5,655.30	22.41	113.62	87.75	-1,982.68	-6,488.08	6,741.18	6,605.16	136.03	49.557	
5,900.00	5,861.56	5,755.15	5,754.56	22.80	115.81	87.85	-1,982.68	-6,488.08	6,740.71	6,602.11	138.61	48.631	
6,000.00	5,960.82	5,854.41	5,853.82	23.19	118.00	87.96	-1,982.68	-6,488.08	6,740.27	6,599.08	141.19	47.739	
6,100.00	6,060.07	5,953.66	5,953.07	23.58	120.19	88.06	-1,982.68	-6,488.08	6,739.84	6,596.07	143.77	46.879	
6,200.00	6,159.33	6,052.92	6,052.33	23.97	122.38	88.16	-1,982.68	-6,488.08	6,739.43	6,593.08	146.35	46.050	
6,300.00	6,258.58	6,152.17	6,151.58	24.36	124.57	88.27	-1,982.68	-6,488.08	6,739.05	6,590.12	148.93	45.249	
6,337.52	6,295.82	6,165.00	6,164.16	24.51	124.85	88.28	-1,982.68	-6,488.08	6,738.96	6,589.60	149.36	45.119	CC, ES
6,400.00	6,357.84	6,165.00	6,164.16	24.76	124.85	88.28	-1,982.68	-6,488.08	6,739.25	6,589.66	149.59	45.050	
6,500.00	6,457.09	6,165.00	6,164.16	25.15	124.85	88.28	-1,982.68	-6,488.08	6,740.92	6,590.97	149.94	44.957	
6,528.17	6,485.05	6,165.00	6,164.16	25.26	124.85	88.28	-1,982.68	-6,488.08	6,741.66	6,591.62	150.04	44.934	
6,550.00	6,506.71	6,165.00	6,164.16	25.34	124.85	102.99	-1,982.68	-6,488.08	6,742.67	6,592.57	150.11	44.919	
6,600.00	6,556.11	6,165.00	6,164.16	25.54	124.85	126.21	-1,982.68	-6,488.08	6,748.03	6,597.76	150.26	44.908	SF
6,650.00	6,605.00	6,165.00	6,164.16	25.74	124.85	138.40	-1,982.68	-6,488.08	6,757.55	6,607.13	150.41	44.927	
6,700.00	6,653.07	6,165.00	6,164.16	25.93	124.85	145.14	-1,982.68	-6,488.08	6,771.15	6,620.60	150.55	44.975	
6,750.00	6,700.02	6,165.00	6,164.16	26.12	124.85	149.14	-1,982.68	-6,488.08	6,788.74	6,638.05	150.69	45.052	
6,800.00	6,745.56	6,165.00	6,164.16	26.31	124.85	151.59	-1,982.68	-6,488.08	6,810.16	6,659.35	150.81	45.157	
6,850.00	6,789.42	6,165.00	6,164.16	26.50	124.85	153.07	-1,982.68	-6,488.08	6,835.26	6,684.34	150.92	45.289	
6,900.00	6,831.32	6,165.00	6,164.16	26.69	124.85	153.85	-1,982.68	-6,488.08	6,863.84	6,712.81	151.03	45.447	
6,950.00	6,871.01	6,165.00	6,164.16	26.87	124.85	154.08	-1,982.68	-6,488.08	6,895.68	6,744.56	151.13	45.628	
7,000.00	6,908.23	6,165.00	6,164.16	27.05	124.85	153.80	-1,982.68	-6,488.08	6,930.55	6,779.33	151.22	45.832	
7,050.00	6,942.77	6,165.00	6,164.16	27.23	124.85	153.01	-1,982.68	-6,488.08	6,968.17	6,816.88	151.30	46.056	
7,100.00	6,974.40	6,165.00	6,164.16	27.41	124.85	151.64	-1,982.68	-6,488.08	7,008.29	6,856.92	151.37	46.299	
7,150.00	7,002.93	6,165.00	6,164.16	27.60	124.85	149.53	-1,982.68	-6,488.08	7,050.60	6,899.16	151.44	46.557	
7,200.00	7,028.20	6,165.00	6,164.16	27.80	124.85	146.42	-1,982.68	-6,488.08	7,094.82	6,943.32	151.50	46.830	
7,250.00	7,050.03	6,165.00	6,164.16	28.00	124.85	141.84	-1,982.68	-6,488.08	7,140.63	6,989.07	151.56	47.114	
7,300.00	7,068.30	6,165.00	6,164.16	28.22	124.85	134.96	-1,982.68	-6,488.08	7,187.73	7,036.12	151.62	47.407	
7,350.00	7,082.89	6,165.00	6,164.16	28.45	124.85	124.36	-1,982.68	-6,488.08	7,235.81	7,084.14	151.67	47.706	
7,400.00	7,093.72	6,165.00	6,164.16	28.70	124.85	108.07	-1,982.68	-6,488.08	7,284.55	7,132.82	151.73	48.011	
7,450.00	7,100.71	6,165.00	6,164.16	28.96	124.85	85.69	-1,982.68	-6,488.08	7,333.64	7,181.86	151.78	48.317	
7,500.00	7,103.82	6,165.00	6,164.16	29.24	124.85	62.32	-1,982.68	-6,488.08	7,382.77	7,230.93	151.84	48.622	
7,515.00	7,104.00	6,165.00	6,164.16	29.32	124.85	56.20	-1,982.68	-6,488.08	7,397.48	7,245.62	151.86	48.713	
7,600.00	7,104.00	6,165.00	6,164.16	29.84	124.85	56.20	-1,982.68	-6,488.08	7,480.74	7,328.78	151.96	49.229	
7,700.00	7,104.00	6,165.00	6,164.16	30.51	124.85	56.20	-1,982.68	-6,488.08	7,578.74	7,426.66	152.08	49.834	
7,800.00	7,104.00	6,165.00	6,164.16	31.26	124.85	56.20	-1,982.68	-6,488.08	7,676.80	7,524.60	152.20	50.439	
7,900.00	7,104.00	6,165.00	6,164.16	32.07	124.85	56.20	-1,982.68	-6,488.08	7,774.90	7,622.58	152.32	51.044	
8,000.00	7,104.00	6,165.00	6,164.16	32.94	124.85	56.20	-1,982.68	-6,488.08	7,873.05	7,720.62	152.43	51.649	
8,100.00	7,104.00	6,165.00	6,164.16	33.86	124.85	56.20	-1,982.68	-6,488.08	7,971.25	7,818.70	152.55	52.253	
8,200.00	7,104.00	6,165.00	6,164.16	34.84	124.85	56.20	-1,982.68	-6,488.08	8,069.49	7,916.82	152.67	52.856	
8,300.00	7,104.00	6,165.00	6,164.16	35.86	124.85	56.20	-1,982.68	-6,488.08	8,167.78	8,014.99	152.79	53.459	
8,400.00	7,104.00	6,165.00	6,164.16	36.92	124.85	56.20	-1,982.68	-6,488.08	8,266.10	8,113.20	152.90	54.062	
8,500.00	7,104.00	6,165.00	6,164.16	38.02	124.85	56.20	-1,982.68	-6,488.08	8,364.47	8,211.45	153.02	54.664	
8,600.00	7,104.00	6,165.00	6,164.16	39.15	124.85	56.20	-1,982.68	-6,488.08	8,462.87	8,309.74	153.13	55.266	
8,700.00	7,104.00	6,165.00	6,164.16	40.32	124.85	56.20	-1,982.68	-6,488.08	8,561.31	8,408.07	153.24	55.867	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	6,165.00	6,164.16	41.52	124.85	56.20	-1,982.68	-6,488.08	8,659.79	8,506.43	153.36	56.468	
8,900.00	7,104.00	6,165.00	6,164.16	42.74	124.85	56.20	-1,982.68	-6,488.08	8,758.30	8,604.83	153.47	57.069	
9,000.00	7,104.00	6,165.00	6,164.16	43.99	124.85	56.20	-1,982.68	-6,488.08	8,856.85	8,703.27	153.58	57.669	
9,100.00	7,104.00	6,165.00	6,164.16	45.26	124.85	56.20	-1,982.68	-6,488.08	8,955.42	8,801.73	153.69	58.269	
9,200.00	7,104.00	6,165.00	6,164.16	46.55	124.85	56.20	-1,982.68	-6,488.08	9,054.03	8,900.23	153.80	58.868	
9,300.00	7,104.00	6,165.00	6,164.16	47.85	124.85	56.20	-1,982.68	-6,488.08	9,152.67	8,998.76	153.91	59.467	
9,400.00	7,104.00	6,165.00	6,164.16	49.18	124.85	56.20	-1,982.68	-6,488.08	9,251.34	9,097.32	154.02	60.065	
9,500.00	7,104.00	6,165.00	6,164.16	50.52	124.85	56.20	-1,982.68	-6,488.08	9,350.03	9,195.90	154.13	60.663	
9,600.00	7,104.00	6,165.00	6,164.16	51.88	124.85	56.20	-1,982.68	-6,488.08	9,448.76	9,294.52	154.24	61.261	
9,700.00	7,104.00	6,165.00	6,164.16	53.25	124.85	56.20	-1,982.68	-6,488.08	9,547.51	9,393.16	154.35	61.858	
9,800.00	7,104.00	6,165.00	6,164.16	54.63	124.85	56.20	-1,982.68	-6,488.08	9,646.28	9,491.83	154.45	62.455	
9,900.00	7,104.00	6,165.00	6,164.16	56.03	124.85	56.20	-1,982.68	-6,488.08	9,745.08	9,590.52	154.56	63.051	
10,000.00	7,104.00	6,165.00	6,164.16	57.43	124.85	56.20	-1,982.68	-6,488.08	9,843.91	9,689.24	154.66	63.647	
10,100.00	7,104.00	6,165.00	6,164.16	58.85	124.85	56.20	-1,982.68	-6,488.08	9,942.76	9,787.99	154.77	64.242	
10,200.00	7,104.00	6,165.00	6,164.16	60.27	124.85	56.20	-1,982.68	-6,488.08	10,041.63	9,886.75	154.87	64.837	
10,300.00	7,104.00	6,165.00	6,164.16	61.71	124.85	56.20	-1,982.68	-6,488.08	10,140.52	9,985.54	154.98	65.432	
10,400.00	7,104.00	6,165.00	6,164.16	63.15	124.85	56.20	-1,982.68	-6,488.08	10,239.44	10,084.35	155.08	66.026	
10,500.00	7,104.00	6,165.00	6,164.16	64.60	124.85	56.20	-1,982.68	-6,488.08	10,338.37	10,183.18	155.19	66.619	
10,600.00	7,104.00	6,165.00	6,164.16	66.05	124.85	56.20	-1,982.68	-6,488.08	10,437.33	10,282.04	155.29	67.212	
10,700.00	7,104.00	6,165.00	6,164.16	67.52	124.85	56.20	-1,982.68	-6,488.08	10,536.30	10,380.91	155.39	67.805	
10,800.00	7,104.00	6,165.00	6,164.16	68.99	124.85	56.20	-1,982.68	-6,488.08	10,635.30	10,479.80	155.49	68.397	
10,900.00	7,104.00	6,165.00	6,164.16	70.46	124.85	56.20	-1,982.68	-6,488.08	10,734.31	10,578.71	155.60	68.988	
11,000.00	7,104.00	6,165.00	6,164.16	71.94	124.85	56.20	-1,982.68	-6,488.08	10,833.34	10,677.64	155.70	69.579	
11,100.00	7,104.00	6,165.00	6,164.16	73.43	124.85	56.20	-1,982.68	-6,488.08	10,932.39	10,776.59	155.80	70.170	
11,200.00	7,104.00	6,165.00	6,164.16	74.92	124.85	56.20	-1,982.68	-6,488.08	11,031.46	10,875.56	155.90	70.760	
11,300.00	7,104.00	6,165.00	6,164.16	76.41	124.85	56.20	-1,982.68	-6,488.08	11,130.54	10,974.54	156.00	71.350	
11,400.00	7,104.00	6,165.00	6,164.16	77.91	124.85	56.20	-1,982.68	-6,488.08	11,229.64	11,073.54	156.10	71.939	
11,500.00	7,104.00	6,165.00	6,164.16	79.41	124.85	56.20	-1,982.68	-6,488.08	11,328.76	11,172.56	156.20	72.528	
11,600.00	7,104.00	6,165.00	6,164.16	80.92	124.85	56.20	-1,982.68	-6,488.08	11,427.89	11,271.59	156.30	73.116	
11,700.00	7,104.00	6,165.00	6,164.16	82.43	124.85	56.20	-1,982.68	-6,488.08	11,527.03	11,370.63	156.40	73.703	
11,800.00	7,104.00	6,165.00	6,164.16	83.94	124.85	56.20	-1,982.68	-6,488.08	11,626.19	11,469.69	156.50	74.290	
11,900.00	7,104.00	6,165.00	6,164.16	85.46	124.85	56.20	-1,982.68	-6,488.08	11,725.37	11,568.77	156.60	74.877	
12,000.00	7,104.00	6,165.00	6,164.16	86.98	124.85	56.20	-1,982.68	-6,488.08	11,824.55	11,667.86	156.69	75.463	
12,100.00	7,104.00	6,165.00	6,164.16	88.50	124.85	56.20	-1,982.68	-6,488.08	11,923.76	11,766.96	156.79	76.048	
12,200.00	7,104.00	6,165.00	6,164.16	90.03	124.85	56.20	-1,982.68	-6,488.08	12,022.97	11,866.08	156.89	76.633	
12,300.00	7,104.00	6,165.00	6,164.16	91.55	124.85	56.20	-1,982.68	-6,488.08	12,122.20	11,965.21	156.99	77.218	
12,400.00	7,104.00	6,165.00	6,164.16	93.08	124.85	56.20	-1,982.68	-6,488.08	12,221.44	12,064.36	157.09	77.801	
12,500.00	7,104.00	6,165.00	6,164.16	94.62	124.85	56.20	-1,982.68	-6,488.08	12,320.69	12,163.51	157.18	78.385	
12,600.00	7,104.00	6,165.00	6,164.16	96.15	124.85	56.20	-1,982.68	-6,488.08	12,419.96	12,262.68	157.28	78.967	
12,700.00	7,104.00	6,165.00	6,164.16	97.69	124.85	56.20	-1,982.68	-6,488.08	12,519.23	12,361.86	157.38	79.550	
12,800.00	7,104.00	6,165.00	6,164.16	99.23	124.85	56.20	-1,982.68	-6,488.08	12,618.52	12,461.05	157.47	80.131	
12,900.00	7,104.00	6,165.00	6,164.16	100.77	124.85	56.20	-1,982.68	-6,488.08	12,717.82	12,560.25	157.57	80.712	
13,000.00	7,104.00	6,165.00	6,164.16	102.31	124.85	56.20	-1,982.68	-6,488.08	12,817.13	12,659.47	157.67	81.293	
13,100.00	7,104.00	6,165.00	6,164.16	103.86	124.85	56.20	-1,982.68	-6,488.08	12,916.45	12,758.69	157.76	81.872	
13,200.00	7,104.00	6,165.00	6,164.16	105.40	124.85	56.20	-1,982.68	-6,488.08	13,015.78	12,857.92	157.86	82.452	
13,300.00	7,104.00	6,165.00	6,164.16	106.95	124.85	56.20	-1,982.68	-6,488.08	13,115.12	12,957.17	157.96	83.030	
13,400.00	7,104.00	6,165.00	6,164.16	108.50	124.85	56.20	-1,982.68	-6,488.08	13,214.48	13,056.42	158.05	83.608	
13,500.00	7,104.00	6,165.00	6,164.16	110.05	124.85	56.20	-1,982.68	-6,488.08	13,313.84	13,155.69	158.15	84.186	
13,600.00	7,104.00	6,165.00	6,164.16	111.60	124.85	56.20	-1,982.68	-6,488.08	13,413.21	13,254.96	158.24	84.763	
13,700.00	7,104.00	6,165.00	6,164.16	113.16	124.85	56.20	-1,982.68	-6,488.08	13,512.59	13,354.25	158.34	85.339	
13,800.00	7,104.00	6,165.00	6,164.16	114.71	124.85	56.20	-1,982.68	-6,488.08	13,611.98	13,453.54	158.44	85.915	
13,900.00	7,104.00	6,165.00	6,164.16	116.27	124.85	56.20	-1,982.68	-6,488.08	13,711.37	13,552.84	158.53	86.490	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137B - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	6,165.00	6,164.16	117.83	124.85	56.20	-1,982.68	-6,488.08	13,810.78	13,652.15	158.63	87.064	
14,100.00	7,104.00	6,165.00	6,164.16	119.38	124.85	56.20	-1,982.68	-6,488.08	13,910.20	13,751.47	158.72	87.638	
14,200.00	7,104.00	6,165.00	6,164.16	120.94	124.85	56.20	-1,982.68	-6,488.08	14,009.62	13,850.80	158.82	88.211	
14,300.00	7,104.00	6,165.00	6,164.16	122.50	124.85	56.20	-1,982.68	-6,488.08	14,109.05	13,950.14	158.91	88.784	
14,400.00	7,104.00	6,165.00	6,164.16	124.07	124.85	56.20	-1,982.68	-6,488.08	14,208.49	14,049.48	159.01	89.356	
14,500.00	7,104.00	6,165.00	6,164.16	125.63	124.85	56.20	-1,982.68	-6,488.08	14,307.94	14,148.83	159.11	89.927	
14,600.00	7,104.00	6,165.00	6,164.16	127.19	124.85	56.20	-1,982.68	-6,488.08	14,407.39	14,248.19	159.20	90.498	
14,700.00	7,104.00	6,165.00	6,164.16	128.76	124.85	56.20	-1,982.68	-6,488.08	14,506.85	14,347.56	159.30	91.068	
14,800.00	7,104.00	6,165.00	6,164.16	130.32	124.85	56.20	-1,982.68	-6,488.08	14,606.32	14,446.93	159.39	91.637	
14,900.00	7,104.00	6,165.00	6,164.16	131.89	124.85	56.20	-1,982.68	-6,488.08	14,705.80	14,546.31	159.49	92.206	
15,000.00	7,104.00	6,165.00	6,164.16	133.46	124.85	56.20	-1,982.68	-6,488.08	14,805.28	14,645.70	159.58	92.774	
15,100.00	7,104.00	6,165.00	6,164.16	135.02	124.85	56.20	-1,982.68	-6,488.08	14,904.77	14,745.09	159.68	93.341	
15,200.00	7,104.00	6,165.00	6,164.16	136.59	124.85	56.20	-1,982.68	-6,488.08	15,004.27	14,844.50	159.78	93.908	
15,300.00	7,104.00	6,165.00	6,164.16	138.16	124.85	56.20	-1,982.68	-6,488.08	15,103.78	14,943.90	159.87	94.474	
15,400.00	7,104.00	6,165.00	6,164.16	139.73	124.85	56.20	-1,982.68	-6,488.08	15,203.29	15,043.32	159.97	95.040	
15,500.00	7,104.00	6,165.00	6,164.16	141.30	124.85	56.20	-1,982.68	-6,488.08	15,302.80	15,142.74	160.06	95.604	
15,600.00	7,104.00	6,165.00	6,164.16	142.88	124.85	56.20	-1,982.68	-6,488.08	15,402.33	15,242.17	160.16	96.169	
15,700.00	7,104.00	6,165.00	6,164.16	144.45	124.85	56.20	-1,982.68	-6,488.08	15,501.86	15,341.60	160.26	96.732	
15,800.00	7,104.00	6,165.00	6,164.16	146.02	124.85	56.20	-1,982.68	-6,488.08	15,601.39	15,441.04	160.35	97.295	
15,900.00	7,104.00	6,165.00	6,164.16	147.60	124.85	56.20	-1,982.68	-6,488.08	15,700.93	15,540.49	160.45	97.857	
16,000.00	7,104.00	6,165.00	6,164.16	149.17	124.85	56.20	-1,982.68	-6,488.08	15,800.48	15,639.94	160.54	98.418	
16,100.00	7,104.00	6,165.00	6,164.16	150.74	124.85	56.20	-1,982.68	-6,488.08	15,900.03	15,739.39	160.64	98.979	
16,200.00	7,104.00	6,165.00	6,164.16	152.32	124.85	56.20	-1,982.68	-6,488.08	15,999.59	15,838.86	160.74	99.539	
16,300.00	7,104.00	6,165.00	6,164.16	153.89	124.85	56.20	-1,982.68	-6,488.08	16,099.16	15,938.32	160.83	100.098	
16,400.00	7,104.00	6,165.00	6,164.16	155.47	124.85	56.20	-1,982.68	-6,488.08	16,198.73	16,037.80	160.93	100.657	
16,500.00	7,104.00	6,165.00	6,164.16	157.05	124.85	56.20	-1,982.68	-6,488.08	16,298.30	16,137.27	161.03	101.215	
16,600.00	7,104.00	6,165.00	6,164.16	158.63	124.85	56.20	-1,982.68	-6,488.08	16,397.88	16,236.76	161.12	101.772	
16,700.00	7,104.00	6,165.00	6,164.16	160.20	124.85	56.20	-1,982.68	-6,488.08	16,497.47	16,336.24	161.22	102.328	
16,800.00	7,104.00	6,165.00	6,164.16	161.78	124.85	56.20	-1,982.68	-6,488.08	16,597.06	16,435.74	161.32	102.884	
16,900.00	7,104.00	6,165.00	6,164.16	163.36	124.85	56.20	-1,982.68	-6,488.08	16,696.65	16,535.23	161.42	103.439	
17,000.00	7,104.00	6,165.00	6,164.16	164.94	124.85	56.20	-1,982.68	-6,488.08	16,796.25	16,634.74	161.51	103.993	
17,100.00	7,104.00	6,165.00	6,164.16	166.52	124.85	56.20	-1,982.68	-6,488.08	16,895.85	16,734.24	161.61	104.547	
17,200.00	7,104.00	6,165.00	6,164.16	168.10	124.85	56.20	-1,982.68	-6,488.08	16,995.46	16,833.76	161.71	105.100	
17,300.00	7,104.00	6,165.00	6,164.16	169.68	124.85	56.20	-1,982.68	-6,488.08	17,095.08	16,933.27	161.81	105.652	
17,400.00	7,104.00	6,165.00	6,164.16	171.26	124.85	56.20	-1,982.68	-6,488.08	17,194.69	17,032.79	161.90	106.204	
17,500.00	7,104.00	6,165.00	6,164.16	172.84	124.85	56.20	-1,982.68	-6,488.08	17,294.32	17,132.32	162.00	106.754	
17,600.00	7,104.00	6,165.00	6,164.16	174.42	124.85	56.20	-1,982.68	-6,488.08	17,393.94	17,231.84	162.10	107.304	
17,700.00	7,104.00	6,165.00	6,164.16	176.00	124.85	56.20	-1,982.68	-6,488.08	17,493.57	17,331.38	162.20	107.854	
17,800.00	7,104.00	6,165.00	6,164.16	177.59	124.85	56.20	-1,982.68	-6,488.08	17,593.21	17,430.91	162.30	108.402	
17,900.00	7,104.00	6,165.00	6,164.16	179.17	124.85	56.20	-1,982.68	-6,488.08	17,692.85	17,530.45	162.39	108.950	
18,000.00	7,104.00	6,165.00	6,164.16	180.75	124.85	56.20	-1,982.68	-6,488.08	17,792.49	17,630.00	162.49	109.497	
18,100.00	7,104.00	6,165.00	6,164.16	182.33	124.85	56.20	-1,982.68	-6,488.08	17,892.14	17,729.55	162.59	110.043	
18,200.00	7,104.00	6,165.00	6,164.16	183.92	124.85	56.20	-1,982.68	-6,488.08	17,991.79	17,829.10	162.69	110.589	
18,300.00	7,104.00	6,165.00	6,164.16	185.50	124.85	56.20	-1,982.68	-6,488.08	18,091.45	17,928.66	162.79	111.134	
18,400.00	7,104.00	6,165.00	6,164.16	187.09	124.85	56.20	-1,982.68	-6,488.08	18,191.10	18,028.22	162.89	111.678	
18,500.00	7,104.00	6,165.00	6,164.16	188.67	124.85	56.20	-1,982.68	-6,488.08	18,290.77	18,127.78	162.99	112.222	
18,600.00	7,104.00	6,165.00	6,164.16	190.26	124.85	56.20	-1,982.68	-6,488.08	18,390.43	18,227.35	163.09	112.764	
18,700.00	7,104.00	6,165.00	6,164.16	191.84	124.85	56.20	-1,982.68	-6,488.08	18,490.10	18,326.92	163.19	113.306	
18,800.00	7,104.00	6,165.00	6,164.16	193.43	124.85	56.20	-1,982.68	-6,488.08	18,589.78	18,426.49	163.29	113.847	
18,900.00	7,104.00	6,165.00	6,164.16	195.01	124.85	56.20	-1,982.68	-6,488.08	18,689.45	18,526.07	163.39	114.388	
19,000.00	7,104.00	6,165.00	6,164.16	196.60	124.85	56.20	-1,982.68	-6,488.08	18,789.13	18,625.65	163.49	114.927	
19,100.00	7,104.00	6,165.00	6,164.16	198.18	124.85	56.20	-1,982.68	-6,488.08	18,888.82	18,725.23	163.59	115.466	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 300-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	6,165.00	6,164.16	199.77	124.85	56.20	-1,982.68	-6,488.08	18,988.50	18,824.82	163.69	116.004	
19,300.00	7,104.00	6,165.00	6,164.16	201.36	124.85	56.20	-1,982.68	-6,488.08	19,088.20	18,924.41	163.79	116.542	
19,400.00	7,104.00	6,165.00	6,164.16	202.94	124.85	56.20	-1,982.68	-6,488.08	19,187.89	19,024.00	163.89	117.078	
19,500.00	7,104.00	6,165.00	6,164.16	204.53	124.85	56.20	-1,982.68	-6,488.08	19,287.59	19,123.60	163.99	117.614	
19,600.00	7,104.00	6,165.00	6,164.16	206.12	124.85	56.20	-1,982.68	-6,488.08	19,387.29	19,223.19	164.09	118.149	
19,700.00	7,104.00	6,165.00	6,164.16	207.70	124.85	56.20	-1,982.68	-6,488.08	19,486.99	19,322.80	164.19	118.683	
19,800.00	7,104.00	6,165.00	6,164.16	209.29	124.85	56.20	-1,982.68	-6,488.08	19,586.69	19,422.40	164.29	119.217	
19,900.00	7,104.00	6,165.00	6,164.16	210.88	124.85	56.20	-1,982.68	-6,488.08	19,686.40	19,522.01	164.40	119.750	
20,000.00	7,104.00	6,165.00	6,164.16	212.47	124.85	56.20	-1,982.68	-6,488.08	19,786.11	19,621.62	164.50	120.282	
20,100.00	7,104.00	6,165.00	6,164.16	214.05	124.85	56.20	-1,982.68	-6,488.08	19,885.83	19,721.23	164.60	120.813	
20,200.00	7,104.00	6,165.00	6,164.16	215.64	124.85	56.20	-1,982.68	-6,488.08	19,985.55	19,820.85	164.70	121.344	
20,215.00	7,104.00	6,165.00	6,164.16	215.88	124.85	56.20	-1,982.68	-6,488.08	20,000.51	19,835.79	164.72	121.423	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137C - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-102.85	-1,915.54	-8,398.90	8,615.17				
100.00	100.00	0.00	0.00	3.29	3.28	-102.85	-1,915.54	-8,398.90	8,614.57	8,608.00	6.57	1,311.281	
200.00	200.00	118.59	118.59	3.34	3.28	-102.85	-1,915.67	-8,398.72	8,614.45	8,607.83	6.62	1,301.924	
300.00	300.00	200.00	200.00	3.42	3.29	-102.85	-1,915.92	-8,398.45	8,614.21	8,607.51	6.70	1,285.183 CC	
304.45	304.45	200.00	200.00	3.42	3.29	-102.85	-1,915.92	-8,398.45	8,614.21	8,607.51	6.71	1,284.311 ES	
400.00	400.00	225.00	225.00	3.54	3.29	-102.85	-1,916.03	-8,398.54	8,614.64	8,607.82	6.82	1,262.969	
500.00	500.00	293.90	293.90	3.69	3.29	-102.85	-1,916.30	-8,399.10	8,615.56	8,608.59	6.97	1,235.875	
600.00	599.98	350.00	349.99	3.86	3.29	107.12	-1,916.61	-8,399.86	8,617.53	8,610.39	7.14	1,206.599	
700.00	699.84	431.54	431.52	4.04	3.30	107.07	-1,917.48	-8,401.29	8,621.00	8,613.66	7.33	1,175.392	
800.00	799.45	534.70	534.65	4.26	3.31	107.04	-1,918.64	-8,403.04	8,625.47	8,617.91	7.56	1,141.173	
849.50	848.63	575.00	574.94	4.37	3.32	107.02	-1,919.14	-8,403.73	8,628.09	8,620.41	7.68	1,123.710	
900.00	898.77	623.51	623.44	4.49	3.33	98.78	-1,919.81	-8,404.58	8,630.48	8,622.67	7.81	1,105.423	
973.84	972.07	676.92	676.84	4.68	3.35	86.69	-1,920.58	-8,405.57	8,632.48	8,624.47	8.00	1,078.632	
1,000.00	998.03	700.00	699.91	4.74	3.35	86.71	-1,920.91	-8,406.02	8,632.88	8,624.81	8.08	1,068.930	
1,100.00	1,097.29	775.00	774.88	5.02	3.37	86.77	-1,922.07	-8,407.58	8,634.58	8,626.21	8.37	1,032.104	
1,200.00	1,196.54	862.95	862.80	5.30	3.40	86.83	-1,923.80	-8,409.60	8,636.57	8,627.90	8.68	995.348	
1,300.00	1,295.80	967.15	966.94	5.61	3.44	86.90	-1,925.99	-8,411.90	8,638.54	8,629.53	9.01	958.884	
1,400.00	1,395.06	1,056.50	1,056.25	5.92	3.47	86.97	-1,927.98	-8,413.95	8,640.61	8,631.26	9.35	924.105	
1,500.00	1,494.31	1,150.00	1,149.70	6.24	3.52	87.03	-1,930.10	-8,416.05	8,642.67	8,632.97	9.71	890.520	
1,600.00	1,593.57	1,243.80	1,243.45	6.57	3.56	87.10	-1,932.29	-8,418.32	8,644.92	8,634.85	10.07	858.356	
1,700.00	1,692.82	1,359.24	1,358.83	6.91	3.62	87.18	-1,934.91	-8,420.96	8,647.04	8,636.58	10.46	826.868	
1,800.00	1,792.08	1,450.00	1,449.54	7.25	3.67	87.24	-1,936.96	-8,423.05	8,649.18	8,638.34	10.84	797.799	
1,900.00	1,891.33	1,600.00	1,599.47	7.60	3.77	87.34	-1,940.38	-8,426.16	8,651.13	8,639.87	11.26	768.141	
2,000.00	1,990.59	1,704.01	1,703.43	7.95	3.83	87.41	-1,942.53	-8,428.12	8,652.86	8,641.19	11.67	741.560	
2,100.00	2,089.85	1,760.26	1,759.66	8.30	3.87	87.45	-1,943.73	-8,429.36	8,654.84	8,642.79	12.05	718.009	
2,200.00	2,189.10	1,874.84	1,874.19	8.66	3.95	87.53	-1,946.11	-8,431.96	8,656.99	8,644.50	12.48	693.650	
2,300.00	2,288.36	2,023.24	2,022.54	9.02	4.06	87.64	-1,948.63	-8,434.86	8,658.78	8,645.85	12.94	669.341	
2,400.00	2,387.61	2,130.29	2,129.56	9.39	4.15	87.72	-1,950.38	-8,436.48	8,660.11	8,646.75	13.37	647.803	
2,500.00	2,486.87	2,221.44	2,220.69	9.76	4.22	87.78	-1,951.88	-8,437.95	8,661.55	8,647.75	13.79	627.879	
2,600.00	2,586.12	2,322.20	2,321.42	10.13	4.31	87.86	-1,953.55	-8,439.56	8,662.99	8,648.76	14.23	608.695	
2,700.00	2,685.38	2,417.76	2,416.96	10.50	4.39	87.93	-1,954.93	-8,441.10	8,664.42	8,649.75	14.67	590.580	
2,800.00	2,784.63	2,510.75	2,509.92	10.87	4.47	87.99	-1,956.29	-8,442.69	8,665.96	8,650.85	15.11	573.446	
2,900.00	2,883.89	2,625.76	2,624.90	11.24	4.57	88.08	-1,957.65	-8,444.65	8,667.46	8,651.88	15.58	556.433	
3,000.00	2,983.15	2,777.17	2,776.29	11.62	4.71	88.19	-1,959.28	-8,446.60	8,668.53	8,652.46	16.07	539.337	
3,100.00	3,082.40	2,882.18	2,881.29	12.00	4.81	88.27	-1,960.25	-8,447.66	8,669.33	8,652.80	16.53	524.363	
3,200.00	3,181.66	2,986.12	2,985.23	12.38	4.91	88.35	-1,961.19	-8,448.63	8,670.06	8,653.07	16.99	510.178	
3,300.00	3,280.91	3,084.95	3,084.05	12.75	5.01	88.43	-1,962.17	-8,449.56	8,670.84	8,653.39	17.45	496.836	
3,400.00	3,380.17	3,159.77	3,158.86	13.13	5.08	88.48	-1,963.13	-8,450.29	8,671.73	8,653.84	17.89	484.758	
3,500.00	3,479.42	3,240.26	3,239.34	13.52	5.16	88.54	-1,964.27	-8,451.31	8,672.93	8,654.59	18.33	473.061	
3,600.00	3,578.68	3,325.00	3,324.06	13.90	5.25	88.60	-1,965.53	-8,452.52	8,674.32	8,655.53	18.78	461.773	
3,700.00	3,677.94	3,436.37	3,435.40	14.28	5.36	88.68	-1,967.36	-8,454.12	8,675.76	8,656.50	19.26	450.480	
3,800.00	3,777.19	3,550.00	3,549.01	14.66	5.48	88.76	-1,968.94	-8,455.47	8,676.91	8,657.17	19.74	439.642	
3,900.00	3,876.45	3,668.83	3,667.82	15.05	5.60	88.85	-1,970.55	-8,456.86	8,678.06	8,657.84	20.22	429.179	
4,000.00	3,975.70	3,831.21	3,830.19	15.43	5.77	88.97	-1,972.66	-8,458.01	8,678.82	8,658.09	20.73	418.733	
4,100.00	4,074.96	3,983.87	3,982.82	15.82	5.90	89.08	-1,975.11	-8,457.75	8,678.69	8,657.52	21.17	409.896	
4,200.00	4,174.21	4,098.93	4,097.85	16.20	5.99	89.15	-1,977.80	-8,457.14	8,678.42	8,656.82	21.60	401.872	
4,300.00	4,273.47	4,185.69	4,184.58	16.59	6.05	89.21	-1,979.99	-8,456.61	8,678.08	8,656.07	22.01	394.319	
4,400.00	4,372.73	4,279.63	4,278.49	16.97	6.13	89.27	-1,982.40	-8,456.06	8,677.80	8,655.38	22.42	386.974	
4,486.78	4,458.86	4,345.26	4,344.10	17.31	6.19	89.31	-1,983.90	-8,455.80	8,677.68	8,654.89	22.78	380.873	
4,500.00	4,471.98	4,358.44	4,357.28	17.36	6.20	89.32	-1,984.17	-8,455.77	8,677.68	8,654.84	22.84	379.932	
4,600.00	4,571.24	4,458.52	4,457.34	17.75	6.29	89.38	-1,986.17	-8,455.64	8,677.77	8,654.50	23.27	372.893	
4,700.00	4,670.49	4,549.97	4,548.77	18.13	6.38	89.45	-1,987.99	-8,455.57	8,677.90	8,654.20	23.70	366.154	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137C - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-Standard Keeper 104 — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,630.89	4,629.67	18.52	6.46	89.50	-1,989.59	-8,455.59	8,678.16	8,654.03	24.13	359.685	
4,900.00	4,869.00	4,737.57	4,736.34	18.91	6.56	89.57	-1,991.62	-8,455.70	8,678.49	8,653.92	24.57	353.204	
5,000.00	4,968.26	4,834.11	4,832.85	19.30	6.66	89.64	-1,993.49	-8,455.75	8,678.79	8,653.78	25.01	347.037	
5,100.00	5,067.51	4,932.60	4,931.33	19.69	6.76	89.71	-1,995.43	-8,455.83	8,679.13	8,653.68	25.45	341.057	
5,200.00	5,166.77	5,044.70	5,043.40	20.07	6.87	89.78	-1,997.68	-8,455.77	8,679.36	8,653.47	25.89	335.226	
5,300.00	5,266.03	5,134.62	5,133.30	20.46	6.97	89.84	-1,999.46	-8,455.78	8,679.66	8,653.34	26.33	329.709	
5,400.00	5,365.28	5,246.15	5,244.82	20.85	7.08	89.92	-2,001.63	-8,455.75	8,679.94	8,653.17	26.77	324.238	
5,500.00	5,464.54	5,359.91	5,358.55	21.24	7.20	89.99	-2,003.79	-8,455.51	8,680.03	8,652.82	27.21	318.999	
5,600.00	5,563.79	5,461.52	5,460.14	21.63	7.30	90.06	-2,005.80	-8,455.23	8,680.09	8,652.45	27.64	314.004	
5,700.00	5,663.05	5,578.05	5,576.65	22.02	7.41	90.14	-2,008.38	-8,454.78	8,680.10	8,652.02	28.08	309.102	
5,800.00	5,762.30	5,680.62	5,679.18	22.41	7.51	90.20	-2,011.17	-8,454.15	8,679.97	8,651.46	28.51	304.438	
5,897.82	5,859.40	5,763.57	5,762.09	22.79	7.59	90.25	-2,013.54	-8,453.63	8,679.87	8,650.94	28.93	300.075	
5,900.00	5,861.56	5,764.89	5,763.40	22.80	7.60	90.26	-2,013.58	-8,453.63	8,679.87	8,650.94	28.93	299.982	
6,000.00	5,960.82	5,837.16	5,835.65	23.19	7.67	90.30	-2,015.38	-8,453.37	8,679.99	8,650.64	29.36	295.682	
6,100.00	6,060.07	5,911.00	5,909.48	23.58	7.75	90.35	-2,017.08	-8,453.44	8,680.52	8,650.73	29.79	291.435	
6,200.00	6,159.33	6,006.02	6,004.48	23.97	7.86	90.41	-2,019.11	-8,453.64	8,681.15	8,650.92	30.23	287.155	
6,300.00	6,258.58	6,093.97	6,092.40	24.36	7.96	90.47	-2,020.91	-8,453.95	8,681.91	8,651.23	30.68	283.015	
6,400.00	6,357.84	6,194.86	6,193.27	24.76	8.08	90.54	-2,023.06	-8,454.37	8,682.77	8,651.64	31.13	278.902	
6,500.00	6,457.09	6,283.50	6,281.89	25.15	8.18	90.60	-2,024.76	-8,454.89	8,683.76	8,652.18	31.58	274.940	
6,528.17	6,485.05	6,307.81	6,306.20	25.26	8.21	90.62	-2,025.18	-8,455.04	8,684.05	8,652.34	31.71	273.844	
6,550.00	6,506.71	6,349.18	6,347.56	25.34	8.26	105.37	-2,025.82	-8,455.26	8,684.61	8,652.78	31.83	272.864	
6,600.00	6,556.11	6,380.18	6,378.56	25.54	8.30	128.65	-2,026.27	-8,455.44	8,688.70	8,656.65	32.05	271.135	
6,650.00	6,605.00	6,450.00	6,448.37	25.74	8.38	140.97	-2,027.16	-8,455.77	8,696.56	8,664.27	32.29	269.301	
6,700.00	6,653.07	6,475.19	6,473.56	25.93	8.41	147.82	-2,027.45	-8,455.92	8,708.31	8,675.80	32.50	267.908	
6,750.00	6,700.02	6,525.00	6,523.37	26.12	8.47	151.99	-2,028.00	-8,456.23	8,723.79	8,691.05	32.74	266.497	
6,800.00	6,745.56	6,570.47	6,568.83	26.31	8.52	154.65	-2,028.37	-8,456.58	8,742.96	8,710.00	32.96	265.253	
6,850.00	6,789.42	6,604.98	6,603.35	26.50	8.56	156.38	-2,028.61	-8,456.87	8,765.65	8,732.48	33.17	264.257	
6,900.00	6,831.32	6,646.85	6,645.21	26.69	8.61	157.48	-2,028.87	-8,457.22	8,791.74	8,758.36	33.38	263.366	
6,950.00	6,871.01	6,682.93	6,681.29	26.87	8.65	158.10	-2,029.11	-8,457.54	8,821.07	8,787.49	33.58	262.694	
7,000.00	6,908.23	6,719.26	6,717.61	27.05	8.69	158.33	-2,029.32	-8,457.88	8,853.45	8,819.68	33.77	262.186	
7,050.00	6,942.77	6,760.96	6,759.32	27.23	8.74	158.20	-2,029.57	-8,458.22	8,888.63	8,854.68	33.95	261.801	
7,100.00	6,974.40	6,786.50	6,784.85	27.41	8.76	157.66	-2,029.73	-8,458.46	8,926.46	8,892.36	34.11	261.713	
7,150.00	7,002.93	6,822.56	6,820.91	27.60	8.81	156.73	-2,029.94	-8,458.76	8,966.66	8,932.40	34.26	261.690 SF	
7,200.00	7,028.20	6,844.28	6,842.63	27.80	8.83	155.20	-2,030.06	-8,458.94	9,009.01	8,974.62	34.39	261.935	
7,250.00	7,050.03	6,870.25	6,868.59	28.00	8.86	152.96	-2,030.21	-8,459.16	9,053.24	9,018.72	34.52	262.285	
7,300.00	7,068.30	6,897.17	6,895.51	28.22	8.89	149.62	-2,030.36	-8,459.36	9,099.06	9,064.43	34.63	262.756	
7,350.00	7,082.89	6,917.66	6,916.00	28.45	8.91	144.45	-2,030.46	-8,459.50	9,146.20	9,111.48	34.72	263.401	
7,400.00	7,093.72	6,925.00	6,923.34	28.70	8.92	135.89	-2,030.51	-8,459.55	9,194.38	9,159.59	34.79	264.261	
7,450.00	7,100.71	6,932.59	6,930.93	28.96	8.93	121.19	-2,030.55	-8,459.60	9,243.30	9,208.44	34.85	265.207	
7,500.00	7,103.82	6,934.34	6,932.68	29.24	8.93	96.27	-2,030.56	-8,459.61	9,292.66	9,257.76	34.90	266.275	
7,515.00	7,104.00	6,934.39	6,932.73	29.32	8.93	86.96	-2,030.56	-8,459.61	9,307.51	9,272.60	34.91	266.609	
7,600.00	7,104.00	6,934.03	6,932.37	29.84	8.93	86.94	-2,030.56	-8,459.61	9,391.68	9,356.70	34.97	268.533	
7,700.00	7,104.00	6,933.61	6,931.96	30.51	8.93	86.92	-2,030.56	-8,459.60	9,490.72	9,455.67	35.05	270.783	
7,800.00	7,104.00	6,933.20	6,931.54	31.26	8.93	86.90	-2,030.55	-8,459.60	9,589.78	9,554.65	35.12	273.019	
7,900.00	7,104.00	6,932.79	6,931.14	32.07	8.93	86.89	-2,030.55	-8,459.60	9,688.86	9,653.66	35.20	275.241	
8,000.00	7,104.00	6,932.39	6,930.73	32.94	8.93	86.87	-2,030.55	-8,459.60	9,787.96	9,752.68	35.28	277.449	
8,100.00	7,104.00	6,931.98	6,930.33	33.86	8.93	86.85	-2,030.55	-8,459.59	9,887.07	9,851.72	35.36	279.644	
8,200.00	7,104.00	6,931.59	6,929.93	34.84	8.93	86.83	-2,030.55	-8,459.59	9,986.21	9,950.77	35.43	281.825	
8,300.00	7,104.00	6,931.19	6,929.53	35.86	8.93	86.82	-2,030.54	-8,459.59	10,085.36	10,049.85	35.51	283.994	
8,400.00	7,104.00	6,930.80	6,929.14	36.92	8.93	86.80	-2,030.54	-8,459.59	10,184.53	10,148.93	35.59	286.150	
8,500.00	7,104.00	6,930.41	6,928.75	38.02	8.93	86.78	-2,030.54	-8,459.58	10,283.71	10,248.04	35.67	288.294	
8,600.00	7,104.00	6,925.00	6,923.34	39.15	8.92	86.54	-2,030.51	-8,459.55	10,382.91	10,347.17	35.74	290.472	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137C - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	7,104.00	6,925.00	6,923.34	40.32	8.92	86.54	-2,030.51	-8,459.55	10,482.13	10,446.30	35.83	292.589	
8,800.00	7,104.00	6,925.00	6,923.34	41.52	8.92	86.54	-2,030.51	-8,459.55	10,581.36	10,545.45	35.91	294.693	
8,900.00	7,104.00	6,925.00	6,923.34	42.74	8.92	86.54	-2,030.51	-8,459.55	10,680.60	10,644.61	35.99	296.787	
9,000.00	7,104.00	6,925.00	6,923.34	43.99	8.92	86.54	-2,030.51	-8,459.55	10,779.86	10,743.79	36.07	298.868	
9,100.00	7,104.00	6,925.00	6,923.34	45.26	8.92	86.54	-2,030.51	-8,459.55	10,879.13	10,842.98	36.15	300.939	
9,200.00	7,104.00	6,925.00	6,923.34	46.55	8.92	86.54	-2,030.51	-8,459.55	10,978.41	10,942.18	36.23	302.998	
9,300.00	7,104.00	6,924.49	6,922.83	47.85	8.92	86.52	-2,030.50	-8,459.55	11,077.71	11,041.40	36.31	305.051	
9,400.00	7,104.00	6,923.83	6,922.18	49.18	8.92	86.49	-2,030.50	-8,459.54	11,177.02	11,140.62	36.40	307.095	
9,500.00	7,104.00	6,929.78	6,928.13	50.52	8.93	86.75	-2,030.54	-8,459.58	11,276.34	11,239.86	36.49	309.066	
9,600.00	7,104.00	6,928.83	6,927.17	51.88	8.92	86.71	-2,030.53	-8,459.57	11,375.67	11,339.11	36.57	311.091	
9,700.00	7,104.00	6,927.86	6,926.20	53.25	8.92	86.67	-2,030.52	-8,459.57	11,475.02	11,438.37	36.65	313.106	
9,800.00	7,104.00	6,926.88	6,925.22	54.63	8.92	86.63	-2,030.52	-8,459.56	11,574.38	11,537.65	36.73	315.110	
9,900.00	7,104.00	6,925.88	6,924.23	56.03	8.92	86.58	-2,030.51	-8,459.55	11,673.75	11,636.93	36.81	317.105	
10,000.00	7,104.00	6,924.88	6,923.22	57.43	8.92	86.54	-2,030.51	-8,459.55	11,773.12	11,736.23	36.90	319.090	
10,100.00	7,104.00	6,923.86	6,922.20	58.85	8.92	86.49	-2,030.50	-8,459.54	11,872.51	11,835.53	36.98	321.065	
10,200.00	7,104.00	6,922.82	6,921.17	60.27	8.92	86.45	-2,030.49	-8,459.54	11,971.91	11,934.85	37.06	323.030	
10,300.00	7,104.00	6,921.77	6,920.12	61.71	8.92	86.40	-2,030.49	-8,459.53	12,071.32	12,034.18	37.14	324.985	
10,400.00	7,104.00	6,920.71	6,919.06	63.15	8.91	86.36	-2,030.48	-8,459.52	12,170.74	12,133.51	37.23	326.930	
10,500.00	7,104.00	6,919.63	6,917.98	64.60	8.91	86.31	-2,030.47	-8,459.52	12,270.17	12,232.86	37.31	328.866	
10,600.00	7,104.00	6,918.54	6,916.89	66.05	8.91	86.26	-2,030.47	-8,459.51	12,369.60	12,332.21	37.39	330.793	
10,700.00	7,104.00	6,917.43	6,915.78	67.52	8.91	86.21	-2,030.46	-8,459.50	12,469.05	12,431.57	37.48	332.710	
10,800.00	7,104.00	6,916.31	6,914.66	68.99	8.91	86.16	-2,030.46	-8,459.50	12,568.50	12,530.94	37.56	334.617	
10,900.00	7,104.00	6,915.17	6,913.52	70.46	8.91	86.11	-2,030.45	-8,459.49	12,667.97	12,630.32	37.64	336.515	
11,000.00	7,104.00	6,914.02	6,912.36	71.94	8.91	86.06	-2,030.44	-8,459.48	12,767.44	12,729.71	37.73	338.404	
11,100.00	7,104.00	6,912.85	6,911.19	73.43	8.91	86.01	-2,030.44	-8,459.47	12,866.92	12,829.11	37.81	340.284	
11,200.00	7,104.00	6,911.66	6,910.00	74.92	8.90	85.96	-2,030.43	-8,459.46	12,966.41	12,928.51	37.90	342.154	
11,300.00	7,104.00	6,910.45	6,908.80	76.41	8.90	85.91	-2,030.42	-8,459.46	13,065.90	13,027.92	37.98	344.015	
11,400.00	7,104.00	6,909.23	6,907.57	77.91	8.90	85.85	-2,030.42	-8,459.45	13,165.41	13,127.34	38.06	345.867	
11,500.00	7,104.00	6,907.99	6,906.33	79.41	8.90	85.80	-2,030.41	-8,459.44	13,264.92	13,226.77	38.15	347.710	
11,600.00	7,104.00	6,906.73	6,905.07	80.92	8.90	85.74	-2,030.40	-8,459.43	13,364.43	13,326.20	38.23	349.545	
11,700.00	7,104.00	6,905.45	6,903.80	82.43	8.90	85.69	-2,030.40	-8,459.42	13,463.96	13,425.64	38.32	351.370	
11,800.00	7,104.00	6,904.27	6,902.62	83.94	8.90	85.64	-2,030.39	-8,459.41	13,563.49	13,525.09	38.40	353.184	
11,900.00	7,104.00	6,902.91	6,901.26	85.46	8.89	85.58	-2,030.39	-8,459.41	13,663.03	13,624.54	38.49	354.991	
12,000.00	7,104.00	6,901.54	6,899.88	86.98	8.89	85.52	-2,030.38	-8,459.40	13,762.57	13,724.00	38.57	356.790	
12,100.00	7,104.00	6,900.14	6,898.49	88.50	8.89	85.46	-2,030.37	-8,459.39	13,862.12	13,823.47	38.66	358.580	
12,200.00	7,104.00	6,898.73	6,897.08	90.03	8.89	85.39	-2,030.37	-8,459.38	13,961.68	13,922.94	38.74	360.362	
12,300.00	7,104.00	6,897.30	6,895.65	91.55	8.89	85.33	-2,030.36	-8,459.37	14,061.25	14,022.42	38.83	362.134	
12,400.00	7,104.00	6,895.86	6,894.20	93.08	8.89	85.27	-2,030.35	-8,459.36	14,160.82	14,121.90	38.91	363.897	
12,500.00	7,104.00	6,894.39	6,892.74	94.62	8.88	85.21	-2,030.34	-8,459.34	14,260.39	14,221.39	39.00	365.652	
12,600.00	7,104.00	6,892.91	6,891.26	96.15	8.88	85.14	-2,030.34	-8,459.33	14,359.97	14,320.89	39.09	367.398	
12,700.00	7,104.00	6,891.41	6,889.75	97.69	8.88	85.07	-2,030.33	-8,459.32	14,459.56	14,420.39	39.17	369.136	
12,800.00	7,104.00	6,889.89	6,888.23	99.23	8.88	85.01	-2,030.32	-8,459.31	14,559.16	14,519.90	39.26	370.864	
12,900.00	7,104.00	6,888.34	6,886.69	100.77	8.88	84.94	-2,030.31	-8,459.30	14,658.75	14,619.41	39.34	372.584	
13,000.00	7,104.00	6,886.78	6,885.13	102.31	8.88	84.87	-2,030.30	-8,459.29	14,758.36	14,718.93	39.43	374.296	
13,100.00	7,104.00	6,885.20	6,883.55	103.86	8.87	84.80	-2,030.29	-8,459.28	14,857.97	14,818.45	39.52	375.999	
13,200.00	7,104.00	6,883.60	6,881.94	105.40	8.87	84.73	-2,030.29	-8,459.26	14,957.58	14,917.98	39.60	377.693	
13,300.00	7,104.00	6,881.97	6,880.32	106.95	8.87	84.66	-2,030.28	-8,459.25	15,057.20	15,017.51	39.69	379.379	
13,400.00	7,104.00	6,880.32	6,878.67	108.50	8.87	84.59	-2,030.27	-8,459.24	15,156.83	15,117.05	39.78	381.056	
13,500.00	7,104.00	6,878.65	6,877.00	110.05	8.87	84.52	-2,030.26	-8,459.23	15,256.46	15,216.59	39.86	382.724	
13,600.00	7,104.00	6,876.96	6,875.31	111.60	8.87	84.44	-2,030.25	-8,459.21	15,356.09	15,316.14	39.95	384.385	
13,700.00	7,104.00	6,875.25	6,873.59	113.16	8.86	84.37	-2,030.24	-8,459.20	15,455.73	15,415.69	40.04	386.036	
13,800.00	7,104.00	6,873.69	6,872.03	114.71	8.86	84.30	-2,030.23	-8,459.19	15,555.37	15,515.25	40.12	387.678	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137C - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	6,872.14	6,870.48	116.27	8.86	84.23	-2,030.22	-8,459.18	15,655.02	15,614.81	40.21	389.310	
14,000.00	7,104.00	6,870.57	6,868.91	117.83	8.86	84.17	-2,030.21	-8,459.16	15,754.67	15,714.37	40.30	390.935	
14,100.00	7,104.00	6,868.98	6,867.32	119.38	8.86	84.10	-2,030.20	-8,459.15	15,854.33	15,813.94	40.39	392.550	
14,200.00	7,104.00	6,867.36	6,865.71	120.94	8.85	84.03	-2,030.19	-8,459.14	15,953.99	15,913.51	40.48	394.158	
14,300.00	7,104.00	6,865.73	6,864.07	122.50	8.85	83.95	-2,030.18	-8,459.12	16,053.65	16,013.09	40.56	395.757	
14,400.00	7,104.00	6,864.07	6,862.42	124.07	8.85	83.88	-2,030.17	-8,459.11	16,153.32	16,112.67	40.65	397.347	
14,500.00	7,104.00	6,862.39	6,860.74	125.63	8.85	83.81	-2,030.16	-8,459.10	16,252.99	16,212.25	40.74	398.930	
14,600.00	7,104.00	6,860.69	6,859.03	127.19	8.85	83.74	-2,030.15	-8,459.08	16,352.67	16,311.84	40.83	400.504	
14,700.00	7,104.00	6,858.96	6,857.31	128.76	8.85	83.66	-2,030.14	-8,459.07	16,452.35	16,411.43	40.92	402.070	
14,800.00	7,104.00	6,857.21	6,855.56	130.32	8.84	83.58	-2,030.13	-8,459.05	16,552.03	16,511.03	41.01	403.627	
14,900.00	7,104.00	6,855.43	6,853.78	131.89	8.84	83.51	-2,030.12	-8,459.04	16,651.72	16,610.62	41.10	405.177	
15,000.00	7,104.00	6,853.63	6,851.98	133.46	8.84	83.43	-2,030.11	-8,459.02	16,751.41	16,710.23	41.19	406.718	
15,100.00	7,104.00	6,851.81	6,850.15	135.02	8.84	83.35	-2,030.10	-8,459.01	16,851.11	16,809.83	41.28	408.251	
15,200.00	7,104.00	6,850.00	6,848.35	136.59	8.84	83.27	-2,030.09	-8,458.99	16,950.81	16,909.44	41.37	409.775	
15,300.00	7,104.00	6,850.00	6,848.35	138.16	8.84	83.27	-2,030.09	-8,458.99	17,050.51	17,009.05	41.46	411.271	
15,400.00	7,104.00	6,850.00	6,848.35	139.73	8.84	83.27	-2,030.09	-8,458.99	17,150.22	17,108.66	41.55	412.759	
15,500.00	7,104.00	6,850.00	6,848.35	141.30	8.84	83.27	-2,030.09	-8,458.99	17,249.92	17,208.28	41.64	414.238	
15,600.00	7,104.00	6,850.00	6,848.35	142.88	8.84	83.27	-2,030.09	-8,458.99	17,349.64	17,307.90	41.74	415.709	
15,700.00	7,104.00	6,846.68	6,845.03	144.45	8.83	83.13	-2,030.07	-8,458.96	17,449.35	17,407.53	41.82	417.209	
15,800.00	7,104.00	6,846.02	6,844.37	146.02	8.83	83.10	-2,030.07	-8,458.96	17,549.07	17,507.15	41.92	418.670	
15,900.00	7,104.00	6,845.37	6,843.72	147.60	8.83	83.07	-2,030.06	-8,458.95	17,648.79	17,606.78	42.01	420.123	
16,000.00	7,104.00	6,844.72	6,843.06	149.17	8.83	83.04	-2,030.06	-8,458.95	17,748.52	17,706.42	42.10	421.568	
16,100.00	7,104.00	6,844.06	6,842.41	150.74	8.83	83.01	-2,030.06	-8,458.94	17,848.24	17,806.05	42.19	423.005	
16,200.00	7,104.00	6,843.42	6,841.76	152.32	8.83	82.99	-2,030.05	-8,458.93	17,947.98	17,905.69	42.29	424.433	
16,300.00	7,104.00	6,842.77	6,841.12	153.89	8.83	82.96	-2,030.05	-8,458.93	18,047.71	18,005.33	42.38	425.854	
16,400.00	7,104.00	6,842.12	6,840.47	155.47	8.83	82.93	-2,030.05	-8,458.92	18,147.45	18,104.97	42.47	427.266	
16,500.00	7,104.00	6,841.48	6,839.83	157.05	8.83	82.90	-2,030.04	-8,458.92	18,247.19	18,204.62	42.57	428.670	
16,600.00	7,104.00	6,840.84	6,839.18	158.63	8.83	82.87	-2,030.04	-8,458.91	18,346.93	18,304.27	42.66	430.065	
16,700.00	7,104.00	6,840.19	6,838.54	160.20	8.82	82.85	-2,030.04	-8,458.91	18,446.67	18,403.92	42.75	431.453	
16,800.00	7,104.00	6,839.55	6,837.90	161.78	8.82	82.82	-2,030.03	-8,458.90	18,546.42	18,503.57	42.85	432.832	
16,900.00	7,104.00	6,838.92	6,837.27	163.36	8.82	82.79	-2,030.03	-8,458.90	18,646.17	18,603.23	42.94	434.204	
17,000.00	7,104.00	6,838.28	6,836.63	164.94	8.82	82.76	-2,030.03	-8,458.89	18,745.93	18,702.89	43.04	435.567	
17,100.00	7,104.00	6,837.65	6,836.00	166.52	8.82	82.74	-2,030.02	-8,458.89	18,845.68	18,802.55	43.13	436.923	
17,200.00	7,104.00	6,837.01	6,835.36	168.10	8.82	82.71	-2,030.02	-8,458.88	18,945.44	18,902.21	43.23	438.270	
17,300.00	7,104.00	6,836.38	6,834.73	169.68	8.82	82.68	-2,030.02	-8,458.87	19,045.20	19,001.88	43.32	439.609	
17,400.00	7,104.00	6,835.75	6,834.10	171.26	8.82	82.65	-2,030.01	-8,458.87	19,144.96	19,101.55	43.42	440.941	
17,500.00	7,104.00	6,835.12	6,833.47	172.84	8.82	82.63	-2,030.01	-8,458.86	19,244.73	19,201.22	43.51	442.265	
17,600.00	7,104.00	6,834.50	6,832.85	174.42	8.82	82.60	-2,030.01	-8,458.86	19,344.50	19,300.89	43.61	443.580	
17,700.00	7,104.00	6,833.87	6,832.22	176.00	8.82	82.57	-2,030.00	-8,458.85	19,444.27	19,400.56	43.71	444.888	
17,800.00	7,104.00	6,833.25	6,831.60	177.59	8.82	82.54	-2,030.00	-8,458.85	19,544.04	19,500.24	43.80	446.188	
17,900.00	7,104.00	6,832.63	6,830.98	179.17	8.82	82.52	-2,030.00	-8,458.84	19,643.82	19,599.92	43.90	447.480	
18,000.00	7,104.00	6,832.01	6,830.36	180.75	8.82	82.49	-2,029.99	-8,458.84	19,743.59	19,699.60	44.00	448.765	
18,100.00	7,104.00	6,831.39	6,829.74	182.33	8.81	82.46	-2,029.99	-8,458.83	19,843.37	19,799.28	44.09	450.041	
18,200.00	7,104.00	6,830.77	6,829.12	183.92	8.81	82.44	-2,029.99	-8,458.83	19,943.16	19,898.97	44.19	451.310	
18,300.00	7,104.00	6,830.16	6,828.51	185.50	8.81	82.41	-2,029.98	-8,458.82	20,042.94	19,998.65	44.29	452.572	
18,400.00	7,104.00	6,829.54	6,827.89	187.09	8.81	82.38	-2,029.98	-8,458.82	20,142.73	20,098.34	44.38	453.825	
18,500.00	7,104.00	6,828.93	6,827.28	188.67	8.81	82.36	-2,029.98	-8,458.81	20,242.51	20,198.03	44.48	455.071	
18,600.00	7,104.00	6,828.32	6,826.67	190.26	8.81	82.33	-2,029.97	-8,458.81	20,342.30	20,297.72	44.58	456.310	
18,700.00	7,104.00	6,825.00	6,823.35	191.84	8.81	82.19	-2,029.96	-8,458.78	20,442.10	20,397.42	44.68	457.571	
18,800.00	7,104.00	6,825.00	6,823.35	193.43	8.81	82.19	-2,029.96	-8,458.78	20,541.89	20,497.12	44.77	458.787	
18,900.00	7,104.00	6,825.00	6,823.35	195.01	8.81	82.19	-2,029.96	-8,458.78	20,641.69	20,596.81	44.87	459.996	
19,000.00	7,104.00	6,825.00	6,823.35	196.60	8.81	82.19	-2,029.96	-8,458.78	20,741.48	20,696.51	44.97	461.198	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #137C - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	6,825.00	6,823.35	198.18	8.81	82.19	-2,029.96	-8,458.78	20,841.28	20,796.21	45.07	462.392	
19,200.00	7,104.00	6,825.00	6,823.35	199.77	8.81	82.19	-2,029.96	-8,458.78	20,941.09	20,895.91	45.17	463.579	
19,300.00	7,104.00	6,823.82	6,822.16	201.36	8.81	82.14	-2,029.95	-8,458.77	21,040.89	20,995.62	45.27	464.771	
19,400.00	7,104.00	6,823.04	6,821.39	202.94	8.81	82.10	-2,029.95	-8,458.76	21,140.70	21,095.32	45.37	465.952	
19,500.00	7,104.00	6,822.26	6,820.61	204.53	8.80	82.07	-2,029.94	-8,458.76	21,240.50	21,195.03	45.47	467.125	
19,600.00	7,104.00	6,821.49	6,819.84	206.12	8.80	82.04	-2,029.94	-8,458.75	21,340.31	21,294.74	45.57	468.291	
19,700.00	7,104.00	6,820.71	6,819.06	207.70	8.80	82.00	-2,029.93	-8,458.74	21,440.12	21,394.45	45.67	469.450	
19,800.00	7,104.00	6,819.94	6,818.29	209.29	8.80	81.97	-2,029.93	-8,458.74	21,539.94	21,494.16	45.77	470.601	
19,900.00	7,104.00	6,819.17	6,817.52	210.88	8.80	81.94	-2,029.92	-8,458.73	21,639.75	21,593.88	45.87	471.746	
20,000.00	7,104.00	6,818.40	6,816.74	212.47	8.80	81.90	-2,029.92	-8,458.72	21,739.57	21,693.59	45.97	472.883	
20,100.00	7,104.00	6,817.62	6,815.97	214.05	8.80	81.87	-2,029.92	-8,458.72	21,839.38	21,793.31	46.07	474.013	
20,200.00	7,104.00	6,816.85	6,815.20	215.64	8.80	81.84	-2,029.91	-8,458.71	21,939.20	21,893.03	46.17	475.136	
20,215.00	7,104.00	6,816.74	6,815.09	215.88	8.80	81.83	-2,029.91	-8,458.71	21,954.18	21,907.99	46.19	475.304	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	15.00	15.00	3.28	0.14	97.67	-1,125.29	8,360.52	8,435.91				
100.00	100.00	115.00	115.00	3.29	1.06	97.67	-1,125.29	8,360.52	8,435.91	8,431.56	4.35	1,938.124	
200.00	200.00	215.00	215.00	3.34	1.99	97.67	-1,125.29	8,360.52	8,435.91	8,430.59	5.32	1,584.695	
300.00	300.00	315.00	315.00	3.42	3.11	97.67	-1,125.29	8,360.52	8,435.91	8,429.37	6.53	1,290.944	
400.00	400.00	415.00	415.00	3.54	4.96	97.67	-1,125.29	8,360.52	8,435.91	8,427.41	8.50	992.294	
500.00	500.00	515.00	515.00	3.69	6.81	97.67	-1,125.29	8,360.52	8,435.91	8,425.41	10.50	803.470	
600.00	599.98	613.60	613.59	3.86	8.63	-52.36	-1,124.79	8,360.52	8,434.78	8,422.29	12.49	675.297	
700.00	699.84	711.55	711.54	4.04	10.45	-52.44	-1,124.99	8,360.52	8,431.61	8,417.12	14.49	581.992	
800.00	799.45	814.47	814.45	4.26	12.37	-52.57	-1,125.29	8,360.52	8,426.33	8,409.70	16.62	506.861	
849.50	848.63	863.66	863.63	4.37	13.33	-52.66	-1,125.29	8,360.52	8,422.92	8,405.21	17.70	475.840	
900.00	898.77	913.79	913.77	4.49	14.32	-60.98	-1,125.29	8,360.52	8,419.57	8,400.76	18.80	447.787	
973.84	972.07	987.09	987.07	4.68	15.75	-73.19	-1,125.29	8,360.52	8,416.10	8,395.68	20.42	412.112	
1,000.00	998.03	1,013.06	1,013.03	4.74	16.26	-73.21	-1,125.29	8,360.52	8,415.17	8,394.17	21.00	400.765	
1,100.00	1,097.29	1,111.17	1,111.14	5.02	18.18	-73.30	-1,124.76	8,360.52	8,411.57	8,388.38	23.19	362.722	
1,200.00	1,196.54	1,208.67	1,208.64	5.30	20.09	-73.37	-1,124.95	8,360.52	8,408.08	8,382.69	25.39	331.212	
1,300.00	1,295.80	1,310.87	1,310.80	5.61	22.11	-73.45	-1,125.29	8,360.52	8,404.62	8,376.92	27.70	303.426	
1,400.00	1,395.06	1,410.12	1,410.06	5.92	24.26	-73.53	-1,125.29	8,360.52	8,401.13	8,370.97	30.16	278.518	
1,500.00	1,494.31	1,509.38	1,509.31	6.24	26.41	-73.61	-1,125.29	8,360.52	8,397.67	8,365.03	32.64	257.298	
1,600.00	1,593.57	1,608.18	1,608.10	6.57	28.56	-73.70	-1,124.03	8,360.52	8,394.06	8,358.95	35.11	239.077	
1,700.00	1,692.82	1,704.53	1,704.44	6.91	30.65	-73.77	-1,124.22	8,360.52	8,390.65	8,353.11	37.54	223.535	
1,800.00	1,792.08	1,800.94	1,800.85	7.25	32.74	-73.85	-1,124.68	8,360.52	8,387.29	8,347.32	39.97	209.842	
1,900.00	1,891.33	1,906.51	1,906.33	7.60	35.00	-73.93	-1,125.29	8,360.52	8,383.95	8,341.38	42.58	196.920	
2,000.00	1,990.59	2,005.77	2,005.59	7.95	37.03	-74.01	-1,125.29	8,360.52	8,380.57	8,335.61	44.95	186.427	
2,100.00	2,089.85	2,105.03	2,104.85	8.30	39.06	-74.09	-1,125.29	8,360.52	8,377.20	8,329.86	47.34	176.975	
2,200.00	2,189.10	2,201.12	2,200.92	8.66	41.02	-74.17	-1,124.08	8,360.52	8,373.71	8,324.05	49.66	168.633	
2,300.00	2,288.36	2,296.46	2,296.26	9.02	42.97	-74.24	-1,124.61	8,360.52	8,370.43	8,318.47	51.97	161.078	
2,400.00	2,387.61	2,402.85	2,402.61	9.39	45.17	-74.32	-1,125.29	8,360.52	8,367.18	8,312.66	54.53	153.449	
2,500.00	2,486.87	2,502.11	2,501.87	9.76	47.27	-74.40	-1,125.29	8,360.52	8,363.88	8,306.88	57.00	146.740	
2,600.00	2,586.12	2,601.36	2,601.12	10.13	49.38	-74.48	-1,125.29	8,360.52	8,360.59	8,301.12	59.47	140.583	
2,700.00	2,685.38	2,700.62	2,700.38	10.50	51.48	-74.56	-1,125.29	8,360.52	8,357.32	8,295.37	61.95	134.914	
2,800.00	2,784.63	2,799.48	2,799.23	10.87	53.58	-74.65	-1,124.45	8,360.52	8,353.97	8,289.56	64.41	129.693	
2,900.00	2,883.89	2,897.79	2,897.55	11.24	55.67	-74.73	-1,124.55	8,360.52	8,350.74	8,283.87	66.87	124.878	
3,000.00	2,983.15	2,996.13	2,995.89	11.62	57.75	-74.81	-1,124.75	8,360.52	8,347.54	8,278.21	69.33	120.401	
3,100.00	3,082.40	3,094.50	3,094.25	12.00	59.84	-74.88	-1,125.07	8,360.52	8,344.37	8,272.58	71.79	116.228	
3,200.00	3,181.66	3,197.03	3,196.66	12.38	62.17	-74.96	-1,125.29	8,360.52	8,341.20	8,266.70	74.51	111.955	
3,300.00	3,280.91	3,296.28	3,295.91	12.75	64.60	-75.04	-1,125.29	8,360.52	8,338.03	8,260.71	77.31	107.845	
3,400.00	3,380.17	3,395.47	3,395.08	13.13	67.03	-75.14	-1,123.68	8,360.52	8,334.72	8,254.59	80.12	104.023	
3,500.00	3,479.42	3,490.76	3,490.36	13.52	69.37	-75.21	-1,123.93	8,360.52	8,331.60	8,248.77	82.84	100.578	
3,600.00	3,578.68	3,586.17	3,585.76	13.90	71.71	-75.28	-1,124.66	8,360.52	8,328.55	8,243.00	85.56	97.346	
3,700.00	3,677.94	3,693.47	3,692.94	14.28	74.25	-75.37	-1,125.29	8,360.52	8,325.50	8,237.02	88.48	94.091	
3,800.00	3,777.19	3,791.04	3,790.49	14.66	76.49	-75.45	-1,124.47	8,360.52	8,322.34	8,231.23	91.11	91.347	
3,900.00	3,876.45	3,883.41	3,882.85	15.05	78.61	-75.52	-1,125.11	8,360.52	8,319.33	8,225.72	93.61	88.871	
4,000.00	3,975.70	3,991.30	3,990.70	15.43	80.93	-75.61	-1,125.29	8,360.52	8,316.28	8,219.97	96.31	86.345	
4,100.00	4,074.96	4,090.56	4,089.96	15.82	83.05	-75.69	-1,125.29	8,360.52	8,313.24	8,214.43	98.81	84.133	
4,200.00	4,174.21	4,189.81	4,189.21	16.20	85.16	-75.77	-1,125.29	8,360.52	8,310.22	8,208.91	101.31	82.029	
4,300.00	4,273.47	4,289.07	4,288.47	16.59	87.27	-75.85	-1,125.29	8,360.52	8,307.21	8,203.41	103.80	80.027	
4,400.00	4,372.73	4,388.32	4,387.73	16.97	89.38	-75.93	-1,125.29	8,360.52	8,304.22	8,197.92	106.30	78.119	
4,500.00	4,471.98	4,487.58	4,486.98	17.36	91.50	-76.01	-1,125.29	8,360.52	8,301.25	8,192.45	108.80	76.298	
4,600.00	4,571.24	4,586.07	4,585.45	17.75	93.59	-76.11	-1,122.69	8,360.52	8,298.09	8,186.80	111.28	74.567	
4,700.00	4,670.49	4,684.45	4,683.82	18.13	95.69	-76.19	-1,122.87	8,360.52	8,295.17	8,181.40	113.76	72.916	
4,800.00	4,769.75	4,782.86	4,782.22	18.52	97.78	-76.27	-1,123.20	8,360.52	8,292.27	8,176.03	116.24	71.335	
4,900.00	4,869.00	4,881.30	4,880.66	18.91	99.88	-76.34	-1,123.66	8,360.52	8,289.40	8,170.68	118.73	69.819	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,000.00	4,968.26	4,979.79	4,979.14	19.30	101.97	-76.42	-1,124.27	8,360.52	8,286.56	8,165.35	121.21	68.365	
5,100.00	5,067.51	5,078.31	5,077.65	19.69	104.07	-76.50	-1,125.01	8,360.52	8,283.75	8,160.05	123.70	66.969	
5,200.00	5,166.77	5,182.55	5,181.77	20.07	106.23	-76.58	-1,125.29	8,360.52	8,280.91	8,154.67	126.24	65.596	
5,300.00	5,266.03	5,281.81	5,281.03	20.46	108.25	-76.66	-1,125.29	8,360.52	8,278.07	8,149.41	128.66	64.342	
5,400.00	5,365.28	5,381.07	5,380.28	20.85	110.28	-76.74	-1,125.29	8,360.52	8,275.25	8,144.18	131.07	63.134	
5,500.00	5,464.54	5,480.32	5,479.54	21.24	112.31	-76.82	-1,125.29	8,360.52	8,272.45	8,138.96	133.49	61.970	
5,600.00	5,563.79	5,579.58	5,578.79	21.63	114.34	-76.91	-1,125.29	8,360.52	8,269.66	8,133.75	135.91	60.848	
5,700.00	5,663.05	5,678.83	5,678.05	22.02	116.36	-76.99	-1,125.29	8,360.52	8,266.89	8,128.56	138.32	59.764	
5,800.00	5,762.30	5,777.55	5,776.74	22.41	118.38	-77.09	-1,122.73	8,360.52	8,263.98	8,123.25	140.73	58.721	
5,900.00	5,861.56	5,876.11	5,875.30	22.80	120.39	-77.17	-1,122.91	8,360.52	8,261.26	8,118.12	143.14	57.716	
6,000.00	5,960.82	5,974.71	5,973.89	23.19	122.41	-77.25	-1,123.23	8,360.52	8,258.56	8,113.02	145.54	56.744	
6,100.00	6,060.07	6,073.35	6,072.52	23.58	124.42	-77.32	-1,123.69	8,360.52	8,255.89	8,107.94	147.95	55.804	
6,200.00	6,159.33	6,172.02	6,171.19	23.97	126.44	-77.40	-1,124.29	8,360.52	8,253.24	8,102.89	150.35	54.893	
6,300.00	6,258.58	6,270.73	6,269.89	24.36	128.46	-77.48	-1,125.04	8,360.52	8,250.61	8,097.86	152.76	54.011	
6,400.00	6,357.84	6,308.00	6,307.08	24.76	129.21	-77.51	-1,125.29	8,360.52	8,248.24	8,094.34	153.90	53.594	
6,500.00	6,457.09	6,308.00	6,307.08	25.15	129.21	-77.51	-1,125.29	8,360.52	8,246.99	8,092.72	154.27	53.456	
6,528.17	6,485.05	6,308.00	6,307.08	25.26	129.21	-77.51	-1,125.29	8,360.52	8,246.86	8,092.49	154.38	53.421	
6,550.00	6,506.71	6,308.00	6,307.08	25.34	129.21	-62.77	-1,125.29	8,360.52	8,246.45	8,092.00	154.45	53.391	
6,600.00	6,556.11	6,308.00	6,307.08	25.54	129.21	-39.45	-1,125.29	8,360.52	8,242.92	8,088.29	154.62	53.309	
6,650.00	6,605.00	6,308.00	6,307.08	25.74	129.21	-27.04	-1,125.29	8,360.52	8,235.78	8,081.00	154.79	53.207	
6,700.00	6,653.07	6,308.00	6,307.08	25.93	129.21	-19.99	-1,125.29	8,360.52	8,225.09	8,070.15	154.94	53.085	
6,750.00	6,700.02	6,308.00	6,307.08	26.12	129.21	-15.57	-1,125.29	8,360.52	8,210.88	8,055.79	155.09	52.944	
6,800.00	6,745.56	6,308.00	6,307.08	26.31	129.21	-12.56	-1,125.29	8,360.52	8,193.23	8,038.01	155.22	52.785	
6,850.00	6,789.42	6,308.00	6,307.08	26.50	129.21	-10.38	-1,125.29	8,360.52	8,172.22	8,016.88	155.34	52.608	
6,900.00	6,831.32	6,308.00	6,307.08	26.69	129.21	-8.71	-1,125.29	8,360.52	8,147.96	7,992.51	155.45	52.415	
6,950.00	6,871.01	6,308.00	6,307.08	26.87	129.21	-7.37	-1,125.29	8,360.52	8,120.58	7,965.03	155.55	52.206	
7,000.00	6,908.23	6,308.00	6,307.08	27.05	129.21	-6.25	-1,125.29	8,360.52	8,090.20	7,934.56	155.64	51.981	
7,050.00	6,942.77	6,308.00	6,307.08	27.23	129.21	-5.27	-1,125.29	8,360.52	8,056.98	7,901.27	155.71	51.743	
7,100.00	6,974.40	6,308.00	6,307.08	27.41	129.21	-4.36	-1,125.29	8,360.52	8,021.10	7,865.33	155.77	51.492	
7,150.00	7,002.93	6,308.00	6,307.08	27.60	129.21	-3.48	-1,125.29	8,360.52	7,982.74	7,826.91	155.82	51.229	
7,200.00	7,028.20	6,308.00	6,307.08	27.80	129.21	-2.57	-1,125.29	8,360.52	7,942.10	7,786.23	155.86	50.956	
7,250.00	7,050.03	6,308.00	6,307.08	28.00	129.21	-1.55	-1,125.29	8,360.52	7,899.40	7,743.51	155.89	50.672	
7,300.00	7,068.30	6,308.00	6,307.08	28.22	129.21	-0.33	-1,125.29	8,360.52	7,854.87	7,698.96	155.91	50.380	
7,350.00	7,082.89	6,308.00	6,307.08	28.45	129.21	1.28	-1,125.29	8,360.52	7,808.76	7,652.84	155.92	50.081	
7,400.00	7,093.72	6,308.00	6,307.08	28.70	129.21	3.65	-1,125.29	8,360.52	7,761.33	7,605.40	155.92	49.776	
7,450.00	7,100.71	6,308.00	6,307.08	28.96	129.21	7.64	-1,125.29	8,360.52	7,712.84	7,556.92	155.92	49.466	
7,500.00	7,103.82	6,308.00	6,307.08	29.24	129.21	16.03	-1,125.29	8,360.52	7,663.58	7,507.67	155.91	49.153	
7,515.00	7,104.00	6,308.00	6,307.08	29.32	129.21	20.65	-1,125.29	8,360.52	7,648.69	7,492.78	155.91	49.058	
7,600.00	7,104.00	6,308.00	6,307.08	29.84	129.21	20.65	-1,125.29	8,360.52	7,564.25	7,408.36	155.89	48.523	
7,700.00	7,104.00	6,308.00	6,307.08	30.51	129.21	20.65	-1,125.29	8,360.52	7,464.92	7,309.06	155.87	47.893	
7,800.00	7,104.00	6,308.00	6,307.08	31.26	129.21	20.65	-1,125.29	8,360.52	7,365.61	7,209.77	155.84	47.263	
7,900.00	7,104.00	6,308.00	6,307.08	32.07	129.21	20.65	-1,125.29	8,360.52	7,266.31	7,110.50	155.82	46.633	
8,000.00	7,104.00	6,308.00	6,307.08	32.94	129.21	20.65	-1,125.29	8,360.52	7,167.04	7,011.25	155.79	46.003	
8,100.00	7,104.00	6,308.00	6,307.08	33.86	129.21	20.65	-1,125.29	8,360.52	7,067.79	6,912.01	155.77	45.373	
8,200.00	7,104.00	6,308.00	6,307.08	34.84	129.21	20.65	-1,125.29	8,360.52	6,968.55	6,812.81	155.75	44.743	
8,300.00	7,104.00	6,308.00	6,307.08	35.86	129.21	20.65	-1,125.29	8,360.52	6,869.34	6,713.62	155.72	44.112	
8,400.00	7,104.00	6,308.00	6,307.08	36.92	129.21	20.65	-1,125.29	8,360.52	6,770.15	6,614.45	155.70	43.482	
8,500.00	7,104.00	6,308.00	6,307.08	38.02	129.21	20.65	-1,125.29	8,360.52	6,670.99	6,515.31	155.68	42.851	
8,600.00	7,104.00	6,308.00	6,307.08	39.15	129.21	20.65	-1,125.29	8,360.52	6,571.85	6,416.20	155.65	42.221	
8,700.00	7,104.00	6,308.00	6,307.08	40.32	129.21	20.65	-1,125.29	8,360.52	6,472.74	6,317.11	155.63	41.590	
8,800.00	7,104.00	6,308.00	6,307.08	41.52	129.21	20.65	-1,125.29	8,360.52	6,373.66	6,218.05	155.61	40.960	
8,900.00	7,104.00	6,308.00	6,307.08	42.74	129.21	20.65	-1,125.29	8,360.52	6,274.61	6,119.02	155.58	40.329	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	6,308.00	6,307.08	43.99	129.21	20.65	-1,125.29	8,360.52	6,175.58	6,020.02	155.56	39.699	
9,100.00	7,104.00	6,308.00	6,307.08	45.26	129.21	20.65	-1,125.29	8,360.52	6,076.59	5,921.05	155.54	39.068	
9,200.00	7,104.00	6,308.00	6,307.08	46.55	129.21	20.65	-1,125.29	8,360.52	5,977.63	5,822.12	155.51	38.438	
9,300.00	7,104.00	6,308.00	6,307.08	47.85	129.21	20.65	-1,125.29	8,360.52	5,878.71	5,723.22	155.49	37.807	
9,400.00	7,104.00	6,308.00	6,307.08	49.18	129.21	20.65	-1,125.29	8,360.52	5,779.82	5,624.36	155.47	37.177	
9,500.00	7,104.00	6,308.00	6,307.08	50.52	129.21	20.65	-1,125.29	8,360.52	5,680.98	5,525.53	155.44	36.547	
9,600.00	7,104.00	6,308.00	6,307.08	51.88	129.21	20.65	-1,125.29	8,360.52	5,582.17	5,426.75	155.42	35.917	
9,700.00	7,104.00	6,308.00	6,307.08	53.25	129.21	20.65	-1,125.29	8,360.52	5,483.41	5,328.01	155.39	35.287	
9,800.00	7,104.00	6,308.00	6,307.08	54.63	129.21	20.65	-1,125.29	8,360.52	5,384.69	5,229.32	155.37	34.657	
9,900.00	7,104.00	6,308.00	6,307.08	56.03	129.21	20.65	-1,125.29	8,360.52	5,286.02	5,130.68	155.34	34.028	
10,000.00	7,104.00	6,308.00	6,307.08	57.43	129.21	20.65	-1,125.29	8,360.52	5,187.40	5,032.08	155.32	33.398	
10,100.00	7,104.00	6,308.00	6,307.08	58.85	129.21	20.65	-1,125.29	8,360.52	5,088.84	4,933.55	155.29	32.769	
10,200.00	7,104.00	6,308.00	6,307.08	60.27	129.21	20.65	-1,125.29	8,360.52	4,990.33	4,835.07	155.27	32.140	
10,300.00	7,104.00	6,308.00	6,307.08	61.71	129.21	20.65	-1,125.29	8,360.52	4,891.89	4,736.65	155.24	31.512	
10,400.00	7,104.00	6,308.00	6,307.08	63.15	129.21	20.65	-1,125.29	8,360.52	4,793.50	4,638.29	155.21	30.883	
10,500.00	7,104.00	6,308.00	6,307.08	64.60	129.21	20.65	-1,125.29	8,360.52	4,695.19	4,540.00	155.19	30.255	
10,600.00	7,104.00	6,308.00	6,307.08	66.05	129.21	20.65	-1,125.29	8,360.52	4,596.95	4,441.79	155.16	29.627	
10,700.00	7,104.00	6,308.00	6,307.08	67.52	129.21	20.65	-1,125.29	8,360.52	4,498.79	4,343.66	155.13	29.000	
10,800.00	7,104.00	6,308.00	6,307.08	68.99	129.21	20.65	-1,125.29	8,360.52	4,400.71	4,245.60	155.10	28.373	
10,900.00	7,104.00	6,308.00	6,307.08	70.46	129.21	20.65	-1,125.29	8,360.52	4,302.72	4,147.64	155.07	27.746	
11,000.00	7,104.00	6,308.00	6,307.08	71.94	129.21	20.65	-1,125.29	8,360.52	4,204.82	4,049.77	155.04	27.120	
11,100.00	7,104.00	6,308.00	6,307.08	73.43	129.21	20.65	-1,125.29	8,360.52	4,107.02	3,952.01	155.01	26.494	
11,200.00	7,104.00	6,308.00	6,307.08	74.92	129.21	20.65	-1,125.29	8,360.52	4,009.33	3,854.35	154.98	25.869	
11,300.00	7,104.00	6,308.00	6,307.08	76.41	129.21	20.65	-1,125.29	8,360.52	3,911.76	3,756.81	154.95	25.245	
11,400.00	7,104.00	6,308.00	6,307.08	77.91	129.21	20.65	-1,125.29	8,360.52	3,814.32	3,659.40	154.92	24.621	
11,500.00	7,104.00	6,308.00	6,307.08	79.41	129.21	20.65	-1,125.29	8,360.52	3,717.01	3,562.12	154.89	23.998	
11,600.00	7,104.00	6,308.00	6,307.08	80.92	129.21	20.65	-1,125.29	8,360.52	3,619.85	3,464.99	154.86	23.375	
11,700.00	7,104.00	6,308.00	6,307.08	82.43	129.21	20.65	-1,125.29	8,360.52	3,522.85	3,368.02	154.83	22.754	
11,800.00	7,104.00	6,308.00	6,307.08	83.94	129.21	20.65	-1,125.29	8,360.52	3,426.01	3,271.22	154.79	22.133	
11,900.00	7,104.00	6,308.00	6,307.08	85.46	129.21	20.65	-1,125.29	8,360.52	3,329.37	3,174.61	154.76	21.513	
12,000.00	7,104.00	6,308.00	6,307.08	86.98	129.21	20.65	-1,125.29	8,360.52	3,232.93	3,078.20	154.73	20.894	
12,100.00	7,104.00	6,308.00	6,307.08	88.50	129.21	20.65	-1,125.29	8,360.52	3,136.71	2,982.02	154.70	20.277	
12,200.00	7,104.00	6,308.00	6,307.08	90.03	129.21	20.65	-1,125.29	8,360.52	3,040.74	2,886.08	154.66	19.660	
12,300.00	7,104.00	6,308.00	6,307.08	91.55	129.21	20.65	-1,125.29	8,360.52	2,945.04	2,790.41	154.63	19.046	
12,400.00	7,104.00	6,308.00	6,307.08	93.08	129.21	20.65	-1,125.29	8,360.52	2,849.63	2,695.03	154.60	18.433	
12,500.00	7,104.00	6,308.00	6,307.08	94.62	129.21	20.65	-1,125.29	8,360.52	2,754.54	2,599.98	154.56	17.821	
12,600.00	7,104.00	6,308.00	6,307.08	96.15	129.21	20.65	-1,125.29	8,360.52	2,659.82	2,505.29	154.53	17.212	
12,700.00	7,104.00	6,308.00	6,307.08	97.69	129.21	20.65	-1,125.29	8,360.52	2,565.50	2,411.00	154.50	16.606	
12,800.00	7,104.00	6,308.00	6,307.08	99.23	129.21	20.65	-1,125.29	8,360.52	2,471.62	2,317.16	154.46	16.002	
12,900.00	7,104.00	6,308.00	6,307.08	100.77	129.21	20.65	-1,125.29	8,360.52	2,378.25	2,223.82	154.42	15.401	
13,000.00	7,104.00	6,308.00	6,307.08	102.31	129.21	20.65	-1,125.29	8,360.52	2,285.43	2,131.05	154.38	14.804	
13,100.00	7,104.00	6,308.00	6,307.08	103.86	129.21	20.65	-1,125.29	8,360.52	2,193.25	2,038.91	154.33	14.211	
13,200.00	7,104.00	6,308.00	6,307.08	105.40	129.21	20.65	-1,125.29	8,360.52	2,101.78	1,947.50	154.28	13.623	
13,300.00	7,104.00	6,308.00	6,307.08	106.95	129.21	20.65	-1,125.29	8,360.52	2,011.12	1,856.91	154.21	13.041	
13,400.00	7,104.00	6,308.00	6,307.08	108.50	129.21	20.65	-1,125.29	8,360.52	1,921.39	1,767.26	154.12	12.467	
13,500.00	7,104.00	6,308.00	6,307.08	110.05	129.21	20.65	-1,125.29	8,360.52	1,832.72	1,678.71	154.01	11.900	
13,600.00	7,104.00	6,308.00	6,307.08	111.60	129.21	20.65	-1,125.29	8,360.52	1,745.28	1,591.42	153.86	11.344	
13,700.00	7,104.00	6,308.00	6,307.08	113.16	129.21	20.65	-1,125.29	8,360.52	1,659.26	1,505.61	153.65	10.799	
13,800.00	7,104.00	6,308.00	6,307.08	114.71	129.21	20.65	-1,125.29	8,360.52	1,574.89	1,421.52	153.37	10.269	
13,900.00	7,104.00	6,308.00	6,307.08	116.27	129.21	20.65	-1,125.29	8,360.52	1,492.45	1,339.47	152.98	9.756	
14,000.00	7,104.00	6,308.00	6,307.08	117.83	129.21	20.65	-1,125.29	8,360.52	1,412.28	1,259.84	152.44	9.264	
14,100.00	7,104.00	6,308.00	6,307.08	119.38	129.21	20.65	-1,125.29	8,360.52	1,334.79	1,183.08	151.71	8.798	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	6,308.00	6,307.08	120.94	129.21	20.65	-1,125.29	8,360.52	1,260.48	1,109.76	150.72	8.363	
14,300.00	7,104.00	6,308.00	6,307.08	122.50	129.21	20.65	-1,125.29	8,360.52	1,189.93	1,040.55	149.38	7.966	
14,400.00	7,104.00	6,308.00	6,307.08	124.07	129.21	20.65	-1,125.29	8,360.52	1,123.87	976.26	147.61	7.614	
14,500.00	7,104.00	6,308.00	6,307.08	125.63	129.21	20.65	-1,125.29	8,360.52	1,063.11	917.81	145.31	7.316	
14,600.00	7,104.00	6,308.00	6,307.08	127.19	129.21	20.65	-1,125.29	8,360.52	1,008.64	866.23	142.41	7.083	
14,700.00	7,104.00	6,308.00	6,307.08	128.76	129.21	20.65	-1,125.29	8,360.52	961.50	822.58	138.92	6.921	
14,800.00	7,104.00	6,308.00	6,307.08	130.32	129.21	20.65	-1,125.29	8,360.52	922.83	787.78	135.05	6.833	
14,900.00	7,104.00	6,308.00	6,307.08	131.89	129.21	20.65	-1,125.29	8,360.52	893.73	762.43	131.30	6.807	
15,000.00	7,104.00	6,308.00	6,307.08	133.46	129.21	20.65	-1,125.29	8,360.52	875.15	746.56	128.59	6.806	
15,100.00	7,104.00	6,308.00	6,307.08	135.02	129.21	20.65	-1,125.29	8,360.52	867.77	739.70	128.06	6.776	
15,114.00	7,104.00	6,308.00	6,307.08	135.24	129.21	20.65	-1,125.29	8,360.52	867.65	739.44	128.21	6.767	CC, ES
15,200.00	7,104.00	6,308.00	6,307.08	136.59	129.21	20.65	-1,125.29	8,360.52	871.87	741.50	130.37	6.688	
15,300.00	7,104.00	6,308.00	6,307.08	138.16	129.21	20.65	-1,125.29	8,360.52	887.29	752.25	135.04	6.570	
15,400.00	7,104.00	6,308.00	6,307.08	139.73	129.21	20.65	-1,125.29	8,360.52	913.47	772.57	140.90	6.483	
15,500.00	7,104.00	6,308.00	6,307.08	141.30	129.21	20.65	-1,125.29	8,360.52	949.50	802.66	146.84	6.466	SF
15,600.00	7,104.00	6,308.00	6,307.08	142.88	129.21	20.65	-1,125.29	8,360.52	994.33	842.11	152.22	6.532	
15,700.00	7,104.00	6,308.00	6,307.08	144.45	129.21	20.65	-1,125.29	8,360.52	1,046.82	890.04	156.77	6.677	
15,800.00	7,104.00	6,308.00	6,307.08	146.02	129.21	20.65	-1,125.29	8,360.52	1,105.88	945.42	160.45	6.892	
15,900.00	7,104.00	6,308.00	6,307.08	147.60	129.21	20.65	-1,125.29	8,360.52	1,170.51	1,007.17	163.34	7.166	
16,000.00	7,104.00	6,308.00	6,307.08	149.17	129.21	20.65	-1,125.29	8,360.52	1,239.85	1,074.29	165.56	7.489	
16,100.00	7,104.00	6,308.00	6,307.08	150.74	129.21	20.65	-1,125.29	8,360.52	1,313.15	1,145.92	167.23	7.852	
16,200.00	7,104.00	6,308.00	6,307.08	152.32	129.21	20.65	-1,125.29	8,360.52	1,389.78	1,221.31	168.48	8.249	
16,300.00	7,104.00	6,308.00	6,307.08	153.89	129.21	20.65	-1,125.29	8,360.52	1,469.23	1,299.84	169.39	8.674	
16,400.00	7,104.00	6,308.00	6,307.08	155.47	129.21	20.65	-1,125.29	8,360.52	1,551.05	1,381.02	170.04	9.122	
16,500.00	7,104.00	6,308.00	6,307.08	157.05	129.21	20.65	-1,125.29	8,360.52	1,634.90	1,464.41	170.49	9.589	
16,600.00	7,104.00	6,308.00	6,307.08	158.63	129.21	20.65	-1,125.29	8,360.52	1,720.48	1,549.68	170.80	10.073	
16,700.00	7,104.00	6,308.00	6,307.08	160.20	129.21	20.65	-1,125.29	8,360.52	1,807.53	1,636.54	170.99	10.571	
16,800.00	7,104.00	6,308.00	6,307.08	161.78	129.21	20.65	-1,125.29	8,360.52	1,895.87	1,724.76	171.11	11.080	
16,900.00	7,104.00	6,308.00	6,307.08	163.36	129.21	20.65	-1,125.29	8,360.52	1,985.31	1,814.15	171.15	11.599	
17,000.00	7,104.00	6,308.00	6,307.08	164.94	129.21	20.65	-1,125.29	8,360.52	2,075.71	1,904.55	171.16	12.127	
17,100.00	7,104.00	6,308.00	6,307.08	166.52	129.21	20.65	-1,125.29	8,360.52	2,166.96	1,995.83	171.13	12.663	
17,200.00	7,104.00	6,308.00	6,307.08	168.10	129.21	20.65	-1,125.29	8,360.52	2,258.95	2,087.88	171.07	13.205	
17,300.00	7,104.00	6,308.00	6,307.08	169.68	129.21	20.65	-1,125.29	8,360.52	2,351.59	2,180.59	171.00	13.752	
17,400.00	7,104.00	6,308.00	6,307.08	171.26	129.21	20.65	-1,125.29	8,360.52	2,444.81	2,273.89	170.92	14.304	
17,500.00	7,104.00	6,308.00	6,307.08	172.84	129.21	20.65	-1,125.29	8,360.52	2,538.55	2,367.72	170.83	14.860	
17,600.00	7,104.00	6,308.00	6,307.08	174.42	129.21	20.65	-1,125.29	8,360.52	2,632.75	2,462.01	170.74	15.420	
17,700.00	7,104.00	6,308.00	6,307.08	176.00	129.21	20.65	-1,125.29	8,360.52	2,727.36	2,556.72	170.64	15.983	
17,800.00	7,104.00	6,308.00	6,307.08	177.59	129.21	20.65	-1,125.29	8,360.52	2,822.35	2,651.80	170.55	16.548	
17,900.00	7,104.00	6,308.00	6,307.08	179.17	129.21	20.65	-1,125.29	8,360.52	2,917.67	2,747.21	170.46	17.116	
18,000.00	7,104.00	6,308.00	6,307.08	180.75	129.21	20.65	-1,125.29	8,360.52	3,013.29	2,842.92	170.37	17.686	
18,100.00	7,104.00	6,308.00	6,307.08	182.33	129.21	20.65	-1,125.29	8,360.52	3,109.19	2,938.90	170.29	18.258	
18,200.00	7,104.00	6,308.00	6,307.08	183.92	129.21	20.65	-1,125.29	8,360.52	3,205.34	3,035.13	170.21	18.832	
18,300.00	7,104.00	6,308.00	6,307.08	185.50	129.21	20.65	-1,125.29	8,360.52	3,301.72	3,131.58	170.13	19.407	
18,400.00	7,104.00	6,308.00	6,307.08	187.09	129.21	20.65	-1,125.29	8,360.52	3,398.30	3,228.24	170.06	19.983	
18,500.00	7,104.00	6,308.00	6,307.08	188.67	129.21	20.65	-1,125.29	8,360.52	3,495.08	3,325.08	170.00	20.560	
18,600.00	7,104.00	6,308.00	6,307.08	190.26	129.21	20.65	-1,125.29	8,360.52	3,592.04	3,422.10	169.94	21.137	
18,700.00	7,104.00	6,308.00	6,307.08	191.84	129.21	20.65	-1,125.29	8,360.52	3,689.16	3,519.27	169.88	21.716	
18,800.00	7,104.00	6,308.00	6,307.08	193.43	129.21	20.65	-1,125.29	8,360.52	3,786.42	3,616.59	169.83	22.295	
18,900.00	7,104.00	6,308.00	6,307.08	195.01	129.21	20.65	-1,125.29	8,360.52	3,883.83	3,714.04	169.79	22.875	
19,000.00	7,104.00	6,308.00	6,307.08	196.60	129.21	20.65	-1,125.29	8,360.52	3,981.37	3,811.62	169.75	23.455	
19,100.00	7,104.00	6,308.00	6,307.08	198.18	129.21	20.65	-1,125.29	8,360.52	4,079.02	3,909.31	169.71	24.035	
19,200.00	7,104.00	6,308.00	6,307.08	199.77	129.21	20.65	-1,125.29	8,360.52	4,176.79	4,007.11	169.68	24.616	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 293-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	6,308.00	6,307.08	201.36	129.21	20.65	-1,125.29	8,360.52	4,274.65	4,105.00	169.65	25.196	
19,400.00	7,104.00	6,308.00	6,307.08	202.94	129.21	20.65	-1,125.29	8,360.52	4,372.62	4,202.99	169.63	25.777	
19,500.00	7,104.00	6,308.00	6,307.08	204.53	129.21	20.65	-1,125.29	8,360.52	4,470.68	4,301.06	169.61	26.358	
19,600.00	7,104.00	6,308.00	6,307.08	206.12	129.21	20.65	-1,125.29	8,360.52	4,568.82	4,399.22	169.60	26.939	
19,700.00	7,104.00	6,308.00	6,307.08	207.70	129.21	20.65	-1,125.29	8,360.52	4,667.03	4,497.45	169.59	27.520	
19,800.00	7,104.00	6,308.00	6,307.08	209.29	129.21	20.65	-1,125.29	8,360.52	4,765.33	4,595.74	169.58	28.100	
19,900.00	7,104.00	6,308.00	6,307.08	210.88	129.21	20.65	-1,125.29	8,360.52	4,863.69	4,694.11	169.58	28.681	
20,000.00	7,104.00	6,308.00	6,307.08	212.47	129.21	20.65	-1,125.29	8,360.52	4,962.12	4,792.54	169.58	29.261	
20,100.00	7,104.00	6,308.00	6,307.08	214.05	129.21	20.65	-1,125.29	8,360.52	5,060.61	4,891.02	169.58	29.841	
20,200.00	7,104.00	6,308.00	6,307.08	215.64	129.21	20.65	-1,125.29	8,360.52	5,159.16	4,989.56	169.59	30.421	
20,215.00	7,104.00	6,308.00	6,307.08	215.88	129.21	20.65	-1,125.29	8,360.52	5,173.95	5,004.35	169.59	30.508	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	5.00	5.00	3.28	0.05	101.98	-1,986.03	9,360.83	9,569.20				
100.00	100.00	105.00	105.00	3.29	1.12	101.98	-1,986.03	9,360.83	9,569.20	9,564.79	4.41	2,171.316	
200.00	200.00	205.00	205.00	3.34	2.18	101.98	-1,986.03	9,360.83	9,569.20	9,563.68	5.52	1,734.257	
300.00	300.00	305.00	305.00	3.42	3.25	101.98	-1,986.03	9,360.83	9,569.20	9,562.53	6.67	1,435.621	
400.00	400.00	405.02	405.00	3.54	4.85	101.98	-1,986.03	9,360.83	9,569.20	9,560.81	8.39	1,140.922	
500.00	500.00	505.02	505.00	3.69	6.89	101.98	-1,986.03	9,360.83	9,569.20	9,558.61	10.58	904.391	
600.00	599.98	605.00	604.98	3.86	8.94	-48.05	-1,986.03	9,360.83	9,568.03	9,555.24	12.79	747.902	
700.00	699.84	703.35	703.32	4.04	10.95	-48.13	-1,984.62	9,360.83	9,564.24	9,549.25	14.99	638.039	
800.00	799.45	797.97	797.93	4.26	12.88	-48.25	-1,984.81	9,360.83	9,558.46	9,541.32	17.14	557.832	
849.50	848.63	844.71	844.67	4.37	13.84	-48.33	-1,985.00	9,360.83	9,554.76	9,536.55	18.20	524.879	
900.00	898.77	892.36	892.32	4.49	14.81	-56.66	-1,985.25	9,360.83	9,551.09	9,531.79	19.30	494.946	
973.84	972.07	962.07	962.03	4.68	16.24	-68.86	-1,985.72	9,360.83	9,547.11	9,526.21	20.91	456.687	
1,000.00	998.03	1,003.13	1,003.03	4.74	17.10	-68.89	-1,986.03	9,360.83	9,546.01	9,524.17	21.84	437.073	
1,100.00	1,097.29	1,102.38	1,102.29	5.02	20.06	-68.96	-1,986.03	9,360.83	9,541.60	9,516.53	25.07	380.620	
1,200.00	1,196.54	1,201.64	1,201.54	5.30	23.02	-69.03	-1,986.03	9,360.83	9,537.21	9,508.90	28.31	336.864	
1,300.00	1,295.80	1,298.46	1,298.35	5.61	25.91	-69.10	-1,985.24	9,360.83	9,532.67	9,501.17	31.50	302.671	
1,400.00	1,395.06	1,393.02	1,392.91	5.92	28.72	-69.16	-1,985.48	9,360.83	9,528.35	9,493.73	34.62	275.207	
1,500.00	1,494.31	1,487.64	1,487.53	6.24	31.54	-69.22	-1,985.95	9,360.83	9,524.10	9,486.34	37.76	252.221	
1,600.00	1,593.57	1,599.33	1,598.57	6.57	37.62	-69.30	-1,986.03	9,360.83	9,519.77	9,475.61	44.16	215.570	
1,700.00	1,692.82	1,698.59	1,697.82	6.91	44.96	-69.37	-1,986.03	9,360.83	9,515.44	9,463.60	51.84	183.560	
1,800.00	1,792.08	1,764.90	1,763.87	7.25	49.87	-69.43	-1,982.85	9,360.83	9,510.56	9,453.48	57.08	166.605	
1,900.00	1,891.33	1,898.89	1,896.33	7.60	60.20	-69.50	-1,986.03	9,360.83	9,506.83	9,439.07	67.76	140.306	
2,000.00	1,990.59	1,998.14	1,995.59	7.95	68.53	-69.57	-1,986.03	9,360.83	9,502.54	9,426.11	76.43	124.322	
2,100.00	2,089.85	2,097.18	2,094.18	8.30	76.84	-69.68	-1,978.72	9,360.83	9,496.87	9,411.77	85.10	111.600	
2,200.00	2,189.10	2,165.67	2,162.53	8.66	82.58	-69.73	-1,979.32	9,360.83	9,492.79	9,401.59	91.20	104.086	
2,300.00	2,288.36	2,234.65	2,231.32	9.02	88.37	-69.76	-1,981.12	9,360.83	9,489.04	9,391.69	97.35	97.476	
2,400.00	2,387.61	2,398.76	2,392.61	9.39	100.91	-69.84	-1,986.03	9,360.83	9,485.53	9,375.29	110.25	86.039	
2,500.00	2,486.87	2,498.02	2,491.87	9.76	107.15	-69.91	-1,986.03	9,360.83	9,481.32	9,364.46	116.86	81.137	
2,600.00	2,586.12	2,597.27	2,591.12	10.13	113.40	-69.98	-1,986.03	9,360.83	9,477.11	9,353.65	123.47	76.758	
2,700.00	2,685.38	2,677.70	2,670.91	10.50	118.46	-70.09	-1,977.60	9,360.83	9,471.39	9,342.50	128.90	73.481	
2,800.00	2,784.63	2,750.91	2,743.94	10.87	123.06	-70.13	-1,978.97	9,360.83	9,467.57	9,333.69	133.87	70.721	
2,900.00	2,883.89	2,824.57	2,817.37	11.24	127.70	-70.17	-1,981.49	9,360.83	9,464.03	9,325.15	138.88	68.147	
3,000.00	2,983.15	2,996.60	2,988.15	11.62	136.42	-70.26	-1,986.03	9,360.83	9,460.44	9,312.46	147.98	63.931	
3,100.00	3,082.40	3,095.85	3,087.40	12.00	140.15	-70.33	-1,986.03	9,360.83	9,456.30	9,304.23	152.08	62.180	
3,200.00	3,181.66	3,192.70	3,184.16	12.38	143.79	-70.41	-1,982.58	9,360.83	9,451.57	9,295.48	156.09	60.551	
3,300.00	3,280.91	3,277.98	3,269.39	12.75	146.99	-70.47	-1,983.06	9,360.83	9,447.57	9,287.90	159.67	59.169	
3,400.00	3,380.17	3,363.47	3,354.84	13.13	150.20	-70.52	-1,984.27	9,360.83	9,443.72	9,280.47	163.26	57.845	
3,500.00	3,479.42	3,493.49	3,484.42	13.52	154.80	-70.60	-1,986.03	9,360.83	9,439.91	9,271.67	168.24	56.111	
3,600.00	3,578.68	3,592.74	3,583.68	13.90	157.97	-70.67	-1,986.03	9,360.83	9,435.84	9,264.05	171.79	54.927	
3,700.00	3,677.94	3,691.60	3,682.48	14.28	161.13	-70.76	-1,983.35	9,360.83	9,431.33	9,256.00	175.33	53.791	
3,800.00	3,777.19	3,778.50	3,769.35	14.66	163.91	-70.82	-1,983.70	9,360.83	9,427.36	9,248.87	178.49	52.817	
3,900.00	3,876.45	3,865.60	3,856.42	15.05	166.70	-70.87	-1,984.73	9,360.83	9,423.54	9,241.89	181.66	51.875	
4,000.00	3,975.70	3,990.15	3,980.70	15.43	170.53	-70.95	-1,986.03	9,360.83	9,419.72	9,233.85	185.88	50.677	
4,100.00	4,074.96	4,089.40	4,079.96	15.82	173.44	-71.02	-1,986.03	9,360.83	9,415.73	9,226.56	189.17	49.774	
4,200.00	4,174.21	4,188.66	4,179.21	16.20	176.35	-71.09	-1,986.03	9,360.83	9,411.75	9,219.28	192.46	48.901	
4,300.00	4,273.47	4,287.91	4,278.47	16.59	179.26	-71.16	-1,986.03	9,360.83	9,407.78	9,212.02	195.76	48.058	
4,400.00	4,372.73	4,387.17	4,377.73	16.97	182.18	-71.23	-1,986.03	9,360.83	9,403.83	9,204.78	199.05	47.243	
4,500.00	4,471.98	4,481.34	4,471.82	17.36	184.94	-71.32	-1,982.18	9,360.83	9,399.26	9,197.07	202.20	46.485	
4,600.00	4,571.24	4,575.28	4,565.74	17.75	187.69	-71.38	-1,982.66	9,360.83	9,395.43	9,190.09	205.34	45.756	
4,700.00	4,670.49	4,669.32	4,659.75	18.13	190.45	-71.44	-1,983.48	9,360.83	9,391.66	9,183.18	208.48	45.048	
4,800.00	4,769.75	4,763.45	4,753.85	18.52	193.21	-71.50	-1,984.64	9,360.83	9,387.96	9,176.33	211.63	44.361	
4,900.00	4,869.00	4,884.01	4,874.00	18.91	196.53	-71.58	-1,986.03	9,360.83	9,384.28	9,168.94	215.34	43.579	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,983.26	4,973.26	19.30	198.79	-71.65	-1,986.03	9,360.83	9,380.41	9,162.43	217.98	43.033	
5,100.00	5,067.51	5,082.52	5,072.51	19.69	201.05	-71.72	-1,986.03	9,360.83	9,376.56	9,155.93	220.63	42.500	
5,200.00	5,166.77	5,181.77	5,171.77	20.07	203.30	-71.79	-1,986.03	9,360.83	9,372.72	9,149.45	223.27	41.979	
5,300.00	5,266.03	5,281.03	5,271.03	20.46	205.56	-71.86	-1,986.03	9,360.83	9,368.89	9,142.98	225.91	41.471	
5,400.00	5,365.28	5,380.28	5,370.28	20.85	207.82	-71.93	-1,986.03	9,360.83	9,365.08	9,136.53	228.56	40.975	
5,500.00	5,464.54	5,479.54	5,469.54	21.24	210.07	-72.00	-1,986.03	9,360.83	9,361.29	9,130.09	231.20	40.490	
5,600.00	5,563.79	5,578.12	5,568.01	21.63	212.32	-72.11	-1,979.87	9,360.83	9,356.59	9,122.75	233.83	40.014	
5,700.00	5,663.05	5,674.16	5,664.03	22.02	214.50	-72.17	-1,980.03	9,360.83	9,352.85	9,116.45	236.40	39.563	
5,800.00	5,762.30	5,770.26	5,760.11	22.41	216.68	-72.24	-1,980.42	9,360.83	9,349.16	9,110.19	238.98	39.121	
5,900.00	5,861.56	5,866.42	5,856.26	22.80	218.87	-72.30	-1,981.04	9,360.83	9,345.53	9,103.97	241.55	38.689	
6,000.00	5,960.82	5,962.66	5,952.47	23.19	221.06	-72.37	-1,981.89	9,360.83	9,341.93	9,097.80	244.13	38.266	
6,100.00	6,060.07	6,058.95	6,048.74	23.58	223.25	-72.43	-1,982.96	9,360.83	9,338.39	9,091.68	246.71	37.852	
6,200.00	6,159.33	6,155.31	6,145.07	23.97	225.44	-72.49	-1,984.27	9,360.83	9,334.89	9,085.60	249.29	37.446	
6,300.00	6,258.58	6,274.02	6,263.58	24.36	228.08	-72.56	-1,986.03	9,360.83	9,331.44	9,079.12	252.32	36.983	
6,400.00	6,357.84	6,298.00	6,287.56	24.76	228.47	-72.58	-1,986.03	9,360.83	9,328.07	9,074.98	253.10	36.856	
6,500.00	6,457.09	6,298.00	6,287.56	25.15	228.47	-72.58	-1,986.03	9,360.83	9,325.75	9,072.29	253.46	36.794	
6,528.17	6,485.05	6,298.00	6,287.56	25.26	228.47	-72.58	-1,986.03	9,360.83	9,325.29	9,071.74	253.55	36.778	
6,550.00	6,506.71	6,298.00	6,287.56	25.34	228.47	-57.84	-1,986.03	9,360.83	9,324.62	9,070.99	253.63	36.765	
6,600.00	6,556.11	6,298.00	6,287.56	25.54	228.47	-34.48	-1,986.03	9,360.83	9,320.49	9,066.70	253.79	36.726	
6,650.00	6,605.00	6,298.00	6,287.56	25.74	228.47	-22.01	-1,986.03	9,360.83	9,312.76	9,058.82	253.94	36.673	
6,700.00	6,653.07	6,298.00	6,287.56	25.93	228.47	-14.87	-1,986.03	9,360.83	9,301.47	9,047.40	254.08	36.609	
6,750.00	6,700.02	6,298.00	6,287.56	26.12	228.47	-10.32	-1,986.03	9,360.83	9,286.69	9,032.48	254.20	36.533	
6,800.00	6,745.56	6,298.00	6,287.56	26.31	228.47	-7.14	-1,986.03	9,360.83	9,268.47	9,014.15	254.32	36.445	
6,850.00	6,789.42	6,298.00	6,287.56	26.50	228.47	-4.75	-1,986.03	9,360.83	9,246.92	8,992.50	254.41	36.346	
6,900.00	6,831.32	6,298.00	6,287.56	26.69	228.47	-2.82	-1,986.03	9,360.83	9,222.14	8,967.64	254.50	36.236	
6,950.00	6,871.01	6,298.00	6,287.56	26.87	228.47	-1.16	-1,986.03	9,360.83	9,194.27	8,939.70	254.57	36.116	
7,000.00	6,908.23	6,298.00	6,287.56	27.05	228.47	0.36	-1,986.03	9,360.83	9,163.44	8,908.81	254.63	35.987	
7,050.00	6,942.77	6,298.00	6,287.56	27.23	228.47	1.83	-1,986.03	9,360.83	9,129.82	8,875.15	254.68	35.849	
7,100.00	6,974.40	6,298.00	6,287.56	27.41	228.47	3.35	-1,986.03	9,360.83	9,093.59	8,838.88	254.71	35.702	
7,150.00	7,002.93	6,298.00	6,287.56	27.60	228.47	5.01	-1,986.03	9,360.83	9,054.94	8,800.21	254.73	35.547	
7,200.00	7,028.20	6,298.00	6,287.56	27.80	228.47	6.91	-1,986.03	9,360.83	9,014.07	8,759.33	254.74	35.385	
7,250.00	7,050.03	6,298.00	6,287.56	28.00	228.47	9.24	-1,986.03	9,360.83	8,971.22	8,716.48	254.74	35.217	
7,300.00	7,068.30	6,298.00	6,287.56	28.22	228.47	12.24	-1,986.03	9,360.83	8,926.61	8,671.88	254.73	35.043	
7,350.00	7,082.89	6,298.00	6,287.56	28.45	228.47	16.36	-1,986.03	9,360.83	8,880.51	8,625.79	254.71	34.865	
7,400.00	7,093.72	6,298.00	6,287.56	28.70	228.47	22.39	-1,986.03	9,360.83	8,833.16	8,578.47	254.69	34.682	
7,450.00	7,100.71	6,298.00	6,287.56	28.96	228.47	31.93	-1,986.03	9,360.83	8,784.86	8,530.19	254.66	34.496	
7,500.00	7,103.82	6,298.00	6,287.56	29.24	228.47	48.02	-1,986.03	9,360.83	8,735.87	8,481.24	254.63	34.308	
7,515.00	7,104.00	6,298.00	6,287.56	29.32	228.47	54.72	-1,986.03	9,360.83	8,721.08	8,466.46	254.63	34.251	
7,600.00	7,104.00	6,298.00	6,287.56	29.84	228.47	54.72	-1,986.03	9,360.83	8,637.23	8,382.66	254.57	33.928	
7,700.00	7,104.00	6,298.00	6,287.56	30.51	228.47	54.72	-1,986.03	9,360.83	8,538.62	8,284.10	254.51	33.549	
7,800.00	7,104.00	6,298.00	6,287.56	31.26	228.47	54.72	-1,986.03	9,360.83	8,440.03	8,185.58	254.45	33.170	
7,900.00	7,104.00	6,298.00	6,287.56	32.07	228.47	54.72	-1,986.03	9,360.83	8,341.48	8,087.09	254.39	32.790	
8,000.00	7,104.00	6,298.00	6,287.56	32.94	228.47	54.72	-1,986.03	9,360.83	8,242.96	7,988.63	254.33	32.410	
8,100.00	7,104.00	6,298.00	6,287.56	33.86	228.47	54.72	-1,986.03	9,360.83	8,144.48	7,890.20	254.28	32.030	
8,200.00	7,104.00	6,298.00	6,287.56	34.84	228.47	54.72	-1,986.03	9,360.83	8,046.03	7,791.81	254.22	31.649	
8,300.00	7,104.00	6,298.00	6,287.56	35.86	228.47	54.72	-1,986.03	9,360.83	7,947.63	7,693.46	254.17	31.269	
8,400.00	7,104.00	6,298.00	6,287.56	36.92	228.47	54.72	-1,986.03	9,360.83	7,849.26	7,595.14	254.12	30.888	
8,500.00	7,104.00	6,298.00	6,287.56	38.02	228.47	54.72	-1,986.03	9,360.83	7,750.94	7,496.87	254.07	30.507	
8,600.00	7,104.00	6,298.00	6,287.56	39.15	228.47	54.72	-1,986.03	9,360.83	7,652.66	7,398.63	254.03	30.125	
8,700.00	7,104.00	6,298.00	6,287.56	40.32	228.47	54.72	-1,986.03	9,360.83	7,554.42	7,300.44	253.99	29.744	
8,800.00	7,104.00	6,298.00	6,287.56	41.52	228.47	54.72	-1,986.03	9,360.83	7,456.24	7,202.29	253.95	29.362	
8,900.00	7,104.00	6,298.00	6,287.56	42.74	228.47	54.72	-1,986.03	9,360.83	7,358.10	7,104.19	253.91	28.979	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	6,298.00	6,287.56	43.99	228.47	54.72	-1,986.03	9,360.83	7,260.01	7,006.13	253.88	28.597	
9,100.00	7,104.00	6,298.00	6,287.56	45.26	228.47	54.72	-1,986.03	9,360.83	7,161.98	6,908.13	253.85	28.214	
9,200.00	7,104.00	6,298.00	6,287.56	46.55	228.47	54.72	-1,986.03	9,360.83	7,063.99	6,810.18	253.82	27.831	
9,300.00	7,104.00	6,298.00	6,287.56	47.85	228.47	54.72	-1,986.03	9,360.83	6,966.07	6,712.27	253.80	27.447	
9,400.00	7,104.00	6,298.00	6,287.56	49.18	228.47	54.72	-1,986.03	9,360.83	6,868.21	6,614.43	253.78	27.064	
9,500.00	7,104.00	6,298.00	6,287.56	50.52	228.47	54.72	-1,986.03	9,360.83	6,770.41	6,516.64	253.77	26.680	
9,600.00	7,104.00	6,298.00	6,287.56	51.88	228.47	54.72	-1,986.03	9,360.83	6,672.67	6,418.91	253.76	26.295	
9,700.00	7,104.00	6,298.00	6,287.56	53.25	228.47	54.72	-1,986.03	9,360.83	6,575.01	6,321.25	253.76	25.910	
9,800.00	7,104.00	6,298.00	6,287.56	54.63	228.47	54.72	-1,986.03	9,360.83	6,477.41	6,223.65	253.76	25.525	
9,900.00	7,104.00	6,298.00	6,287.56	56.03	228.47	54.72	-1,986.03	9,360.83	6,379.89	6,126.12	253.77	25.140	
10,000.00	7,104.00	6,298.00	6,287.56	57.43	228.47	54.72	-1,986.03	9,360.83	6,282.45	6,028.65	253.79	24.754	
10,100.00	7,104.00	6,298.00	6,287.56	58.85	228.47	54.72	-1,986.03	9,360.83	6,185.08	5,931.27	253.82	24.368	
10,200.00	7,104.00	6,298.00	6,287.56	60.27	228.47	54.72	-1,986.03	9,360.83	6,087.81	5,833.96	253.85	23.982	
10,300.00	7,104.00	6,298.00	6,287.56	61.71	228.47	54.72	-1,986.03	9,360.83	5,990.62	5,736.73	253.89	23.595	
10,400.00	7,104.00	6,298.00	6,287.56	63.15	228.47	54.72	-1,986.03	9,360.83	5,893.53	5,639.58	253.95	23.208	
10,500.00	7,104.00	6,298.00	6,287.56	64.60	228.47	54.72	-1,986.03	9,360.83	5,796.53	5,542.53	254.01	22.820	
10,600.00	7,104.00	6,298.00	6,287.56	66.05	228.47	54.72	-1,986.03	9,360.83	5,699.65	5,445.56	254.08	22.432	
10,700.00	7,104.00	6,298.00	6,287.56	67.52	228.47	54.72	-1,986.03	9,360.83	5,602.86	5,348.70	254.17	22.044	
10,800.00	7,104.00	6,298.00	6,287.56	68.99	228.47	54.72	-1,986.03	9,360.83	5,506.20	5,251.94	254.26	21.655	
10,900.00	7,104.00	6,298.00	6,287.56	70.46	228.47	54.72	-1,986.03	9,360.83	5,409.66	5,155.28	254.38	21.266	
11,000.00	7,104.00	6,298.00	6,287.56	71.94	228.47	54.72	-1,986.03	9,360.83	5,313.24	5,058.74	254.50	20.877	
11,100.00	7,104.00	6,298.00	6,287.56	73.43	228.47	54.72	-1,986.03	9,360.83	5,216.96	4,962.31	254.64	20.487	
11,200.00	7,104.00	6,298.00	6,287.56	74.92	228.47	54.72	-1,986.03	9,360.83	5,120.82	4,866.02	254.80	20.097	
11,300.00	7,104.00	6,298.00	6,287.56	76.41	228.47	54.72	-1,986.03	9,360.83	5,024.83	4,769.85	254.98	19.707	
11,400.00	7,104.00	6,298.00	6,287.56	77.91	228.47	54.72	-1,986.03	9,360.83	4,929.00	4,673.83	255.17	19.316	
11,500.00	7,104.00	6,298.00	6,287.56	79.41	228.47	54.72	-1,986.03	9,360.83	4,833.34	4,577.95	255.39	18.925	
11,600.00	7,104.00	6,298.00	6,287.56	80.92	228.47	54.72	-1,986.03	9,360.83	4,737.86	4,482.23	255.63	18.534	
11,700.00	7,104.00	6,298.00	6,287.56	82.43	228.47	54.72	-1,986.03	9,360.83	4,642.57	4,386.68	255.89	18.143	
11,800.00	7,104.00	6,298.00	6,287.56	83.94	228.47	54.72	-1,986.03	9,360.83	4,547.48	4,291.30	256.18	17.751	
11,900.00	7,104.00	6,298.00	6,287.56	85.46	228.47	54.72	-1,986.03	9,360.83	4,452.61	4,196.12	256.49	17.359	
12,000.00	7,104.00	6,298.00	6,287.56	86.98	228.47	54.72	-1,986.03	9,360.83	4,357.97	4,101.13	256.84	16.968	
12,100.00	7,104.00	6,298.00	6,287.56	88.50	228.47	54.72	-1,986.03	9,360.83	4,263.57	4,006.36	257.21	16.576	
12,200.00	7,104.00	6,298.00	6,287.56	90.03	228.47	54.72	-1,986.03	9,360.83	4,169.43	3,911.81	257.62	16.184	
12,300.00	7,104.00	6,298.00	6,287.56	91.55	228.47	54.72	-1,986.03	9,360.83	4,075.57	3,817.51	258.06	15.793	
12,400.00	7,104.00	6,298.00	6,287.56	93.08	228.47	54.72	-1,986.03	9,360.83	3,982.01	3,723.47	258.54	15.402	
12,500.00	7,104.00	6,298.00	6,287.56	94.62	228.47	54.72	-1,986.03	9,360.83	3,888.78	3,629.72	259.06	15.011	
12,600.00	7,104.00	6,298.00	6,287.56	96.15	228.47	54.72	-1,986.03	9,360.83	3,795.88	3,536.26	259.62	14.621	
12,700.00	7,104.00	6,298.00	6,287.56	97.69	228.47	54.72	-1,986.03	9,360.83	3,703.36	3,443.13	260.22	14.231	
12,800.00	7,104.00	6,298.00	6,287.56	99.23	228.47	54.72	-1,986.03	9,360.83	3,611.23	3,350.35	260.88	13.843	
12,900.00	7,104.00	6,298.00	6,287.56	100.77	228.47	54.72	-1,986.03	9,360.83	3,519.54	3,257.96	261.58	13.455	
13,000.00	7,104.00	6,298.00	6,287.56	102.31	228.47	54.72	-1,986.03	9,360.83	3,428.30	3,165.97	262.33	13.069	
13,100.00	7,104.00	6,298.00	6,287.56	103.86	228.47	54.72	-1,986.03	9,360.83	3,337.57	3,074.43	263.14	12.683	
13,200.00	7,104.00	6,298.00	6,287.56	105.40	228.47	54.72	-1,986.03	9,360.83	3,247.39	2,983.38	264.01	12.300	
13,300.00	7,104.00	6,298.00	6,287.56	106.95	228.47	54.72	-1,986.03	9,360.83	3,157.80	2,892.85	264.95	11.919	
13,400.00	7,104.00	6,298.00	6,287.56	108.50	228.47	54.72	-1,986.03	9,360.83	3,068.85	2,802.90	265.94	11.540	
13,500.00	7,104.00	6,298.00	6,287.56	110.05	228.47	54.72	-1,986.03	9,360.83	2,980.60	2,713.59	267.01	11.163	
13,600.00	7,104.00	6,298.00	6,287.56	111.60	228.47	54.72	-1,986.03	9,360.83	2,893.11	2,624.96	268.15	10.789	
13,700.00	7,104.00	6,298.00	6,287.56	113.16	228.47	54.72	-1,986.03	9,360.83	2,806.46	2,537.10	269.36	10.419	
13,800.00	7,104.00	6,298.00	6,287.56	114.71	228.47	54.72	-1,986.03	9,360.83	2,720.73	2,450.08	270.65	10.052	
13,900.00	7,104.00	6,298.00	6,287.56	116.27	228.47	54.72	-1,986.03	9,360.83	2,636.00	2,363.97	272.03	9.690	
14,000.00	7,104.00	6,298.00	6,287.56	117.83	228.47	54.72	-1,986.03	9,360.83	2,552.38	2,278.89	273.49	9.333	
14,100.00	7,104.00	6,298.00	6,287.56	119.38	228.47	54.72	-1,986.03	9,360.83	2,469.98	2,194.94	275.04	8.981	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	6,298.00	6,287.56	120.94	228.47	54.72	-1,986.03	9,360.83	2,388.92	2,112.24	276.67	8.634	
14,300.00	7,104.00	6,298.00	6,287.56	122.50	228.47	54.72	-1,986.03	9,360.83	2,309.34	2,030.94	278.40	8.295	
14,400.00	7,104.00	6,298.00	6,287.56	124.07	228.47	54.72	-1,986.03	9,360.83	2,231.41	1,951.19	280.22	7.963	
14,500.00	7,104.00	6,298.00	6,287.56	125.63	228.47	54.72	-1,986.03	9,360.83	2,155.30	1,873.17	282.13	7.639	
14,600.00	7,104.00	6,298.00	6,287.56	127.19	228.47	54.72	-1,986.03	9,360.83	2,081.22	1,797.09	284.13	7.325	
14,700.00	7,104.00	6,298.00	6,287.56	128.76	228.47	54.72	-1,986.03	9,360.83	2,009.38	1,723.16	286.22	7.020	
14,800.00	7,104.00	6,298.00	6,287.56	130.32	228.47	54.72	-1,986.03	9,360.83	1,940.04	1,651.65	288.39	6.727	
14,900.00	7,104.00	6,298.00	6,287.56	131.89	228.47	54.72	-1,986.03	9,360.83	1,873.47	1,582.84	290.63	6.446	
15,000.00	7,104.00	6,298.00	6,287.56	133.46	228.47	54.72	-1,986.03	9,360.83	1,809.98	1,517.05	292.93	6.179	
15,100.00	7,104.00	6,298.00	6,287.56	135.02	228.47	54.72	-1,986.03	9,360.83	1,749.90	1,454.61	295.29	5.926	
15,200.00	7,104.00	6,298.00	6,287.56	136.59	228.47	54.72	-1,986.03	9,360.83	1,693.61	1,395.92	297.69	5.689	
15,300.00	7,104.00	6,298.00	6,287.56	138.16	228.47	54.72	-1,986.03	9,360.83	1,641.48	1,341.37	300.10	5.470	
15,400.00	7,104.00	6,298.00	6,287.56	139.73	228.47	54.72	-1,986.03	9,360.83	1,593.92	1,291.40	302.52	5.269	
15,500.00	7,104.00	6,298.00	6,287.56	141.30	228.47	54.72	-1,986.03	9,360.83	1,551.36	1,246.44	304.93	5.088	
15,600.00	7,104.00	6,298.00	6,287.56	142.88	228.47	54.72	-1,986.03	9,360.83	1,514.22	1,206.92	307.30	4.928	
15,700.00	7,104.00	6,298.00	6,287.56	144.45	228.47	54.72	-1,986.03	9,360.83	1,482.90	1,173.28	309.62	4.789	
15,800.00	7,104.00	6,298.00	6,287.56	146.02	228.47	54.72	-1,986.03	9,360.83	1,457.78	1,145.91	311.88	4.674	
15,900.00	7,104.00	6,298.00	6,287.56	147.60	228.47	54.72	-1,986.03	9,360.83	1,439.19	1,125.14	314.05	4.583	
16,000.00	7,104.00	6,298.00	6,287.56	149.17	228.47	54.72	-1,986.03	9,360.83	1,427.38	1,111.26	316.12	4.515	
16,100.00	7,104.00	6,298.00	6,287.56	150.74	228.47	54.72	-1,986.03	9,360.83	1,422.51	1,104.46	318.06	4.472	
16,119.31	7,104.00	6,298.00	6,287.56	151.05	228.47	54.72	-1,986.03	9,360.83	1,422.38	1,103.97	318.42	4.467	CC, ES
16,200.00	7,104.00	6,298.00	6,287.56	152.32	228.47	54.72	-1,986.03	9,360.83	1,424.67	1,104.82	319.85	4.454	SF
16,300.00	7,104.00	6,298.00	6,287.56	153.89	228.47	54.72	-1,986.03	9,360.83	1,433.81	1,112.36	321.45	4.460	
16,400.00	7,104.00	6,298.00	6,287.56	155.47	228.47	54.72	-1,986.03	9,360.83	1,449.81	1,126.96	322.85	4.491	
16,500.00	7,104.00	6,298.00	6,287.56	157.05	228.47	54.72	-1,986.03	9,360.83	1,472.45	1,148.43	324.02	4.544	
16,600.00	7,104.00	6,298.00	6,287.56	158.63	228.47	54.72	-1,986.03	9,360.83	1,501.41	1,176.49	324.92	4.621	
16,700.00	7,104.00	6,298.00	6,287.56	160.20	228.47	54.72	-1,986.03	9,360.83	1,536.35	1,210.78	325.57	4.719	
16,800.00	7,104.00	6,298.00	6,287.56	161.78	228.47	54.72	-1,986.03	9,360.83	1,576.87	1,250.92	325.95	4.838	
16,900.00	7,104.00	6,298.00	6,287.56	163.36	228.47	54.72	-1,986.03	9,360.83	1,622.54	1,296.46	326.08	4.976	
17,000.00	7,104.00	6,298.00	6,287.56	164.94	228.47	54.72	-1,986.03	9,360.83	1,672.96	1,346.98	325.98	5.132	
17,100.00	7,104.00	6,298.00	6,287.56	166.52	228.47	54.72	-1,986.03	9,360.83	1,727.69	1,402.03	325.66	5.305	
17,200.00	7,104.00	6,298.00	6,287.56	168.10	228.47	54.72	-1,986.03	9,360.83	1,786.36	1,461.18	325.17	5.494	
17,300.00	7,104.00	6,298.00	6,287.56	169.68	228.47	54.72	-1,986.03	9,360.83	1,848.57	1,524.04	324.52	5.696	
17,400.00	7,104.00	6,298.00	6,287.56	171.26	228.47	54.72	-1,986.03	9,360.83	1,913.99	1,590.23	323.75	5.912	
17,500.00	7,104.00	6,298.00	6,287.56	172.84	228.47	54.72	-1,986.03	9,360.83	1,982.29	1,659.41	322.88	6.139	
17,600.00	7,104.00	6,298.00	6,287.56	174.42	228.47	54.72	-1,986.03	9,360.83	2,053.20	1,731.26	321.93	6.378	
17,700.00	7,104.00	6,298.00	6,287.56	176.00	228.47	54.72	-1,986.03	9,360.83	2,126.44	1,805.51	320.93	6.626	
17,800.00	7,104.00	6,298.00	6,287.56	177.59	228.47	54.72	-1,986.03	9,360.83	2,201.79	1,881.90	319.89	6.883	
17,900.00	7,104.00	6,298.00	6,287.56	179.17	228.47	54.72	-1,986.03	9,360.83	2,279.04	1,960.21	318.83	7.148	
18,000.00	7,104.00	6,298.00	6,287.56	180.75	228.47	54.72	-1,986.03	9,360.83	2,358.00	2,040.24	317.76	7.421	
18,100.00	7,104.00	6,298.00	6,287.56	182.33	228.47	54.72	-1,986.03	9,360.83	2,438.51	2,121.82	316.69	7.700	
18,200.00	7,104.00	6,298.00	6,287.56	183.92	228.47	54.72	-1,986.03	9,360.83	2,520.41	2,204.78	315.62	7.985	
18,300.00	7,104.00	6,298.00	6,287.56	185.50	228.47	54.72	-1,986.03	9,360.83	2,603.57	2,289.00	314.57	8.277	
18,400.00	7,104.00	6,298.00	6,287.56	187.09	228.47	54.72	-1,986.03	9,360.83	2,687.88	2,374.34	313.54	8.573	
18,500.00	7,104.00	6,298.00	6,287.56	188.67	228.47	54.72	-1,986.03	9,360.83	2,773.24	2,460.70	312.53	8.873	
18,600.00	7,104.00	6,298.00	6,287.56	190.26	228.47	54.72	-1,986.03	9,360.83	2,859.54	2,547.99	311.55	9.178	
18,700.00	7,104.00	6,298.00	6,287.56	191.84	228.47	54.72	-1,986.03	9,360.83	2,946.72	2,636.12	310.60	9.487	
18,800.00	7,104.00	6,298.00	6,287.56	193.43	228.47	54.72	-1,986.03	9,360.83	3,034.68	2,725.01	309.67	9.800	
18,900.00	7,104.00	6,298.00	6,287.56	195.01	228.47	54.72	-1,986.03	9,360.83	3,123.37	2,814.59	308.78	10.115	
19,000.00	7,104.00	6,298.00	6,287.56	196.60	228.47	54.72	-1,986.03	9,360.83	3,212.72	2,904.81	307.91	10.434	
19,100.00	7,104.00	6,298.00	6,287.56	198.18	228.47	54.72	-1,986.03	9,360.83	3,302.68	2,995.61	307.07	10.755	
19,200.00	7,104.00	6,298.00	6,287.56	199.77	228.47	54.72	-1,986.03	9,360.83	3,393.20	3,086.94	306.27	11.079	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #184B - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 350-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	6,298.00	6,287.56	201.36	228.47	54.72	-1,986.03	9,360.83	3,484.25	3,178.76	305.49	11.405	
19,400.00	7,104.00	6,298.00	6,287.56	202.94	228.47	54.72	-1,986.03	9,360.83	3,575.77	3,271.02	304.74	11.734	
19,500.00	7,104.00	6,298.00	6,287.56	204.53	228.47	54.72	-1,986.03	9,360.83	3,667.73	3,363.71	304.02	12.064	
19,600.00	7,104.00	6,298.00	6,287.56	206.12	228.47	54.72	-1,986.03	9,360.83	3,760.10	3,456.77	303.33	12.396	
19,700.00	7,104.00	6,298.00	6,287.56	207.70	228.47	54.72	-1,986.03	9,360.83	3,852.86	3,550.20	302.66	12.730	
19,800.00	7,104.00	6,298.00	6,287.56	209.29	228.47	54.72	-1,986.03	9,360.83	3,945.97	3,643.94	302.02	13.065	
19,900.00	7,104.00	6,298.00	6,287.56	210.88	228.47	54.72	-1,986.03	9,360.83	4,039.40	3,738.00	301.41	13.402	
20,000.00	7,104.00	6,298.00	6,287.56	212.47	228.47	54.72	-1,986.03	9,360.83	4,133.15	3,832.34	300.81	13.740	
20,100.00	7,104.00	6,298.00	6,287.56	214.05	228.47	54.72	-1,986.03	9,360.83	4,227.18	3,926.94	300.25	14.079	
20,200.00	7,104.00	6,298.00	6,287.56	215.64	228.47	54.72	-1,986.03	9,360.83	4,321.48	4,021.78	299.70	14.419	
20,215.00	7,104.00	6,298.00	6,287.56	215.88	228.47	54.72	-1,986.03	9,360.83	4,335.65	4,036.03	299.62	14.471	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	170.00	170.00	3.28	1.57	95.77	-612.00	6,059.04	6,089.87				
100.00	100.00	270.00	270.00	3.29	2.50	95.77	-612.00	6,059.04	6,089.87	6,084.08	5.79	1,052.677	
200.00	200.00	370.00	370.00	3.34	4.36	95.77	-612.00	6,059.04	6,089.87	6,082.17	7.69	791.593	
300.00	300.00	470.00	470.00	3.42	6.32	95.77	-612.00	6,059.04	6,089.87	6,080.12	9.74	625.086	
362.57	362.57	532.57	532.57	3.49	7.55	95.76	-611.45	6,059.04	6,089.81	6,078.77	11.04	551.493	
400.00	400.00	569.61	569.61	3.54	8.28	95.76	-611.46	6,059.04	6,089.81	6,077.99	11.82	515.277	
500.00	500.00	668.57	668.56	3.69	10.23	95.76	-611.61	6,059.04	6,089.83	6,075.91	13.91	437.708	
600.00	599.98	767.51	767.50	3.86	12.17	-54.26	-611.92	6,059.04	6,088.84	6,072.81	16.03	379.927	
700.00	699.84	869.89	869.84	4.04	14.19	-54.35	-612.00	6,059.04	6,085.79	6,067.56	18.23	333.867	
800.00	799.45	969.50	969.45	4.26	16.15	-54.50	-612.00	6,059.04	6,080.71	6,060.30	20.40	298.061	
849.50	848.63	1,018.68	1,018.63	4.37	17.12	-54.60	-612.00	6,059.04	6,077.44	6,055.96	21.48	282.897	
900.00	898.77	1,068.17	1,068.11	4.49	18.09	-62.95	-610.92	6,059.04	6,074.17	6,051.59	22.58	269.038	
973.84	972.07	1,140.05	1,139.99	4.68	19.51	-75.17	-611.09	6,059.04	6,071.00	6,046.82	24.18	251.107	
1,000.00	998.03	1,165.52	1,165.46	4.74	20.01	-75.20	-611.19	6,059.04	6,070.19	6,045.44	24.75	245.299	
1,100.00	1,097.29	1,262.95	1,262.88	5.02	21.93	-75.30	-611.79	6,059.04	6,067.12	6,040.19	26.94	225.242	
1,200.00	1,196.54	1,366.64	1,366.54	5.30	23.97	-75.41	-612.00	6,059.04	6,064.04	6,034.78	29.26	207.212	
1,300.00	1,295.80	1,465.89	1,465.80	5.61	25.92	-75.52	-612.00	6,059.04	6,060.96	6,029.44	31.52	192.291	
1,400.00	1,395.06	1,564.91	1,564.81	5.92	27.87	-75.64	-611.46	6,059.04	6,057.86	6,024.08	33.78	179.329	
1,500.00	1,494.31	1,663.29	1,663.19	6.24	29.81	-75.75	-611.59	6,059.04	6,054.84	6,018.80	36.04	168.009	
1,600.00	1,593.57	1,761.71	1,761.61	6.57	31.75	-75.86	-611.88	6,059.04	6,051.86	6,013.56	38.31	157.988	
1,700.00	1,692.82	1,862.96	1,862.82	6.91	33.80	-75.97	-612.00	6,059.04	6,048.89	6,008.20	40.69	148.667	
1,800.00	1,792.08	1,962.22	1,962.08	7.25	35.82	-76.08	-612.00	6,059.04	6,045.92	6,002.87	43.05	140.427	
1,900.00	1,891.33	2,061.13	2,060.98	7.60	37.84	-76.20	-610.91	6,059.04	6,042.90	5,997.48	45.42	133.050	
2,000.00	1,990.59	2,158.86	2,158.71	7.95	39.84	-76.31	-611.15	6,059.04	6,040.00	5,992.24	47.76	126.457	
2,100.00	2,089.85	2,256.68	2,256.52	8.30	41.83	-76.41	-611.72	6,059.04	6,037.16	5,987.04	50.11	120.469	
2,200.00	2,189.10	2,359.30	2,359.10	8.66	43.93	-76.53	-612.00	6,059.04	6,034.31	5,981.74	52.57	114.793	
2,300.00	2,288.36	2,458.55	2,458.36	9.02	45.95	-76.64	-612.00	6,059.04	6,031.46	5,976.50	54.95	109.753	
2,400.00	2,387.61	2,557.56	2,557.35	9.39	47.97	-76.76	-611.21	6,059.04	6,028.58	5,971.24	57.34	105.136	
2,500.00	2,486.87	2,655.78	2,655.58	9.76	49.98	-76.86	-611.40	6,059.04	6,025.80	5,966.08	59.71	100.913	
2,600.00	2,586.12	2,754.08	2,753.87	10.13	51.99	-76.97	-611.85	6,059.04	6,023.05	5,960.96	62.09	97.007	
2,700.00	2,685.38	2,855.63	2,855.38	10.50	54.12	-77.08	-612.00	6,059.04	6,020.31	5,955.72	64.59	93.206	
2,800.00	2,784.63	2,954.89	2,954.63	10.87	56.22	-77.20	-612.00	6,059.04	6,017.58	5,950.51	67.07	89.727	
2,900.00	2,883.89	3,053.67	3,053.40	11.24	58.31	-77.32	-610.99	6,059.04	6,014.81	5,945.28	69.53	86.505	
3,000.00	2,983.15	3,151.75	3,151.48	11.62	60.39	-77.43	-611.30	6,059.04	6,012.15	5,940.17	71.98	83.521	
3,100.00	3,082.40	3,249.92	3,249.65	12.00	62.47	-77.53	-611.96	6,059.04	6,009.53	5,935.09	74.44	80.731	
3,200.00	3,181.66	3,351.98	3,351.66	12.38	64.41	-77.65	-612.00	6,059.04	6,006.89	5,930.13	76.76	78.256	
3,300.00	3,280.91	3,451.24	3,450.91	12.75	66.29	-77.76	-612.00	6,059.04	6,004.28	5,925.26	79.02	75.986	
3,400.00	3,380.17	3,550.02	3,549.68	13.13	68.17	-77.88	-610.95	6,059.04	6,001.64	5,920.37	81.27	73.849	
3,500.00	3,479.42	3,648.36	3,648.02	13.52	70.03	-77.99	-611.29	6,059.04	5,999.09	5,915.58	83.51	71.834	
3,600.00	3,578.68	3,746.79	3,746.44	13.90	71.89	-78.10	-611.96	6,059.04	5,996.58	5,910.82	85.76	69.923	
3,700.00	3,677.94	3,848.30	3,847.94	14.28	73.96	-78.21	-612.00	6,059.04	5,994.07	5,905.86	88.21	67.953	
3,800.00	3,777.19	3,947.50	3,947.14	14.66	75.99	-78.33	-611.80	6,059.04	5,991.57	5,900.95	90.62	66.118	
3,900.00	3,876.45	4,046.49	4,046.13	15.05	78.01	-78.44	-611.88	6,059.04	5,989.10	5,896.07	93.02	64.382	
4,000.00	3,975.70	4,146.11	4,145.70	15.43	80.10	-78.55	-612.00	6,059.04	5,986.66	5,891.16	95.50	62.689	
4,100.00	4,074.96	4,245.37	4,244.96	15.82	82.28	-78.66	-612.00	6,059.04	5,984.23	5,886.17	98.06	61.023	
4,200.00	4,174.21	4,344.62	4,344.21	16.20	84.46	-78.78	-612.00	6,059.04	5,981.83	5,881.20	100.63	59.443	
4,300.00	4,273.47	4,443.88	4,443.47	16.59	86.65	-78.89	-612.00	6,059.04	5,979.46	5,876.26	103.20	57.941	
4,400.00	4,372.73	4,543.13	4,542.73	16.97	88.83	-79.01	-612.00	6,059.04	5,977.11	5,871.34	105.77	56.512	
4,500.00	4,471.98	4,642.39	4,641.98	17.36	91.01	-79.12	-612.00	6,059.04	5,974.78	5,866.45	108.33	55.151	
4,600.00	4,571.24	4,741.44	4,740.98	17.75	93.19	-79.27	-608.37	6,059.04	5,972.39	5,861.49	110.90	53.855	
4,700.00	4,670.49	4,840.45	4,839.98	18.13	95.36	-79.38	-608.65	6,059.04	5,970.12	5,856.66	113.46	52.618	
4,800.00	4,769.75	4,939.53	4,939.04	18.52	97.54	-79.49	-609.15	6,059.04	5,967.88	5,851.86	116.03	51.435	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,869.00	5,038.67	5,038.17	18.91	99.72	-79.59	-609.88	6,059.04	5,965.67	5,847.08	118.59	50.303	
5,000.00	4,968.26	5,137.87	5,137.35	19.30	101.90	-79.70	-610.84	6,059.04	5,963.48	5,842.32	121.16	49.219	
5,100.00	5,067.51	5,238.15	5,237.51	19.69	104.10	-79.80	-612.00	6,059.04	5,961.32	5,837.57	123.75	48.172	
5,200.00	5,166.77	5,337.40	5,336.77	20.07	106.13	-79.92	-612.00	6,059.04	5,959.16	5,832.99	126.17	47.231	
5,300.00	5,266.03	5,436.66	5,436.03	20.46	108.16	-80.03	-612.00	6,059.04	5,957.02	5,828.44	128.59	46.326	
5,400.00	5,365.28	5,535.91	5,535.28	20.85	110.19	-80.15	-612.00	6,059.04	5,954.91	5,823.91	131.01	45.455	
5,500.00	5,464.54	5,635.17	5,634.54	21.24	112.22	-80.26	-612.00	6,059.04	5,952.83	5,819.40	133.43	44.615	
5,600.00	5,563.79	5,734.43	5,733.79	21.63	114.25	-80.38	-612.00	6,059.04	5,950.76	5,814.92	135.85	43.805	
5,700.00	5,663.05	5,833.68	5,833.05	22.02	116.28	-80.49	-612.00	6,059.04	5,948.72	5,810.46	138.27	43.024	
5,800.00	5,762.30	5,932.94	5,932.30	22.41	118.31	-80.61	-612.00	6,059.04	5,946.71	5,806.02	140.69	42.269	
5,900.00	5,861.56	6,032.19	6,031.56	22.80	120.34	-80.72	-612.00	6,059.04	5,944.72	5,801.61	143.11	41.540	
6,000.00	5,960.82	6,131.45	6,130.82	23.19	122.37	-80.84	-612.00	6,059.04	5,942.75	5,797.23	145.53	40.836	
6,100.00	6,060.07	6,230.70	6,230.07	23.58	124.40	-80.95	-612.00	6,059.04	5,940.81	5,792.87	147.95	40.155	
6,200.00	6,159.33	6,329.96	6,329.33	23.97	126.43	-81.07	-612.00	6,059.04	5,938.90	5,788.53	150.37	39.496	
6,300.00	6,258.58	6,429.22	6,428.58	24.36	128.46	-81.18	-612.00	6,059.04	5,937.00	5,784.21	152.79	38.857	
6,400.00	6,357.84	6,476.00	6,475.22	24.76	129.41	-81.24	-612.00	6,059.04	5,935.37	5,781.23	154.14	38.508	
6,457.94	6,415.35	6,476.00	6,475.22	24.98	129.41	-81.24	-612.00	6,059.04	5,935.09	5,780.74	154.35	38.453	
6,500.00	6,457.09	6,476.00	6,475.22	25.15	129.41	-81.24	-612.00	6,059.04	5,935.23	5,780.74	154.49	38.418	
6,528.17	6,485.05	6,476.00	6,475.22	25.26	129.41	-81.24	-612.00	6,059.04	5,935.50	5,780.92	154.58	38.397	
6,550.00	6,506.71	6,476.00	6,475.22	25.34	129.41	-66.51	-612.00	6,059.04	5,935.43	5,780.77	154.65	38.379	
6,600.00	6,556.11	6,476.00	6,475.22	25.54	129.41	-43.20	-612.00	6,059.04	5,932.74	5,777.93	154.80	38.324	
6,650.00	6,605.00	6,476.00	6,475.22	25.74	129.41	-30.83	-612.00	6,059.04	5,926.55	5,771.61	154.94	38.250	
6,700.00	6,653.07	6,476.00	6,475.22	25.93	129.41	-23.85	-612.00	6,059.04	5,916.91	5,761.84	155.07	38.157	
6,750.00	6,700.02	6,476.00	6,475.22	26.12	129.41	-19.52	-612.00	6,059.04	5,903.84	5,748.66	155.18	38.045	
6,800.00	6,745.56	6,476.00	6,475.22	26.31	129.41	-16.63	-612.00	6,059.04	5,887.41	5,732.13	155.28	37.915	
6,850.00	6,789.42	6,476.00	6,475.22	26.50	129.41	-14.59	-612.00	6,059.04	5,867.69	5,712.32	155.37	37.767	
6,900.00	6,831.32	6,476.00	6,475.22	26.69	129.41	-13.10	-612.00	6,059.04	5,844.77	5,689.33	155.44	37.602	
6,950.00	6,871.01	6,476.00	6,475.22	26.87	129.41	-11.99	-612.00	6,059.04	5,818.75	5,663.25	155.50	37.420	
7,000.00	6,908.23	6,476.00	6,475.22	27.05	129.41	-11.15	-612.00	6,059.04	5,789.75	5,634.21	155.55	37.222	
7,050.00	6,942.77	6,476.00	6,475.22	27.23	129.41	-10.52	-612.00	6,059.04	5,757.92	5,602.33	155.58	37.009	
7,100.00	6,974.40	6,476.00	6,475.22	27.41	129.41	-10.05	-612.00	6,059.04	5,723.39	5,567.78	155.61	36.782	
7,150.00	7,002.93	6,476.00	6,475.22	27.60	129.41	-9.72	-612.00	6,059.04	5,686.33	5,530.71	155.62	36.540	
7,200.00	7,028.20	6,476.00	6,475.22	27.80	129.41	-9.51	-612.00	6,059.04	5,646.94	5,491.31	155.62	36.286	
7,250.00	7,050.03	6,476.00	6,475.22	28.00	129.41	-9.43	-612.00	6,059.04	5,605.39	5,449.77	155.62	36.019	
7,300.00	7,068.30	6,476.00	6,475.22	28.22	129.41	-9.48	-612.00	6,059.04	5,561.91	5,406.29	155.62	35.741	
7,350.00	7,082.89	6,476.00	6,475.22	28.45	129.41	-9.71	-612.00	6,059.04	5,516.71	5,361.11	155.60	35.454	
7,400.00	7,093.72	6,476.00	6,475.22	28.70	129.41	-10.17	-612.00	6,059.04	5,470.05	5,314.46	155.59	35.157	
7,450.00	7,100.71	6,476.00	6,475.22	28.96	129.41	-11.05	-612.00	6,059.04	5,422.17	5,266.59	155.58	34.852	
7,500.00	7,103.82	6,476.00	6,475.22	29.24	129.41	-12.81	-612.00	6,059.04	5,373.33	5,217.77	155.57	34.541	
7,515.00	7,104.00	6,476.00	6,475.22	29.32	129.41	-13.71	-612.00	6,059.04	5,358.53	5,202.97	155.56	34.446	
7,600.00	7,104.00	6,476.00	6,475.22	29.84	129.41	-13.71	-612.00	6,059.04	5,274.56	5,119.01	155.54	33.910	
7,700.00	7,104.00	6,476.00	6,475.22	30.51	129.41	-13.71	-612.00	6,059.04	5,175.80	5,020.28	155.52	33.281	
7,800.00	7,104.00	6,476.00	6,475.22	31.26	129.41	-13.71	-612.00	6,059.04	5,077.10	4,921.60	155.50	32.651	
7,900.00	7,104.00	6,476.00	6,475.22	32.07	129.41	-13.71	-612.00	6,059.04	4,978.45	4,822.98	155.47	32.022	
8,000.00	7,104.00	6,476.00	6,475.22	32.94	129.41	-13.71	-612.00	6,059.04	4,879.85	4,724.40	155.44	31.393	
8,100.00	7,104.00	6,476.00	6,475.22	33.86	129.41	-13.71	-612.00	6,059.04	4,781.31	4,625.89	155.41	30.765	
8,200.00	7,104.00	6,476.00	6,475.22	34.84	129.41	-13.71	-612.00	6,059.04	4,682.83	4,527.44	155.38	30.137	
8,300.00	7,104.00	6,476.00	6,475.22	35.86	129.41	-13.71	-612.00	6,059.04	4,584.41	4,429.06	155.35	29.510	
8,400.00	7,104.00	6,476.00	6,475.22	36.92	129.41	-13.71	-612.00	6,059.04	4,486.07	4,330.76	155.32	28.884	
8,500.00	7,104.00	6,476.00	6,475.22	38.02	129.41	-13.71	-612.00	6,059.04	4,387.80	4,232.53	155.28	28.258	
8,600.00	7,104.00	6,476.00	6,475.22	39.15	129.41	-13.71	-612.00	6,059.04	4,289.62	4,134.38	155.24	27.632	
8,700.00	7,104.00	6,476.00	6,475.22	40.32	129.41	-13.71	-612.00	6,059.04	4,191.51	4,036.32	155.20	27.008	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	6,476.00	6,475.22	41.52	129.41	-13.71	-612.00	6,059.04	4,093.50	3,938.35	155.15	26.384	
8,900.00	7,104.00	6,476.00	6,475.22	42.74	129.41	-13.71	-612.00	6,059.04	3,995.59	3,840.49	155.10	25.762	
9,000.00	7,104.00	6,476.00	6,475.22	43.99	129.41	-13.71	-612.00	6,059.04	3,897.79	3,742.74	155.04	25.140	
9,100.00	7,104.00	6,476.00	6,475.22	45.26	129.41	-13.71	-612.00	6,059.04	3,800.09	3,645.11	154.98	24.519	
9,200.00	7,104.00	6,476.00	6,475.22	46.55	129.41	-13.71	-612.00	6,059.04	3,702.53	3,547.61	154.92	23.900	
9,300.00	7,104.00	6,476.00	6,475.22	47.85	129.41	-13.71	-612.00	6,059.04	3,605.09	3,450.24	154.85	23.282	
9,400.00	7,104.00	6,476.00	6,475.22	49.18	129.41	-13.71	-612.00	6,059.04	3,507.80	3,353.03	154.77	22.665	
9,500.00	7,104.00	6,476.00	6,475.22	50.52	129.41	-13.71	-612.00	6,059.04	3,410.67	3,255.99	154.68	22.050	
9,600.00	7,104.00	6,476.00	6,475.22	51.88	129.41	-13.71	-612.00	6,059.04	3,313.70	3,159.12	154.59	21.436	
9,700.00	7,104.00	6,476.00	6,475.22	53.25	129.41	-13.71	-612.00	6,059.04	3,216.93	3,062.45	154.48	20.824	
9,800.00	7,104.00	6,476.00	6,475.22	54.63	129.41	-13.71	-612.00	6,059.04	3,120.35	2,965.99	154.36	20.215	
9,900.00	7,104.00	6,476.00	6,475.22	56.03	129.41	-13.71	-612.00	6,059.04	3,024.00	2,869.77	154.23	19.607	
10,000.00	7,104.00	6,476.00	6,475.22	57.43	129.41	-13.71	-612.00	6,059.04	2,927.90	2,773.81	154.08	19.002	
10,100.00	7,104.00	6,476.00	6,475.22	58.85	129.41	-13.71	-612.00	6,059.04	2,832.06	2,678.14	153.92	18.400	
10,200.00	7,104.00	6,476.00	6,475.22	60.27	129.41	-13.71	-612.00	6,059.04	2,736.52	2,582.79	153.73	17.801	
10,300.00	7,104.00	6,476.00	6,475.22	61.71	129.41	-13.71	-612.00	6,059.04	2,641.31	2,487.79	153.52	17.205	
10,400.00	7,104.00	6,476.00	6,475.22	63.15	129.41	-13.71	-612.00	6,059.04	2,546.47	2,393.19	153.28	16.613	
10,500.00	7,104.00	6,476.00	6,475.22	64.60	129.41	-13.71	-612.00	6,059.04	2,452.04	2,299.02	153.01	16.025	
10,600.00	7,104.00	6,476.00	6,475.22	66.05	129.41	-13.71	-612.00	6,059.04	2,358.07	2,205.36	152.71	15.442	
10,700.00	7,104.00	6,476.00	6,475.22	67.52	129.41	-13.71	-612.00	6,059.04	2,264.61	2,112.25	152.36	14.864	
10,800.00	7,104.00	6,476.00	6,475.22	68.99	129.41	-13.71	-612.00	6,059.04	2,171.74	2,019.79	151.95	14.292	
10,900.00	7,104.00	6,476.00	6,475.22	70.46	129.41	-13.71	-612.00	6,059.04	2,079.52	1,928.04	151.48	13.728	
11,000.00	7,104.00	6,476.00	6,475.22	71.94	129.41	-13.71	-612.00	6,059.04	1,988.07	1,837.13	150.94	13.171	
11,100.00	7,104.00	6,476.00	6,475.22	73.43	129.41	-13.71	-612.00	6,059.04	1,897.47	1,747.16	150.30	12.624	
11,200.00	7,104.00	6,476.00	6,475.22	74.92	129.41	-13.71	-612.00	6,059.04	1,807.86	1,658.30	149.56	12.088	
11,300.00	7,104.00	6,476.00	6,475.22	76.41	129.41	-13.71	-612.00	6,059.04	1,719.41	1,570.73	148.68	11.565	
11,400.00	7,104.00	6,476.00	6,475.22	77.91	129.41	-13.71	-612.00	6,059.04	1,632.28	1,484.65	147.63	11.056	
11,500.00	7,104.00	6,476.00	6,475.22	79.41	129.41	-13.71	-612.00	6,059.04	1,546.71	1,400.33	146.38	10.566	
11,600.00	7,104.00	6,476.00	6,475.22	80.92	129.41	-13.71	-612.00	6,059.04	1,462.98	1,318.10	144.88	10.098	
11,700.00	7,104.00	6,476.00	6,475.22	82.43	129.41	-13.71	-612.00	6,059.04	1,381.41	1,238.35	143.05	9.657	
11,800.00	7,104.00	6,476.00	6,475.22	83.94	129.41	-13.71	-612.00	6,059.04	1,302.41	1,161.57	140.84	9.248	
11,900.00	7,104.00	6,476.00	6,475.22	85.46	129.41	-13.71	-612.00	6,059.04	1,226.48	1,088.36	138.12	8.880	
12,000.00	7,104.00	6,476.00	6,475.22	86.98	129.41	-13.71	-612.00	6,059.04	1,154.23	1,019.43	134.80	8.562	
12,100.00	7,104.00	6,476.00	6,475.22	88.50	129.41	-13.71	-612.00	6,059.04	1,086.38	955.65	130.73	8.310	
12,200.00	7,104.00	6,476.00	6,475.22	90.03	129.41	-13.71	-612.00	6,059.04	1,023.82	898.05	125.77	8.140	
12,300.00	7,104.00	6,476.00	6,475.22	91.55	129.41	-13.71	-612.00	6,059.04	967.57	847.76	119.81	8.076	
12,400.00	7,104.00	6,476.00	6,475.22	93.08	129.41	-13.71	-612.00	6,059.04	918.79	805.97	112.82	8.144	
12,500.00	7,104.00	6,476.00	6,475.22	94.62	129.41	-13.71	-612.00	6,059.04	878.72	773.74	104.98	8.370	
12,600.00	7,104.00	6,476.00	6,475.22	96.15	129.41	-13.71	-612.00	6,059.04	848.61	751.66	96.95	8.753	
12,700.00	7,104.00	6,476.00	6,475.22	97.69	129.41	-13.71	-612.00	6,059.04	829.53	739.32	90.21	9.195	
12,800.00	7,104.00	6,476.00	6,475.22	99.23	129.41	-13.71	-612.00	6,059.04	822.26	735.08	87.17	9.432	
12,810.08	7,104.00	6,476.00	6,475.22	99.38	129.41	-13.71	-612.00	6,059.04	822.20	735.03	87.16	9.433	CC, ES
12,900.00	7,104.00	6,476.00	6,475.22	100.77	129.41	-13.71	-612.00	6,059.04	827.10	737.57	89.52	9.239	
13,000.00	7,104.00	6,476.00	6,475.22	102.31	129.41	-13.71	-612.00	6,059.04	843.84	747.79	96.06	8.785	
13,100.00	7,104.00	6,476.00	6,475.22	103.86	129.41	-13.71	-612.00	6,059.04	871.81	767.53	104.28	8.360	
13,200.00	7,104.00	6,476.00	6,475.22	105.40	129.41	-13.71	-612.00	6,059.04	909.97	797.46	112.50	8.088	
13,300.00	7,104.00	6,476.00	6,475.22	106.95	129.41	-13.71	-612.00	6,059.04	957.09	837.16	119.93	7.980	SF
13,400.00	7,104.00	6,476.00	6,475.22	108.50	129.41	-13.71	-612.00	6,059.04	1,011.93	885.62	126.31	8.011	
13,500.00	7,104.00	6,476.00	6,475.22	110.05	129.41	-13.71	-612.00	6,059.04	1,073.31	941.67	131.64	8.153	
13,600.00	7,104.00	6,476.00	6,475.22	111.60	129.41	-13.71	-612.00	6,059.04	1,140.16	1,004.13	136.03	8.382	
13,700.00	7,104.00	6,476.00	6,475.22	113.16	129.41	-13.71	-612.00	6,059.04	1,211.59	1,071.96	139.63	8.677	
13,800.00	7,104.00	6,476.00	6,475.22	114.71	129.41	-13.71	-612.00	6,059.04	1,286.83	1,144.26	142.57	9.026	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	6,476.00	6,475.22	116.27	129.41	-13.71	-612.00	6,059.04	1,365.26	1,220.27	144.99	9.416	
14,000.00	7,104.00	6,476.00	6,475.22	117.83	129.41	-13.71	-612.00	6,059.04	1,446.34	1,299.37	146.98	9.841	
14,100.00	7,104.00	6,476.00	6,475.22	119.38	129.41	-13.71	-612.00	6,059.04	1,529.67	1,381.04	148.63	10.292	
14,200.00	7,104.00	6,476.00	6,475.22	120.94	129.41	-13.71	-612.00	6,059.04	1,614.89	1,464.88	150.01	10.765	
14,300.00	7,104.00	6,476.00	6,475.22	122.50	129.41	-13.71	-612.00	6,059.04	1,701.72	1,550.54	151.18	11.256	
14,400.00	7,104.00	6,476.00	6,475.22	124.07	129.41	-13.71	-612.00	6,059.04	1,789.93	1,637.76	152.17	11.763	
14,500.00	7,104.00	6,476.00	6,475.22	125.63	129.41	-13.71	-612.00	6,059.04	1,879.32	1,726.30	153.01	12.282	
14,600.00	7,104.00	6,476.00	6,475.22	127.19	129.41	-13.71	-612.00	6,059.04	1,969.72	1,815.98	153.75	12.812	
14,700.00	7,104.00	6,476.00	6,475.22	128.76	129.41	-13.71	-612.00	6,059.04	2,061.02	1,906.64	154.38	13.350	
14,800.00	7,104.00	6,476.00	6,475.22	130.32	129.41	-13.71	-612.00	6,059.04	2,153.09	1,998.15	154.94	13.896	
14,900.00	7,104.00	6,476.00	6,475.22	131.89	129.41	-13.71	-612.00	6,059.04	2,245.83	2,090.40	155.43	14.449	
15,000.00	7,104.00	6,476.00	6,475.22	133.46	129.41	-13.71	-612.00	6,059.04	2,339.18	2,183.31	155.87	15.007	
15,100.00	7,104.00	6,476.00	6,475.22	135.02	129.41	-13.71	-612.00	6,059.04	2,433.05	2,276.79	156.26	15.570	
15,200.00	7,104.00	6,476.00	6,475.22	136.59	129.41	-13.71	-612.00	6,059.04	2,527.39	2,370.78	156.62	16.137	
15,300.00	7,104.00	6,476.00	6,475.22	138.16	129.41	-13.71	-612.00	6,059.04	2,622.15	2,465.22	156.94	16.708	
15,400.00	7,104.00	6,476.00	6,475.22	139.73	129.41	-13.71	-612.00	6,059.04	2,717.29	2,560.06	157.23	17.282	
15,500.00	7,104.00	6,476.00	6,475.22	141.30	129.41	-13.71	-612.00	6,059.04	2,812.77	2,655.27	157.50	17.859	
15,600.00	7,104.00	6,476.00	6,475.22	142.88	129.41	-13.71	-612.00	6,059.04	2,908.55	2,750.80	157.75	18.438	
15,700.00	7,104.00	6,476.00	6,475.22	144.45	129.41	-13.71	-612.00	6,059.04	3,004.60	2,846.62	157.98	19.019	
15,800.00	7,104.00	6,476.00	6,475.22	146.02	129.41	-13.71	-612.00	6,059.04	3,100.90	2,942.71	158.20	19.601	
15,900.00	7,104.00	6,476.00	6,475.22	147.60	129.41	-13.71	-612.00	6,059.04	3,197.44	3,039.04	158.40	20.186	
16,000.00	7,104.00	6,476.00	6,475.22	149.17	129.41	-13.71	-612.00	6,059.04	3,294.17	3,135.58	158.59	20.771	
16,100.00	7,104.00	6,476.00	6,475.22	150.74	129.41	-13.71	-612.00	6,059.04	3,391.10	3,232.33	158.77	21.358	
16,200.00	7,104.00	6,476.00	6,475.22	152.32	129.41	-13.71	-612.00	6,059.04	3,488.20	3,329.26	158.94	21.946	
16,300.00	7,104.00	6,476.00	6,475.22	153.89	129.41	-13.71	-612.00	6,059.04	3,585.46	3,426.35	159.11	22.535	
16,400.00	7,104.00	6,476.00	6,475.22	155.47	129.41	-13.71	-612.00	6,059.04	3,682.87	3,523.60	159.26	23.124	
16,500.00	7,104.00	6,476.00	6,475.22	157.05	129.41	-13.71	-612.00	6,059.04	3,780.41	3,620.99	159.42	23.714	
16,600.00	7,104.00	6,476.00	6,475.22	158.63	129.41	-13.71	-612.00	6,059.04	3,878.08	3,718.52	159.56	24.305	
16,700.00	7,104.00	6,476.00	6,475.22	160.20	129.41	-13.71	-612.00	6,059.04	3,975.86	3,816.16	159.70	24.896	
16,800.00	7,104.00	6,476.00	6,475.22	161.78	129.41	-13.71	-612.00	6,059.04	4,073.75	3,913.91	159.84	25.487	
16,900.00	7,104.00	6,476.00	6,475.22	163.36	129.41	-13.71	-612.00	6,059.04	4,171.74	4,011.77	159.97	26.078	
17,000.00	7,104.00	6,476.00	6,475.22	164.94	129.41	-13.71	-612.00	6,059.04	4,269.83	4,109.73	160.10	26.670	
17,100.00	7,104.00	6,476.00	6,475.22	166.52	129.41	-13.71	-612.00	6,059.04	4,368.00	4,207.77	160.23	27.262	
17,200.00	7,104.00	6,476.00	6,475.22	168.10	129.41	-13.71	-612.00	6,059.04	4,466.25	4,305.90	160.35	27.853	
17,300.00	7,104.00	6,476.00	6,475.22	169.68	129.41	-13.71	-612.00	6,059.04	4,564.58	4,404.11	160.47	28.445	
17,400.00	7,104.00	6,476.00	6,475.22	171.26	129.41	-13.71	-612.00	6,059.04	4,662.98	4,502.39	160.59	29.037	
17,500.00	7,104.00	6,476.00	6,475.22	172.84	129.41	-13.71	-612.00	6,059.04	4,761.44	4,600.74	160.71	29.628	
17,600.00	7,104.00	6,476.00	6,475.22	174.42	129.41	-13.71	-612.00	6,059.04	4,859.97	4,699.15	160.82	30.220	
17,700.00	7,104.00	6,476.00	6,475.22	176.00	129.41	-13.71	-612.00	6,059.04	4,958.56	4,797.62	160.93	30.811	
17,800.00	7,104.00	6,476.00	6,475.22	177.59	129.41	-13.71	-612.00	6,059.04	5,057.20	4,896.15	161.05	31.402	
17,900.00	7,104.00	6,476.00	6,475.22	179.17	129.41	-13.71	-612.00	6,059.04	5,155.90	4,994.74	161.16	31.993	
18,000.00	7,104.00	6,476.00	6,475.22	180.75	129.41	-13.71	-612.00	6,059.04	5,254.64	5,093.37	161.27	32.583	
18,100.00	7,104.00	6,476.00	6,475.22	182.33	129.41	-13.71	-612.00	6,059.04	5,353.43	5,192.05	161.38	33.173	
18,200.00	7,104.00	6,476.00	6,475.22	183.92	129.41	-13.71	-612.00	6,059.04	5,452.27	5,290.78	161.49	33.763	
18,300.00	7,104.00	6,476.00	6,475.22	185.50	129.41	-13.71	-612.00	6,059.04	5,551.14	5,389.55	161.59	34.353	
18,400.00	7,104.00	6,476.00	6,475.22	187.09	129.41	-13.71	-612.00	6,059.04	5,650.06	5,488.36	161.70	34.942	
18,500.00	7,104.00	6,476.00	6,475.22	188.67	129.41	-13.71	-612.00	6,059.04	5,749.01	5,587.21	161.81	35.530	
18,600.00	7,104.00	6,476.00	6,475.22	190.26	129.41	-13.71	-612.00	6,059.04	5,848.00	5,686.09	161.91	36.119	
18,700.00	7,104.00	6,476.00	6,475.22	191.84	129.41	-13.71	-612.00	6,059.04	5,947.03	5,785.01	162.02	36.706	
18,800.00	7,104.00	6,476.00	6,475.22	193.43	129.41	-13.71	-612.00	6,059.04	6,046.08	5,883.96	162.12	37.294	
18,900.00	7,104.00	6,476.00	6,475.22	195.01	129.41	-13.71	-612.00	6,059.04	6,145.17	5,982.94	162.23	37.880	
19,000.00	7,104.00	6,476.00	6,475.22	196.60	129.41	-13.71	-612.00	6,059.04	6,244.28	6,081.95	162.33	38.467	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 280-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	6,476.00	6,475.22	198.18	129.41	-13.71	-612.00	6,059.04	6,343.43	6,180.99	162.43	39.052	
19,200.00	7,104.00	6,476.00	6,475.22	199.77	129.41	-13.71	-612.00	6,059.04	6,442.60	6,280.06	162.54	39.638	
19,300.00	7,104.00	6,476.00	6,475.22	201.36	129.41	-13.71	-612.00	6,059.04	6,541.79	6,379.15	162.64	40.222	
19,400.00	7,104.00	6,476.00	6,475.22	202.94	129.41	-13.71	-612.00	6,059.04	6,641.01	6,478.27	162.74	40.806	
19,500.00	7,104.00	6,476.00	6,475.22	204.53	129.41	-13.71	-612.00	6,059.04	6,740.25	6,577.40	162.85	41.390	
19,600.00	7,104.00	6,476.00	6,475.22	206.12	129.41	-13.71	-612.00	6,059.04	6,839.52	6,676.57	162.95	41.973	
19,700.00	7,104.00	6,476.00	6,475.22	207.70	129.41	-13.71	-612.00	6,059.04	6,938.80	6,775.75	163.05	42.555	
19,800.00	7,104.00	6,476.00	6,475.22	209.29	129.41	-13.71	-612.00	6,059.04	7,038.11	6,874.95	163.16	43.137	
19,900.00	7,104.00	6,476.00	6,475.22	210.88	129.41	-13.71	-612.00	6,059.04	7,137.43	6,974.17	163.26	43.718	
20,000.00	7,104.00	6,476.00	6,475.22	212.47	129.41	-13.71	-612.00	6,059.04	7,236.78	7,073.41	163.36	44.298	
20,100.00	7,104.00	6,476.00	6,475.22	214.05	129.41	-13.71	-612.00	6,059.04	7,336.14	7,172.67	163.47	44.878	
20,200.00	7,104.00	6,476.00	6,475.22	215.64	129.41	-13.71	-612.00	6,059.04	7,435.52	7,271.94	163.57	45.457	
20,215.00	7,104.00	6,476.00	6,475.22	215.88	129.41	-13.71	-612.00	6,059.04	7,450.43	7,286.84	163.59	45.544	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Rule Assigned: Distance

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	161.87	161.87	3.28	3.28	104.44	-1,743.74	6,771.06	6,991.99				
100.00	100.00	242.72	242.72	3.29	3.29	104.44	-1,743.19	6,771.29	6,992.10	6,985.53	6.57	1,063.900	
200.00	200.00	343.57	343.57	3.34	3.30	104.43	-1,742.41	6,771.76	6,992.37	6,985.74	6.62	1,055.843	
300.00	300.00	439.90	439.89	3.42	3.32	104.42	-1,741.58	6,772.30	6,992.69	6,985.98	6.71	1,041.869	
400.00	400.00	538.10	538.08	3.54	3.34	104.41	-1,740.82	6,772.87	6,993.07	6,986.23	6.84	1,022.756	
500.00	500.00	635.43	635.40	3.69	3.37	104.41	-1,740.09	6,773.45	6,993.45	6,986.45	7.00	999.577	
600.00	599.98	732.21	732.18	3.86	3.40	-45.62	-1,739.31	6,774.10	6,992.68	6,985.50	7.18	974.379	
700.00	699.84	820.25	820.22	4.04	3.43	-45.70	-1,738.50	6,774.80	6,989.56	6,982.18	7.38	947.708	
800.00	799.45	905.91	905.87	4.26	3.46	-45.83	-1,737.64	6,775.64	6,984.17	6,976.57	7.60	918.982	
849.50	848.63	944.87	944.83	4.37	3.48	-45.91	-1,737.26	6,776.09	6,980.70	6,972.98	7.72	904.192	
900.00	898.77	999.76	999.71	4.49	3.50	-54.26	-1,736.74	6,776.75	6,977.25	6,969.40	7.85	888.710	
973.84	972.07	1,077.87	1,077.81	4.68	3.54	-66.50	-1,736.06	6,777.65	6,973.52	6,965.46	8.05	866.121	
1,000.00	998.03	1,100.71	1,100.65	4.74	3.55	-66.52	-1,735.87	6,777.90	6,972.46	6,964.34	8.12	858.260	
1,100.00	1,097.29	1,200.08	1,200.00	5.02	3.60	-66.62	-1,734.85	6,779.08	6,968.50	6,960.08	8.42	827.782	
1,200.00	1,196.54	1,321.90	1,321.81	5.30	3.67	-66.75	-1,733.18	6,780.25	6,964.23	6,955.50	8.73	797.560	
1,300.00	1,295.80	1,420.40	1,420.29	5.61	3.73	-66.85	-1,731.74	6,781.16	6,959.95	6,950.90	9.05	768.711	
1,400.00	1,395.06	1,496.60	1,496.48	5.92	3.77	-66.94	-1,730.59	6,781.99	6,955.86	6,946.47	9.38	741.255	
1,500.00	1,494.31	1,600.00	1,599.86	6.24	3.84	-67.04	-1,729.30	6,783.27	6,951.98	6,942.25	9.74	714.105	
1,600.00	1,593.57	1,660.40	1,660.25	6.57	3.88	-67.11	-1,728.44	6,784.18	6,948.34	6,938.25	10.08	689.145	
1,700.00	1,692.82	1,758.54	1,758.37	6.91	3.95	-67.21	-1,727.12	6,785.92	6,945.00	6,934.54	10.45	664.381	
1,800.00	1,792.08	1,831.51	1,831.31	7.25	4.00	-67.29	-1,726.05	6,787.43	6,941.93	6,931.11	10.82	641.425	
1,900.00	1,891.33	1,934.68	1,934.45	7.60	4.08	-67.40	-1,724.67	6,789.50	6,938.86	6,927.65	11.21	618.857	
2,000.00	1,990.59	2,016.03	2,015.77	7.95	4.14	-67.49	-1,723.37	6,791.35	6,936.03	6,924.43	11.60	598.002	
2,100.00	2,089.85	2,083.24	2,082.95	8.30	4.19	-67.57	-1,722.41	6,793.13	6,933.61	6,921.62	11.99	578.504	
2,200.00	2,189.10	2,200.00	2,199.66	8.66	4.28	-67.69	-1,721.15	6,796.16	6,931.24	6,918.83	12.41	558.726	
2,300.00	2,288.36	2,275.00	2,274.63	9.02	4.35	-67.77	-1,720.21	6,798.20	6,928.99	6,916.18	12.81	541.010	
2,400.00	2,387.61	2,385.87	2,385.45	9.39	4.44	-67.89	-1,718.96	6,801.36	6,926.91	6,913.67	13.24	523.326	
2,500.00	2,486.87	2,460.36	2,459.90	9.76	4.50	-67.97	-1,718.05	6,803.61	6,924.97	6,911.33	13.65	507.408	
2,600.00	2,586.12	2,550.00	2,549.49	10.13	4.57	-68.07	-1,716.96	6,806.34	6,923.13	6,909.05	14.07	491.960	
2,700.00	2,685.38	2,625.00	2,624.44	10.50	4.64	-68.15	-1,716.04	6,808.90	6,921.65	6,907.15	14.49	477.617	
2,800.00	2,784.63	2,702.18	2,701.56	10.87	4.70	-68.24	-1,715.09	6,811.84	6,920.56	6,905.65	14.92	463.950	
2,900.00	2,883.89	2,775.00	2,774.31	11.24	4.77	-68.32	-1,714.06	6,814.79	6,919.75	6,904.41	15.34	451.072	
3,000.00	2,983.15	2,862.87	2,862.08	11.62	4.85	-68.42	-1,712.74	6,818.74	6,919.33	6,903.55	15.78	438.521	
3,100.00	3,082.40	2,991.23	2,990.31	12.00	4.97	-68.56	-1,710.78	6,824.20	6,918.69	6,902.44	16.25	425.752	
3,200.00	3,181.66	3,067.55	3,066.56	12.38	5.04	-68.65	-1,709.49	6,827.46	6,918.09	6,901.40	16.69	414.626	
3,300.00	3,280.91	3,162.97	3,161.86	12.75	5.13	-68.76	-1,707.74	6,831.77	6,917.71	6,900.57	17.14	403.674	
3,351.70	3,332.23	3,192.67	3,191.52	12.95	5.16	-68.80	-1,707.18	6,833.17	6,917.63	6,900.27	17.36	398.578	
3,400.00	3,380.17	3,225.00	3,223.80	13.13	5.19	-68.83	-1,706.59	6,834.78	6,917.69	6,900.12	17.56	393.845	
3,500.00	3,479.42	3,311.37	3,310.04	13.52	5.27	-68.94	-1,704.98	6,839.31	6,918.06	6,900.05	18.01	384.030	
3,600.00	3,578.68	3,396.96	3,395.49	13.90	5.36	-69.04	-1,703.36	6,843.92	6,918.61	6,900.15	18.47	374.671	
3,700.00	3,677.94	3,496.79	3,495.15	14.28	5.46	-69.16	-1,701.49	6,849.45	6,919.34	6,900.41	18.93	365.479	
3,800.00	3,777.19	3,675.00	3,673.16	14.66	5.63	-69.35	-1,699.40	6,857.55	6,919.10	6,899.62	19.47	355.288	
3,900.00	3,876.45	3,798.80	3,796.86	15.05	5.76	-69.49	-1,698.40	6,862.41	6,918.51	6,898.54	19.97	346.407	
4,000.00	3,975.70	3,901.86	3,899.84	15.43	5.86	-69.60	-1,697.58	6,866.30	6,917.81	6,897.36	20.45	338.230	
4,100.00	4,074.96	4,028.41	4,026.31	15.82	5.99	-69.73	-1,696.77	6,870.71	6,916.88	6,895.92	20.96	330.020	
4,200.00	4,174.21	4,258.79	4,256.64	16.20	6.20	-69.95	-1,697.03	6,875.38	6,914.53	6,892.96	21.57	320.506	
4,300.00	4,273.47	4,411.67	4,409.51	16.59	6.28	-70.09	-1,698.26	6,876.64	6,911.40	6,889.30	22.10	312.798	
4,400.00	4,372.73	4,555.42	4,553.26	16.97	6.27	-70.22	-1,698.65	6,876.56	6,907.19	6,884.68	22.51	306.886	
4,500.00	4,471.98	4,650.00	4,647.84	17.36	6.26	-70.31	-1,698.78	6,876.30	6,902.81	6,879.92	22.89	301.531	
4,600.00	4,571.24	4,735.52	4,733.35	17.75	6.25	-70.39	-1,699.54	6,876.10	6,898.61	6,875.30	23.31	295.942	
4,700.00	4,670.49	4,826.55	4,824.38	18.13	6.24	-70.47	-1,700.40	6,875.95	6,894.52	6,870.78	23.74	290.475	
4,800.00	4,769.75	4,925.91	4,923.73	18.52	6.24	-70.55	-1,701.45	6,875.82	6,890.49	6,866.32	24.17	285.118	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,869.00	5,042.99	5,040.80	18.91	6.23	-70.66	-1,702.51	6,875.61	6,886.39	6,861.79	24.60	279.918	
5,000.00	4,968.26	5,125.51	5,123.32	19.30	6.24	-70.73	-1,703.39	6,875.49	6,882.37	6,857.35	25.03	274.984	
5,100.00	5,067.51	5,225.00	5,222.81	19.69	6.24	-70.81	-1,704.43	6,875.34	6,878.36	6,852.90	25.46	270.153	
5,200.00	5,166.77	5,322.49	5,320.29	20.07	6.25	-70.90	-1,705.54	6,875.21	6,874.41	6,848.51	25.90	265.469	
5,300.00	5,266.03	5,422.99	5,420.79	20.46	6.26	-70.98	-1,706.67	6,875.07	6,870.46	6,844.13	26.33	260.929	
5,400.00	5,365.28	5,522.26	5,520.04	20.85	6.27	-71.07	-1,707.90	6,874.88	6,866.50	6,839.73	26.76	256.549	
5,500.00	5,464.54	5,605.70	5,603.48	21.24	6.29	-71.14	-1,708.82	6,874.84	6,862.68	6,835.48	27.20	252.318	
5,600.00	5,563.79	5,711.56	5,709.34	21.63	6.32	-71.24	-1,709.83	6,874.86	6,858.90	6,831.25	27.65	248.088	
5,700.00	5,663.05	5,800.00	5,797.77	22.02	6.35	-71.32	-1,710.62	6,875.04	6,855.30	6,827.21	28.10	243.983	
5,800.00	5,762.30	5,889.39	5,887.15	22.41	6.40	-71.39	-1,711.93	6,875.32	6,851.94	6,823.39	28.55	239.997	
5,900.00	5,861.56	6,012.46	6,010.19	22.80	6.44	-71.49	-1,714.86	6,875.35	6,848.44	6,819.43	29.01	236.099	
6,000.00	5,960.82	6,116.39	6,114.09	23.19	6.47	-71.57	-1,717.19	6,875.18	6,844.75	6,815.30	29.45	232.424	
6,100.00	6,060.07	6,235.24	6,232.93	23.58	6.50	-71.67	-1,719.21	6,874.77	6,840.79	6,810.90	29.89	228.865	
6,200.00	6,159.33	6,331.94	6,329.61	23.97	6.53	-71.75	-1,720.75	6,874.41	6,836.83	6,806.50	30.32	225.478	
6,300.00	6,258.58	6,425.00	6,422.66	24.36	6.56	-71.82	-1,722.07	6,874.13	6,832.91	6,802.16	30.75	222.186	
6,400.00	6,357.84	6,530.61	6,528.26	24.76	6.59	-71.91	-1,723.77	6,873.71	6,828.95	6,797.76	31.19	218.958	
6,500.00	6,457.09	6,626.79	6,624.42	25.15	6.63	-71.99	-1,725.28	6,873.41	6,825.07	6,793.45	31.62	215.830	
6,528.17	6,485.05	6,659.89	6,657.52	25.26	6.64	-72.02	-1,725.79	6,873.29	6,823.97	6,792.22	31.75	214.950	
6,550.00	6,506.71	6,675.00	6,672.63	25.34	6.65	-57.29	-1,726.00	6,873.24	6,822.76	6,790.92	31.84	214.288	
6,600.00	6,556.11	6,723.28	6,720.90	25.54	6.67	-33.94	-1,726.64	6,873.15	6,817.24	6,785.19	32.06	212.669	
6,650.00	6,605.00	6,764.43	6,762.05	25.74	6.68	-21.47	-1,727.13	6,873.08	6,807.90	6,775.63	32.27	210.999	
6,700.00	6,653.07	6,822.63	6,820.25	25.93	6.71	-14.33	-1,727.84	6,873.01	6,794.80	6,762.32	32.48	209.224	
6,750.00	6,700.02	6,854.82	6,852.43	26.12	6.73	-9.75	-1,728.17	6,872.98	6,777.99	6,745.32	32.67	207.474	
6,800.00	6,745.56	6,903.99	6,901.60	26.31	6.75	-6.54	-1,728.77	6,872.98	6,757.64	6,724.78	32.86	205.631	
6,850.00	6,789.42	6,959.21	6,956.81	26.50	6.78	-4.09	-1,729.39	6,872.91	6,733.75	6,700.70	33.05	203.773	
6,900.00	6,831.32	6,999.21	6,996.81	26.69	6.80	-2.08	-1,729.74	6,872.84	6,706.50	6,673.29	33.21	201.949	
6,950.00	6,871.01	7,041.80	7,039.40	26.87	6.82	-0.30	-1,730.10	6,872.77	6,676.09	6,642.73	33.36	200.120	
7,000.00	6,908.23	7,075.00	7,072.60	27.05	6.84	1.37	-1,730.39	6,872.71	6,642.72	6,609.22	33.50	198.316	
7,050.00	6,942.77	7,115.54	7,113.14	27.23	6.86	3.07	-1,730.69	6,872.65	6,606.58	6,572.96	33.62	196.517	
7,100.00	6,974.40	7,145.66	7,143.25	27.41	6.87	4.90	-1,730.93	6,872.58	6,567.88	6,534.15	33.72	194.767	
7,150.00	7,002.93	7,171.74	7,169.34	27.60	6.88	7.00	-1,731.17	6,872.53	6,526.89	6,493.08	33.81	193.052	
7,200.00	7,028.20	7,189.16	7,186.76	27.80	6.89	9.53	-1,731.34	6,872.51	6,483.87	6,450.00	33.88	191.381	
7,250.00	7,050.03	7,204.74	7,202.33	28.00	6.90	12.81	-1,731.49	6,872.51	6,439.10	6,405.17	33.93	189.753	
7,300.00	7,068.30	7,221.20	7,218.80	28.22	6.91	17.35	-1,731.63	6,872.52	6,392.83	6,358.85	33.97	188.164	
7,350.00	7,082.89	7,246.76	7,244.36	28.45	6.93	24.23	-1,731.81	6,872.53	6,345.32	6,311.32	34.00	186.611	
7,400.00	7,093.72	7,261.61	7,259.21	28.70	6.94	35.20	-1,731.91	6,872.52	6,296.87	6,262.86	34.01	185.138	
7,450.00	7,100.71	7,270.30	7,267.89	28.96	6.94	53.59	-1,731.97	6,872.50	6,247.79	6,213.79	34.01	183.727	
7,500.00	7,103.82	7,274.09	7,271.69	29.24	6.94	81.22	-1,732.00	6,872.50	6,198.40	6,164.41	33.99	182.372	
7,515.00	7,104.00	7,274.28	7,271.87	29.32	6.94	90.24	-1,732.00	6,872.50	6,183.56	6,149.58	33.98	181.976	
7,600.00	7,104.00	7,274.08	7,271.68	29.84	6.94	90.23	-1,732.00	6,872.50	6,099.52	6,065.59	33.93	179.747	
7,700.00	7,104.00	7,273.86	7,271.45	30.51	6.94	90.21	-1,732.00	6,872.50	6,000.69	5,966.81	33.88	177.110	
7,800.00	7,104.00	7,273.64	7,271.23	31.26	6.94	90.20	-1,732.00	6,872.50	5,901.89	5,868.06	33.83	174.457	
7,900.00	7,104.00	7,273.42	7,271.01	32.07	6.94	90.19	-1,732.00	6,872.50	5,803.14	5,769.36	33.78	171.787	
8,000.00	7,104.00	7,273.20	7,270.79	32.94	6.94	90.17	-1,731.99	6,872.50	5,704.42	5,670.69	33.73	169.100	
8,100.00	7,104.00	7,272.98	7,270.58	33.86	6.94	90.16	-1,731.99	6,872.50	5,605.76	5,572.07	33.69	166.396	
8,200.00	7,104.00	7,272.77	7,270.37	34.84	6.94	90.15	-1,731.99	6,872.50	5,507.14	5,473.49	33.65	163.672	
8,300.00	7,104.00	7,272.56	7,270.16	35.86	6.94	90.13	-1,731.99	6,872.50	5,408.58	5,374.97	33.61	160.928	
8,400.00	7,104.00	7,272.35	7,269.95	36.92	6.94	90.12	-1,731.99	6,872.50	5,310.06	5,276.49	33.57	158.163	
8,500.00	7,104.00	7,272.15	7,269.74	38.02	6.94	90.11	-1,731.99	6,872.50	5,211.61	5,178.06	33.54	155.375	
8,600.00	7,104.00	7,271.94	7,269.54	39.15	6.94	90.10	-1,731.99	6,872.50	5,113.21	5,079.69	33.51	152.565	
8,700.00	7,104.00	7,271.74	7,269.33	40.32	6.94	90.08	-1,731.98	6,872.50	5,014.88	4,981.38	33.49	149.730	
8,800.00	7,104.00	7,271.54	7,269.13	41.52	6.94	90.07	-1,731.98	6,872.50	4,916.61	4,883.13	33.48	146.868	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	7,271.34	7,268.94	42.74	6.94	90.06	-1,731.98	6,872.50	4,818.42	4,784.95	33.47	143.980	
9,000.00	7,104.00	7,271.15	7,268.74	43.99	6.94	90.05	-1,731.98	6,872.50	4,720.30	4,686.83	33.46	141.062	
9,100.00	7,104.00	7,270.95	7,268.55	45.26	6.94	90.03	-1,731.98	6,872.50	4,622.26	4,588.79	33.47	138.114	
9,200.00	7,104.00	7,270.76	7,268.35	46.55	6.94	90.02	-1,731.98	6,872.50	4,524.31	4,490.83	33.48	135.133	
9,300.00	7,104.00	7,270.57	7,268.16	47.85	6.94	90.01	-1,731.97	6,872.50	4,426.45	4,392.94	33.50	132.118	
9,400.00	7,104.00	7,270.38	7,267.98	49.18	6.94	90.00	-1,731.97	6,872.50	4,328.68	4,295.14	33.54	129.067	
9,500.00	7,104.00	7,270.19	7,267.79	50.52	6.94	89.99	-1,731.97	6,872.50	4,231.02	4,197.44	33.59	125.979	
9,600.00	7,104.00	7,270.01	7,267.61	51.88	6.94	89.98	-1,731.97	6,872.50	4,133.48	4,099.83	33.65	122.850	
9,700.00	7,104.00	7,269.83	7,267.42	53.25	6.94	89.96	-1,731.97	6,872.50	4,036.05	4,002.33	33.72	119.680	
9,800.00	7,104.00	7,269.65	7,267.24	54.63	6.94	89.95	-1,731.97	6,872.50	3,938.75	3,904.94	33.82	116.466	
9,900.00	7,104.00	7,269.47	7,267.06	56.03	6.94	89.94	-1,731.97	6,872.50	3,841.60	3,807.66	33.93	113.208	
10,000.00	7,104.00	7,269.29	7,266.89	57.43	6.94	89.93	-1,731.96	6,872.50	3,744.59	3,710.51	34.07	109.902	
10,100.00	7,104.00	7,269.11	7,266.71	58.85	6.94	89.92	-1,731.96	6,872.50	3,647.74	3,613.50	34.24	106.548	
10,200.00	7,104.00	7,268.94	7,266.54	60.27	6.94	89.91	-1,731.96	6,872.51	3,551.07	3,516.64	34.43	103.145	
10,300.00	7,104.00	7,268.77	7,266.36	61.71	6.94	89.90	-1,731.96	6,872.51	3,454.58	3,419.93	34.65	99.691	
10,400.00	7,104.00	7,268.60	7,266.19	63.15	6.94	89.89	-1,731.96	6,872.51	3,358.31	3,323.39	34.91	96.188	
10,500.00	7,104.00	7,268.43	7,266.02	64.60	6.94	89.88	-1,731.96	6,872.51	3,262.25	3,227.04	35.22	92.636	
10,600.00	7,104.00	7,268.26	7,265.86	66.05	6.94	89.87	-1,731.96	6,872.51	3,166.44	3,130.88	35.56	89.035	
10,700.00	7,104.00	7,268.10	7,265.69	67.52	6.94	89.86	-1,731.96	6,872.51	3,070.90	3,034.94	35.96	85.388	
10,800.00	7,104.00	7,267.93	7,265.53	68.99	6.94	89.85	-1,731.95	6,872.51	2,975.65	2,939.23	36.42	81.699	
10,900.00	7,104.00	7,267.77	7,265.36	70.46	6.94	89.84	-1,731.95	6,872.51	2,880.73	2,843.78	36.95	77.972	
11,000.00	7,104.00	7,267.61	7,265.20	71.94	6.94	89.83	-1,731.95	6,872.51	2,786.15	2,748.61	37.54	74.213	
11,100.00	7,104.00	7,267.45	7,265.04	73.43	6.94	89.82	-1,731.95	6,872.51	2,691.98	2,653.75	38.22	70.431	
11,200.00	7,104.00	7,267.29	7,264.88	74.92	6.94	89.81	-1,731.95	6,872.51	2,598.23	2,559.24	38.99	66.633	
11,300.00	7,104.00	7,267.13	7,264.73	76.41	6.94	89.80	-1,731.95	6,872.51	2,504.97	2,465.10	39.87	62.832	
11,400.00	7,104.00	7,266.98	7,264.57	77.91	6.94	89.79	-1,731.95	6,872.51	2,412.25	2,371.39	40.86	59.039	
11,500.00	7,104.00	7,266.82	7,264.42	79.41	6.94	89.78	-1,731.95	6,872.51	2,320.13	2,278.16	41.98	55.270	
11,600.00	7,104.00	7,266.67	7,264.26	80.92	6.94	89.77	-1,731.95	6,872.51	2,228.70	2,185.45	43.24	51.538	
11,700.00	7,104.00	7,266.52	7,264.11	82.43	6.94	89.76	-1,731.94	6,872.51	2,138.03	2,093.36	44.67	47.863	
11,800.00	7,104.00	7,266.37	7,263.96	83.94	6.94	89.75	-1,731.94	6,872.51	2,048.23	2,001.95	46.28	44.260	
11,900.00	7,104.00	7,266.22	7,263.81	85.46	6.94	89.74	-1,731.94	6,872.51	1,959.42	1,911.33	48.09	40.748	
12,000.00	7,104.00	7,266.07	7,263.67	86.98	6.94	89.73	-1,731.94	6,872.51	1,871.73	1,821.61	50.12	37.347	
12,100.00	7,104.00	7,265.93	7,263.52	88.50	6.94	89.72	-1,731.94	6,872.51	1,785.34	1,732.95	52.40	34.073	
12,200.00	7,104.00	7,265.78	7,263.38	90.03	6.94	89.71	-1,731.94	6,872.51	1,700.45	1,645.50	54.95	30.944	
12,300.00	7,104.00	7,265.64	7,263.23	91.55	6.94	89.70	-1,731.94	6,872.51	1,617.28	1,559.47	57.81	27.977	
12,400.00	7,104.00	7,265.50	7,263.09	93.08	6.94	89.69	-1,731.94	6,872.51	1,536.12	1,475.13	60.99	25.185	
12,500.00	7,104.00	7,265.35	7,262.95	94.62	6.94	89.69	-1,731.94	6,872.51	1,457.31	1,392.77	64.53	22.582	
12,600.00	7,104.00	7,265.21	7,262.81	96.15	6.94	89.68	-1,731.93	6,872.51	1,381.24	1,312.78	68.45	20.178	
12,700.00	7,104.00	7,265.08	7,262.67	97.69	6.94	89.67	-1,731.93	6,872.51	1,308.39	1,235.63	72.76	17.982	
12,800.00	7,104.00	7,264.94	7,262.53	99.23	6.94	89.66	-1,731.93	6,872.51	1,239.34	1,161.88	77.46	16.000	
12,900.00	7,104.00	7,264.80	7,262.40	100.77	6.94	89.65	-1,731.93	6,872.51	1,174.75	1,092.22	82.52	14.235	
13,000.00	7,104.00	7,264.67	7,262.26	102.31	6.94	89.64	-1,731.93	6,872.51	1,115.39	1,027.50	87.90	12.690	
13,100.00	7,104.00	7,264.53	7,262.13	103.86	6.94	89.63	-1,731.93	6,872.51	1,062.15	968.68	93.47	11.363	
13,200.00	7,104.00	7,264.40	7,262.00	105.40	6.94	89.63	-1,731.93	6,872.51	1,015.99	916.90	99.09	10.253	
13,300.00	7,104.00	7,264.27	7,261.86	106.95	6.94	89.62	-1,731.93	6,872.51	977.91	873.37	104.54	9.354	
13,400.00	7,104.00	7,264.14	7,261.73	108.50	6.94	89.61	-1,731.93	6,872.51	948.89	839.34	109.54	8.662	
13,500.00	7,104.00	7,264.01	7,261.60	110.05	6.94	89.60	-1,731.93	6,872.51	929.76	815.95	113.81	8.169	
13,600.00	7,104.00	7,263.88	7,261.47	111.60	6.94	89.59	-1,731.93	6,872.51	921.16	804.06	117.09	7.867	
13,629.64	7,104.00	7,263.84	7,261.44	112.06	6.94	89.59	-1,731.92	6,872.51	920.68	802.83	117.85	7.813	CC, ES
13,700.00	7,104.00	7,263.75	7,261.35	113.16	6.94	89.59	-1,731.92	6,872.51	923.36	804.16	119.20	7.746	SF
13,800.00	7,104.00	7,263.63	7,261.22	114.71	6.94	89.58	-1,731.92	6,872.51	936.31	816.22	120.09	7.797	
13,900.00	7,104.00	7,263.50	7,261.10	116.27	6.94	89.57	-1,731.92	6,872.51	959.55	839.74	119.82	8.009	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	7,263.38	7,260.97	117.83	6.94	89.56	-1,731.92	6,872.51	992.38	873.83	118.55	8.371	
14,100.00	7,104.00	7,263.25	7,260.85	119.38	6.94	89.55	-1,731.92	6,872.51	1,033.87	917.36	116.51	8.874	
14,200.00	7,104.00	7,263.13	7,260.73	120.94	6.94	89.55	-1,731.92	6,872.51	1,083.03	969.10	113.93	9.506	
14,300.00	7,104.00	7,263.01	7,260.60	122.50	6.94	89.54	-1,731.92	6,872.51	1,138.87	1,027.85	111.02	10.258	
14,400.00	7,104.00	7,262.89	7,260.48	124.07	6.94	89.53	-1,731.92	6,872.51	1,200.46	1,092.51	107.94	11.121	
14,500.00	7,104.00	7,262.77	7,260.36	125.63	6.94	89.52	-1,731.92	6,872.51	1,266.95	1,162.12	104.83	12.086	
14,600.00	7,104.00	7,262.65	7,260.25	127.19	6.94	89.52	-1,731.92	6,872.51	1,337.62	1,235.85	101.77	13.143	
14,700.00	7,104.00	7,262.53	7,260.13	128.76	6.94	89.51	-1,731.92	6,872.51	1,411.85	1,313.02	98.83	14.286	
14,800.00	7,104.00	7,262.42	7,260.01	130.32	6.94	89.50	-1,731.91	6,872.51	1,489.09	1,393.06	96.02	15.508	
14,900.00	7,104.00	7,262.30	7,259.90	131.89	6.94	89.50	-1,731.91	6,872.51	1,568.90	1,475.52	93.38	16.801	
15,000.00	7,104.00	7,262.19	7,259.78	133.46	6.94	89.49	-1,731.91	6,872.52	1,650.92	1,560.00	90.91	18.159	
15,100.00	7,104.00	7,262.07	7,259.67	135.02	6.94	89.48	-1,731.91	6,872.52	1,734.82	1,646.21	88.61	19.578	
15,200.00	7,104.00	7,261.96	7,259.55	136.59	6.94	89.47	-1,731.91	6,872.52	1,820.35	1,733.88	86.47	21.051	
15,300.00	7,104.00	7,261.85	7,259.44	138.16	6.94	89.47	-1,731.91	6,872.52	1,907.28	1,822.80	84.49	22.575	
15,400.00	7,104.00	7,261.73	7,259.33	139.73	6.94	89.46	-1,731.91	6,872.52	1,995.45	1,912.80	82.65	24.144	
15,500.00	7,104.00	7,261.62	7,259.22	141.30	6.94	89.45	-1,731.91	6,872.52	2,084.68	2,003.73	80.94	25.755	
15,600.00	7,104.00	7,261.51	7,259.11	142.88	6.94	89.45	-1,731.91	6,872.52	2,174.84	2,095.48	79.36	27.404	
15,700.00	7,104.00	7,261.41	7,259.00	144.45	6.94	89.44	-1,731.91	6,872.52	2,265.84	2,187.94	77.90	29.088	
15,800.00	7,104.00	7,261.30	7,258.89	146.02	6.94	89.43	-1,731.91	6,872.52	2,357.56	2,281.02	76.54	30.804	
15,900.00	7,104.00	7,261.19	7,258.79	147.60	6.94	89.43	-1,731.91	6,872.52	2,449.93	2,374.66	75.27	32.548	
16,000.00	7,104.00	7,261.08	7,258.68	149.17	6.94	89.42	-1,731.91	6,872.52	2,542.88	2,468.78	74.09	34.319	
16,100.00	7,104.00	7,260.98	7,258.57	150.74	6.94	89.41	-1,731.90	6,872.52	2,636.34	2,563.34	73.00	36.114	
16,200.00	7,104.00	7,260.87	7,258.47	152.32	6.94	89.41	-1,731.90	6,872.52	2,730.27	2,658.29	71.98	37.931	
16,300.00	7,104.00	7,260.77	7,258.37	153.89	6.94	89.40	-1,731.90	6,872.52	2,824.61	2,753.59	71.03	39.767	
16,400.00	7,104.00	7,260.67	7,258.26	155.47	6.94	89.39	-1,731.90	6,872.52	2,919.33	2,849.20	70.14	41.622	
16,500.00	7,104.00	7,260.56	7,258.16	157.05	6.94	89.39	-1,731.90	6,872.52	3,014.40	2,945.09	69.31	43.493	
16,600.00	7,104.00	7,260.46	7,258.06	158.63	6.94	89.38	-1,731.90	6,872.52	3,109.77	3,041.24	68.53	45.378	
16,700.00	7,104.00	7,260.36	7,257.96	160.20	6.94	89.37	-1,731.90	6,872.52	3,205.42	3,137.62	67.80	47.277	
16,800.00	7,104.00	7,260.26	7,257.86	161.78	6.94	89.37	-1,731.90	6,872.52	3,301.33	3,234.21	67.12	49.187	
16,900.00	7,104.00	7,260.16	7,257.76	163.36	6.94	89.36	-1,731.90	6,872.52	3,397.48	3,331.00	66.48	51.109	
17,000.00	7,104.00	7,260.06	7,257.66	164.94	6.94	89.36	-1,731.90	6,872.52	3,493.84	3,427.97	65.87	53.039	
17,100.00	7,104.00	7,259.97	7,257.56	166.52	6.94	89.35	-1,731.90	6,872.52	3,590.40	3,525.10	65.31	54.978	
17,200.00	7,104.00	7,259.87	7,257.46	168.10	6.94	89.34	-1,731.90	6,872.52	3,687.15	3,622.38	64.77	56.925	
17,300.00	7,104.00	7,259.77	7,257.37	169.68	6.93	89.34	-1,731.90	6,872.52	3,784.06	3,719.80	64.27	58.878	
17,400.00	7,104.00	7,259.67	7,257.27	171.26	6.93	89.33	-1,731.90	6,872.52	3,881.14	3,817.34	63.80	60.837	
17,500.00	7,104.00	7,259.58	7,257.18	172.84	6.93	89.33	-1,731.90	6,872.52	3,978.35	3,915.00	63.35	62.801	
17,600.00	7,104.00	7,259.49	7,257.08	174.42	6.93	89.32	-1,731.89	6,872.52	4,075.70	4,012.78	62.93	64.768	
17,700.00	7,104.00	7,259.39	7,256.99	176.00	6.93	89.31	-1,731.89	6,872.52	4,173.18	4,110.65	62.53	66.740	
17,800.00	7,104.00	7,259.30	7,256.89	177.59	6.93	89.31	-1,731.89	6,872.52	4,270.77	4,208.62	62.15	68.714	
17,900.00	7,104.00	7,259.21	7,256.80	179.17	6.93	89.30	-1,731.89	6,872.52	4,368.47	4,306.68	61.80	70.690	
18,000.00	7,104.00	7,259.11	7,256.71	180.75	6.93	89.30	-1,731.89	6,872.52	4,466.28	4,404.82	61.46	72.668	
18,100.00	7,104.00	7,259.02	7,256.62	182.33	6.93	89.29	-1,731.89	6,872.52	4,564.18	4,503.03	61.14	74.647	
18,200.00	7,104.00	7,258.93	7,256.53	183.92	6.93	89.29	-1,731.89	6,872.52	4,662.16	4,601.32	60.84	76.626	
18,300.00	7,104.00	7,258.84	7,256.44	185.50	6.93	89.28	-1,731.89	6,872.52	4,760.24	4,699.68	60.56	78.606	
18,400.00	7,104.00	7,258.75	7,256.35	187.09	6.93	89.27	-1,731.89	6,872.52	4,858.39	4,798.10	60.29	80.585	
18,500.00	7,104.00	7,258.66	7,256.26	188.67	6.93	89.27	-1,731.89	6,872.52	4,956.61	4,896.58	60.03	82.564	
18,600.00	7,104.00	7,258.57	7,256.17	190.26	6.93	89.26	-1,731.89	6,872.52	5,054.90	4,995.11	59.79	84.542	
18,700.00	7,104.00	7,258.49	7,256.08	191.84	6.93	89.26	-1,731.89	6,872.52	5,153.26	5,093.70	59.56	86.518	
18,800.00	7,104.00	7,258.40	7,256.00	193.43	6.93	89.25	-1,731.89	6,872.52	5,251.69	5,192.34	59.35	88.493	
18,900.00	7,104.00	7,258.31	7,255.91	195.01	6.93	89.25	-1,731.89	6,872.52	5,350.17	5,291.02	59.14	90.465	
19,000.00	7,104.00	7,258.23	7,255.82	196.60	6.93	89.24	-1,731.89	6,872.52	5,448.70	5,389.75	58.95	92.435	
19,100.00	7,104.00	7,258.14	7,255.74	198.18	6.93	89.24	-1,731.89	6,872.52	5,547.29	5,488.53	58.76	94.402	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #188C - OH - OH-SVY

Offset Site Error: 0.00 usft

Survey Program: 100-Standard Keeper 104 **Offset Well Error:** 3.28 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	7,258.06	7,255.65	199.77	6.93	89.23	-1,731.89	6,872.52	5,645.93	5,587.34	58.59	96.367	
19,300.00	7,104.00	7,257.97	7,255.57	201.36	6.93	89.23	-1,731.88	6,872.52	5,744.61	5,686.19	58.42	98.328	
19,400.00	7,104.00	7,257.89	7,255.48	202.94	6.93	89.22	-1,731.88	6,872.52	5,843.34	5,785.07	58.27	100.286	
19,500.00	7,104.00	7,257.81	7,255.40	204.53	6.93	89.22	-1,731.88	6,872.52	5,942.11	5,883.99	58.12	102.240	
19,600.00	7,104.00	7,257.72	7,255.32	206.12	6.93	89.21	-1,731.88	6,872.52	6,040.92	5,982.94	57.98	104.191	
19,700.00	7,104.00	7,257.64	7,255.24	207.70	6.93	89.21	-1,731.88	6,872.52	6,139.77	6,081.93	57.85	106.137	
19,800.00	7,104.00	7,257.56	7,255.16	209.29	6.93	89.20	-1,731.88	6,872.52	6,238.66	6,180.94	57.72	108.079	
19,900.00	7,104.00	7,257.48	7,255.08	210.88	6.93	89.20	-1,731.88	6,872.52	6,337.58	6,279.98	57.61	110.017	
20,000.00	7,104.00	7,257.40	7,254.99	212.47	6.93	89.19	-1,731.88	6,872.52	6,436.54	6,379.04	57.49	111.950	
20,100.00	7,104.00	7,257.32	7,254.91	214.05	6.93	89.19	-1,731.88	6,872.52	6,535.53	6,478.14	57.39	113.879	
20,200.00	7,104.00	7,257.24	7,254.84	215.64	6.93	89.18	-1,731.88	6,872.52	6,634.54	6,577.25	57.29	115.802	
20,215.00	7,104.00	7,257.23	7,254.82	215.88	6.93	89.18	-1,731.88	6,872.52	6,649.40	6,592.13	57.28	116.090	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-98.33	-1,366.60	-9,336.21	9,435.72				
100.00	100.00	79.00	79.00	3.29	0.70	-98.33	-1,366.60	-9,336.21	9,435.70	9,431.71	3.99	2,365.111	
200.00	200.00	179.00	179.00	3.34	1.59	-98.33	-1,366.60	-9,336.21	9,435.70	9,430.78	4.92	1,917.106	
300.00	300.00	279.00	279.00	3.42	2.92	-98.33	-1,366.60	-9,336.21	9,435.70	9,429.36	6.34	1,488.091	
400.00	400.00	379.00	379.00	3.54	4.72	-98.33	-1,366.60	-9,336.21	9,435.70	9,427.43	8.26	1,142.044	
500.00	500.00	479.00	479.00	3.69	6.53	-98.33	-1,366.60	-9,336.21	9,435.70	9,425.48	10.21	923.745 CC	
600.00	599.98	578.45	578.44	3.86	8.32	111.67	-1,366.29	-9,336.21	9,436.30	9,424.12	12.18	774.978	
700.00	699.84	677.31	677.31	4.04	10.10	111.66	-1,366.36	-9,336.21	9,438.24	9,424.10	14.14	667.250	
800.00	799.45	775.95	775.95	4.26	11.88	111.65	-1,366.51	-9,336.21	9,441.49	9,425.36	16.13	585.173	
849.50	848.63	827.65	827.63	4.37	12.82	111.65	-1,366.60	-9,336.21	9,443.58	9,426.40	17.18	549.591	
900.00	898.77	877.78	877.77	4.49	13.74	103.41	-1,366.60	-9,336.21	9,445.43	9,427.20	18.23	518.185	
973.84	972.07	951.08	951.07	4.68	15.09	91.34	-1,366.60	-9,336.21	9,446.57	9,426.80	19.77	477.942	
1,000.00	998.03	977.05	977.03	4.74	15.57	91.35	-1,366.60	-9,336.21	9,446.64	9,426.33	20.31	465.077	
1,100.00	1,097.29	1,074.66	1,074.65	5.02	17.37	91.43	-1,366.20	-9,336.21	9,446.89	9,424.50	22.38	422.033	
1,200.00	1,196.54	1,171.15	1,171.13	5.30	19.15	91.50	-1,366.42	-9,336.21	9,447.23	9,422.78	24.45	386.374	
1,300.00	1,295.80	1,274.83	1,274.80	5.61	21.09	91.57	-1,366.60	-9,336.21	9,447.58	9,420.89	26.69	353.944	
1,400.00	1,395.06	1,374.08	1,374.06	5.92	22.97	91.65	-1,366.60	-9,336.21	9,447.93	9,419.05	28.88	327.112	
1,500.00	1,494.31	1,473.11	1,473.08	6.24	24.84	91.72	-1,366.06	-9,336.21	9,448.22	9,417.14	31.08	304.012	
1,600.00	1,593.57	1,570.21	1,570.18	6.57	26.68	91.80	-1,366.16	-9,336.21	9,448.61	9,415.36	33.25	284.207	
1,700.00	1,692.82	1,667.35	1,667.32	6.91	28.52	91.87	-1,366.43	-9,336.21	9,449.04	9,413.62	35.42	266.769	
1,800.00	1,792.08	1,771.14	1,771.08	7.25	30.55	91.94	-1,366.60	-9,336.21	9,449.47	9,411.67	37.80	250.013	
1,900.00	1,891.33	1,870.39	1,870.33	7.60	32.54	92.01	-1,366.60	-9,336.21	9,449.89	9,409.76	40.13	235.459	
2,000.00	1,990.59	1,969.35	1,969.29	7.95	34.53	92.09	-1,365.78	-9,336.21	9,450.22	9,407.75	42.47	222.513	
2,100.00	2,089.85	2,065.59	2,065.53	8.30	36.46	92.16	-1,365.93	-9,336.21	9,450.70	9,405.94	44.76	211.159	
2,200.00	2,189.10	2,161.90	2,161.83	8.66	38.39	92.23	-1,366.31	-9,336.21	9,451.22	9,404.17	47.05	200.890	
2,300.00	2,288.36	2,267.47	2,267.36	9.02	40.55	92.31	-1,366.60	-9,336.21	9,451.74	9,402.17	49.57	190.670	
2,400.00	2,387.61	2,366.73	2,366.61	9.39	42.62	92.38	-1,366.60	-9,336.21	9,452.24	9,400.24	52.00	181.759	
2,500.00	2,486.87	2,465.63	2,465.51	9.76	44.68	92.46	-1,365.52	-9,336.21	9,452.63	9,398.20	54.43	173.658	
2,600.00	2,586.12	2,561.06	2,560.93	10.13	46.67	92.53	-1,365.71	-9,336.21	9,453.19	9,396.40	56.79	166.459	
2,700.00	2,685.38	2,656.58	2,656.44	10.50	48.66	92.60	-1,366.22	-9,336.21	9,453.80	9,394.65	59.15	159.824	
2,800.00	2,784.63	2,763.83	2,763.63	10.87	50.90	92.67	-1,366.60	-9,336.21	9,454.41	9,392.64	61.77	153.061	
2,900.00	2,883.89	2,863.08	2,862.89	11.24	52.99	92.75	-1,366.60	-9,336.21	9,454.99	9,390.76	64.23	147.210	
3,000.00	2,983.15	2,962.34	2,962.15	11.62	55.07	92.82	-1,366.60	-9,336.21	9,455.58	9,388.89	66.69	141.788	
3,100.00	3,082.40	3,060.09	3,059.89	12.00	57.12	92.90	-1,365.29	-9,336.21	9,456.04	9,386.93	69.12	136.809	
3,200.00	3,181.66	3,156.46	3,156.24	12.38	59.15	92.97	-1,365.56	-9,336.21	9,456.70	9,385.18	71.52	132.224	
3,300.00	3,280.91	3,252.89	3,252.67	12.75	61.17	93.04	-1,366.09	-9,336.21	9,457.41	9,383.48	73.92	127.933	
3,400.00	3,380.17	3,337.00	3,336.71	13.13	62.94	93.10	-1,366.60	-9,336.21	9,458.15	9,382.07	76.07	124.331 ES	
3,500.00	3,479.42	3,337.00	3,336.71	13.52	62.94	93.10	-1,366.60	-9,336.21	9,459.58	9,383.13	76.45	123.741	
3,600.00	3,578.68	3,337.00	3,336.71	13.90	62.94	93.10	-1,366.60	-9,336.21	9,462.06	9,385.25	76.81	123.183	
3,700.00	3,677.94	3,337.00	3,336.71	14.28	62.94	93.10	-1,366.60	-9,336.21	9,465.61	9,388.44	77.17	122.656	
3,800.00	3,777.19	3,337.00	3,336.71	14.66	62.94	93.10	-1,366.60	-9,336.21	9,470.20	9,392.68	77.52	122.159	
3,900.00	3,876.45	3,337.00	3,336.71	15.05	62.94	93.10	-1,366.60	-9,336.21	9,475.86	9,397.99	77.87	121.693	
4,000.00	3,975.70	3,337.00	3,336.71	15.43	62.94	93.10	-1,366.60	-9,336.21	9,482.56	9,404.35	78.20	121.256	
4,100.00	4,074.96	3,337.00	3,336.71	15.82	62.94	93.10	-1,366.60	-9,336.21	9,490.31	9,411.78	78.53	120.849	
4,200.00	4,174.21	3,337.00	3,336.71	16.20	62.94	93.10	-1,366.60	-9,336.21	9,499.11	9,420.26	78.85	120.471	
4,300.00	4,273.47	3,337.00	3,336.71	16.59	62.94	93.10	-1,366.60	-9,336.21	9,508.95	9,429.79	79.16	120.121	
4,400.00	4,372.73	3,337.00	3,336.71	16.97	62.94	93.10	-1,366.60	-9,336.21	9,519.83	9,440.36	79.46	119.800	
4,500.00	4,471.98	3,337.00	3,336.71	17.36	62.94	93.10	-1,366.60	-9,336.21	9,531.75	9,451.99	79.76	119.507	
4,600.00	4,571.24	3,337.00	3,336.71	17.75	62.94	93.10	-1,366.60	-9,336.21	9,544.70	9,464.65	80.05	119.241	
4,700.00	4,670.49	3,337.00	3,336.71	18.13	62.94	93.10	-1,366.60	-9,336.21	9,558.68	9,478.35	80.32	119.002	
4,800.00	4,769.75	3,337.00	3,336.71	18.52	62.94	93.10	-1,366.60	-9,336.21	9,573.68	9,493.09	80.59	118.790	
4,900.00	4,869.00	3,337.00	3,336.71	18.91	62.94	93.10	-1,366.60	-9,336.21	9,589.70	9,508.85	80.86	118.604	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	3,337.00	3,336.71	19.30	62.94	93.10	-1,366.60	-9,336.21	9,606.74	9,525.63	81.11	118.443	
5,100.00	5,067.51	3,337.00	3,336.71	19.69	62.94	93.10	-1,366.60	-9,336.21	9,624.79	9,543.43	81.35	118.309	
5,200.00	5,166.77	3,337.00	3,336.71	20.07	62.94	93.10	-1,366.60	-9,336.21	9,643.84	9,562.25	81.59	118.199	
5,300.00	5,266.03	3,337.00	3,336.71	20.46	62.94	93.10	-1,366.60	-9,336.21	9,663.88	9,582.07	81.82	118.114	
5,400.00	5,365.28	3,337.00	3,336.71	20.85	62.94	93.10	-1,366.60	-9,336.21	9,684.92	9,602.88	82.04	118.053	
5,500.00	5,464.54	3,337.00	3,336.71	21.24	62.94	93.10	-1,366.60	-9,336.21	9,706.94	9,624.69	82.25	118.016	
5,600.00	5,563.79	3,337.00	3,336.71	21.63	62.94	93.10	-1,366.60	-9,336.21	9,729.95	9,647.49	82.45	118.003	SF
5,700.00	5,663.05	3,337.00	3,336.71	22.02	62.94	93.10	-1,366.60	-9,336.21	9,753.92	9,671.27	82.65	118.013	
5,800.00	5,762.30	3,337.00	3,336.71	22.41	62.94	93.10	-1,366.60	-9,336.21	9,778.85	9,696.01	82.84	118.046	
5,900.00	5,861.56	3,337.00	3,336.71	22.80	62.94	93.10	-1,366.60	-9,336.21	9,804.74	9,721.72	83.02	118.100	
6,000.00	5,960.82	3,337.00	3,336.71	23.19	62.94	93.10	-1,366.60	-9,336.21	9,831.59	9,748.39	83.19	118.177	
6,100.00	6,060.07	3,337.00	3,336.71	23.58	62.94	93.10	-1,366.60	-9,336.21	9,859.37	9,776.01	83.36	118.276	
6,200.00	6,159.33	3,337.00	3,336.71	23.97	62.94	93.10	-1,366.60	-9,336.21	9,888.08	9,804.57	83.52	118.396	
6,300.00	6,258.58	3,337.00	3,336.71	24.36	62.94	93.10	-1,366.60	-9,336.21	9,917.72	9,834.06	83.67	118.536	
6,400.00	6,357.84	3,337.00	3,336.71	24.76	62.94	93.10	-1,366.60	-9,336.21	9,948.28	9,864.47	83.81	118.697	
6,500.00	6,457.09	3,337.00	3,336.71	25.15	62.94	93.10	-1,366.60	-9,336.21	9,979.75	9,895.80	83.95	118.879	
6,528.17	6,485.05	3,337.00	3,336.71	25.26	62.94	93.10	-1,366.60	-9,336.21	9,988.77	9,904.79	83.99	118.933	
6,550.00	6,506.71	3,337.00	3,336.71	25.34	62.94	107.75	-1,366.60	-9,336.21	9,996.17	9,912.15	84.02	118.979	
6,600.00	6,556.11	3,337.00	3,336.71	25.54	62.94	130.83	-1,366.60	-9,336.21	10,015.86	9,931.78	84.08	119.116	
6,650.00	6,605.00	3,337.00	3,336.71	25.74	62.94	142.91	-1,366.60	-9,336.21	10,039.27	9,955.12	84.15	119.298	
6,700.00	6,653.07	3,337.00	3,336.71	25.93	62.94	149.53	-1,366.60	-9,336.21	10,066.23	9,982.01	84.22	119.525	
6,750.00	6,700.02	3,337.00	3,336.71	26.12	62.94	153.42	-1,366.60	-9,336.21	10,096.54	10,012.26	84.28	119.796	
6,800.00	6,745.56	3,337.00	3,336.71	26.31	62.94	155.75	-1,366.60	-9,336.21	10,129.99	10,045.65	84.34	120.107	
6,850.00	6,789.42	3,337.00	3,336.71	26.50	62.94	157.08	-1,366.60	-9,336.21	10,166.35	10,081.95	84.40	120.456	
6,900.00	6,831.32	3,337.00	3,336.71	26.69	62.94	157.64	-1,366.60	-9,336.21	10,205.35	10,120.90	84.45	120.841	
6,950.00	6,871.01	3,337.00	3,336.71	26.87	62.94	157.54	-1,366.60	-9,336.21	10,246.73	10,162.22	84.50	121.258	
7,000.00	6,908.23	3,337.00	3,336.71	27.05	62.94	156.73	-1,366.60	-9,336.21	10,290.20	10,205.65	84.55	121.704	
7,050.00	6,942.77	3,337.00	3,336.71	27.23	62.94	155.03	-1,366.60	-9,336.21	10,335.48	10,250.88	84.60	122.174	
7,100.00	6,974.40	3,337.00	3,336.71	27.41	62.94	152.00	-1,366.60	-9,336.21	10,382.26	10,297.62	84.64	122.664	
7,150.00	7,002.93	3,337.00	3,336.71	27.60	62.94	146.63	-1,366.60	-9,336.21	10,430.24	10,345.56	84.68	123.171	
7,200.00	7,028.20	3,337.00	3,336.71	27.80	62.94	136.43	-1,366.60	-9,336.21	10,479.10	10,394.38	84.72	123.689	
7,250.00	7,050.03	3,337.00	3,336.71	28.00	62.94	115.10	-1,366.60	-9,336.21	10,528.54	10,443.78	84.76	124.214	
7,300.00	7,068.30	3,337.00	3,336.71	28.22	62.94	76.04	-1,366.60	-9,336.21	10,578.24	10,493.44	84.80	124.739	
7,350.00	7,082.89	3,337.00	3,336.71	28.45	62.94	41.64	-1,366.60	-9,336.21	10,627.90	10,543.06	84.85	125.261	
7,400.00	7,093.72	3,337.00	3,336.71	28.70	62.94	24.45	-1,366.60	-9,336.21	10,677.21	10,592.32	84.89	125.772	
7,450.00	7,100.71	3,337.00	3,336.71	28.96	62.94	15.81	-1,366.60	-9,336.21	10,725.88	10,640.93	84.95	126.268	
7,500.00	7,103.82	3,337.00	3,336.71	29.24	62.94	10.84	-1,366.60	-9,336.21	10,773.61	10,688.60	85.00	126.742	
7,515.00	7,104.00	3,337.00	3,336.71	29.32	62.94	9.75	-1,366.60	-9,336.21	10,787.71	10,702.69	85.02	126.882	
7,600.00	7,104.00	3,337.00	3,336.71	29.84	62.94	9.75	-1,366.60	-9,336.21	10,867.29	10,782.15	85.14	127.642	
7,700.00	7,104.00	3,337.00	3,336.71	30.51	62.94	9.75	-1,366.60	-9,336.21	10,961.03	10,875.75	85.28	128.532	
7,800.00	7,104.00	3,337.00	3,336.71	31.26	62.94	9.75	-1,366.60	-9,336.21	11,054.88	10,969.46	85.42	129.420	
7,900.00	7,104.00	3,337.00	3,336.71	32.07	62.94	9.75	-1,366.60	-9,336.21	11,148.84	11,063.28	85.56	130.306	
8,000.00	7,104.00	3,337.00	3,336.71	32.94	62.94	9.75	-1,366.60	-9,336.21	11,242.90	11,157.20	85.70	131.190	
8,100.00	7,104.00	3,337.00	3,336.71	33.86	62.94	9.75	-1,366.60	-9,336.21	11,337.06	11,251.22	85.84	132.072	
8,200.00	7,104.00	3,337.00	3,336.71	34.84	62.94	9.75	-1,366.60	-9,336.21	11,431.32	11,345.34	85.98	132.952	
8,300.00	7,104.00	3,337.00	3,336.71	35.86	62.94	9.75	-1,366.60	-9,336.21	11,525.68	11,439.56	86.12	133.830	
8,400.00	7,104.00	3,337.00	3,336.71	36.92	62.94	9.75	-1,366.60	-9,336.21	11,620.13	11,533.87	86.26	134.707	
8,500.00	7,104.00	3,337.00	3,336.71	38.02	62.94	9.75	-1,366.60	-9,336.21	11,714.67	11,628.27	86.40	135.581	
8,600.00	7,104.00	3,337.00	3,336.71	39.15	62.94	9.75	-1,366.60	-9,336.21	11,809.31	11,722.76	86.54	136.454	
8,700.00	7,104.00	3,337.00	3,336.71	40.32	62.94	9.75	-1,366.60	-9,336.21	11,904.03	11,817.34	86.69	137.325	
8,800.00	7,104.00	3,337.00	3,336.71	41.52	62.94	9.75	-1,366.60	-9,336.21	11,998.84	11,912.01	86.83	138.194	
8,900.00	7,104.00	3,337.00	3,336.71	42.74	62.94	9.75	-1,366.60	-9,336.21	12,093.73	12,006.76	86.97	139.062	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	3,337.00	3,336.71	43.99	62.94	9.75	-1,366.60	-9,336.21	12,188.70	12,101.59	87.11	139.928	
9,100.00	7,104.00	3,337.00	3,336.71	45.26	62.94	9.75	-1,366.60	-9,336.21	12,283.75	12,196.50	87.25	140.792	
9,200.00	7,104.00	3,337.00	3,336.71	46.55	62.94	9.75	-1,366.60	-9,336.21	12,378.88	12,291.49	87.39	141.655	
9,300.00	7,104.00	3,337.00	3,336.71	47.85	62.94	9.75	-1,366.60	-9,336.21	12,474.09	12,386.56	87.53	142.516	
9,400.00	7,104.00	3,337.00	3,336.71	49.18	62.94	9.75	-1,366.60	-9,336.21	12,569.37	12,481.70	87.67	143.376	
9,500.00	7,104.00	3,337.00	3,336.71	50.52	62.94	9.75	-1,366.60	-9,336.21	12,664.72	12,576.92	87.81	144.234	
9,600.00	7,104.00	3,337.00	3,336.71	51.88	62.94	9.75	-1,366.60	-9,336.21	12,760.15	12,672.20	87.95	145.091	
9,700.00	7,104.00	3,337.00	3,336.71	53.25	62.94	9.75	-1,366.60	-9,336.21	12,855.64	12,767.56	88.09	145.946	
9,800.00	7,104.00	3,337.00	3,336.71	54.63	62.94	9.75	-1,366.60	-9,336.21	12,951.21	12,862.98	88.22	146.800	
9,900.00	7,104.00	3,337.00	3,336.71	56.03	62.94	9.75	-1,366.60	-9,336.21	13,046.83	12,958.47	88.36	147.652	
10,000.00	7,104.00	3,337.00	3,336.71	57.43	62.94	9.75	-1,366.60	-9,336.21	13,142.53	13,054.03	88.50	148.503	
10,100.00	7,104.00	3,337.00	3,336.71	58.85	62.94	9.75	-1,366.60	-9,336.21	13,238.29	13,149.65	88.64	149.352	
10,200.00	7,104.00	3,337.00	3,336.71	60.27	62.94	9.75	-1,366.60	-9,336.21	13,334.11	13,245.33	88.78	150.200	
10,300.00	7,104.00	3,337.00	3,336.71	61.71	62.94	9.75	-1,366.60	-9,336.21	13,429.99	13,341.07	88.91	151.047	
10,400.00	7,104.00	3,337.00	3,336.71	63.15	62.94	9.75	-1,366.60	-9,336.21	13,525.93	13,436.88	89.05	151.892	
10,500.00	7,104.00	3,337.00	3,336.71	64.60	62.94	9.75	-1,366.60	-9,336.21	13,621.93	13,532.74	89.19	152.736	
10,600.00	7,104.00	3,337.00	3,336.71	66.05	62.94	9.75	-1,366.60	-9,336.21	13,717.98	13,628.66	89.32	153.578	
10,700.00	7,104.00	3,337.00	3,336.71	67.52	62.94	9.75	-1,366.60	-9,336.21	13,814.09	13,724.64	89.46	154.419	
10,800.00	7,104.00	3,337.00	3,336.71	68.99	62.94	9.75	-1,366.60	-9,336.21	13,910.26	13,820.67	89.59	155.259	
10,900.00	7,104.00	3,337.00	3,336.71	70.46	62.94	9.75	-1,366.60	-9,336.21	14,006.48	13,916.75	89.73	156.097	
11,000.00	7,104.00	3,337.00	3,336.71	71.94	62.94	9.75	-1,366.60	-9,336.21	14,102.75	14,012.89	89.86	156.934	
11,100.00	7,104.00	3,337.00	3,336.71	73.43	62.94	9.75	-1,366.60	-9,336.21	14,199.08	14,109.08	90.00	157.770	
11,200.00	7,104.00	3,337.00	3,336.71	74.92	62.94	9.75	-1,366.60	-9,336.21	14,295.45	14,205.32	90.13	158.604	
11,300.00	7,104.00	3,337.00	3,336.71	76.41	62.94	9.75	-1,366.60	-9,336.21	14,391.88	14,301.61	90.27	159.437	
11,400.00	7,104.00	3,337.00	3,336.71	77.91	62.94	9.75	-1,366.60	-9,336.21	14,488.35	14,397.95	90.40	160.269	
11,500.00	7,104.00	3,337.00	3,336.71	79.41	62.94	9.75	-1,366.60	-9,336.21	14,584.87	14,494.34	90.53	161.099	
11,600.00	7,104.00	3,337.00	3,336.71	80.92	62.94	9.75	-1,366.60	-9,336.21	14,681.44	14,590.77	90.67	161.928	
11,700.00	7,104.00	3,337.00	3,336.71	82.43	62.94	9.75	-1,366.60	-9,336.21	14,778.05	14,687.25	90.80	162.756	
11,800.00	7,104.00	3,337.00	3,336.71	83.94	62.94	9.75	-1,366.60	-9,336.21	14,874.71	14,783.78	90.93	163.582	
11,900.00	7,104.00	3,337.00	3,336.71	85.46	62.94	9.75	-1,366.60	-9,336.21	14,971.41	14,880.35	91.06	164.407	
12,000.00	7,104.00	3,337.00	3,336.71	86.98	62.94	9.75	-1,366.60	-9,336.21	15,068.16	14,976.96	91.19	165.230	
12,100.00	7,104.00	3,337.00	3,336.71	88.50	62.94	9.75	-1,366.60	-9,336.21	15,164.94	15,073.62	91.33	166.053	
12,200.00	7,104.00	3,337.00	3,336.71	90.03	62.94	9.75	-1,366.60	-9,336.21	15,261.77	15,170.31	91.46	166.873	
12,300.00	7,104.00	3,337.00	3,336.71	91.55	62.94	9.75	-1,366.60	-9,336.21	15,358.64	15,267.05	91.59	167.693	
12,400.00	7,104.00	3,337.00	3,336.71	93.08	62.94	9.75	-1,366.60	-9,336.21	15,455.55	15,363.83	91.72	168.511	
12,500.00	7,104.00	3,337.00	3,336.71	94.62	62.94	9.75	-1,366.60	-9,336.21	15,552.50	15,460.65	91.85	169.328	
12,600.00	7,104.00	3,337.00	3,336.71	96.15	62.94	9.75	-1,366.60	-9,336.21	15,649.48	15,557.51	91.98	170.143	
12,700.00	7,104.00	3,337.00	3,336.71	97.69	62.94	9.75	-1,366.60	-9,336.21	15,746.51	15,654.40	92.11	170.958	
12,800.00	7,104.00	3,337.00	3,336.71	99.23	62.94	9.75	-1,366.60	-9,336.21	15,843.57	15,751.33	92.24	171.770	
12,900.00	7,104.00	3,337.00	3,336.71	100.77	62.94	9.75	-1,366.60	-9,336.21	15,940.67	15,848.30	92.37	172.582	
13,000.00	7,104.00	3,337.00	3,336.71	102.31	62.94	9.75	-1,366.60	-9,336.21	16,037.80	15,945.30	92.49	173.392	
13,100.00	7,104.00	3,337.00	3,336.71	103.86	62.94	9.75	-1,366.60	-9,336.21	16,134.97	16,042.34	92.62	174.201	
13,200.00	7,104.00	3,337.00	3,336.71	105.40	62.94	9.75	-1,366.60	-9,336.21	16,232.17	16,139.42	92.75	175.008	
13,300.00	7,104.00	3,337.00	3,336.71	106.95	62.94	9.75	-1,366.60	-9,336.21	16,329.41	16,236.53	92.88	175.814	
13,400.00	7,104.00	3,337.00	3,336.71	108.50	62.94	9.75	-1,366.60	-9,336.21	16,426.68	16,333.67	93.01	176.618	
13,500.00	7,104.00	3,337.00	3,336.71	110.05	62.94	9.75	-1,366.60	-9,336.21	16,523.98	16,430.84	93.13	177.422	
13,600.00	7,104.00	3,337.00	3,336.71	111.60	62.94	9.75	-1,366.60	-9,336.21	16,621.31	16,528.05	93.26	178.223	
13,700.00	7,104.00	3,337.00	3,336.71	113.16	62.94	9.75	-1,366.60	-9,336.21	16,718.68	16,625.29	93.39	179.024	
13,800.00	7,104.00	3,337.00	3,336.71	114.71	62.94	9.75	-1,366.60	-9,336.21	16,816.07	16,722.56	93.51	179.823	
13,900.00	7,104.00	3,337.00	3,336.71	116.27	62.94	9.75	-1,366.60	-9,336.21	16,913.50	16,819.86	93.64	180.620	
14,000.00	7,104.00	3,337.00	3,336.71	117.83	62.94	9.75	-1,366.60	-9,336.21	17,010.96	16,917.19	93.77	181.416	
14,100.00	7,104.00	3,337.00	3,336.71	119.38	62.94	9.75	-1,366.60	-9,336.21	17,108.44	17,014.55	93.89	182.211	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	3,337.00	3,336.71	120.94	62.94	9.75	-1,366.60	-9,336.21	17,205.96	17,111.94	94.02	183.005	
14,300.00	7,104.00	3,337.00	3,336.71	122.50	62.94	9.75	-1,366.60	-9,336.21	17,303.50	17,209.36	94.14	183.797	
14,400.00	7,104.00	3,337.00	3,336.71	124.07	62.94	9.75	-1,366.60	-9,336.21	17,401.07	17,306.80	94.27	184.587	
14,500.00	7,104.00	3,337.00	3,336.71	125.63	62.94	9.75	-1,366.60	-9,336.21	17,498.67	17,404.28	94.40	185.376	
14,600.00	7,104.00	3,337.00	3,336.71	127.19	62.94	9.75	-1,366.60	-9,336.21	17,596.30	17,501.78	94.52	186.164	
14,700.00	7,104.00	3,337.00	3,336.71	128.76	62.94	9.75	-1,366.60	-9,336.21	17,693.95	17,599.30	94.65	186.950	
14,800.00	7,104.00	3,337.00	3,336.71	130.32	62.94	9.75	-1,366.60	-9,336.21	17,791.63	17,696.86	94.77	187.735	
14,900.00	7,104.00	3,337.00	3,336.71	131.89	62.94	9.75	-1,366.60	-9,336.21	17,889.33	17,794.44	94.89	188.518	
15,000.00	7,104.00	3,337.00	3,336.71	133.46	62.94	9.75	-1,366.60	-9,336.21	17,987.06	17,892.04	95.02	189.300	
15,100.00	7,104.00	3,337.00	3,336.71	135.02	62.94	9.75	-1,366.60	-9,336.21	18,084.81	17,989.67	95.14	190.081	
15,200.00	7,104.00	3,337.00	3,336.71	136.59	62.94	9.75	-1,366.60	-9,336.21	18,182.59	18,087.32	95.27	190.859	
15,300.00	7,104.00	3,337.00	3,336.71	138.16	62.94	9.75	-1,366.60	-9,336.21	18,280.39	18,185.00	95.39	191.637	
15,400.00	7,104.00	3,337.00	3,336.71	139.73	62.94	9.75	-1,366.60	-9,336.21	18,378.22	18,282.71	95.51	192.413	
15,500.00	7,104.00	3,337.00	3,336.71	141.30	62.94	9.75	-1,366.60	-9,336.21	18,476.07	18,380.43	95.64	193.188	
15,600.00	7,104.00	3,337.00	3,336.71	142.88	62.94	9.75	-1,366.60	-9,336.21	18,573.94	18,478.18	95.76	193.961	
15,700.00	7,104.00	3,337.00	3,336.71	144.45	62.94	9.75	-1,366.60	-9,336.21	18,671.84	18,575.95	95.88	194.732	
15,800.00	7,104.00	3,337.00	3,336.71	146.02	62.94	9.75	-1,366.60	-9,336.21	18,769.75	18,673.75	96.01	195.503	
15,900.00	7,104.00	3,337.00	3,336.71	147.60	62.94	9.75	-1,366.60	-9,336.21	18,867.69	18,771.56	96.13	196.271	
16,000.00	7,104.00	3,337.00	3,336.71	149.17	62.94	9.75	-1,366.60	-9,336.21	18,965.65	18,869.40	96.25	197.038	
16,100.00	7,104.00	3,337.00	3,336.71	150.74	62.94	9.75	-1,366.60	-9,336.21	19,063.63	18,967.26	96.38	197.804	
16,200.00	7,104.00	3,337.00	3,336.71	152.32	62.94	9.75	-1,366.60	-9,336.21	19,161.64	19,065.14	96.50	198.568	
16,300.00	7,104.00	3,337.00	3,336.71	153.89	62.94	9.75	-1,366.60	-9,336.21	19,259.66	19,163.04	96.62	199.331	
16,400.00	7,104.00	3,337.00	3,336.71	155.47	62.94	9.75	-1,366.60	-9,336.21	19,357.70	19,260.96	96.74	200.092	
16,500.00	7,104.00	3,337.00	3,336.71	157.05	62.94	9.75	-1,366.60	-9,336.21	19,455.76	19,358.90	96.87	200.852	
16,600.00	7,104.00	3,337.00	3,336.71	158.63	62.94	9.75	-1,366.60	-9,336.21	19,553.85	19,456.86	96.99	201.610	
16,700.00	7,104.00	3,337.00	3,336.71	160.20	62.94	9.75	-1,366.60	-9,336.21	19,651.95	19,554.84	97.11	202.367	
16,800.00	7,104.00	3,337.00	3,336.71	161.78	62.94	9.75	-1,366.60	-9,336.21	19,750.07	19,652.84	97.23	203.122	
16,900.00	7,104.00	3,337.00	3,336.71	163.36	62.94	9.75	-1,366.60	-9,336.21	19,848.21	19,750.86	97.35	203.875	
17,000.00	7,104.00	3,337.00	3,336.71	164.94	62.94	9.75	-1,366.60	-9,336.21	19,946.37	19,848.89	97.48	204.627	
17,100.00	7,104.00	3,337.00	3,336.71	166.52	62.94	9.75	-1,366.60	-9,336.21	20,044.54	19,946.95	97.60	205.378	
17,200.00	7,104.00	3,337.00	3,336.71	168.10	62.94	9.75	-1,366.60	-9,336.21	20,142.74	20,045.02	97.72	206.127	
17,300.00	7,104.00	3,337.00	3,336.71	169.68	62.94	9.75	-1,366.60	-9,336.21	20,240.95	20,143.11	97.84	206.874	
17,400.00	7,104.00	3,337.00	3,336.71	171.26	62.94	9.75	-1,366.60	-9,336.21	20,339.18	20,241.22	97.96	207.620	
17,500.00	7,104.00	3,337.00	3,336.71	172.84	62.94	9.75	-1,366.60	-9,336.21	20,437.43	20,339.34	98.08	208.365	
17,600.00	7,104.00	3,337.00	3,336.71	174.42	62.94	9.75	-1,366.60	-9,336.21	20,535.69	20,437.48	98.21	209.107	
17,700.00	7,104.00	3,337.00	3,336.71	176.00	62.94	9.75	-1,366.60	-9,336.21	20,633.97	20,535.64	98.33	209.849	
17,800.00	7,104.00	3,337.00	3,336.71	177.59	62.94	9.75	-1,366.60	-9,336.21	20,732.27	20,633.82	98.45	210.589	
17,900.00	7,104.00	3,337.00	3,336.71	179.17	62.94	9.75	-1,366.60	-9,336.21	20,830.58	20,732.01	98.57	211.327	
18,000.00	7,104.00	3,337.00	3,336.71	180.75	62.94	9.75	-1,366.60	-9,336.21	20,928.91	20,830.22	98.69	212.063	
18,100.00	7,104.00	3,337.00	3,336.71	182.33	62.94	9.75	-1,366.60	-9,336.21	21,027.25	20,928.44	98.81	212.798	
18,200.00	7,104.00	3,337.00	3,336.71	183.92	62.94	9.75	-1,366.60	-9,336.21	21,125.61	21,026.68	98.93	213.532	
18,300.00	7,104.00	3,337.00	3,336.71	185.50	62.94	9.75	-1,366.60	-9,336.21	21,223.99	21,124.94	99.06	214.264	
18,400.00	7,104.00	3,337.00	3,336.71	187.09	62.94	9.75	-1,366.60	-9,336.21	21,322.38	21,223.20	99.18	214.994	
18,500.00	7,104.00	3,337.00	3,336.71	188.67	62.94	9.75	-1,366.60	-9,336.21	21,420.79	21,321.49	99.30	215.723	
18,600.00	7,104.00	3,337.00	3,336.71	190.26	62.94	9.75	-1,366.60	-9,336.21	21,519.21	21,419.79	99.42	216.451	
18,700.00	7,104.00	3,337.00	3,336.71	191.84	62.94	9.75	-1,366.60	-9,336.21	21,617.64	21,518.10	99.54	217.176	
18,800.00	7,104.00	3,337.00	3,336.71	193.43	62.94	9.75	-1,366.60	-9,336.21	21,716.09	21,616.43	99.66	217.900	
18,900.00	7,104.00	3,337.00	3,336.71	195.01	62.94	9.75	-1,366.60	-9,336.21	21,814.55	21,714.77	99.78	218.623	
19,000.00	7,104.00	3,337.00	3,336.71	196.60	62.94	9.75	-1,366.60	-9,336.21	21,913.03	21,813.13	99.90	219.344	
19,100.00	7,104.00	3,337.00	3,336.71	198.18	62.94	9.75	-1,366.60	-9,336.21	22,011.52	21,911.50	100.02	220.063	
19,200.00	7,104.00	3,337.00	3,336.71	199.77	62.94	9.75	-1,366.60	-9,336.21	22,110.03	22,009.88	100.14	220.781	
19,300.00	7,104.00	3,337.00	3,336.71	201.36	62.94	9.75	-1,366.60	-9,336.21	22,208.54	22,108.28	100.27	221.497	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 230-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	7,104.00	3,337.00	3,336.71	202.94	62.94	9.75	-1,366.60	-9,336.21	22,307.07	22,206.69	100.39	222.212	
19,500.00	7,104.00	3,337.00	3,336.71	204.53	62.94	9.75	-1,366.60	-9,336.21	22,405.62	22,305.11	100.51	222.925	
19,600.00	7,104.00	3,337.00	3,336.71	206.12	62.94	9.75	-1,366.60	-9,336.21	22,504.18	22,403.55	100.63	223.637	
19,700.00	7,104.00	3,337.00	3,336.71	207.70	62.94	9.75	-1,366.60	-9,336.21	22,602.75	22,502.00	100.75	224.347	
19,800.00	7,104.00	3,337.00	3,336.71	209.29	62.94	9.75	-1,366.60	-9,336.21	22,701.33	22,600.46	100.87	225.055	
19,900.00	7,104.00	3,337.00	3,336.71	210.88	62.94	9.75	-1,366.60	-9,336.21	22,799.92	22,698.93	100.99	225.762	
20,000.00	7,104.00	3,337.00	3,336.71	212.47	62.94	9.75	-1,366.60	-9,336.21	22,898.53	22,797.42	101.11	226.467	
20,100.00	7,104.00	3,337.00	3,336.71	214.05	62.94	9.75	-1,366.60	-9,336.21	22,997.15	22,895.91	101.23	227.171	
20,200.00	7,104.00	3,337.00	3,336.71	215.64	62.94	9.75	-1,366.60	-9,336.21	23,095.78	22,994.42	101.35	227.873	
20,215.00	7,104.00	3,337.00	3,336.71	215.88	62.94	9.75	-1,366.60	-9,336.21	23,110.58	23,009.20	101.37	227.978	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231A - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-105.29	-1,747.99	-6,392.03	6,627.52				
100.00	100.00	0.00	0.00	3.29	0.00	-105.29	-1,747.99	-6,392.03	6,626.73	6,623.44	3.29	2,014.336	
134.01	134.01	32.01	32.01	3.30	0.34	-105.29	-1,747.99	-6,392.03	6,626.73	6,623.09	3.64	1,819.539	
200.00	200.00	98.00	98.00	3.34	1.04	-105.29	-1,747.99	-6,392.03	6,626.73	6,622.35	4.38	1,513.245	
300.00	300.00	198.00	198.00	3.42	2.11	-105.29	-1,747.99	-6,392.03	6,626.73	6,621.20	5.53	1,198.987	
400.00	400.00	298.00	298.00	3.54	3.17	-105.29	-1,747.99	-6,392.03	6,626.73	6,620.02	6.71	987.702	
500.00	500.00	398.02	398.00	3.69	4.98	-105.29	-1,747.99	-6,392.03	6,626.73	6,618.06	8.67	764.525	
600.00	599.98	498.00	497.98	3.86	7.02	104.71	-1,747.99	-6,392.03	6,627.17	6,616.29	10.88	609.124	
700.00	699.84	594.75	594.73	4.04	9.00	104.74	-1,747.04	-6,392.03	6,628.26	6,615.21	13.04	508.161	
800.00	799.45	688.16	688.13	4.26	10.91	104.76	-1,747.37	-6,392.03	6,630.58	6,615.41	15.16	437.261	
849.50	848.63	734.30	734.27	4.37	11.85	104.77	-1,747.66	-6,392.03	6,632.09	6,615.87	16.22	408.867	
900.00	898.77	796.83	796.77	4.49	13.13	96.56	-1,747.99	-6,392.03	6,633.31	6,615.69	17.62	376.459	
973.84	972.07	870.14	870.07	4.68	14.63	84.52	-1,747.99	-6,392.03	6,633.38	6,614.08	19.31	343.596	
1,000.00	998.03	896.10	896.03	4.74	15.16	84.54	-1,747.99	-6,392.03	6,633.08	6,613.17	19.91	333.232	
1,100.00	1,097.29	995.36	995.29	5.02	17.19	84.65	-1,747.99	-6,392.03	6,631.92	6,609.71	22.21	298.630	
1,200.00	1,196.54	1,093.15	1,093.08	5.30	19.19	84.76	-1,747.08	-6,392.03	6,630.56	6,606.06	24.50	270.681	
1,300.00	1,295.80	1,188.70	1,188.62	5.61	21.15	84.86	-1,747.27	-6,392.03	6,629.50	6,602.75	26.75	247.825	
1,400.00	1,395.06	1,284.30	1,284.21	5.92	23.10	84.95	-1,747.67	-6,392.03	6,628.52	6,599.50	29.02	228.429	
1,500.00	1,494.31	1,392.45	1,392.31	6.24	25.36	85.06	-1,747.99	-6,392.03	6,627.52	6,595.92	31.60	209.758	
1,600.00	1,593.57	1,491.70	1,491.57	6.57	27.47	85.17	-1,747.99	-6,392.03	6,626.48	6,592.44	34.04	194.690	
1,700.00	1,692.82	1,588.79	1,588.65	6.91	29.53	85.28	-1,747.06	-6,392.03	6,625.23	6,588.79	36.44	181.827	
1,800.00	1,792.08	1,682.06	1,681.91	7.25	31.51	85.37	-1,747.35	-6,392.03	6,624.30	6,585.54	38.76	170.896	
1,900.00	1,891.33	1,789.54	1,789.33	7.60	33.80	85.48	-1,747.99	-6,392.03	6,623.48	6,582.08	41.39	160.007	
2,000.00	1,990.59	1,888.79	1,888.59	7.95	35.91	85.59	-1,747.99	-6,392.03	6,622.52	6,578.66	43.86	150.999	
2,100.00	2,089.85	1,988.05	1,987.85	8.30	38.02	85.69	-1,747.99	-6,392.03	6,621.59	6,575.26	46.33	142.937	
2,200.00	2,189.10	2,083.99	2,083.78	8.66	40.06	85.80	-1,746.96	-6,392.03	6,620.44	6,571.71	48.73	135.873	
2,300.00	2,288.36	2,178.16	2,177.95	9.02	42.07	85.90	-1,747.32	-6,392.03	6,619.64	6,568.55	51.09	129.567	
2,400.00	2,387.61	2,285.89	2,285.61	9.39	44.36	86.00	-1,747.99	-6,392.03	6,618.92	6,565.17	53.75	123.150	
2,500.00	2,486.87	2,385.15	2,384.87	9.76	46.47	86.11	-1,747.99	-6,392.03	6,618.08	6,561.85	56.23	117.705	
2,600.00	2,586.12	2,484.40	2,484.12	10.13	48.58	86.21	-1,747.99	-6,392.03	6,617.26	6,558.55	58.71	112.717	
2,700.00	2,685.38	2,580.54	2,580.25	10.50	50.63	86.32	-1,746.96	-6,392.03	6,616.22	6,555.10	61.12	108.244	
2,800.00	2,784.63	2,674.88	2,674.58	10.87	52.63	86.42	-1,747.32	-6,392.03	6,615.53	6,552.03	63.50	104.176	
2,900.00	2,883.89	2,782.24	2,781.89	11.24	54.91	86.53	-1,747.99	-6,392.03	6,614.92	6,548.77	66.15	99.996	
3,000.00	2,983.15	2,881.50	2,881.15	11.62	56.94	86.63	-1,747.99	-6,392.03	6,614.19	6,545.64	68.56	96.479	
3,100.00	3,082.40	2,977.92	2,977.55	12.00	58.91	86.74	-1,747.28	-6,392.03	6,613.33	6,542.42	70.90	93.272	
3,200.00	3,181.66	3,070.34	3,069.97	12.38	60.80	86.83	-1,747.68	-6,392.03	6,612.73	6,539.56	73.17	90.374	
3,300.00	3,280.91	3,179.31	3,178.91	12.75	62.97	86.94	-1,747.99	-6,392.03	6,612.13	6,536.41	75.72	87.324	
3,400.00	3,380.17	3,278.56	3,278.17	13.13	64.91	87.05	-1,747.99	-6,392.03	6,611.49	6,533.44	78.05	84.713	
3,500.00	3,479.42	3,377.82	3,377.42	13.52	66.86	87.15	-1,747.99	-6,392.03	6,610.87	6,530.49	80.37	82.252	
3,546.40	3,525.48	3,384.00	3,383.58	13.69	66.98	87.16	-1,747.99	-6,392.03	6,610.71	6,530.04	80.67	81.948	CC, ES
3,600.00	3,578.68	3,384.00	3,383.58	13.90	66.98	87.16	-1,747.99	-6,392.03	6,610.92	6,530.05	80.87	81.749	
3,700.00	3,677.94	3,384.00	3,383.58	14.28	66.98	87.16	-1,747.99	-6,392.03	6,612.49	6,531.26	81.23	81.409	
3,800.00	3,777.19	3,384.00	3,383.58	14.66	66.98	87.16	-1,747.99	-6,392.03	6,615.57	6,534.00	81.57	81.107	
3,900.00	3,876.45	3,384.00	3,383.58	15.05	66.98	87.16	-1,747.99	-6,392.03	6,620.16	6,538.27	81.89	80.843	
4,000.00	3,975.70	3,384.00	3,383.58	15.43	66.98	87.16	-1,747.99	-6,392.03	6,626.25	6,544.05	82.20	80.616	
4,100.00	4,074.96	3,384.00	3,383.58	15.82	66.98	87.16	-1,747.99	-6,392.03	6,633.84	6,551.36	82.48	80.426	
4,200.00	4,174.21	3,384.00	3,383.58	16.20	66.98	87.16	-1,747.99	-6,392.03	6,642.94	6,560.18	82.75	80.273	
4,300.00	4,273.47	3,384.00	3,383.58	16.59	66.98	87.16	-1,747.99	-6,392.03	6,653.52	6,570.51	83.01	80.156	
4,400.00	4,372.73	3,384.00	3,383.58	16.97	66.98	87.16	-1,747.99	-6,392.03	6,665.59	6,582.34	83.24	80.074	
4,500.00	4,471.98	3,384.00	3,383.58	17.36	66.98	87.16	-1,747.99	-6,392.03	6,679.13	6,595.67	83.46	80.028	
4,600.00	4,571.24	3,384.00	3,383.58	17.75	66.98	87.16	-1,747.99	-6,392.03	6,694.14	6,610.48	83.66	80.016	SF
4,700.00	4,670.49	3,384.00	3,383.58	18.13	66.98	87.16	-1,747.99	-6,392.03	6,710.60	6,626.76	83.84	80.037	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	3,384.00	3,383.58	18.52	66.98	87.16	-1,747.99	-6,392.03	6,728.52	6,644.51	84.01	80.092	
4,900.00	4,869.00	3,384.00	3,383.58	18.91	66.98	87.16	-1,747.99	-6,392.03	6,747.86	6,663.70	84.16	80.180	
5,000.00	4,968.26	3,384.00	3,383.58	19.30	66.98	87.16	-1,747.99	-6,392.03	6,768.63	6,684.34	84.29	80.301	
5,100.00	5,067.51	3,384.00	3,383.58	19.69	66.98	87.16	-1,747.99	-6,392.03	6,790.81	6,706.40	84.41	80.453	
5,200.00	5,166.77	3,384.00	3,383.58	20.07	66.98	87.16	-1,747.99	-6,392.03	6,814.38	6,729.88	84.51	80.637	
5,300.00	5,266.03	3,384.00	3,383.58	20.46	66.98	87.16	-1,747.99	-6,392.03	6,839.34	6,754.75	84.59	80.852	
5,400.00	5,365.28	3,384.00	3,383.58	20.85	66.98	87.16	-1,747.99	-6,392.03	6,865.66	6,781.00	84.66	81.097	
5,500.00	5,464.54	3,384.00	3,383.58	21.24	66.98	87.16	-1,747.99	-6,392.03	6,893.33	6,808.61	84.71	81.372	
5,600.00	5,563.79	3,384.00	3,383.58	21.63	66.98	87.16	-1,747.99	-6,392.03	6,922.33	6,837.58	84.75	81.677	
5,700.00	5,663.05	3,384.00	3,383.58	22.02	66.98	87.16	-1,747.99	-6,392.03	6,952.65	6,867.88	84.78	82.011	
5,800.00	5,762.30	3,384.00	3,383.58	22.41	66.98	87.16	-1,747.99	-6,392.03	6,984.28	6,899.49	84.79	82.373	
5,900.00	5,861.56	3,384.00	3,383.58	22.80	66.98	87.16	-1,747.99	-6,392.03	7,017.18	6,932.39	84.79	82.763	
6,000.00	5,960.82	3,384.00	3,383.58	23.19	66.98	87.16	-1,747.99	-6,392.03	7,051.35	6,966.58	84.77	83.180	
6,100.00	6,060.07	3,384.00	3,383.58	23.58	66.98	87.16	-1,747.99	-6,392.03	7,086.77	7,002.02	84.75	83.624	
6,200.00	6,159.33	3,384.00	3,383.58	23.97	66.98	87.16	-1,747.99	-6,392.03	7,123.41	7,038.70	84.71	84.095	
6,300.00	6,258.58	3,384.00	3,383.58	24.36	66.98	87.16	-1,747.99	-6,392.03	7,161.26	7,076.61	84.66	84.592	
6,400.00	6,357.84	3,384.00	3,383.58	24.76	66.98	87.16	-1,747.99	-6,392.03	7,200.31	7,115.71	84.60	85.114	
6,500.00	6,457.09	3,384.00	3,383.58	25.15	66.98	87.16	-1,747.99	-6,392.03	7,240.52	7,156.00	84.53	85.661	
6,528.17	6,485.05	3,384.00	3,383.58	25.26	66.98	87.16	-1,747.99	-6,392.03	7,252.06	7,167.55	84.50	85.819	
6,550.00	6,506.71	3,384.00	3,383.58	25.34	66.98	101.69	-1,747.99	-6,392.03	7,261.39	7,176.90	84.49	85.945	
6,600.00	6,556.11	3,384.00	3,383.58	25.54	66.98	124.44	-1,747.99	-6,392.03	7,285.41	7,200.95	84.46	86.261	
6,650.00	6,605.00	3,384.00	3,383.58	25.74	66.98	136.11	-1,747.99	-6,392.03	7,312.95	7,228.52	84.43	86.613	
6,700.00	6,653.07	3,384.00	3,383.58	25.93	66.98	142.23	-1,747.99	-6,392.03	7,343.81	7,259.39	84.41	87.001	
6,750.00	6,700.02	3,384.00	3,383.58	26.12	66.98	145.47	-1,747.99	-6,392.03	7,377.74	7,293.35	84.39	87.420	
6,800.00	6,745.56	3,384.00	3,383.58	26.31	66.98	146.99	-1,747.99	-6,392.03	7,414.52	7,330.13	84.38	87.867	
6,850.00	6,789.42	3,384.00	3,383.58	26.50	66.98	147.26	-1,747.99	-6,392.03	7,453.85	7,369.48	84.38	88.339	
6,900.00	6,831.32	3,384.00	3,383.58	26.69	66.98	146.43	-1,747.99	-6,392.03	7,495.48	7,411.10	84.38	88.830	
6,950.00	6,871.01	3,384.00	3,383.58	26.87	66.98	144.43	-1,747.99	-6,392.03	7,539.10	7,454.71	84.39	89.338	
7,000.00	6,908.23	3,384.00	3,383.58	27.05	66.98	140.97	-1,747.99	-6,392.03	7,584.41	7,500.00	84.41	89.857	
7,050.00	6,942.77	3,384.00	3,383.58	27.23	66.98	135.40	-1,747.99	-6,392.03	7,631.10	7,546.67	84.43	90.383	
7,100.00	6,974.40	3,384.00	3,383.58	27.41	66.98	126.58	-1,747.99	-6,392.03	7,678.87	7,594.41	84.47	90.912	
7,150.00	7,002.93	3,384.00	3,383.58	27.60	66.98	112.74	-1,747.99	-6,392.03	7,727.41	7,642.90	84.51	91.439	
7,200.00	7,028.20	3,384.00	3,383.58	27.80	66.98	92.59	-1,747.99	-6,392.03	7,776.40	7,691.83	84.56	91.959	
7,250.00	7,050.03	3,384.00	3,383.58	28.00	66.98	69.22	-1,747.99	-6,392.03	7,825.53	7,740.90	84.63	92.468	
7,300.00	7,068.30	3,384.00	3,383.58	28.22	66.98	49.43	-1,747.99	-6,392.03	7,874.50	7,789.80	84.71	92.961	
7,350.00	7,082.89	3,384.00	3,383.58	28.45	66.98	35.79	-1,747.99	-6,392.03	7,923.02	7,838.23	84.80	93.433	
7,400.00	7,093.72	3,384.00	3,383.58	28.70	66.98	26.85	-1,747.99	-6,392.03	7,970.80	7,885.90	84.90	93.881	
7,450.00	7,100.71	3,384.00	3,383.58	28.96	66.98	20.83	-1,747.99	-6,392.03	8,017.56	7,932.54	85.02	94.299	
7,500.00	7,103.82	3,384.00	3,383.58	29.24	66.98	16.61	-1,747.99	-6,392.03	8,063.03	7,977.87	85.16	94.683	
7,515.00	7,104.00	3,384.00	3,383.58	29.32	66.98	15.58	-1,747.99	-6,392.03	8,076.38	7,991.18	85.20	94.793	
7,600.00	7,104.00	3,384.00	3,383.58	29.84	66.98	15.58	-1,747.99	-6,392.03	8,151.72	8,066.26	85.46	95.387	
7,700.00	7,104.00	3,384.00	3,383.58	30.51	66.98	15.58	-1,747.99	-6,392.03	8,240.60	8,154.84	85.76	96.085	
7,800.00	7,104.00	3,384.00	3,383.58	31.26	66.98	15.58	-1,747.99	-6,392.03	8,329.73	8,243.67	86.06	96.785	
7,900.00	7,104.00	3,384.00	3,383.58	32.07	66.98	15.58	-1,747.99	-6,392.03	8,419.11	8,332.74	86.36	97.487	
8,000.00	7,104.00	3,384.00	3,383.58	32.94	66.98	15.58	-1,747.99	-6,392.03	8,508.72	8,422.06	86.66	98.190	
8,100.00	7,104.00	3,384.00	3,383.58	33.86	66.98	15.58	-1,747.99	-6,392.03	8,598.56	8,511.61	86.95	98.895	
8,200.00	7,104.00	3,384.00	3,383.58	34.84	66.98	15.58	-1,747.99	-6,392.03	8,688.62	8,601.39	87.23	99.602	
8,300.00	7,104.00	3,384.00	3,383.58	35.86	66.98	15.58	-1,747.99	-6,392.03	8,778.90	8,691.38	87.52	100.310	
8,400.00	7,104.00	3,384.00	3,383.58	36.92	66.98	15.58	-1,747.99	-6,392.03	8,869.38	8,781.59	87.80	101.021	
8,500.00	7,104.00	3,384.00	3,383.58	38.02	66.98	15.58	-1,747.99	-6,392.03	8,960.07	8,872.00	88.07	101.732	
8,600.00	7,104.00	3,384.00	3,383.58	39.15	66.98	15.58	-1,747.99	-6,392.03	9,050.96	8,962.61	88.35	102.446	
8,700.00	7,104.00	3,384.00	3,383.58	40.32	66.98	15.58	-1,747.99	-6,392.03	9,142.03	9,053.41	88.62	103.161	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	3,384.00	3,383.58	41.52	66.98	15.58	-1,747.99	-6,392.03	9,233.29	9,144.40	88.89	103.878	
8,900.00	7,104.00	3,384.00	3,383.58	42.74	66.98	15.58	-1,747.99	-6,392.03	9,324.73	9,235.58	89.15	104.596	
9,000.00	7,104.00	3,384.00	3,383.58	43.99	66.98	15.58	-1,747.99	-6,392.03	9,416.34	9,326.93	89.41	105.316	
9,100.00	7,104.00	3,384.00	3,383.58	45.26	66.98	15.58	-1,747.99	-6,392.03	9,508.12	9,418.46	89.67	106.037	
9,200.00	7,104.00	3,384.00	3,383.58	46.55	66.98	15.58	-1,747.99	-6,392.03	9,600.07	9,510.15	89.92	106.760	
9,300.00	7,104.00	3,384.00	3,383.58	47.85	66.98	15.58	-1,747.99	-6,392.03	9,692.18	9,602.00	90.17	107.485	
9,400.00	7,104.00	3,384.00	3,383.58	49.18	66.98	15.58	-1,747.99	-6,392.03	9,784.44	9,694.02	90.42	108.211	
9,500.00	7,104.00	3,384.00	3,383.58	50.52	66.98	15.58	-1,747.99	-6,392.03	9,876.85	9,786.18	90.67	108.938	
9,600.00	7,104.00	3,384.00	3,383.58	51.88	66.98	15.58	-1,747.99	-6,392.03	9,969.41	9,878.50	90.91	109.666	
9,700.00	7,104.00	3,384.00	3,383.58	53.25	66.98	15.58	-1,747.99	-6,392.03	10,062.11	9,970.96	91.15	110.396	
9,800.00	7,104.00	3,384.00	3,383.58	54.63	66.98	15.58	-1,747.99	-6,392.03	10,154.94	10,063.56	91.38	111.127	
9,900.00	7,104.00	3,384.00	3,383.58	56.03	66.98	15.58	-1,747.99	-6,392.03	10,247.92	10,156.30	91.61	111.860	
10,000.00	7,104.00	3,384.00	3,383.58	57.43	66.98	15.58	-1,747.99	-6,392.03	10,341.02	10,249.18	91.84	112.593	
10,100.00	7,104.00	3,384.00	3,383.58	58.85	66.98	15.58	-1,747.99	-6,392.03	10,434.25	10,342.18	92.07	113.328	
10,200.00	7,104.00	3,384.00	3,383.58	60.27	66.98	15.58	-1,747.99	-6,392.03	10,527.61	10,435.31	92.30	114.063	
10,300.00	7,104.00	3,384.00	3,383.58	61.71	66.98	15.58	-1,747.99	-6,392.03	10,621.09	10,528.57	92.52	114.800	
10,400.00	7,104.00	3,384.00	3,383.58	63.15	66.98	15.58	-1,747.99	-6,392.03	10,714.68	10,621.95	92.74	115.538	
10,500.00	7,104.00	3,384.00	3,383.58	64.60	66.98	15.58	-1,747.99	-6,392.03	10,808.39	10,715.44	92.95	116.276	
10,600.00	7,104.00	3,384.00	3,383.58	66.05	66.98	15.58	-1,747.99	-6,392.03	10,902.21	10,809.05	93.17	117.016	
10,700.00	7,104.00	3,384.00	3,383.58	67.52	66.98	15.58	-1,747.99	-6,392.03	10,996.15	10,902.76	93.38	117.756	
10,800.00	7,104.00	3,384.00	3,383.58	68.99	66.98	15.58	-1,747.99	-6,392.03	11,090.18	10,996.59	93.59	118.498	
10,900.00	7,104.00	3,384.00	3,383.58	70.46	66.98	15.58	-1,747.99	-6,392.03	11,184.32	11,090.53	93.80	119.240	
11,000.00	7,104.00	3,384.00	3,383.58	71.94	66.98	15.58	-1,747.99	-6,392.03	11,278.56	11,184.56	94.00	119.982	
11,100.00	7,104.00	3,384.00	3,383.58	73.43	66.98	15.58	-1,747.99	-6,392.03	11,372.90	11,278.70	94.20	120.726	
11,200.00	7,104.00	3,384.00	3,383.58	74.92	66.98	15.58	-1,747.99	-6,392.03	11,467.34	11,372.93	94.40	121.470	
11,300.00	7,104.00	3,384.00	3,383.58	76.41	66.98	15.58	-1,747.99	-6,392.03	11,561.87	11,467.26	94.60	122.214	
11,400.00	7,104.00	3,384.00	3,383.58	77.91	66.98	15.58	-1,747.99	-6,392.03	11,656.49	11,561.69	94.80	122.960	
11,500.00	7,104.00	3,384.00	3,383.58	79.41	66.98	15.58	-1,747.99	-6,392.03	11,751.20	11,656.20	94.99	123.705	
11,600.00	7,104.00	3,384.00	3,383.58	80.92	66.98	15.58	-1,747.99	-6,392.03	11,845.99	11,750.81	95.19	124.452	
11,700.00	7,104.00	3,384.00	3,383.58	82.43	66.98	15.58	-1,747.99	-6,392.03	11,940.87	11,845.50	95.38	125.198	
11,800.00	7,104.00	3,384.00	3,383.58	83.94	66.98	15.58	-1,747.99	-6,392.03	12,035.84	11,940.27	95.56	125.945	
11,900.00	7,104.00	3,384.00	3,383.58	85.46	66.98	15.58	-1,747.99	-6,392.03	12,130.88	12,035.13	95.75	126.693	
12,000.00	7,104.00	3,384.00	3,383.58	86.98	66.98	15.58	-1,747.99	-6,392.03	12,226.01	12,130.07	95.94	127.440	
12,100.00	7,104.00	3,384.00	3,383.58	88.50	66.98	15.58	-1,747.99	-6,392.03	12,321.21	12,225.09	96.12	128.188	
12,200.00	7,104.00	3,384.00	3,383.58	90.03	66.98	15.58	-1,747.99	-6,392.03	12,416.48	12,320.18	96.30	128.937	
12,300.00	7,104.00	3,384.00	3,383.58	91.55	66.98	15.58	-1,747.99	-6,392.03	12,511.83	12,415.36	96.48	129.685	
12,400.00	7,104.00	3,384.00	3,383.58	93.08	66.98	15.58	-1,747.99	-6,392.03	12,607.26	12,510.60	96.66	130.434	
12,500.00	7,104.00	3,384.00	3,383.58	94.62	66.98	15.58	-1,747.99	-6,392.03	12,702.75	12,605.92	96.83	131.183	
12,600.00	7,104.00	3,384.00	3,383.58	96.15	66.98	15.58	-1,747.99	-6,392.03	12,798.31	12,701.30	97.01	131.932	
12,700.00	7,104.00	3,384.00	3,383.58	97.69	66.98	15.58	-1,747.99	-6,392.03	12,893.94	12,796.76	97.18	132.681	
12,800.00	7,104.00	3,384.00	3,383.58	99.23	66.98	15.58	-1,747.99	-6,392.03	12,989.63	12,892.28	97.35	133.430	
12,900.00	7,104.00	3,384.00	3,383.58	100.77	66.98	15.58	-1,747.99	-6,392.03	13,085.39	12,987.87	97.52	134.179	
13,000.00	7,104.00	3,384.00	3,383.58	102.31	66.98	15.58	-1,747.99	-6,392.03	13,181.22	13,083.53	97.69	134.928	
13,100.00	7,104.00	3,384.00	3,383.58	103.86	66.98	15.58	-1,747.99	-6,392.03	13,277.10	13,179.24	97.86	135.677	
13,200.00	7,104.00	3,384.00	3,383.58	105.40	66.98	15.58	-1,747.99	-6,392.03	13,373.04	13,275.02	98.02	136.426	
13,300.00	7,104.00	3,384.00	3,383.58	106.95	66.98	15.58	-1,747.99	-6,392.03	13,469.05	13,370.86	98.19	137.175	
13,400.00	7,104.00	3,384.00	3,383.58	108.50	66.98	15.58	-1,747.99	-6,392.03	13,565.11	13,466.76	98.35	137.924	
13,500.00	7,104.00	3,384.00	3,383.58	110.05	66.98	15.58	-1,747.99	-6,392.03	13,661.23	13,562.71	98.51	138.673	
13,600.00	7,104.00	3,384.00	3,383.58	111.60	66.98	15.58	-1,747.99	-6,392.03	13,757.40	13,658.72	98.68	139.421	
13,700.00	7,104.00	3,384.00	3,383.58	113.16	66.98	15.58	-1,747.99	-6,392.03	13,853.63	13,754.79	98.83	140.170	
13,800.00	7,104.00	3,384.00	3,383.58	114.71	66.98	15.58	-1,747.99	-6,392.03	13,949.91	13,850.91	98.99	140.918	
13,900.00	7,104.00	3,384.00	3,383.58	116.27	66.98	15.58	-1,747.99	-6,392.03	14,046.24	13,947.09	99.15	141.665	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	3,384.00	3,383.58	117.83	66.98	15.58	-1,747.99	-6,392.03	14,142.62	14,043.31	99.31	142.413	
14,100.00	7,104.00	3,384.00	3,383.58	119.38	66.98	15.58	-1,747.99	-6,392.03	14,239.05	14,139.59	99.46	143.160	
14,200.00	7,104.00	3,384.00	3,383.58	120.94	66.98	15.58	-1,747.99	-6,392.03	14,335.53	14,235.92	99.62	143.907	
14,300.00	7,104.00	3,384.00	3,383.58	122.50	66.98	15.58	-1,747.99	-6,392.03	14,432.06	14,332.29	99.77	144.653	
14,400.00	7,104.00	3,384.00	3,383.58	124.07	66.98	15.58	-1,747.99	-6,392.03	14,528.64	14,428.72	99.92	145.399	
14,500.00	7,104.00	3,384.00	3,383.58	125.63	66.98	15.58	-1,747.99	-6,392.03	14,625.26	14,525.19	100.07	146.145	
14,600.00	7,104.00	3,384.00	3,383.58	127.19	66.98	15.58	-1,747.99	-6,392.03	14,721.93	14,621.71	100.22	146.890	
14,700.00	7,104.00	3,384.00	3,383.58	128.76	66.98	15.58	-1,747.99	-6,392.03	14,818.64	14,718.27	100.37	147.635	
14,800.00	7,104.00	3,384.00	3,383.58	130.32	66.98	15.58	-1,747.99	-6,392.03	14,915.40	14,814.88	100.52	148.379	
14,900.00	7,104.00	3,384.00	3,383.58	131.89	66.98	15.58	-1,747.99	-6,392.03	15,012.20	14,911.53	100.67	149.123	
15,000.00	7,104.00	3,384.00	3,383.58	133.46	66.98	15.58	-1,747.99	-6,392.03	15,109.04	15,008.22	100.82	149.866	
15,100.00	7,104.00	3,384.00	3,383.58	135.02	66.98	15.58	-1,747.99	-6,392.03	15,205.92	15,104.95	100.96	150.609	
15,200.00	7,104.00	3,384.00	3,383.58	136.59	66.98	15.58	-1,747.99	-6,392.03	15,302.84	15,201.73	101.11	151.352	
15,300.00	7,104.00	3,384.00	3,383.58	138.16	66.98	15.58	-1,747.99	-6,392.03	15,399.80	15,298.54	101.25	152.093	
15,400.00	7,104.00	3,384.00	3,383.58	139.73	66.98	15.58	-1,747.99	-6,392.03	15,496.79	15,395.40	101.40	152.834	
15,500.00	7,104.00	3,384.00	3,383.58	141.30	66.98	15.58	-1,747.99	-6,392.03	15,593.83	15,492.29	101.54	153.575	
15,600.00	7,104.00	3,384.00	3,383.58	142.88	66.98	15.58	-1,747.99	-6,392.03	15,690.90	15,589.22	101.68	154.315	
15,700.00	7,104.00	3,384.00	3,383.58	144.45	66.98	15.58	-1,747.99	-6,392.03	15,788.01	15,686.19	101.82	155.054	
15,800.00	7,104.00	3,384.00	3,383.58	146.02	66.98	15.58	-1,747.99	-6,392.03	15,885.16	15,783.20	101.96	155.792	
15,900.00	7,104.00	3,384.00	3,383.58	147.60	66.98	15.58	-1,747.99	-6,392.03	15,982.34	15,880.24	102.10	156.530	
16,000.00	7,104.00	3,384.00	3,383.58	149.17	66.98	15.58	-1,747.99	-6,392.03	16,079.56	15,977.31	102.24	157.267	
16,100.00	7,104.00	3,384.00	3,383.58	150.74	66.98	15.58	-1,747.99	-6,392.03	16,176.81	16,074.43	102.38	158.004	
16,200.00	7,104.00	3,384.00	3,383.58	152.32	66.98	15.58	-1,747.99	-6,392.03	16,274.09	16,171.57	102.52	158.739	
16,300.00	7,104.00	3,384.00	3,383.58	153.89	66.98	15.58	-1,747.99	-6,392.03	16,371.41	16,268.75	102.66	159.474	
16,400.00	7,104.00	3,384.00	3,383.58	155.47	66.98	15.58	-1,747.99	-6,392.03	16,468.75	16,365.96	102.80	160.209	
16,500.00	7,104.00	3,384.00	3,383.58	157.05	66.98	15.58	-1,747.99	-6,392.03	16,566.13	16,463.20	102.93	160.942	
16,600.00	7,104.00	3,384.00	3,383.58	158.63	66.98	15.58	-1,747.99	-6,392.03	16,663.54	16,560.48	103.07	161.675	
16,700.00	7,104.00	3,384.00	3,383.58	160.20	66.98	15.58	-1,747.99	-6,392.03	16,760.99	16,657.78	103.20	162.406	
16,800.00	7,104.00	3,384.00	3,383.58	161.78	66.98	15.58	-1,747.99	-6,392.03	16,858.46	16,755.12	103.34	163.137	
16,900.00	7,104.00	3,384.00	3,383.58	163.36	66.98	15.58	-1,747.99	-6,392.03	16,955.96	16,852.48	103.47	163.868	
17,000.00	7,104.00	3,384.00	3,383.58	164.94	66.98	15.58	-1,747.99	-6,392.03	17,053.49	16,949.88	103.61	164.597	
17,100.00	7,104.00	3,384.00	3,383.58	166.52	66.98	15.58	-1,747.99	-6,392.03	17,151.05	17,047.30	103.74	165.325	
17,200.00	7,104.00	3,384.00	3,383.58	168.10	66.98	15.58	-1,747.99	-6,392.03	17,248.63	17,144.76	103.87	166.053	
17,300.00	7,104.00	3,384.00	3,383.58	169.68	66.98	15.58	-1,747.99	-6,392.03	17,346.24	17,242.24	104.01	166.780	
17,400.00	7,104.00	3,384.00	3,383.58	171.26	66.98	15.58	-1,747.99	-6,392.03	17,443.88	17,339.75	104.14	167.506	
17,500.00	7,104.00	3,384.00	3,383.58	172.84	66.98	15.58	-1,747.99	-6,392.03	17,541.55	17,437.28	104.27	168.231	
17,600.00	7,104.00	3,384.00	3,383.58	174.42	66.98	15.58	-1,747.99	-6,392.03	17,639.25	17,534.84	104.40	168.955	
17,700.00	7,104.00	3,384.00	3,383.58	176.00	66.98	15.58	-1,747.99	-6,392.03	17,736.96	17,632.43	104.53	169.678	
17,800.00	7,104.00	3,384.00	3,383.58	177.59	66.98	15.58	-1,747.99	-6,392.03	17,834.71	17,730.04	104.66	170.400	
17,900.00	7,104.00	3,384.00	3,383.58	179.17	66.98	15.58	-1,747.99	-6,392.03	17,932.48	17,827.68	104.79	171.121	
18,000.00	7,104.00	3,384.00	3,383.58	180.75	66.98	15.58	-1,747.99	-6,392.03	18,030.27	17,925.35	104.92	171.841	
18,100.00	7,104.00	3,384.00	3,383.58	182.33	66.98	15.58	-1,747.99	-6,392.03	18,128.09	18,023.03	105.05	172.560	
18,200.00	7,104.00	3,384.00	3,383.58	183.92	66.98	15.58	-1,747.99	-6,392.03	18,225.93	18,120.75	105.18	173.279	
18,300.00	7,104.00	3,384.00	3,383.58	185.50	66.98	15.58	-1,747.99	-6,392.03	18,323.79	18,218.48	105.31	173.996	
18,400.00	7,104.00	3,384.00	3,383.58	187.09	66.98	15.58	-1,747.99	-6,392.03	18,421.68	18,316.24	105.44	174.712	
18,500.00	7,104.00	3,384.00	3,383.58	188.67	66.98	15.58	-1,747.99	-6,392.03	18,519.59	18,414.02	105.57	175.427	
18,600.00	7,104.00	3,384.00	3,383.58	190.26	66.98	15.58	-1,747.99	-6,392.03	18,617.52	18,511.83	105.70	176.142	
18,700.00	7,104.00	3,384.00	3,383.58	191.84	66.98	15.58	-1,747.99	-6,392.03	18,715.48	18,609.65	105.82	176.855	
18,800.00	7,104.00	3,384.00	3,383.58	193.43	66.98	15.58	-1,747.99	-6,392.03	18,813.45	18,707.50	105.95	177.567	
18,900.00	7,104.00	3,384.00	3,383.58	195.01	66.98	15.58	-1,747.99	-6,392.03	18,911.45	18,805.37	106.08	178.278	
19,000.00	7,104.00	3,384.00	3,383.58	196.60	66.98	15.58	-1,747.99	-6,392.03	19,009.47	18,903.26	106.21	178.988	
19,100.00	7,104.00	3,384.00	3,383.58	198.18	66.98	15.58	-1,747.99	-6,392.03	19,107.51	19,001.18	106.33	179.697	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #231A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 322-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	3,384.00	3,383.58	199.77	66.98	15.58	-1,747.99	-6,392.03	19,205.57	19,099.11	106.46	180.405	
19,300.00	7,104.00	3,384.00	3,383.58	201.36	66.98	15.58	-1,747.99	-6,392.03	19,303.64	19,197.06	106.58	181.112	
19,400.00	7,104.00	3,384.00	3,383.58	202.94	66.98	15.58	-1,747.99	-6,392.03	19,401.74	19,295.03	106.71	181.817	
19,500.00	7,104.00	3,384.00	3,383.58	204.53	66.98	15.58	-1,747.99	-6,392.03	19,499.86	19,393.02	106.84	182.522	
19,600.00	7,104.00	3,384.00	3,383.58	206.12	66.98	15.58	-1,747.99	-6,392.03	19,598.00	19,491.03	106.96	183.226	
19,700.00	7,104.00	3,384.00	3,383.58	207.70	66.98	15.58	-1,747.99	-6,392.03	19,696.15	19,589.06	107.09	183.928	
19,800.00	7,104.00	3,384.00	3,383.58	209.29	66.98	15.58	-1,747.99	-6,392.03	19,794.32	19,687.11	107.21	184.629	
19,900.00	7,104.00	3,384.00	3,383.58	210.88	66.98	15.58	-1,747.99	-6,392.03	19,892.52	19,785.18	107.34	185.329	
20,000.00	7,104.00	3,384.00	3,383.58	212.47	66.98	15.58	-1,747.99	-6,392.03	19,990.73	19,883.27	107.46	186.028	
20,100.00	7,104.00	3,384.00	3,383.58	214.05	66.98	15.58	-1,747.99	-6,392.03	20,088.95	19,981.37	107.59	186.726	
20,200.00	7,104.00	3,384.00	3,383.58	215.64	66.98	15.58	-1,747.99	-6,392.03	20,187.20	20,079.49	107.71	187.423	
20,215.00	7,104.00	3,384.00	3,383.58	215.88	66.98	15.58	-1,747.99	-6,392.03	20,201.94	20,094.21	107.73	187.527	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259 - OH - OH-INC — **Offset Site Error:** 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY — **Rule Assigned:** — **Offset Well Error:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-178.03	-1,333.58	-45.94	1,335.09				
100.00	100.00	56.00	56.00	3.29	3.44	-178.03	-1,333.58	-45.94	1,334.37	1,327.64	6.73	198.298	
200.00	200.00	156.00	156.00	3.34	4.37	-178.03	-1,333.58	-45.94	1,334.37	1,326.66	7.70	173.214	
300.00	300.00	256.00	256.00	3.42	5.76	-178.03	-1,333.58	-45.94	1,334.37	1,325.19	9.18	145.392	
400.00	400.00	356.00	356.00	3.54	7.35	-178.03	-1,333.58	-45.94	1,334.37	1,323.48	10.89	122.520	
500.00	500.00	456.00	456.00	3.69	9.05	-178.03	-1,333.58	-45.94	1,334.37	1,321.64	12.73	104.800	
600.00	599.98	554.86	554.85	3.86	10.77	32.03	-1,333.01	-45.94	1,332.33	1,317.70	14.62	91.100	
700.00	699.84	652.61	652.61	4.04	12.50	32.19	-1,333.17	-45.94	1,328.06	1,311.51	16.55	80.267	
800.00	799.45	750.16	750.15	4.26	14.25	32.46	-1,333.49	-45.94	1,321.00	1,302.50	18.50	71.389	
849.50	848.63	804.66	804.63	4.37	15.25	32.66	-1,333.58	-45.94	1,316.35	1,296.74	19.62	67.100	
900.00	898.77	854.79	854.77	4.49	16.18	24.42	-1,333.58	-45.94	1,311.00	1,290.33	20.67	63.429	
973.84	972.07	928.09	928.07	4.68	17.55	12.26	-1,333.58	-45.94	1,302.57	1,280.36	22.22	58.633	
1,000.00	998.03	954.06	954.03	4.74	18.03	12.29	-1,333.58	-45.94	1,299.46	1,276.69	22.77	57.077	
1,100.00	1,097.29	1,053.23	1,053.20	5.02	19.89	12.41	-1,332.97	-45.94	1,286.95	1,262.07	24.88	51.722	
1,200.00	1,196.54	1,150.54	1,150.52	5.30	21.72	12.53	-1,333.05	-45.94	1,275.14	1,248.16	26.98	47.262	
1,300.00	1,295.80	1,247.90	1,247.87	5.61	23.55	12.64	-1,333.28	-45.94	1,263.48	1,234.39	29.09	43.428	
1,400.00	1,395.06	1,351.11	1,351.06	5.92	25.52	12.77	-1,333.58	-45.94	1,251.89	1,220.53	31.36	39.921	
1,500.00	1,494.31	1,450.37	1,450.31	6.24	27.51	12.89	-1,333.58	-45.94	1,240.01	1,206.36	33.65	36.850	
1,600.00	1,593.57	1,549.62	1,549.57	6.57	29.50	13.02	-1,333.58	-45.94	1,228.14	1,192.18	35.95	34.162	
1,700.00	1,692.82	1,646.49	1,646.43	6.91	31.45	13.15	-1,332.85	-45.94	1,215.54	1,177.33	38.21	31.811	
1,800.00	1,792.08	1,742.70	1,742.64	7.25	33.39	13.27	-1,333.16	-45.94	1,204.00	1,163.54	40.47	29.754	
1,900.00	1,891.33	1,847.45	1,847.33	7.60	35.52	13.42	-1,333.58	-45.94	1,192.55	1,149.64	42.92	27.787	
2,000.00	1,990.59	1,946.70	1,946.59	7.95	37.59	13.55	-1,333.58	-45.94	1,180.71	1,135.39	45.32	26.053	
2,100.00	2,089.85	2,045.96	2,045.85	8.30	39.67	13.69	-1,333.58	-45.94	1,168.86	1,121.14	47.73	24.491	
2,200.00	2,189.10	2,142.09	2,141.96	8.66	41.68	13.83	-1,332.60	-45.94	1,156.07	1,105.99	50.07	23.088	
2,300.00	2,288.36	2,237.55	2,237.42	9.02	43.68	13.97	-1,333.03	-45.94	1,144.68	1,092.27	52.41	21.841	
2,400.00	2,387.61	2,343.80	2,343.61	9.39	46.30	14.13	-1,333.58	-45.94	1,133.39	1,078.01	55.37	20.469	
2,500.00	2,486.87	2,443.06	2,442.87	9.76	49.63	14.28	-1,333.58	-45.94	1,121.57	1,062.53	59.04	18.995	
2,600.00	2,586.12	2,537.81	2,537.61	10.13	52.81	14.43	-1,333.05	-45.94	1,109.26	1,046.69	62.57	17.728	
2,700.00	2,685.38	2,636.64	2,635.95	10.50	56.39	14.59	-1,333.26	-45.94	1,097.67	1,031.17	66.49	16.508	
2,800.00	2,784.63	2,741.88	2,740.63	10.87	62.26	14.76	-1,333.58	-45.94	1,086.19	1,013.48	72.71	14.939	
2,900.00	2,883.89	2,841.74	2,839.89	11.24	68.68	14.92	-1,333.58	-45.94	1,074.41	994.93	79.48	13.518	
3,000.00	2,983.15	2,941.75	2,939.15	11.62	76.18	15.09	-1,333.58	-45.94	1,062.64	975.31	87.33	12.168	
3,100.00	3,082.40	3,041.31	3,038.18	12.00	83.39	15.27	-1,332.16	-45.94	1,049.47	954.58	94.89	11.060	
3,200.00	3,181.66	3,141.30	3,137.66	12.38	90.11	15.44	-1,333.58	-45.94	1,039.13	937.17	101.96	10.192	
3,300.00	3,280.91	3,241.16	3,236.91	12.75	96.39	15.62	-1,333.58	-45.94	1,027.39	918.80	108.59	9.461	
3,400.00	3,380.17	3,340.41	3,336.17	13.13	102.32	15.81	-1,333.58	-45.94	1,015.66	900.78	114.88	8.841	
3,500.00	3,479.42	3,392.00	3,387.10	13.52	105.40	15.90	-1,333.58	-45.94	1,005.10	886.88	118.23	8.501	SF
3,569.64	3,548.55	3,392.00	3,387.10	13.78	105.40	15.90	-1,333.58	-45.94	1,002.69	884.80	117.88	8.506	CC, ES
3,600.00	3,578.68	3,392.00	3,387.10	13.90	105.40	15.90	-1,333.58	-45.94	1,003.15	885.59	117.56	8.533	
3,700.00	3,677.94	3,392.00	3,387.10	14.28	105.40	15.90	-1,333.58	-45.94	1,011.13	895.35	115.77	8.734	
3,800.00	3,777.19	3,392.00	3,387.10	14.66	105.40	15.90	-1,333.58	-45.94	1,028.81	915.84	112.97	9.107	
3,900.00	3,876.45	3,392.00	3,387.10	15.05	105.40	15.90	-1,333.58	-45.94	1,055.71	946.37	109.34	9.655	
4,000.00	3,975.70	3,392.00	3,387.10	15.43	105.40	15.90	-1,333.58	-45.94	1,091.14	986.05	105.09	10.383	
4,100.00	4,074.96	3,392.00	3,387.10	15.82	105.40	15.90	-1,333.58	-45.94	1,134.31	1,033.85	100.46	11.291	
4,200.00	4,174.21	3,392.00	3,387.10	16.20	105.40	15.90	-1,333.58	-45.94	1,184.37	1,088.73	95.64	12.383	
4,300.00	4,273.47	3,392.00	3,387.10	16.59	105.40	15.90	-1,333.58	-45.94	1,240.49	1,149.68	90.81	13.660	
4,400.00	4,372.73	3,392.00	3,387.10	16.97	105.40	15.90	-1,333.58	-45.94	1,301.88	1,215.80	86.08	15.124	
4,500.00	4,471.98	3,392.00	3,387.10	17.36	105.40	15.90	-1,333.58	-45.94	1,367.83	1,286.29	81.54	16.776	
4,600.00	4,571.24	3,392.00	3,387.10	17.75	105.40	15.90	-1,333.58	-45.94	1,437.72	1,360.48	77.24	18.615	
4,700.00	4,670.49	3,392.00	3,387.10	18.13	105.40	15.90	-1,333.58	-45.94	1,510.99	1,437.79	73.20	20.641	
4,800.00	4,769.75	3,392.00	3,387.10	18.52	105.40	15.90	-1,333.58	-45.94	1,587.19	1,517.74	69.45	22.853	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
4,900.00	4,869.00	3,392.00	3,387.10	18.91	105.40	15.90	-1,333.58	-45.94	1,665.91	1,599.93	65.98	25.250	
5,000.00	4,968.26	3,392.00	3,387.10	19.30	105.40	15.90	-1,333.58	-45.94	1,746.80	1,684.03	62.77	27.828	
5,100.00	5,067.51	3,392.00	3,387.10	19.69	105.40	15.90	-1,333.58	-45.94	1,829.59	1,769.77	59.82	30.586	
5,200.00	5,166.77	3,392.00	3,387.10	20.07	105.40	15.90	-1,333.58	-45.94	1,914.02	1,856.91	57.11	33.517	
5,300.00	5,266.03	3,392.00	3,387.10	20.46	105.40	15.90	-1,333.58	-45.94	1,999.88	1,945.27	54.61	36.618	
5,400.00	5,365.28	3,392.00	3,387.10	20.85	105.40	15.90	-1,333.58	-45.94	2,087.01	2,034.68	52.33	39.884	
5,500.00	5,464.54	3,392.00	3,387.10	21.24	105.40	15.90	-1,333.58	-45.94	2,175.24	2,125.01	50.23	43.307	
5,600.00	5,563.79	3,392.00	3,387.10	21.63	105.40	15.90	-1,333.58	-45.94	2,264.45	2,216.15	48.30	46.880	
5,700.00	5,663.05	3,392.00	3,387.10	22.02	105.40	15.90	-1,333.58	-45.94	2,354.53	2,308.00	46.54	50.595	
5,800.00	5,762.30	3,392.00	3,387.10	22.41	105.40	15.90	-1,333.58	-45.94	2,445.38	2,400.47	44.92	54.445	
5,900.00	5,861.56	3,392.00	3,387.10	22.80	105.40	15.90	-1,333.58	-45.94	2,536.92	2,493.49	43.43	58.418	
6,000.00	5,960.82	3,392.00	3,387.10	23.19	105.40	15.90	-1,333.58	-45.94	2,629.08	2,587.02	42.06	62.507	
6,100.00	6,060.07	3,392.00	3,387.10	23.58	105.40	15.90	-1,333.58	-45.94	2,721.79	2,680.98	40.81	66.699	
6,200.00	6,159.33	3,392.00	3,387.10	23.97	105.40	15.90	-1,333.58	-45.94	2,814.99	2,775.34	39.66	70.984	
6,300.00	6,258.58	3,392.00	3,387.10	24.36	105.40	15.90	-1,333.58	-45.94	2,908.65	2,870.05	38.60	75.351	
6,400.00	6,357.84	3,392.00	3,387.10	24.76	105.40	15.90	-1,333.58	-45.94	3,002.72	2,965.09	37.63	79.788	
6,500.00	6,457.09	3,392.00	3,387.10	25.15	105.40	15.90	-1,333.58	-45.94	3,097.16	3,060.41	36.75	84.283	
6,528.17	6,485.05	3,392.00	3,387.10	25.26	105.40	15.90	-1,333.58	-45.94	3,123.83	3,087.32	36.51	85.558	
6,550.00	6,506.71	3,392.00	3,387.10	25.34	105.40	24.80	-1,333.58	-45.94	3,144.52	3,108.18	36.34	86.541	
6,600.00	6,556.11	3,392.00	3,387.10	25.54	105.40	34.78	-1,333.58	-45.94	3,191.93	3,155.97	35.97	88.739	
6,650.00	6,605.00	3,392.00	3,387.10	25.74	105.40	34.97	-1,333.58	-45.94	3,239.15	3,203.49	35.66	90.842	
6,700.00	6,653.07	3,392.00	3,387.10	25.93	105.40	31.75	-1,333.58	-45.94	3,285.89	3,250.49	35.40	92.819	
6,750.00	6,700.02	3,392.00	3,387.10	26.12	105.40	27.95	-1,333.58	-45.94	3,331.89	3,296.68	35.21	94.636	
6,800.00	6,745.56	3,392.00	3,387.10	26.31	105.40	24.49	-1,333.58	-45.94	3,376.90	3,341.82	35.08	96.255	
6,850.00	6,789.42	3,392.00	3,387.10	26.50	105.40	21.58	-1,333.58	-45.94	3,420.69	3,385.66	35.03	97.640	
6,900.00	6,831.32	3,392.00	3,387.10	26.69	105.40	19.18	-1,333.58	-45.94	3,463.05	3,427.98	35.07	98.756	
6,950.00	6,871.01	3,392.00	3,387.10	26.87	105.40	17.23	-1,333.58	-45.94	3,503.76	3,468.57	35.19	99.570	
7,000.00	6,908.23	3,392.00	3,387.10	27.05	105.40	15.62	-1,333.58	-45.94	3,542.63	3,507.23	35.41	100.060	
7,050.00	6,942.77	3,392.00	3,387.10	27.23	105.40	14.30	-1,333.58	-45.94	3,579.50	3,543.78	35.72	100.209	
7,100.00	6,974.40	3,392.00	3,387.10	27.41	105.40	13.19	-1,333.58	-45.94	3,614.20	3,578.06	36.14	100.012	
7,150.00	7,002.93	3,392.00	3,387.10	27.60	105.40	12.27	-1,333.58	-45.94	3,646.57	3,609.91	36.66	99.473	
7,200.00	7,028.20	3,392.00	3,387.10	27.80	105.40	11.50	-1,333.58	-45.94	3,676.49	3,639.21	37.28	98.609	
7,250.00	7,050.03	3,392.00	3,387.10	28.00	105.40	10.84	-1,333.58	-45.94	3,703.83	3,665.82	38.01	97.442	
7,300.00	7,068.30	3,392.00	3,387.10	28.22	105.40	10.28	-1,333.58	-45.94	3,728.48	3,689.64	38.84	96.004	
7,350.00	7,082.89	3,392.00	3,387.10	28.45	105.40	9.80	-1,333.58	-45.94	3,750.34	3,710.58	39.76	94.331	
7,400.00	7,093.72	3,392.00	3,387.10	28.70	105.40	9.39	-1,333.58	-45.94	3,769.33	3,728.56	40.77	92.459	
7,450.00	7,100.71	3,392.00	3,387.10	28.96	105.40	9.05	-1,333.58	-45.94	3,785.38	3,743.52	41.86	90.429	
7,500.00	7,103.82	3,392.00	3,387.10	29.24	105.40	8.75	-1,333.58	-45.94	3,798.42	3,755.39	43.03	88.277	
7,515.00	7,104.00	3,392.00	3,387.10	29.32	105.40	8.67	-1,333.58	-45.94	3,801.73	3,758.34	43.39	87.617	
7,600.00	7,104.00	3,392.00	3,387.10	29.84	105.40	8.67	-1,333.58	-45.94	3,820.65	3,775.14	45.52	83.940	
7,700.00	7,104.00	3,392.00	3,387.10	30.51	105.40	8.67	-1,333.58	-45.94	3,845.20	3,797.11	48.10	79.950	
7,800.00	7,104.00	3,392.00	3,387.10	31.26	105.40	8.67	-1,333.58	-45.94	3,872.18	3,821.45	50.73	76.330	
7,900.00	7,104.00	3,392.00	3,387.10	32.07	105.40	8.67	-1,333.58	-45.94	3,901.53	3,848.13	53.39	73.069	
8,000.00	7,104.00	3,392.00	3,387.10	32.94	105.40	8.67	-1,333.58	-45.94	3,933.20	3,877.13	56.07	70.147	
8,100.00	7,104.00	3,392.00	3,387.10	33.86	105.40	8.67	-1,333.58	-45.94	3,967.15	3,908.41	58.74	67.535	
8,200.00	7,104.00	3,392.00	3,387.10	34.84	105.40	8.67	-1,333.58	-45.94	4,003.30	3,941.91	61.39	65.208	
8,300.00	7,104.00	3,392.00	3,387.10	35.86	105.40	8.67	-1,333.58	-45.94	4,041.61	3,977.60	64.01	63.136	
8,400.00	7,104.00	3,392.00	3,387.10	36.92	105.40	8.67	-1,333.58	-45.94	4,082.01	4,015.41	66.60	61.295	
8,500.00	7,104.00	3,392.00	3,387.10	38.02	105.40	8.67	-1,333.58	-45.94	4,124.44	4,055.31	69.13	59.662	
8,600.00	7,104.00	3,392.00	3,387.10	39.15	105.40	8.67	-1,333.58	-45.94	4,168.83	4,097.22	71.61	58.214	
8,700.00	7,104.00	3,392.00	3,387.10	40.32	105.40	8.67	-1,333.58	-45.94	4,215.13	4,141.09	74.04	56.933	
8,800.00	7,104.00	3,392.00	3,387.10	41.52	105.40	8.67	-1,333.58	-45.94	4,263.27	4,186.87	76.40	55.802	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
8,900.00	7,104.00	3,392.00	3,387.10	42.74	105.40	8.67	-1,333.58	-45.94	4,313.20	4,234.50	78.70	54.806	
9,000.00	7,104.00	3,392.00	3,387.10	43.99	105.40	8.67	-1,333.58	-45.94	4,364.84	4,283.91	80.93	53.931	
9,100.00	7,104.00	3,392.00	3,387.10	45.26	105.40	8.67	-1,333.58	-45.94	4,418.15	4,335.05	83.10	53.166	
9,200.00	7,104.00	3,392.00	3,387.10	46.55	105.40	8.67	-1,333.58	-45.94	4,473.05	4,387.85	85.20	52.499	
9,300.00	7,104.00	3,392.00	3,387.10	47.85	105.40	8.67	-1,333.58	-45.94	4,529.50	4,442.26	87.24	51.922	
9,400.00	7,104.00	3,392.00	3,387.10	49.18	105.40	8.67	-1,333.58	-45.94	4,587.43	4,498.23	89.20	51.427	
9,500.00	7,104.00	3,392.00	3,387.10	50.52	105.40	8.67	-1,333.58	-45.94	4,646.80	4,555.69	91.10	51.005	
9,600.00	7,104.00	3,392.00	3,387.10	51.88	105.40	8.67	-1,333.58	-45.94	4,707.54	4,614.60	92.94	50.652	
9,700.00	7,104.00	3,392.00	3,387.10	53.25	105.40	8.67	-1,333.58	-45.94	4,769.60	4,674.89	94.71	50.360	
9,800.00	7,104.00	3,392.00	3,387.10	54.63	105.40	8.67	-1,333.58	-45.94	4,832.93	4,736.51	96.42	50.124	
9,900.00	7,104.00	3,392.00	3,387.10	56.03	105.40	8.67	-1,333.58	-45.94	4,897.49	4,799.42	98.07	49.940	
10,000.00	7,104.00	3,392.00	3,387.10	57.43	105.40	8.67	-1,333.58	-45.94	4,963.22	4,863.57	99.66	49.804	
10,100.00	7,104.00	3,392.00	3,387.10	58.85	105.40	8.67	-1,333.58	-45.94	5,030.09	4,928.90	101.19	49.711	
10,200.00	7,104.00	3,392.00	3,387.10	60.27	105.40	8.67	-1,333.58	-45.94	5,098.03	4,995.37	102.66	49.659	
10,300.00	7,104.00	3,392.00	3,387.10	61.71	105.40	8.67	-1,333.58	-45.94	5,167.02	5,062.94	104.08	49.645	
10,400.00	7,104.00	3,392.00	3,387.10	63.15	105.40	8.67	-1,333.58	-45.94	5,237.01	5,131.56	105.45	49.664	
10,500.00	7,104.00	3,392.00	3,387.10	64.60	105.40	8.67	-1,333.58	-45.94	5,307.96	5,201.20	106.77	49.716	
10,600.00	7,104.00	3,392.00	3,387.10	66.05	105.40	8.67	-1,333.58	-45.94	5,379.84	5,271.80	108.03	49.798	
10,700.00	7,104.00	3,392.00	3,387.10	67.52	105.40	8.67	-1,333.58	-45.94	5,452.60	5,343.34	109.25	49.907	
10,800.00	7,104.00	3,392.00	3,387.10	68.99	105.40	8.67	-1,333.58	-45.94	5,526.21	5,415.78	110.43	50.042	
10,900.00	7,104.00	3,392.00	3,387.10	70.46	105.40	8.67	-1,333.58	-45.94	5,600.64	5,489.08	111.56	50.201	
11,000.00	7,104.00	3,392.00	3,387.10	71.94	105.40	8.67	-1,333.58	-45.94	5,675.86	5,563.20	112.65	50.383	
11,100.00	7,104.00	3,392.00	3,387.10	73.43	105.40	8.67	-1,333.58	-45.94	5,751.83	5,638.12	113.71	50.585	
11,200.00	7,104.00	3,392.00	3,387.10	74.92	105.40	8.67	-1,333.58	-45.94	5,828.52	5,713.81	114.72	50.807	
11,300.00	7,104.00	3,392.00	3,387.10	76.41	105.40	8.67	-1,333.58	-45.94	5,905.92	5,790.22	115.69	51.048	
11,400.00	7,104.00	3,392.00	3,387.10	77.91	105.40	8.67	-1,333.58	-45.94	5,983.98	5,867.35	116.63	51.306	
11,500.00	7,104.00	3,392.00	3,387.10	79.41	105.40	8.67	-1,333.58	-45.94	6,062.69	5,945.15	117.54	51.579	
11,600.00	7,104.00	3,392.00	3,387.10	80.92	105.40	8.67	-1,333.58	-45.94	6,142.02	6,023.60	118.42	51.869	
11,700.00	7,104.00	3,392.00	3,387.10	82.43	105.40	8.67	-1,333.58	-45.94	6,221.94	6,102.68	119.26	52.172	
11,800.00	7,104.00	3,392.00	3,387.10	83.94	105.40	8.67	-1,333.58	-45.94	6,302.44	6,182.37	120.07	52.489	
11,900.00	7,104.00	3,392.00	3,387.10	85.46	105.40	8.67	-1,333.58	-45.94	6,383.49	6,262.63	120.86	52.818	
12,000.00	7,104.00	3,392.00	3,387.10	86.98	105.40	8.67	-1,333.58	-45.94	6,465.07	6,343.45	121.62	53.160	
12,100.00	7,104.00	3,392.00	3,387.10	88.50	105.40	8.67	-1,333.58	-45.94	6,547.16	6,424.81	122.35	53.513	
12,200.00	7,104.00	3,392.00	3,387.10	90.03	105.40	8.67	-1,333.58	-45.94	6,629.74	6,506.69	123.05	53.876	
12,300.00	7,104.00	3,392.00	3,387.10	91.55	105.40	8.67	-1,333.58	-45.94	6,712.80	6,589.06	123.74	54.250	
12,400.00	7,104.00	3,392.00	3,387.10	93.08	105.40	8.67	-1,333.58	-45.94	6,796.31	6,671.91	124.40	54.634	
12,500.00	7,104.00	3,392.00	3,387.10	94.62	105.40	8.67	-1,333.58	-45.94	6,880.26	6,755.22	125.04	55.026	
12,600.00	7,104.00	3,392.00	3,387.10	96.15	105.40	8.67	-1,333.58	-45.94	6,964.64	6,838.98	125.65	55.427	
12,700.00	7,104.00	3,392.00	3,387.10	97.69	105.40	8.67	-1,333.58	-45.94	7,049.42	6,923.17	126.25	55.836	
12,800.00	7,104.00	3,392.00	3,387.10	99.23	105.40	8.67	-1,333.58	-45.94	7,134.60	7,007.77	126.83	56.253	
12,900.00	7,104.00	3,392.00	3,387.10	100.77	105.40	8.67	-1,333.58	-45.94	7,220.16	7,092.77	127.39	56.677	
13,000.00	7,104.00	3,392.00	3,387.10	102.31	105.40	8.67	-1,333.58	-45.94	7,306.08	7,178.15	127.93	57.108	
13,100.00	7,104.00	3,392.00	3,387.10	103.86	105.40	8.67	-1,333.58	-45.94	7,392.36	7,263.90	128.46	57.546	
13,200.00	7,104.00	3,392.00	3,387.10	105.40	105.40	8.67	-1,333.58	-45.94	7,478.98	7,350.01	128.97	57.990	
13,300.00	7,104.00	3,392.00	3,387.10	106.95	105.40	8.67	-1,333.58	-45.94	7,565.94	7,436.47	129.46	58.440	
13,400.00	7,104.00	3,392.00	3,387.10	108.50	105.40	8.67	-1,333.58	-45.94	7,653.21	7,523.26	129.94	58.896	
13,500.00	7,104.00	3,392.00	3,387.10	110.05	105.40	8.67	-1,333.58	-45.94	7,740.78	7,610.37	130.41	59.357	
13,600.00	7,104.00	3,392.00	3,387.10	111.60	105.40	8.67	-1,333.58	-45.94	7,828.66	7,697.80	130.86	59.824	
13,700.00	7,104.00	3,392.00	3,387.10	113.16	105.40	8.67	-1,333.58	-45.94	7,916.82	7,785.52	131.30	60.295	
13,800.00	7,104.00	3,392.00	3,387.10	114.71	105.40	8.67	-1,333.58	-45.94	8,005.26	7,873.54	131.73	60.771	
13,900.00	7,104.00	3,392.00	3,387.10	116.27	105.40	8.67	-1,333.58	-45.94	8,093.97	7,961.83	132.14	61.252	
14,000.00	7,104.00	3,392.00	3,387.10	117.83	105.40	8.67	-1,333.58	-45.94	8,182.95	8,050.40	132.55	61.736	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	3,392.00	3,387.10	119.38	105.40	8.67	-1,333.58	-45.94	8,272.17	8,139.23	132.94	62.225	
14,200.00	7,104.00	3,392.00	3,387.10	120.94	105.40	8.67	-1,333.58	-45.94	8,361.64	8,228.31	133.32	62.718	
14,300.00	7,104.00	3,392.00	3,387.10	122.50	105.40	8.67	-1,333.58	-45.94	8,451.34	8,317.65	133.69	63.215	
14,400.00	7,104.00	3,392.00	3,387.10	124.07	105.40	8.67	-1,333.58	-45.94	8,541.27	8,407.22	134.06	63.715	
14,500.00	7,104.00	3,392.00	3,387.10	125.63	105.40	8.67	-1,333.58	-45.94	8,631.42	8,497.02	134.41	64.218	
14,600.00	7,104.00	3,392.00	3,387.10	127.19	105.40	8.67	-1,333.58	-45.94	8,721.79	8,587.04	134.75	64.725	
14,700.00	7,104.00	3,392.00	3,387.10	128.76	105.40	8.67	-1,333.58	-45.94	8,812.37	8,677.28	135.09	65.234	
14,800.00	7,104.00	3,392.00	3,387.10	130.32	105.40	8.67	-1,333.58	-45.94	8,903.15	8,767.73	135.42	65.747	
14,900.00	7,104.00	3,392.00	3,387.10	131.89	105.40	8.67	-1,333.58	-45.94	8,994.12	8,858.38	135.73	66.262	
15,000.00	7,104.00	3,392.00	3,387.10	133.46	105.40	8.67	-1,333.58	-45.94	9,085.28	8,949.24	136.05	66.781	
15,100.00	7,104.00	3,392.00	3,387.10	135.02	105.40	8.67	-1,333.58	-45.94	9,176.63	9,040.28	136.35	67.301	
15,200.00	7,104.00	3,392.00	3,387.10	136.59	105.40	8.67	-1,333.58	-45.94	9,268.16	9,131.51	136.65	67.824	
15,300.00	7,104.00	3,392.00	3,387.10	138.16	105.40	8.67	-1,333.58	-45.94	9,359.85	9,222.91	136.94	68.350	
15,400.00	7,104.00	3,392.00	3,387.10	139.73	105.40	8.67	-1,333.58	-45.94	9,451.72	9,314.50	137.22	68.878	
15,500.00	7,104.00	3,392.00	3,387.10	141.30	105.40	8.67	-1,333.58	-45.94	9,543.75	9,406.25	137.50	69.407	
15,600.00	7,104.00	3,392.00	3,387.10	142.88	105.40	8.67	-1,333.58	-45.94	9,635.94	9,498.17	137.78	69.939	
15,700.00	7,104.00	3,392.00	3,387.10	144.45	105.40	8.67	-1,333.58	-45.94	9,728.29	9,590.24	138.04	70.473	
15,800.00	7,104.00	3,392.00	3,387.10	146.02	105.40	8.67	-1,333.58	-45.94	9,820.78	9,682.48	138.30	71.009	
15,900.00	7,104.00	3,392.00	3,387.10	147.60	105.40	8.67	-1,333.58	-45.94	9,913.42	9,774.86	138.56	71.546	
16,000.00	7,104.00	3,392.00	3,387.10	149.17	105.40	8.67	-1,333.58	-45.94	10,006.20	9,867.39	138.81	72.085	
16,100.00	7,104.00	3,392.00	3,387.10	150.74	105.40	8.67	-1,333.58	-45.94	10,099.12	9,960.07	139.06	72.626	
16,200.00	7,104.00	3,392.00	3,387.10	152.32	105.40	8.67	-1,333.58	-45.94	10,192.18	10,052.88	139.30	73.168	
16,300.00	7,104.00	3,392.00	3,387.10	153.89	105.40	8.67	-1,333.58	-45.94	10,285.36	10,145.83	139.53	73.712	
16,400.00	7,104.00	3,392.00	3,387.10	155.47	105.40	8.67	-1,333.58	-45.94	10,378.67	10,238.90	139.77	74.257	
16,500.00	7,104.00	3,392.00	3,387.10	157.05	105.40	8.67	-1,333.58	-45.94	10,472.10	10,332.11	139.99	74.804	
16,600.00	7,104.00	3,392.00	3,387.10	158.63	105.40	8.67	-1,333.58	-45.94	10,565.66	10,425.44	140.22	75.351	
16,700.00	7,104.00	3,392.00	3,387.10	160.20	105.40	8.67	-1,333.58	-45.94	10,659.33	10,518.89	140.44	75.900	
16,800.00	7,104.00	3,392.00	3,387.10	161.78	105.40	8.67	-1,333.58	-45.94	10,753.12	10,612.46	140.66	76.450	
16,900.00	7,104.00	3,392.00	3,387.10	163.36	105.40	8.67	-1,333.58	-45.94	10,847.01	10,706.14	140.87	77.001	
17,000.00	7,104.00	3,392.00	3,387.10	164.94	105.40	8.67	-1,333.58	-45.94	10,941.02	10,799.94	141.08	77.553	
17,100.00	7,104.00	3,392.00	3,387.10	166.52	105.40	8.67	-1,333.58	-45.94	11,035.13	10,893.84	141.28	78.107	
17,200.00	7,104.00	3,392.00	3,387.10	168.10	105.40	8.67	-1,333.58	-45.94	11,129.34	10,987.85	141.49	78.661	
17,300.00	7,104.00	3,392.00	3,387.10	169.68	105.40	8.67	-1,333.58	-45.94	11,223.65	11,081.97	141.69	79.215	
17,400.00	7,104.00	3,392.00	3,387.10	171.26	105.40	8.67	-1,333.58	-45.94	11,318.06	11,176.18	141.88	79.771	
17,500.00	7,104.00	3,392.00	3,387.10	172.84	105.40	8.67	-1,333.58	-45.94	11,412.57	11,270.49	142.08	80.328	
17,600.00	7,104.00	3,392.00	3,387.10	174.42	105.40	8.67	-1,333.58	-45.94	11,507.17	11,364.90	142.27	80.885	
17,700.00	7,104.00	3,392.00	3,387.10	176.00	105.40	8.67	-1,333.58	-45.94	11,601.86	11,459.40	142.45	81.443	
17,800.00	7,104.00	3,392.00	3,387.10	177.59	105.40	8.67	-1,333.58	-45.94	11,696.63	11,553.99	142.64	82.001	
17,900.00	7,104.00	3,392.00	3,387.10	179.17	105.40	8.67	-1,333.58	-45.94	11,791.50	11,648.68	142.82	82.560	
18,000.00	7,104.00	3,392.00	3,387.10	180.75	105.40	8.67	-1,333.58	-45.94	11,886.45	11,743.44	143.00	83.120	
18,100.00	7,104.00	3,392.00	3,387.10	182.33	105.40	8.67	-1,333.58	-45.94	11,981.48	11,838.29	143.18	83.680	
18,200.00	7,104.00	3,392.00	3,387.10	183.92	105.40	8.67	-1,333.58	-45.94	12,076.59	11,933.23	143.36	84.241	
18,300.00	7,104.00	3,392.00	3,387.10	185.50	105.40	8.67	-1,333.58	-45.94	12,171.78	12,028.24	143.53	84.802	
18,400.00	7,104.00	3,392.00	3,387.10	187.09	105.40	8.67	-1,333.58	-45.94	12,267.04	12,123.34	143.70	85.364	
18,500.00	7,104.00	3,392.00	3,387.10	188.67	105.40	8.67	-1,333.58	-45.94	12,362.38	12,218.51	143.87	85.926	
18,600.00	7,104.00	3,392.00	3,387.10	190.26	105.40	8.67	-1,333.58	-45.94	12,457.79	12,313.75	144.04	86.488	
18,700.00	7,104.00	3,392.00	3,387.10	191.84	105.40	8.67	-1,333.58	-45.94	12,553.28	12,409.07	144.21	87.051	
18,800.00	7,104.00	3,392.00	3,387.10	193.43	105.40	8.67	-1,333.58	-45.94	12,648.83	12,504.46	144.37	87.614	
18,900.00	7,104.00	3,392.00	3,387.10	195.01	105.40	8.67	-1,333.58	-45.94	12,744.46	12,599.92	144.53	88.177	
19,000.00	7,104.00	3,392.00	3,387.10	196.60	105.40	8.67	-1,333.58	-45.94	12,840.15	12,695.45	144.69	88.740	
19,100.00	7,104.00	3,392.00	3,387.10	198.18	105.40	8.67	-1,333.58	-45.94	12,935.90	12,791.05	144.85	89.304	
19,200.00	7,104.00	3,392.00	3,387.10	199.77	105.40	8.67	-1,333.58	-45.94	13,031.72	12,886.71	145.01	89.868	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259 - OH - OH-INC

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	3,392.00	3,387.10	201.36	105.40	8.67	-1,333.58	-45.94	13,127.60	12,982.43	145.17	90.432	
19,400.00	7,104.00	3,392.00	3,387.10	202.94	105.40	8.67	-1,333.58	-45.94	13,223.54	13,078.22	145.32	90.996	
19,500.00	7,104.00	3,392.00	3,387.10	204.53	105.40	8.67	-1,333.58	-45.94	13,319.54	13,174.07	145.47	91.560	
19,600.00	7,104.00	3,392.00	3,387.10	206.12	105.40	8.67	-1,333.58	-45.94	13,415.60	13,269.98	145.62	92.124	
19,700.00	7,104.00	3,392.00	3,387.10	207.70	105.40	8.67	-1,333.58	-45.94	13,511.72	13,365.94	145.78	92.689	
19,800.00	7,104.00	3,392.00	3,387.10	209.29	105.40	8.67	-1,333.58	-45.94	13,607.89	13,461.97	145.92	93.253	
19,900.00	7,104.00	3,392.00	3,387.10	210.88	105.40	8.67	-1,333.58	-45.94	13,704.12	13,558.05	146.07	93.817	
20,000.00	7,104.00	3,392.00	3,387.10	212.47	105.40	8.67	-1,333.58	-45.94	13,800.40	13,654.18	146.22	94.382	
20,100.00	7,104.00	3,392.00	3,387.10	214.05	105.40	8.67	-1,333.58	-45.94	13,896.74	13,750.37	146.36	94.946	
20,200.00	7,104.00	3,392.00	3,387.10	215.64	105.40	8.67	-1,333.58	-45.94	13,993.12	13,846.61	146.51	95.511	
20,215.00	7,104.00	3,392.00	3,387.10	215.88	105.40	8.67	-1,333.58	-45.94	14,007.59	13,861.06	146.53	95.595	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	107.80	-1,031.91	3,213.11	3,375.16				
100.00	100.00	47.00	47.00	3.29	0.43	107.80	-1,031.91	3,213.11	3,374.74	3,371.02	3.72	906.190	
200.00	200.00	147.00	147.00	3.34	1.81	107.80	-1,031.91	3,213.11	3,374.74	3,369.60	5.14	655.931	
230.59	230.59	177.59	177.58	3.36	2.39	107.80	-1,031.74	3,213.11	3,374.69	3,368.94	5.75	587.034	
300.00	300.00	243.14	243.14	3.42	3.64	107.80	-1,031.87	3,213.11	3,374.73	3,367.67	7.06	478.142	
400.00	400.00	347.01	347.00	3.54	5.56	107.80	-1,031.91	3,213.11	3,374.74	3,365.64	9.10	370.819	
423.02	423.02	369.49	369.48	3.57	5.98	107.80	-1,031.56	3,213.11	3,374.64	3,365.09	9.55	353.447	
500.00	500.00	441.91	441.90	3.69	7.32	107.80	-1,031.76	3,213.11	3,374.70	3,363.70	11.00	306.707	
600.00	599.98	547.00	546.98	3.86	9.26	-42.23	-1,031.91	3,213.11	3,373.45	3,360.34	13.11	257.249	
700.00	699.84	646.86	646.84	4.04	11.10	-42.34	-1,031.91	3,213.11	3,369.58	3,354.43	15.15	222.477	
800.00	799.45	746.33	746.31	4.26	12.94	-42.54	-1,031.63	3,213.11	3,363.05	3,345.85	17.19	195.583	
849.50	848.63	795.10	795.08	4.37	13.84	-42.66	-1,031.64	3,213.11	3,358.92	3,340.71	18.21	184.458	
900.00	898.77	844.82	844.80	4.49	14.76	-51.04	-1,031.68	3,213.11	3,354.75	3,335.50	19.25	174.296	
973.84	972.07	917.53	917.51	4.68	16.11	-63.35	-1,031.77	3,213.11	3,349.95	3,329.18	20.77	161.264	
1,000.00	998.03	943.29	943.27	4.74	16.58	-63.40	-1,031.81	3,213.11	3,348.53	3,327.21	21.32	157.091	
1,100.00	1,097.29	1,044.33	1,044.29	5.02	18.54	-63.58	-1,031.91	3,213.11	3,343.09	3,319.55	23.54	142.008	
1,200.00	1,196.54	1,143.59	1,143.54	5.30	20.54	-63.77	-1,031.91	3,213.11	3,337.66	3,311.83	25.83	129.218	
1,300.00	1,295.80	1,242.78	1,242.74	5.61	22.55	-63.97	-1,031.10	3,213.11	3,332.02	3,303.90	28.13	118.453	
1,400.00	1,395.06	1,339.63	1,339.58	5.92	24.50	-64.15	-1,031.23	3,213.11	3,326.70	3,296.31	30.39	109.456	
1,500.00	1,494.31	1,436.54	1,436.49	6.24	26.46	-64.33	-1,031.60	3,213.11	3,321.49	3,288.82	32.67	101.677	
1,600.00	1,593.57	1,540.67	1,540.57	6.57	28.57	-64.52	-1,031.91	3,213.11	3,316.28	3,281.18	35.10	94.476	
1,700.00	1,692.82	1,639.92	1,639.82	6.91	30.59	-64.71	-1,031.91	3,213.11	3,311.03	3,273.58	37.45	88.407	
1,800.00	1,792.08	1,739.16	1,739.05	7.25	32.60	-64.92	-1,030.82	3,213.11	3,305.52	3,265.71	39.81	83.036	
1,900.00	1,891.33	1,835.44	1,835.33	7.60	34.56	-65.10	-1,030.99	3,213.11	3,300.39	3,258.28	42.11	78.377	
2,000.00	1,990.59	1,931.81	1,931.69	7.95	36.52	-65.28	-1,031.48	3,213.11	3,295.38	3,250.96	44.42	74.193	
2,100.00	2,089.85	2,037.00	2,036.85	8.30	38.70	-65.47	-1,031.91	3,213.11	3,290.38	3,243.44	46.94	70.092	
2,200.00	2,189.10	2,136.26	2,136.10	8.66	40.79	-65.66	-1,031.91	3,213.11	3,285.32	3,235.92	49.39	66.514	
2,300.00	2,288.36	2,235.51	2,235.36	9.02	42.88	-65.86	-1,031.91	3,213.11	3,280.28	3,228.44	51.84	63.272	
2,400.00	2,387.61	2,332.70	2,332.53	9.39	44.93	-66.06	-1,031.22	3,213.11	3,275.12	3,220.86	54.26	60.365	
2,500.00	2,486.87	2,429.91	2,429.74	9.76	46.98	-66.24	-1,031.59	3,213.11	3,270.26	3,213.59	56.67	57.707	
2,600.00	2,586.12	2,533.36	2,533.12	10.13	49.13	-66.44	-1,031.91	3,213.11	3,265.42	3,206.23	59.19	55.173	
2,700.00	2,685.38	2,632.61	2,632.38	10.50	51.16	-66.63	-1,031.91	3,213.11	3,260.54	3,198.96	61.58	52.947	
2,800.00	2,784.63	2,731.87	2,731.63	10.87	53.19	-66.83	-1,031.91	3,213.11	3,255.69	3,191.72	63.98	50.888	
2,900.00	2,883.89	2,831.10	2,830.84	11.24	55.21	-67.06	-1,030.03	3,213.11	3,250.45	3,184.07	66.38	48.970	
3,000.00	2,983.15	2,928.06	2,927.79	11.62	57.19	-67.25	-1,030.19	3,213.11	3,245.73	3,177.00	68.73	47.225	
3,100.00	3,082.40	3,025.10	3,024.83	12.00	59.17	-67.43	-1,030.64	3,213.11	3,241.11	3,170.03	71.09	45.594	
3,200.00	3,181.66	3,122.22	3,121.93	12.38	61.16	-67.61	-1,031.39	3,213.11	3,236.60	3,163.16	73.45	44.068	
3,300.00	3,280.91	3,228.23	3,227.91	12.75	63.20	-67.81	-1,031.91	3,213.11	3,232.07	3,156.20	75.87	42.601	
3,400.00	3,380.17	3,327.49	3,327.17	13.13	65.02	-68.01	-1,031.91	3,213.11	3,227.46	3,149.40	78.06	41.347	
3,500.00	3,479.42	3,414.00	3,413.67	13.52	66.59	-68.19	-1,031.91	3,213.11	3,222.91	3,142.90	80.02	40.278	
3,600.00	3,578.68	3,414.00	3,413.67	13.90	66.59	-68.19	-1,031.91	3,213.11	3,220.31	3,139.94	80.36	40.072	
3,633.97	3,612.40	3,414.00	3,413.67	14.03	66.59	-68.19	-1,031.91	3,213.11	3,220.13	3,139.66	80.46	40.019	CC, ES
3,700.00	3,677.94	3,414.00	3,413.67	14.28	66.59	-68.19	-1,031.91	3,213.11	3,220.80	3,140.17	80.64	39.942	
3,800.00	3,777.19	3,414.00	3,413.67	14.66	66.59	-68.19	-1,031.91	3,213.11	3,224.40	3,143.57	80.84	39.887	SF
3,900.00	3,876.45	3,414.00	3,413.67	15.05	66.59	-68.19	-1,031.91	3,213.11	3,231.10	3,150.13	80.97	39.906	
4,000.00	3,975.70	3,414.00	3,413.67	15.43	66.59	-68.19	-1,031.91	3,213.11	3,240.86	3,159.84	81.02	39.998	
4,100.00	4,074.96	3,414.00	3,413.67	15.82	66.59	-68.19	-1,031.91	3,213.11	3,253.68	3,172.66	81.01	40.164	
4,200.00	4,174.21	3,414.00	3,413.67	16.20	66.59	-68.19	-1,031.91	3,213.11	3,269.50	3,188.57	80.93	40.400	
4,300.00	4,273.47	3,414.00	3,413.67	16.59	66.59	-68.19	-1,031.91	3,213.11	3,288.28	3,207.51	80.78	40.708	
4,400.00	4,372.73	3,414.00	3,413.67	16.97	66.59	-68.19	-1,031.91	3,213.11	3,309.99	3,229.42	80.56	41.085	
4,500.00	4,471.98	3,414.00	3,413.67	17.36	66.59	-68.19	-1,031.91	3,213.11	3,334.55	3,254.26	80.29	41.531	
4,600.00	4,571.24	3,414.00	3,413.67	17.75	66.59	-68.19	-1,031.91	3,213.11	3,361.91	3,281.95	79.96	42.045	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,700.00	4,670.49	3,414.00	3,413.67	18.13	66.59	-68.19	-1,031.91	3,213.11	3,392.00	3,312.42	79.58	42.625	
4,800.00	4,769.75	3,414.00	3,413.67	18.52	66.59	-68.19	-1,031.91	3,213.11	3,424.74	3,345.59	79.15	43.271	
4,900.00	4,869.00	3,414.00	3,413.67	18.91	66.59	-68.19	-1,031.91	3,213.11	3,460.07	3,381.39	78.67	43.981	
5,000.00	4,968.26	3,414.00	3,413.67	19.30	66.59	-68.19	-1,031.91	3,213.11	3,497.89	3,419.74	78.16	44.755	
5,100.00	5,067.51	3,414.00	3,413.67	19.69	66.59	-68.19	-1,031.91	3,213.11	3,538.14	3,460.54	77.61	45.591	
5,200.00	5,166.77	3,414.00	3,413.67	20.07	66.59	-68.19	-1,031.91	3,213.11	3,580.74	3,503.71	77.02	46.488	
5,300.00	5,266.03	3,414.00	3,413.67	20.46	66.59	-68.19	-1,031.91	3,213.11	3,625.59	3,549.17	76.42	47.446	
5,400.00	5,365.28	3,414.00	3,413.67	20.85	66.59	-68.19	-1,031.91	3,213.11	3,672.61	3,596.83	75.78	48.461	
5,500.00	5,464.54	3,414.00	3,413.67	21.24	66.59	-68.19	-1,031.91	3,213.11	3,721.73	3,646.60	75.13	49.535	
5,600.00	5,563.79	3,414.00	3,413.67	21.63	66.59	-68.19	-1,031.91	3,213.11	3,772.86	3,698.40	74.47	50.664	
5,700.00	5,663.05	3,414.00	3,413.67	22.02	66.59	-68.19	-1,031.91	3,213.11	3,825.93	3,752.14	73.79	51.849	
5,800.00	5,762.30	3,414.00	3,413.67	22.41	66.59	-68.19	-1,031.91	3,213.11	3,880.84	3,807.73	73.10	53.086	
5,900.00	5,861.56	3,414.00	3,413.67	22.80	66.59	-68.19	-1,031.91	3,213.11	3,937.53	3,865.11	72.41	54.376	
6,000.00	5,960.82	3,414.00	3,413.67	23.19	66.59	-68.19	-1,031.91	3,213.11	3,995.91	3,924.20	71.72	55.717	
6,100.00	6,060.07	3,414.00	3,413.67	23.58	66.59	-68.19	-1,031.91	3,213.11	4,055.93	3,984.90	71.02	57.107	
6,200.00	6,159.33	3,414.00	3,413.67	23.97	66.59	-68.19	-1,031.91	3,213.11	4,117.49	4,047.16	70.33	58.545	
6,300.00	6,258.58	3,414.00	3,413.67	24.36	66.59	-68.19	-1,031.91	3,213.11	4,180.54	4,110.90	69.64	60.029	
6,400.00	6,357.84	3,414.00	3,413.67	24.76	66.59	-68.19	-1,031.91	3,213.11	4,245.01	4,176.05	68.96	61.558	
6,500.00	6,457.09	3,414.00	3,413.67	25.15	66.59	-68.19	-1,031.91	3,213.11	4,310.84	4,242.56	68.29	63.130	
6,528.17	6,485.05	3,414.00	3,413.67	25.26	66.59	-68.19	-1,031.91	3,213.11	4,329.62	4,261.52	68.10	63.580	
6,550.00	6,506.71	3,414.00	3,413.67	25.34	66.59	-53.81	-1,031.91	3,213.11	4,343.97	4,276.02	67.95	63.932	
6,600.00	6,556.11	3,414.00	3,413.67	25.54	66.59	-31.20	-1,031.91	3,213.11	4,374.95	4,307.37	67.58	64.738	
6,650.00	6,605.00	3,414.00	3,413.67	25.74	66.59	-19.40	-1,031.91	3,213.11	4,403.20	4,336.01	67.18	65.540	
6,700.00	6,653.07	3,414.00	3,413.67	25.93	66.59	-12.88	-1,031.91	3,213.11	4,428.59	4,361.83	66.76	66.334	
6,750.00	6,700.02	3,414.00	3,413.67	26.12	66.59	-8.91	-1,031.91	3,213.11	4,451.03	4,384.71	66.32	67.119	
6,800.00	6,745.56	3,414.00	3,413.67	26.31	66.59	-6.30	-1,031.91	3,213.11	4,470.41	4,404.56	65.85	67.891	
6,850.00	6,789.42	3,414.00	3,413.67	26.50	66.59	-4.48	-1,031.91	3,213.11	4,486.66	4,421.30	65.36	68.648	
6,900.00	6,831.32	3,414.00	3,413.67	26.69	66.59	-3.14	-1,031.91	3,213.11	4,499.72	4,434.87	64.85	69.388	
6,950.00	6,871.01	3,414.00	3,413.67	26.87	66.59	-2.11	-1,031.91	3,213.11	4,509.52	4,445.20	64.32	70.109	
7,000.00	6,908.23	3,414.00	3,413.67	27.05	66.59	-1.29	-1,031.91	3,213.11	4,516.04	4,452.26	63.78	70.807	
7,050.00	6,942.77	3,414.00	3,413.67	27.23	66.59	-0.62	-1,031.91	3,213.11	4,519.24	4,456.02	63.22	71.480	
7,100.00	6,974.40	3,414.00	3,413.67	27.41	66.59	-0.05	-1,031.91	3,213.11	4,519.11	4,456.46	62.66	72.124	
7,150.00	7,002.93	3,414.00	3,413.67	27.60	66.59	0.46	-1,031.91	3,213.11	4,515.66	4,453.58	62.08	72.736	
7,200.00	7,028.20	3,414.00	3,413.67	27.80	66.59	0.92	-1,031.91	3,213.11	4,508.90	4,447.39	61.50	73.312	
7,250.00	7,050.03	3,414.00	3,413.67	28.00	66.59	1.35	-1,031.91	3,213.11	4,498.85	4,437.93	60.92	73.849	
7,300.00	7,068.30	3,414.00	3,413.67	28.22	66.59	1.77	-1,031.91	3,213.11	4,485.55	4,425.21	60.34	74.343	
7,350.00	7,082.89	3,414.00	3,413.67	28.45	66.59	2.20	-1,031.91	3,213.11	4,469.06	4,409.30	59.75	74.790	
7,400.00	7,093.72	3,414.00	3,413.67	28.70	66.59	2.64	-1,031.91	3,213.11	4,449.44	4,390.26	59.18	75.186	
7,450.00	7,100.71	3,414.00	3,413.67	28.96	66.59	3.11	-1,031.91	3,213.11	4,426.78	4,368.17	58.61	75.527	
7,500.00	7,103.82	3,414.00	3,413.67	29.24	66.59	3.62	-1,031.91	3,213.11	4,401.17	4,343.11	58.06	75.808	
7,515.00	7,104.00	3,414.00	3,413.67	29.32	66.59	3.78	-1,031.91	3,213.11	4,392.92	4,335.03	57.90	75.876	
7,600.00	7,104.00	3,414.00	3,413.67	29.84	66.59	3.78	-1,031.91	3,213.11	4,346.06	4,289.11	56.95	76.312	
7,700.00	7,104.00	3,414.00	3,413.67	30.51	66.59	3.78	-1,031.91	3,213.11	4,292.43	4,236.60	55.83	76.883	
7,800.00	7,104.00	3,414.00	3,413.67	31.26	66.59	3.78	-1,031.91	3,213.11	4,240.48	4,185.78	54.70	77.517	
7,900.00	7,104.00	3,414.00	3,413.67	32.07	66.59	3.78	-1,031.91	3,213.11	4,190.27	4,136.70	53.57	78.216	
8,000.00	7,104.00	3,414.00	3,413.67	32.94	66.59	3.78	-1,031.91	3,213.11	4,141.87	4,089.43	52.44	78.979	
8,100.00	7,104.00	3,414.00	3,413.67	33.86	66.59	3.78	-1,031.91	3,213.11	4,095.34	4,044.02	51.31	79.809	
8,200.00	7,104.00	3,414.00	3,413.67	34.84	66.59	3.78	-1,031.91	3,213.11	4,050.74	4,000.55	50.19	80.705	
8,300.00	7,104.00	3,414.00	3,413.67	35.86	66.59	3.78	-1,031.91	3,213.11	4,008.14	3,959.06	49.08	81.667	
8,400.00	7,104.00	3,414.00	3,413.67	36.92	66.59	3.78	-1,031.91	3,213.11	3,967.61	3,919.63	47.98	82.694	
8,500.00	7,104.00	3,414.00	3,413.67	38.02	66.59	3.78	-1,031.91	3,213.11	3,929.20	3,882.30	46.90	83.785	
8,600.00	7,104.00	3,414.00	3,413.67	39.15	66.59	3.78	-1,031.91	3,213.11	3,892.98	3,847.15	45.83	84.938	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
8,700.00	7,104.00	3,414.00	3,413.67	40.32	66.59	3.78	-1,031.91	3,213.11	3,859.02	3,814.22	44.80	86.147	
8,800.00	7,104.00	3,414.00	3,413.67	41.52	66.59	3.78	-1,031.91	3,213.11	3,827.36	3,783.58	43.79	87.405	
8,900.00	7,104.00	3,414.00	3,413.67	42.74	66.59	3.78	-1,031.91	3,213.11	3,798.08	3,755.26	42.82	88.703	
9,000.00	7,104.00	3,414.00	3,413.67	43.99	66.59	3.78	-1,031.91	3,213.11	3,771.22	3,729.33	41.89	90.025	
9,100.00	7,104.00	3,414.00	3,413.67	45.26	66.59	3.78	-1,031.91	3,213.11	3,746.84	3,705.83	41.02	91.349	
9,200.00	7,104.00	3,414.00	3,413.67	46.55	66.59	3.78	-1,031.91	3,213.11	3,724.99	3,684.78	40.21	92.643	
9,300.00	7,104.00	3,414.00	3,413.67	47.85	66.59	3.78	-1,031.91	3,213.11	3,705.70	3,666.22	39.48	93.865	
9,400.00	7,104.00	3,414.00	3,413.67	49.18	66.59	3.78	-1,031.91	3,213.11	3,689.03	3,650.18	38.85	94.955	
9,500.00	7,104.00	3,414.00	3,413.67	50.52	66.59	3.78	-1,031.91	3,213.11	3,675.00	3,636.66	38.35	95.836	
9,600.00	7,104.00	3,414.00	3,413.67	51.88	66.59	3.78	-1,031.91	3,213.11	3,663.65	3,625.65	38.00	96.414	
9,700.00	7,104.00	3,414.00	3,413.67	53.25	66.59	3.78	-1,031.91	3,213.11	3,655.00	3,617.16	37.84	96.581	
9,800.00	7,104.00	3,414.00	3,413.67	54.63	66.59	3.78	-1,031.91	3,213.11	3,649.08	3,611.16	37.92	96.233	
9,900.00	7,104.00	3,414.00	3,413.67	56.03	66.59	3.78	-1,031.91	3,213.11	3,645.88	3,607.62	38.26	95.297	
9,966.48	7,104.00	3,414.00	3,413.67	56.96	66.59	3.78	-1,031.91	3,213.11	3,645.28	3,606.64	38.64	94.338	
10,000.00	7,104.00	3,414.00	3,413.67	57.43	66.59	3.78	-1,031.91	3,213.11	3,645.43	3,606.55	38.88	93.758	
10,100.00	7,104.00	3,414.00	3,413.67	58.85	66.59	3.78	-1,031.91	3,213.11	3,647.72	3,607.93	39.79	91.677	
10,200.00	7,104.00	3,414.00	3,413.67	60.27	66.59	3.78	-1,031.91	3,213.11	3,652.75	3,611.79	40.96	89.179	
10,300.00	7,104.00	3,414.00	3,413.67	61.71	66.59	3.78	-1,031.91	3,213.11	3,660.50	3,618.15	42.36	86.420	
10,400.00	7,104.00	3,414.00	3,413.67	63.15	66.59	3.78	-1,031.91	3,213.11	3,670.96	3,627.03	43.94	83.551	
10,500.00	7,104.00	3,414.00	3,413.67	64.60	66.59	3.78	-1,031.91	3,213.11	3,684.11	3,638.46	45.66	80.694	
10,600.00	7,104.00	3,414.00	3,413.67	66.05	66.59	3.78	-1,031.91	3,213.11	3,699.92	3,652.44	47.47	77.936	
10,700.00	7,104.00	3,414.00	3,413.67	67.52	66.59	3.78	-1,031.91	3,213.11	3,718.35	3,668.99	49.36	75.331	
10,800.00	7,104.00	3,414.00	3,413.67	68.99	66.59	3.78	-1,031.91	3,213.11	3,739.36	3,688.07	51.29	72.911	
10,900.00	7,104.00	3,414.00	3,413.67	70.46	66.59	3.78	-1,031.91	3,213.11	3,762.91	3,709.68	53.23	70.687	
11,000.00	7,104.00	3,414.00	3,413.67	71.94	66.59	3.78	-1,031.91	3,213.11	3,788.96	3,733.78	55.18	68.663	
11,100.00	7,104.00	3,414.00	3,413.67	73.43	66.59	3.78	-1,031.91	3,213.11	3,817.45	3,760.33	57.12	66.832	
11,200.00	7,104.00	3,414.00	3,413.67	74.92	66.59	3.78	-1,031.91	3,213.11	3,848.33	3,789.29	59.04	65.185	
11,300.00	7,104.00	3,414.00	3,413.67	76.41	66.59	3.78	-1,031.91	3,213.11	3,881.54	3,820.61	60.92	63.711	
11,400.00	7,104.00	3,414.00	3,413.67	77.91	66.59	3.78	-1,031.91	3,213.11	3,917.02	3,854.24	62.77	62.399	
11,500.00	7,104.00	3,414.00	3,413.67	79.41	66.59	3.78	-1,031.91	3,213.11	3,954.71	3,890.13	64.58	61.235	
11,600.00	7,104.00	3,414.00	3,413.67	80.92	66.59	3.78	-1,031.91	3,213.11	3,994.55	3,928.21	66.34	60.209	
11,700.00	7,104.00	3,414.00	3,413.67	82.43	66.59	3.78	-1,031.91	3,213.11	4,036.47	3,968.42	68.06	59.310	
11,800.00	7,104.00	3,414.00	3,413.67	83.94	66.59	3.78	-1,031.91	3,213.11	4,080.42	4,010.70	69.72	58.526	
11,900.00	7,104.00	3,414.00	3,413.67	85.46	66.59	3.78	-1,031.91	3,213.11	4,126.32	4,054.99	71.33	57.849	
12,000.00	7,104.00	3,414.00	3,413.67	86.98	66.59	3.78	-1,031.91	3,213.11	4,174.12	4,101.23	72.89	57.269	
12,100.00	7,104.00	3,414.00	3,413.67	88.50	66.59	3.78	-1,031.91	3,213.11	4,223.74	4,149.35	74.39	56.780	
12,200.00	7,104.00	3,414.00	3,413.67	90.03	66.59	3.78	-1,031.91	3,213.11	4,275.12	4,199.28	75.84	56.373	
12,300.00	7,104.00	3,414.00	3,413.67	91.55	66.59	3.78	-1,031.91	3,213.11	4,328.20	4,250.97	77.23	56.042	
12,400.00	7,104.00	3,414.00	3,413.67	93.08	66.59	3.78	-1,031.91	3,213.11	4,382.93	4,304.36	78.57	55.782	
12,500.00	7,104.00	3,414.00	3,413.67	94.62	66.59	3.78	-1,031.91	3,213.11	4,439.23	4,359.37	79.86	55.586	
12,600.00	7,104.00	3,414.00	3,413.67	96.15	66.59	3.78	-1,031.91	3,213.11	4,497.05	4,415.95	81.10	55.450	
12,700.00	7,104.00	3,414.00	3,413.67	97.69	66.59	3.78	-1,031.91	3,213.11	4,556.33	4,474.04	82.29	55.370	
12,800.00	7,104.00	3,414.00	3,413.67	99.23	66.59	3.78	-1,031.91	3,213.11	4,617.02	4,533.59	83.43	55.340	
12,900.00	7,104.00	3,414.00	3,413.67	100.77	66.59	3.78	-1,031.91	3,213.11	4,679.06	4,594.53	84.52	55.358	
13,000.00	7,104.00	3,414.00	3,413.67	102.31	66.59	3.78	-1,031.91	3,213.11	4,742.39	4,656.82	85.57	55.420	
13,100.00	7,104.00	3,414.00	3,413.67	103.86	66.59	3.78	-1,031.91	3,213.11	4,806.97	4,720.40	86.58	55.523	
13,200.00	7,104.00	3,414.00	3,413.67	105.40	66.59	3.78	-1,031.91	3,213.11	4,872.75	4,785.21	87.54	55.665	
13,300.00	7,104.00	3,414.00	3,413.67	106.95	66.59	3.78	-1,031.91	3,213.11	4,939.68	4,851.22	88.46	55.841	
13,400.00	7,104.00	3,414.00	3,413.67	108.50	66.59	3.78	-1,031.91	3,213.11	5,007.70	4,918.36	89.34	56.051	
13,500.00	7,104.00	3,414.00	3,413.67	110.05	66.59	3.78	-1,031.91	3,213.11	5,076.79	4,986.60	90.19	56.292	
13,600.00	7,104.00	3,414.00	3,413.67	111.60	66.59	3.78	-1,031.91	3,213.11	5,146.89	5,055.90	91.00	56.562	
13,700.00	7,104.00	3,414.00	3,413.67	113.16	66.59	3.78	-1,031.91	3,213.11	5,217.97	5,126.20	91.77	56.859	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	7,104.00	3,414.00	3,413.67	114.71	66.59	3.78	-1,031.91	3,213.11	5,289.98	5,197.47	92.51	57.182	
13,900.00	7,104.00	3,414.00	3,413.67	116.27	66.59	3.78	-1,031.91	3,213.11	5,362.89	5,269.67	93.22	57.528	
14,000.00	7,104.00	3,414.00	3,413.67	117.83	66.59	3.78	-1,031.91	3,213.11	5,436.66	5,342.76	93.90	57.896	
14,100.00	7,104.00	3,414.00	3,413.67	119.38	66.59	3.78	-1,031.91	3,213.11	5,511.26	5,416.71	94.56	58.286	
14,200.00	7,104.00	3,414.00	3,413.67	120.94	66.59	3.78	-1,031.91	3,213.11	5,586.66	5,491.48	95.18	58.695	
14,300.00	7,104.00	3,414.00	3,413.67	122.50	66.59	3.78	-1,031.91	3,213.11	5,662.81	5,567.03	95.78	59.123	
14,400.00	7,104.00	3,414.00	3,413.67	124.07	66.59	3.78	-1,031.91	3,213.11	5,739.70	5,643.34	96.35	59.569	
14,500.00	7,104.00	3,414.00	3,413.67	125.63	66.59	3.78	-1,031.91	3,213.11	5,817.29	5,720.38	96.91	60.031	
14,600.00	7,104.00	3,414.00	3,413.67	127.19	66.59	3.78	-1,031.91	3,213.11	5,895.55	5,798.12	97.43	60.508	
14,700.00	7,104.00	3,414.00	3,413.67	128.76	66.59	3.78	-1,031.91	3,213.11	5,974.47	5,876.52	97.94	61.000	
14,800.00	7,104.00	3,414.00	3,413.67	130.32	66.59	3.78	-1,031.91	3,213.11	6,054.00	5,955.57	98.43	61.506	
14,900.00	7,104.00	3,414.00	3,413.67	131.89	66.59	3.78	-1,031.91	3,213.11	6,134.14	6,035.24	98.90	62.026	
15,000.00	7,104.00	3,414.00	3,413.67	133.46	66.59	3.78	-1,031.91	3,213.11	6,214.85	6,115.50	99.35	62.557	
15,100.00	7,104.00	3,414.00	3,413.67	135.02	66.59	3.78	-1,031.91	3,213.11	6,296.11	6,196.34	99.78	63.101	
15,200.00	7,104.00	3,414.00	3,413.67	136.59	66.59	3.78	-1,031.91	3,213.11	6,377.91	6,277.72	100.20	63.655	
15,300.00	7,104.00	3,414.00	3,413.67	138.16	66.59	3.78	-1,031.91	3,213.11	6,460.22	6,359.63	100.60	64.220	
15,400.00	7,104.00	3,414.00	3,413.67	139.73	66.59	3.78	-1,031.91	3,213.11	6,543.02	6,442.04	100.98	64.795	
15,500.00	7,104.00	3,414.00	3,413.67	141.30	66.59	3.78	-1,031.91	3,213.11	6,626.30	6,524.95	101.35	65.379	
15,600.00	7,104.00	3,414.00	3,413.67	142.88	66.59	3.78	-1,031.91	3,213.11	6,710.04	6,608.33	101.71	65.972	
15,700.00	7,104.00	3,414.00	3,413.67	144.45	66.59	3.78	-1,031.91	3,213.11	6,794.21	6,692.15	102.05	66.574	
15,800.00	7,104.00	3,414.00	3,413.67	146.02	66.59	3.78	-1,031.91	3,213.11	6,878.81	6,776.42	102.39	67.184	
15,900.00	7,104.00	3,414.00	3,413.67	147.60	66.59	3.78	-1,031.91	3,213.11	6,963.81	6,861.10	102.71	67.801	
16,000.00	7,104.00	3,414.00	3,413.67	149.17	66.59	3.78	-1,031.91	3,213.11	7,049.21	6,946.19	103.02	68.426	
16,100.00	7,104.00	3,414.00	3,413.67	150.74	66.59	3.78	-1,031.91	3,213.11	7,134.99	7,031.67	103.32	69.058	
16,200.00	7,104.00	3,414.00	3,413.67	152.32	66.59	3.78	-1,031.91	3,213.11	7,221.14	7,117.53	103.61	69.696	
16,300.00	7,104.00	3,414.00	3,413.67	153.89	66.59	3.78	-1,031.91	3,213.11	7,307.63	7,203.74	103.89	70.340	
16,400.00	7,104.00	3,414.00	3,413.67	155.47	66.59	3.78	-1,031.91	3,213.11	7,394.47	7,290.31	104.16	70.991	
16,500.00	7,104.00	3,414.00	3,413.67	157.05	66.59	3.78	-1,031.91	3,213.11	7,481.64	7,377.21	104.42	71.647	
16,600.00	7,104.00	3,414.00	3,413.67	158.63	66.59	3.78	-1,031.91	3,213.11	7,569.12	7,464.44	104.68	72.308	
16,700.00	7,104.00	3,414.00	3,413.67	160.20	66.59	3.78	-1,031.91	3,213.11	7,656.91	7,551.99	104.93	72.974	
16,800.00	7,104.00	3,414.00	3,413.67	161.78	66.59	3.78	-1,031.91	3,213.11	7,745.00	7,639.83	105.17	73.645	
16,900.00	7,104.00	3,414.00	3,413.67	163.36	66.59	3.78	-1,031.91	3,213.11	7,833.37	7,727.97	105.40	74.321	
17,000.00	7,104.00	3,414.00	3,413.67	164.94	66.59	3.78	-1,031.91	3,213.11	7,922.02	7,816.40	105.63	75.001	
17,100.00	7,104.00	3,414.00	3,413.67	166.52	66.59	3.78	-1,031.91	3,213.11	8,010.94	7,905.09	105.85	75.686	
17,200.00	7,104.00	3,414.00	3,413.67	168.10	66.59	3.78	-1,031.91	3,213.11	8,100.11	7,994.05	106.06	76.374	
17,300.00	7,104.00	3,414.00	3,413.67	169.68	66.59	3.78	-1,031.91	3,213.11	8,189.54	8,083.27	106.27	77.066	
17,400.00	7,104.00	3,414.00	3,413.67	171.26	66.59	3.78	-1,031.91	3,213.11	8,279.21	8,172.74	106.47	77.761	
17,500.00	7,104.00	3,414.00	3,413.67	172.84	66.59	3.78	-1,031.91	3,213.11	8,369.11	8,262.44	106.67	78.460	
17,600.00	7,104.00	3,414.00	3,413.67	174.42	66.59	3.78	-1,031.91	3,213.11	8,459.24	8,352.38	106.86	79.162	
17,700.00	7,104.00	3,414.00	3,413.67	176.00	66.59	3.78	-1,031.91	3,213.11	8,549.58	8,442.53	107.05	79.867	
17,800.00	7,104.00	3,414.00	3,413.67	177.59	66.59	3.78	-1,031.91	3,213.11	8,640.14	8,532.91	107.23	80.575	
17,900.00	7,104.00	3,414.00	3,413.67	179.17	66.59	3.78	-1,031.91	3,213.11	8,730.91	8,623.50	107.41	81.286	
18,000.00	7,104.00	3,414.00	3,413.67	180.75	66.59	3.78	-1,031.91	3,213.11	8,821.87	8,714.29	107.59	81.999	
18,100.00	7,104.00	3,414.00	3,413.67	182.33	66.59	3.78	-1,031.91	3,213.11	8,913.03	8,805.28	107.76	82.714	
18,200.00	7,104.00	3,414.00	3,413.67	183.92	66.59	3.78	-1,031.91	3,213.11	9,004.38	8,896.46	107.92	83.432	
18,300.00	7,104.00	3,414.00	3,413.67	185.50	66.59	3.78	-1,031.91	3,213.11	9,095.91	8,987.82	108.09	84.153	
18,400.00	7,104.00	3,414.00	3,413.67	187.09	66.59	3.78	-1,031.91	3,213.11	9,187.62	9,079.37	108.25	84.875	
18,500.00	7,104.00	3,414.00	3,413.67	188.67	66.59	3.78	-1,031.91	3,213.11	9,279.49	9,171.09	108.41	85.599	
18,600.00	7,104.00	3,414.00	3,413.67	190.26	66.59	3.78	-1,031.91	3,213.11	9,371.54	9,262.98	108.56	86.325	
18,700.00	7,104.00	3,414.00	3,413.67	191.84	66.59	3.78	-1,031.91	3,213.11	9,463.74	9,355.03	108.71	87.053	
18,800.00	7,104.00	3,414.00	3,413.67	193.43	66.59	3.78	-1,031.91	3,213.11	9,556.10	9,447.24	108.86	87.782	
18,900.00	7,104.00	3,414.00	3,413.67	195.01	66.59	3.78	-1,031.91	3,213.11	9,648.62	9,539.61	109.01	88.513	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #259A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 101-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	7,104.00	3,414.00	3,413.67	196.60	66.59	3.78	-1,031.91	3,213.11	9,741.28	9,632.13	109.15	89.246	
19,100.00	7,104.00	3,414.00	3,413.67	198.18	66.59	3.78	-1,031.91	3,213.11	9,834.08	9,724.79	109.29	89.979	
19,200.00	7,104.00	3,414.00	3,413.67	199.77	66.59	3.78	-1,031.91	3,213.11	9,927.03	9,817.60	109.43	90.714	
19,300.00	7,104.00	3,414.00	3,413.67	201.36	66.59	3.78	-1,031.91	3,213.11	10,020.11	9,910.54	109.57	91.451	
19,400.00	7,104.00	3,414.00	3,413.67	202.94	66.59	3.78	-1,031.91	3,213.11	10,113.32	10,003.62	109.70	92.188	
19,500.00	7,104.00	3,414.00	3,413.67	204.53	66.59	3.78	-1,031.91	3,213.11	10,206.67	10,096.83	109.84	92.926	
19,600.00	7,104.00	3,414.00	3,413.67	206.12	66.59	3.78	-1,031.91	3,213.11	10,300.13	10,190.17	109.97	93.665	
19,700.00	7,104.00	3,414.00	3,413.67	207.70	66.59	3.78	-1,031.91	3,213.11	10,393.72	10,283.62	110.10	94.405	
19,800.00	7,104.00	3,414.00	3,413.67	209.29	66.59	3.78	-1,031.91	3,213.11	10,487.43	10,377.20	110.22	95.146	
19,900.00	7,104.00	3,414.00	3,413.67	210.88	66.59	3.78	-1,031.91	3,213.11	10,581.25	10,470.90	110.35	95.888	
20,000.00	7,104.00	3,414.00	3,413.67	212.47	66.59	3.78	-1,031.91	3,213.11	10,675.18	10,564.71	110.47	96.630	
20,100.00	7,104.00	3,414.00	3,413.67	214.05	66.59	3.78	-1,031.91	3,213.11	10,769.23	10,658.63	110.60	97.373	
20,200.00	7,104.00	3,414.00	3,413.67	215.64	66.59	3.78	-1,031.91	3,213.11	10,863.38	10,752.66	110.72	98.116	
20,215.00	7,104.00	3,414.00	3,413.67	215.88	66.59	3.78	-1,031.91	3,213.11	10,877.51	10,766.78	110.74	98.228	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #269A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	47.06	47.06	3.28	0.14	98.00	-1,170.85	8,335.85	8,417.74				
100.00	100.00	210.58	210.57	3.29	0.63	97.99	-1,169.41	8,334.65	8,416.82	8,412.90	3.92	2,146.480	
200.00	200.00	300.10	300.08	3.34	0.90	97.98	-1,168.97	8,333.66	8,415.67	8,411.43	4.24	1,986.544	
300.00	300.00	373.47	373.44	3.42	1.12	97.99	-1,169.00	8,333.04	8,414.84	8,410.30	4.54	1,853.414	
400.00	400.00	428.87	428.84	3.54	1.29	97.99	-1,169.61	8,332.68	8,414.38	8,409.55	4.82	1,744.047	
424.97	424.97	441.00	440.97	3.57	1.32	97.99	-1,169.85	8,332.64	8,414.36	8,409.47	4.90	1,718.777	
500.00	500.00	472.00	471.96	3.69	1.42	98.00	-1,170.68	8,332.58	8,414.53	8,409.43	5.10	1,648.808	
600.00	599.98	502.00	501.94	3.86	1.51	-52.00	-1,171.71	8,332.63	8,414.31	8,408.95	5.36	1,569.365	
700.00	699.84	546.99	546.89	4.04	1.64	-52.02	-1,173.69	8,333.05	8,412.70	8,407.02	5.68	1,480.556	
800.00	799.45	582.25	582.08	4.26	1.75	-52.08	-1,175.67	8,333.62	8,409.72	8,403.72	6.00	1,402.206	
849.50	848.63	601.26	601.05	4.37	1.80	-52.11	-1,176.89	8,334.02	8,407.74	8,401.57	6.17	1,363.315	
900.00	898.77	620.00	619.74	4.49	1.86	-60.39	-1,178.15	8,334.47	8,406.01	8,399.67	6.34	1,325.285	
959.16	957.50	640.14	639.82	4.64	1.92	-70.16	-1,179.58	8,335.02	8,405.25	8,398.70	6.55	1,283.221	
973.84	972.07	651.00	650.65	4.68	1.95	-72.53	-1,180.39	8,335.36	8,405.28	8,398.66	6.62	1,269.733	
1,000.00	998.03	651.00	650.65	4.74	1.95	-72.53	-1,180.39	8,335.36	8,405.41	8,398.73	6.69	1,256.924	
1,100.00	1,097.29	681.00	680.53	5.02	2.04	-72.54	-1,182.83	8,336.39	8,406.44	8,399.39	7.05	1,192.899	
1,200.00	1,196.54	713.00	712.38	5.30	2.14	-72.55	-1,185.69	8,337.71	8,408.27	8,400.84	7.43	1,131.975	
1,300.00	1,295.80	744.00	743.18	5.61	2.23	-72.55	-1,188.75	8,339.29	8,411.01	8,403.19	7.82	1,075.782	
1,400.00	1,395.06	775.00	773.96	5.92	2.33	-72.56	-1,192.06	8,341.07	8,414.55	8,406.33	8.22	1,023.706	
1,500.00	1,494.31	806.00	804.70	6.24	2.42	-72.56	-1,195.55	8,343.01	8,418.83	8,410.20	8.63	975.559	
1,600.00	1,593.57	836.00	834.39	6.57	2.51	-72.56	-1,199.24	8,345.17	8,424.02	8,414.97	9.04	931.428	
1,700.00	1,692.82	867.00	865.01	6.91	2.60	-72.56	-1,203.34	8,347.70	8,430.12	8,420.65	9.47	890.386	
1,800.00	1,792.08	898.00	895.60	7.25	2.69	-72.56	-1,207.62	8,350.41	8,436.97	8,427.07	9.90	852.487	
1,900.00	1,891.33	930.00	927.12	7.60	2.79	-72.56	-1,212.29	8,353.36	8,444.56	8,434.23	10.33	817.222	
2,000.00	1,990.59	973.75	970.11	7.95	2.92	-72.55	-1,219.17	8,357.63	8,452.86	8,442.05	10.81	781.992	
2,100.00	2,089.85	1,024.00	1,019.32	8.30	3.07	-72.53	-1,227.88	8,362.87	8,461.92	8,450.61	11.31	748.261	
2,200.00	2,189.10	1,056.00	1,050.57	8.66	3.17	-72.52	-1,233.83	8,366.30	8,471.57	8,459.81	11.75	720.708	
2,300.00	2,288.36	1,096.06	1,089.60	9.02	3.29	-72.50	-1,241.66	8,370.85	8,481.96	8,469.73	12.23	693.695	
2,400.00	2,387.61	1,118.00	1,110.92	9.39	3.35	-72.49	-1,246.15	8,373.44	8,493.12	8,480.48	12.65	671.644	
2,500.00	2,486.87	1,178.00	1,169.11	9.76	3.54	-72.46	-1,258.64	8,381.04	8,505.02	8,491.84	13.18	645.139	
2,600.00	2,586.12	1,228.43	1,217.95	10.13	3.69	-72.44	-1,269.24	8,387.80	8,517.56	8,503.86	13.69	622.043	
2,700.00	2,685.38	1,277.92	1,265.81	10.50	3.84	-72.41	-1,279.85	8,394.53	8,530.52	8,516.31	14.20	600.716	
2,800.00	2,784.63	1,344.47	1,330.05	10.87	4.03	-72.37	-1,294.47	8,403.97	8,544.06	8,529.30	14.76	578.747	
2,900.00	2,883.89	1,404.78	1,388.20	11.24	4.22	-72.34	-1,307.89	8,412.62	8,557.90	8,542.59	15.31	559.095	
3,000.00	2,983.15	1,473.57	1,454.33	11.62	4.42	-72.29	-1,323.93	8,422.76	8,572.24	8,556.36	15.88	539.880	
3,100.00	3,082.40	1,636.88	1,611.06	12.00	4.91	-72.18	-1,363.38	8,446.20	8,586.41	8,569.66	16.75	512.614	
3,200.00	3,181.66	2,020.00	1,980.86	12.38	6.06	-71.94	-1,450.48	8,495.23	8,599.61	8,581.29	18.32	469.514	
3,300.00	3,280.91	2,050.00	2,009.88	12.75	6.15	-71.92	-1,457.30	8,498.55	8,610.42	8,591.65	18.77	458.709	
3,400.00	3,380.17	2,121.97	2,079.68	13.13	6.37	-71.88	-1,472.58	8,507.15	8,621.77	8,602.41	19.36	445.381	
3,500.00	3,479.42	2,209.29	2,164.45	13.52	6.63	-71.84	-1,490.53	8,518.03	8,633.48	8,613.49	19.99	431.791	
3,600.00	3,578.68	2,417.09	2,365.84	13.90	7.25	-71.73	-1,535.66	8,542.13	8,644.48	8,623.47	21.01	411.407	
3,700.00	3,677.94	3,512.00	3,448.77	14.28	10.54	-71.90	-1,648.29	8,613.89	8,643.69	8,618.94	24.75	349.229	
3,782.52	3,759.84	3,512.00	3,448.77	14.60	10.54	-71.90	-1,648.29	8,613.89	8,643.30	8,618.23	25.07	344.832	
3,800.00	3,777.19	3,512.00	3,448.77	14.66	10.54	-71.90	-1,648.29	8,613.89	8,643.31	8,618.18	25.13	343.921	
3,900.00	3,876.45	3,512.00	3,448.77	15.05	10.54	-71.90	-1,648.29	8,613.89	8,644.09	8,618.58	25.51	338.831	
4,000.00	3,975.70	3,512.00	3,448.77	15.43	10.54	-71.90	-1,648.29	8,613.89	8,646.03	8,620.14	25.89	333.951	
4,100.00	4,074.96	3,512.00	3,448.77	15.82	10.54	-71.90	-1,648.29	8,613.89	8,649.13	8,622.86	26.27	329.274	
4,200.00	4,174.21	3,512.00	3,448.77	16.20	10.54	-71.90	-1,648.29	8,613.89	8,653.37	8,626.73	26.64	324.792	
4,300.00	4,273.47	3,512.00	3,448.77	16.59	10.54	-71.90	-1,648.29	8,613.89	8,658.77	8,631.76	27.02	320.498	
4,400.00	4,372.73	3,512.00	3,448.77	16.97	10.54	-71.90	-1,648.29	8,613.89	8,665.32	8,637.94	27.39	316.385	
4,500.00	4,471.98	3,512.00	3,448.77	17.36	10.54	-71.90	-1,648.29	8,613.89	8,673.02	8,645.27	27.76	312.446	
4,600.00	4,571.24	3,512.00	3,448.77	17.75	10.54	-71.90	-1,648.29	8,613.89	8,681.87	8,653.74	28.13	308.675	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #269A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,700.00	4,670.49	3,512.00	3,448.77	18.13	10.54	-71.90	-1,648.29	8,613.89	8,691.85	8,663.36	28.49	305.067	
4,800.00	4,769.75	3,512.00	3,448.77	18.52	10.54	-71.90	-1,648.29	8,613.89	8,702.98	8,674.12	28.85	301.614	
4,900.00	4,869.00	3,512.00	3,448.77	18.91	10.54	-71.90	-1,648.29	8,613.89	8,715.24	8,686.02	29.22	298.311	
5,000.00	4,968.26	3,512.00	3,448.77	19.30	10.54	-71.90	-1,648.29	8,613.89	8,728.62	8,699.05	29.57	295.153	
5,100.00	5,067.51	3,512.00	3,448.77	19.69	10.54	-71.90	-1,648.29	8,613.89	8,743.13	8,713.20	29.93	292.135	
5,200.00	5,166.77	3,512.00	3,448.77	20.07	10.54	-71.90	-1,648.29	8,613.89	8,758.76	8,728.48	30.28	289.251	
5,300.00	5,266.03	3,512.00	3,448.77	20.46	10.54	-71.90	-1,648.29	8,613.89	8,775.50	8,744.86	30.63	286.496	
5,400.00	5,365.28	3,512.00	3,448.77	20.85	10.54	-71.90	-1,648.29	8,613.89	8,793.34	8,762.36	30.98	283.867	
5,500.00	5,464.54	3,512.00	3,448.77	21.24	10.54	-71.90	-1,648.29	8,613.89	8,812.28	8,780.96	31.32	281.358	
5,600.00	5,563.79	3,512.00	3,448.77	21.63	10.54	-71.90	-1,648.29	8,613.89	8,832.32	8,800.65	31.66	278.965	
5,700.00	5,663.05	3,512.00	3,448.77	22.02	10.54	-71.90	-1,648.29	8,613.89	8,853.43	8,821.44	32.00	276.684	
5,800.00	5,762.30	3,512.00	3,448.77	22.41	10.54	-71.90	-1,648.29	8,613.89	8,875.63	8,843.30	32.33	274.510	
5,900.00	5,861.56	3,512.00	3,448.77	22.80	10.54	-71.90	-1,648.29	8,613.89	8,898.89	8,866.23	32.66	272.441	
6,000.00	5,960.82	3,512.00	3,448.77	23.19	10.54	-71.90	-1,648.29	8,613.89	8,923.22	8,890.22	32.99	270.472	
6,100.00	6,060.07	3,512.00	3,448.77	23.58	10.54	-71.90	-1,648.29	8,613.89	8,948.59	8,915.28	33.32	268.599	
6,200.00	6,159.33	3,512.00	3,448.77	23.97	10.54	-71.90	-1,648.29	8,613.89	8,975.01	8,941.37	33.64	266.820	
6,300.00	6,258.58	3,512.00	3,448.77	24.36	10.54	-71.90	-1,648.29	8,613.89	9,002.46	8,968.50	33.95	265.130	
6,400.00	6,357.84	3,512.00	3,448.77	24.76	10.54	-71.90	-1,648.29	8,613.89	9,030.93	8,996.66	34.27	263.527	
6,500.00	6,457.09	3,512.00	3,448.77	25.15	10.54	-71.90	-1,648.29	8,613.89	9,060.42	9,025.84	34.58	262.007	
6,528.17	6,485.05	3,512.00	3,448.77	25.26	10.54	-71.90	-1,648.29	8,613.89	9,068.91	9,034.24	34.67	261.594	
6,550.00	6,506.71	3,512.00	3,448.77	25.34	10.54	-57.25	-1,648.29	8,613.89	9,075.19	9,040.46	34.73	261.275	
6,600.00	6,556.11	3,512.00	3,448.77	25.54	10.54	-34.10	-1,648.29	8,613.89	9,087.06	9,052.18	34.88	260.489	
6,650.00	6,605.00	3,512.00	3,448.77	25.74	10.54	-21.83	-1,648.29	8,613.89	9,095.39	9,060.36	35.03	259.633	
6,700.00	6,653.07	3,512.00	3,448.77	25.93	10.54	-14.89	-1,648.29	8,613.89	9,100.14	9,064.96	35.18	258.704	
6,750.00	6,700.02	3,512.00	3,448.77	26.12	10.54	-10.55	-1,648.29	8,613.89	9,101.28	9,065.96	35.32	257.709	
6,800.00	6,745.56	3,512.00	3,448.77	26.31	10.54	-7.60	-1,648.29	8,613.89	9,098.80	9,063.35	35.45	256.655	
6,850.00	6,789.42	3,512.00	3,448.77	26.50	10.54	-5.46	-1,648.29	8,613.89	9,092.73	9,057.15	35.58	255.550	
6,900.00	6,831.32	3,512.00	3,448.77	26.69	10.54	-3.80	-1,648.29	8,613.89	9,083.09	9,047.38	35.70	254.401	
6,950.00	6,871.01	3,512.00	3,448.77	26.87	10.54	-2.46	-1,648.29	8,613.89	9,069.92	9,034.10	35.82	253.214	
7,000.00	6,908.23	3,512.00	3,448.77	27.05	10.54	-1.32	-1,648.29	8,613.89	9,053.30	9,017.37	35.93	251.997	
7,050.00	6,942.77	3,512.00	3,448.77	27.23	10.54	-0.30	-1,648.29	8,613.89	9,033.31	8,997.28	36.02	250.756	
7,100.00	6,974.40	3,512.00	3,448.77	27.41	10.54	0.64	-1,648.29	8,613.89	9,010.04	8,973.93	36.11	249.496	
7,150.00	7,002.93	3,512.00	3,448.77	27.60	10.54	1.57	-1,648.29	8,613.89	8,983.63	8,947.44	36.19	248.225	
7,200.00	7,028.20	3,512.00	3,448.77	27.80	10.54	2.50	-1,648.29	8,613.89	8,954.19	8,917.93	36.26	246.946	
7,250.00	7,050.03	3,512.00	3,448.77	28.00	10.54	3.50	-1,648.29	8,613.89	8,921.90	8,885.58	36.32	245.666	
7,300.00	7,068.30	3,512.00	3,448.77	28.22	10.54	4.61	-1,648.29	8,613.89	8,886.91	8,850.54	36.36	244.390	
7,350.00	7,082.89	3,512.00	3,448.77	28.45	10.54	5.88	-1,648.29	8,613.89	8,849.41	8,813.01	36.40	243.121	
7,400.00	7,093.72	3,512.00	3,448.77	28.70	10.54	7.41	-1,648.29	8,613.89	8,809.60	8,773.17	36.42	241.863	
7,450.00	7,100.71	3,512.00	3,448.77	28.96	10.54	9.32	-1,648.29	8,613.89	8,767.69	8,731.26	36.44	240.619	
7,500.00	7,103.82	3,512.00	3,448.77	29.24	10.54	11.80	-1,648.29	8,613.89	8,723.93	8,687.49	36.44	239.392	
7,515.00	7,104.00	3,512.00	3,448.77	29.32	10.54	12.70	-1,648.29	8,613.89	8,710.47	8,674.02	36.44	239.012	
7,600.00	7,104.00	3,512.00	3,448.77	29.84	10.54	12.70	-1,648.29	8,613.89	8,633.89	8,597.46	36.43	237.003	
7,700.00	7,104.00	3,512.00	3,448.77	30.51	10.54	12.70	-1,648.29	8,613.89	8,544.00	8,507.58	36.42	234.614	
7,800.00	7,104.00	3,512.00	3,448.77	31.26	10.54	12.70	-1,648.29	8,613.89	8,454.34	8,417.93	36.41	232.188	
7,900.00	7,104.00	3,512.00	3,448.77	32.07	10.54	12.70	-1,648.29	8,613.89	8,364.91	8,328.50	36.41	229.725	
8,000.00	7,104.00	3,512.00	3,448.77	32.94	10.54	12.70	-1,648.29	8,613.89	8,275.73	8,239.31	36.42	227.223	
8,100.00	7,104.00	3,512.00	3,448.77	33.86	10.54	12.70	-1,648.29	8,613.89	8,186.79	8,150.35	36.44	224.684	
8,200.00	7,104.00	3,512.00	3,448.77	34.84	10.54	12.70	-1,648.29	8,613.89	8,098.11	8,061.65	36.46	222.104	
8,300.00	7,104.00	3,512.00	3,448.77	35.86	10.54	12.70	-1,648.29	8,613.89	8,009.70	7,973.21	36.49	219.484	
8,400.00	7,104.00	3,512.00	3,448.77	36.92	10.54	12.70	-1,648.29	8,613.89	7,921.57	7,885.03	36.53	216.823	
8,500.00	7,104.00	3,512.00	3,448.77	38.02	10.54	12.70	-1,648.29	8,613.89	7,833.72	7,797.13	36.59	214.121	
8,600.00	7,104.00	3,512.00	3,448.77	39.15	10.54	12.70	-1,648.29	8,613.89	7,746.16	7,709.51	36.65	211.377	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #269A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	7,104.00	3,512.00	3,448.77	40.32	10.54	12.70	-1,648.29	8,613.89	7,658.91	7,622.19	36.72	208.592	
8,800.00	7,104.00	3,512.00	3,448.77	41.52	10.54	12.70	-1,648.29	8,613.89	7,571.97	7,535.17	36.80	205.764	
8,900.00	7,104.00	3,512.00	3,448.77	42.74	10.54	12.70	-1,648.29	8,613.89	7,485.36	7,448.47	36.89	202.894	
9,000.00	7,104.00	3,512.00	3,448.77	43.99	10.54	12.70	-1,648.29	8,613.89	7,399.09	7,362.09	37.00	199.982	
9,100.00	7,104.00	3,512.00	3,448.77	45.26	10.54	12.70	-1,648.29	8,613.89	7,313.17	7,276.05	37.12	197.029	
9,200.00	7,104.00	3,512.00	3,448.77	46.55	10.54	12.70	-1,648.29	8,613.89	7,227.61	7,190.36	37.25	194.035	
9,300.00	7,104.00	3,512.00	3,448.77	47.85	10.54	12.70	-1,648.29	8,613.89	7,142.43	7,105.03	37.39	191.001	
9,400.00	7,104.00	3,512.00	3,448.77	49.18	10.54	12.70	-1,648.29	8,613.89	7,057.63	7,020.07	37.55	187.928	
9,500.00	7,104.00	3,512.00	3,448.77	50.52	10.54	12.70	-1,648.29	8,613.89	6,973.24	6,935.51	37.73	184.818	
9,600.00	7,104.00	3,512.00	3,448.77	51.88	10.54	12.70	-1,648.29	8,613.89	6,889.26	6,851.34	37.92	181.671	
9,700.00	7,104.00	3,512.00	3,448.77	53.25	10.54	12.70	-1,648.29	8,613.89	6,805.72	6,767.59	38.13	178.490	
9,800.00	7,104.00	3,512.00	3,448.77	54.63	10.54	12.70	-1,648.29	8,613.89	6,722.63	6,684.27	38.35	175.277	
9,900.00	7,104.00	3,512.00	3,448.77	56.03	10.54	12.70	-1,648.29	8,613.89	6,640.00	6,601.40	38.60	172.033	
10,000.00	7,104.00	3,512.00	3,448.77	57.43	10.54	12.70	-1,648.29	8,613.89	6,557.86	6,519.00	38.86	168.762	
10,100.00	7,104.00	3,512.00	3,448.77	58.85	10.54	12.70	-1,648.29	8,613.89	6,476.22	6,437.08	39.14	165.467	
10,200.00	7,104.00	3,512.00	3,448.77	60.27	10.54	12.70	-1,648.29	8,613.89	6,395.10	6,355.66	39.44	162.149	
10,300.00	7,104.00	3,512.00	3,448.77	61.71	10.54	12.70	-1,648.29	8,613.89	6,314.52	6,274.76	39.76	158.814	
10,400.00	7,104.00	3,512.00	3,448.77	63.15	10.54	12.70	-1,648.29	8,613.89	6,234.50	6,194.40	40.10	155.463	
10,500.00	7,104.00	3,512.00	3,448.77	64.60	10.54	12.70	-1,648.29	8,613.89	6,155.07	6,114.61	40.47	152.101	
10,600.00	7,104.00	3,512.00	3,448.77	66.05	10.54	12.70	-1,648.29	8,613.89	6,076.25	6,035.40	40.85	148.732	
10,700.00	7,104.00	3,512.00	3,448.77	67.52	10.54	12.70	-1,648.29	8,613.89	5,998.06	5,956.80	41.26	145.360	
10,800.00	7,104.00	3,512.00	3,448.77	68.99	10.54	12.70	-1,648.29	8,613.89	5,920.52	5,878.83	41.70	141.988	
10,900.00	7,104.00	3,512.00	3,448.77	70.46	10.54	12.70	-1,648.29	8,613.89	5,843.67	5,801.52	42.16	138.622	
11,000.00	7,104.00	3,512.00	3,448.77	71.94	10.54	12.70	-1,648.29	8,613.89	5,767.53	5,724.89	42.64	135.265	
11,100.00	7,104.00	3,512.00	3,448.77	73.43	10.54	12.70	-1,648.29	8,613.89	5,692.12	5,648.98	43.15	131.923	
11,200.00	7,104.00	3,512.00	3,448.77	74.92	10.54	12.70	-1,648.29	8,613.89	5,617.49	5,573.81	43.68	128.599	
11,300.00	7,104.00	3,512.00	3,448.77	76.41	10.54	12.70	-1,648.29	8,613.89	5,543.65	5,499.41	44.24	125.298	
11,400.00	7,104.00	3,512.00	3,448.77	77.91	10.54	12.70	-1,648.29	8,613.89	5,470.65	5,425.81	44.83	122.025	
11,500.00	7,104.00	3,512.00	3,448.77	79.41	10.54	12.70	-1,648.29	8,613.89	5,398.50	5,353.06	45.45	118.784	
11,600.00	7,104.00	3,512.00	3,448.77	80.92	10.54	12.70	-1,648.29	8,613.89	5,327.26	5,281.17	46.09	115.580	
11,700.00	7,104.00	3,512.00	3,448.77	82.43	10.54	12.70	-1,648.29	8,613.89	5,256.96	5,210.20	46.76	112.416	
11,800.00	7,104.00	3,512.00	3,448.77	83.94	10.54	12.70	-1,648.29	8,613.89	5,187.63	5,140.17	47.46	109.297	
11,900.00	7,104.00	3,512.00	3,448.77	85.46	10.54	12.70	-1,648.29	8,613.89	5,119.32	5,071.13	48.19	106.227	
12,000.00	7,104.00	3,512.00	3,448.77	86.98	10.54	12.70	-1,648.29	8,613.89	5,052.06	5,003.11	48.95	103.210	
12,100.00	7,104.00	3,512.00	3,448.77	88.50	10.54	12.70	-1,648.29	8,613.89	4,985.90	4,936.17	49.74	100.249	
12,200.00	7,104.00	3,512.00	3,448.77	90.03	10.54	12.70	-1,648.29	8,613.89	4,920.88	4,870.33	50.55	97.347	
12,300.00	7,104.00	3,512.00	3,448.77	91.55	10.54	12.70	-1,648.29	8,613.89	4,857.06	4,805.66	51.39	94.509	
12,400.00	7,104.00	3,512.00	3,448.77	93.08	10.54	12.70	-1,648.29	8,613.89	4,794.46	4,742.20	52.26	91.736	
12,500.00	7,104.00	3,512.00	3,448.77	94.62	10.54	12.70	-1,648.29	8,613.89	4,733.16	4,679.99	53.16	89.031	
12,600.00	7,104.00	3,512.00	3,448.77	96.15	10.54	12.70	-1,648.29	8,613.89	4,673.19	4,619.10	54.09	86.397	
12,700.00	7,104.00	3,512.00	3,448.77	97.69	10.54	12.70	-1,648.29	8,613.89	4,614.60	4,559.56	55.04	83.837	
12,800.00	7,104.00	3,512.00	3,448.77	99.23	10.54	12.70	-1,648.29	8,613.89	4,557.46	4,501.44	56.02	81.352	
12,900.00	7,104.00	3,512.00	3,448.77	100.77	10.54	12.70	-1,648.29	8,613.89	4,501.81	4,444.79	57.03	78.944	
13,000.00	7,104.00	3,512.00	3,448.77	102.31	10.54	12.70	-1,648.29	8,613.89	4,447.72	4,389.67	58.05	76.614	
13,100.00	7,104.00	3,512.00	3,448.77	103.86	10.54	12.70	-1,648.29	8,613.89	4,395.24	4,336.13	59.10	74.363	
13,200.00	7,104.00	3,512.00	3,448.77	105.40	10.54	12.70	-1,648.29	8,613.89	4,344.42	4,284.25	60.18	72.194	
13,300.00	7,104.00	3,512.00	3,448.77	106.95	10.54	12.70	-1,648.29	8,613.89	4,295.33	4,234.07	61.27	70.106	
13,400.00	7,104.00	3,512.00	3,448.77	108.50	10.54	12.70	-1,648.29	8,613.89	4,248.03	4,185.65	62.38	68.100	
13,500.00	7,104.00	3,512.00	3,448.77	110.05	10.54	12.70	-1,648.29	8,613.89	4,202.58	4,139.08	63.51	66.176	
13,600.00	7,104.00	3,512.00	3,448.77	111.60	10.54	12.70	-1,648.29	8,613.89	4,159.04	4,094.39	64.65	64.336	
13,700.00	7,104.00	3,512.00	3,448.77	113.16	10.54	12.70	-1,648.29	8,613.89	4,117.46	4,051.66	65.80	62.578	
13,800.00	7,104.00	3,512.00	3,448.77	114.71	10.54	12.70	-1,648.29	8,613.89	4,077.91	4,010.95	66.96	60.902	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #269A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	3,512.00	3,448.77	116.27	10.54	12.70	-1,648.29	8,613.89	4,040.45	3,972.33	68.13	59.309	
14,000.00	7,104.00	3,512.00	3,448.77	117.83	10.54	12.70	-1,648.29	8,613.89	4,005.14	3,935.84	69.30	57.797	
14,100.00	7,104.00	3,512.00	3,448.77	119.38	10.54	12.70	-1,648.29	8,613.89	3,972.03	3,901.56	70.47	56.367	
14,200.00	7,104.00	3,512.00	3,448.77	120.94	10.54	12.70	-1,648.29	8,613.89	3,941.18	3,869.55	71.64	55.017	
14,300.00	7,104.00	3,512.00	3,448.77	122.50	10.54	12.70	-1,648.29	8,613.89	3,912.65	3,839.85	72.80	53.746	
14,400.00	7,104.00	3,512.00	3,448.77	124.07	10.54	12.70	-1,648.29	8,613.89	3,886.48	3,812.53	73.95	52.554	
14,500.00	7,104.00	3,512.00	3,448.77	125.63	10.54	12.70	-1,648.29	8,613.89	3,862.72	3,787.63	75.09	51.440	
14,600.00	7,104.00	3,512.00	3,448.77	127.19	10.54	12.70	-1,648.29	8,613.89	3,841.42	3,765.20	76.22	50.401	
14,700.00	7,104.00	3,512.00	3,448.77	128.76	10.54	12.70	-1,648.29	8,613.89	3,822.62	3,745.29	77.32	49.438	
14,800.00	7,104.00	3,512.00	3,448.77	130.32	10.54	12.70	-1,648.29	8,613.89	3,806.35	3,727.94	78.40	48.549	
14,900.00	7,104.00	3,512.00	3,448.77	131.89	10.54	12.70	-1,648.29	8,613.89	3,792.65	3,713.19	79.46	47.732	
15,000.00	7,104.00	3,512.00	3,448.77	133.46	10.54	12.70	-1,648.29	8,613.89	3,781.54	3,701.06	80.48	46.985	
15,100.00	7,104.00	3,512.00	3,448.77	135.02	10.54	12.70	-1,648.29	8,613.89	3,773.06	3,691.58	81.48	46.309	
15,200.00	7,104.00	3,512.00	3,448.77	136.59	10.54	12.70	-1,648.29	8,613.89	3,767.21	3,684.77	82.43	45.700	
15,300.00	7,104.00	3,512.00	3,448.77	138.16	10.54	12.70	-1,648.29	8,613.89	3,764.01	3,680.65	83.35	45.158	
15,370.54	7,104.00	3,512.00	3,448.77	139.27	10.54	12.70	-1,648.29	8,613.89	3,763.34	3,679.37	83.98	44.814	CC
15,400.00	7,104.00	3,512.00	3,448.77	139.73	10.54	12.70	-1,648.29	8,613.89	3,763.46	3,679.23	84.23	44.680	ES
15,500.00	7,104.00	3,512.00	3,448.77	141.30	10.54	12.70	-1,648.29	8,613.89	3,765.57	3,680.50	85.07	44.266	
15,600.00	7,104.00	3,512.00	3,448.77	142.88	10.54	12.70	-1,648.29	8,613.89	3,770.33	3,684.48	85.86	43.914	
15,700.00	7,104.00	3,512.00	3,448.77	144.45	10.54	12.70	-1,648.29	8,613.89	3,777.74	3,691.14	86.60	43.622	
15,800.00	7,104.00	3,512.00	3,448.77	146.02	10.54	12.70	-1,648.29	8,613.89	3,787.77	3,700.47	87.30	43.388	
15,900.00	7,104.00	3,512.00	3,448.77	147.60	10.54	12.70	-1,648.29	8,613.89	3,800.41	3,712.46	87.95	43.212	
16,000.00	7,104.00	3,512.00	3,448.77	149.17	10.54	12.70	-1,648.29	8,613.89	3,815.62	3,727.07	88.55	43.090	
16,100.00	7,104.00	3,512.00	3,448.77	150.74	10.54	12.70	-1,648.29	8,613.89	3,833.39	3,744.29	89.10	43.023	
16,200.00	7,104.00	3,512.00	3,448.77	152.32	10.54	12.70	-1,648.29	8,613.89	3,853.67	3,764.06	89.61	43.007	SF
16,300.00	7,104.00	3,512.00	3,448.77	153.89	10.54	12.70	-1,648.29	8,613.89	3,876.42	3,786.36	90.06	43.042	
16,400.00	7,104.00	3,512.00	3,448.77	155.47	10.54	12.70	-1,648.29	8,613.89	3,901.61	3,811.14	90.47	43.127	
16,500.00	7,104.00	3,512.00	3,448.77	157.05	10.54	12.70	-1,648.29	8,613.89	3,929.18	3,838.35	90.83	43.259	
16,600.00	7,104.00	3,512.00	3,448.77	158.63	10.54	12.70	-1,648.29	8,613.89	3,959.08	3,867.94	91.15	43.437	
16,700.00	7,104.00	3,512.00	3,448.77	160.20	10.54	12.70	-1,648.29	8,613.89	3,991.27	3,899.85	91.42	43.659	
16,800.00	7,104.00	3,512.00	3,448.77	161.78	10.54	12.70	-1,648.29	8,613.89	4,025.68	3,934.03	91.65	43.925	
16,900.00	7,104.00	3,512.00	3,448.77	163.36	10.54	12.70	-1,648.29	8,613.89	4,062.27	3,970.43	91.84	44.233	
17,000.00	7,104.00	3,512.00	3,448.77	164.94	10.54	12.70	-1,648.29	8,613.89	4,100.96	4,008.97	91.99	44.581	
17,100.00	7,104.00	3,512.00	3,448.77	166.52	10.54	12.70	-1,648.29	8,613.89	4,141.71	4,049.61	92.10	44.969	
17,200.00	7,104.00	3,512.00	3,448.77	168.10	10.54	12.70	-1,648.29	8,613.89	4,184.46	4,092.28	92.18	45.394	
17,300.00	7,104.00	3,512.00	3,448.77	169.68	10.54	12.70	-1,648.29	8,613.89	4,229.13	4,136.91	92.23	45.855	
17,400.00	7,104.00	3,512.00	3,448.77	171.26	10.54	12.70	-1,648.29	8,613.89	4,275.68	4,183.44	92.24	46.352	
17,500.00	7,104.00	3,512.00	3,448.77	172.84	10.54	12.70	-1,648.29	8,613.89	4,324.04	4,231.81	92.23	46.883	
17,600.00	7,104.00	3,512.00	3,448.77	174.42	10.54	12.70	-1,648.29	8,613.89	4,374.16	4,281.97	92.19	47.447	
17,700.00	7,104.00	3,512.00	3,448.77	176.00	10.54	12.70	-1,648.29	8,613.89	4,425.96	4,333.84	92.13	48.043	
17,800.00	7,104.00	3,512.00	3,448.77	177.59	10.54	12.70	-1,648.29	8,613.89	4,479.40	4,387.36	92.04	48.669	
17,900.00	7,104.00	3,512.00	3,448.77	179.17	10.54	12.70	-1,648.29	8,613.89	4,534.42	4,442.49	91.93	49.325	
18,000.00	7,104.00	3,512.00	3,448.77	180.75	10.54	12.70	-1,648.29	8,613.89	4,590.95	4,499.15	91.80	50.009	
18,100.00	7,104.00	3,512.00	3,448.77	182.33	10.54	12.70	-1,648.29	8,613.89	4,648.95	4,557.29	91.66	50.721	
18,200.00	7,104.00	3,512.00	3,448.77	183.92	10.54	12.70	-1,648.29	8,613.89	4,708.35	4,616.86	91.50	51.459	
18,300.00	7,104.00	3,512.00	3,448.77	185.50	10.54	12.70	-1,648.29	8,613.89	4,769.12	4,677.79	91.32	52.222	
18,400.00	7,104.00	3,512.00	3,448.77	187.09	10.54	12.70	-1,648.29	8,613.89	4,831.19	4,740.05	91.14	53.011	
18,500.00	7,104.00	3,512.00	3,448.77	188.67	10.54	12.70	-1,648.29	8,613.89	4,894.51	4,803.58	90.94	53.823	
18,600.00	7,104.00	3,512.00	3,448.77	190.26	10.54	12.70	-1,648.29	8,613.89	4,959.05	4,868.32	90.73	54.657	
18,700.00	7,104.00	3,512.00	3,448.77	191.84	10.54	12.70	-1,648.29	8,613.89	5,024.74	4,934.23	90.51	55.514	
18,800.00	7,104.00	3,512.00	3,448.77	193.43	10.54	12.70	-1,648.29	8,613.89	5,091.56	5,001.27	90.29	56.392	
18,900.00	7,104.00	3,512.00	3,448.77	195.01	10.54	12.70	-1,648.29	8,613.89	5,159.44	5,069.38	90.06	57.290	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #269A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 71-MWD-SDI

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	7,104.00	3,512.00	3,448.77	196.60	10.54	12.70	-1,648.29	8,613.89	5,228.36	5,138.54	89.82	58.208	
19,100.00	7,104.00	3,512.00	3,448.77	198.18	10.54	12.70	-1,648.29	8,613.89	5,298.27	5,208.68	89.58	59.144	
19,200.00	7,104.00	3,512.00	3,448.77	199.77	10.54	12.70	-1,648.29	8,613.89	5,369.13	5,279.79	89.34	60.099	
19,300.00	7,104.00	3,512.00	3,448.77	201.36	10.54	12.70	-1,648.29	8,613.89	5,440.90	5,351.81	89.09	61.071	
19,400.00	7,104.00	3,512.00	3,448.77	202.94	10.54	12.70	-1,648.29	8,613.89	5,513.56	5,424.71	88.84	62.060	
19,500.00	7,104.00	3,512.00	3,448.77	204.53	10.54	12.70	-1,648.29	8,613.89	5,587.06	5,498.46	88.59	63.065	
19,600.00	7,104.00	3,512.00	3,448.77	206.12	10.54	12.70	-1,648.29	8,613.89	5,661.37	5,573.03	88.34	64.086	
19,700.00	7,104.00	3,512.00	3,448.77	207.70	10.54	12.70	-1,648.29	8,613.89	5,736.46	5,648.37	88.09	65.121	
19,800.00	7,104.00	3,512.00	3,448.77	209.29	10.54	12.70	-1,648.29	8,613.89	5,812.30	5,724.47	87.84	66.171	
19,900.00	7,104.00	3,512.00	3,448.77	210.88	10.54	12.70	-1,648.29	8,613.89	5,888.87	5,801.28	87.59	67.235	
20,000.00	7,104.00	3,512.00	3,448.77	212.47	10.54	12.70	-1,648.29	8,613.89	5,966.13	5,878.79	87.34	68.311	
20,100.00	7,104.00	3,512.00	3,448.77	214.05	10.54	12.70	-1,648.29	8,613.89	6,044.05	5,956.96	87.09	69.401	
20,200.00	7,104.00	3,512.00	3,448.77	215.64	10.54	12.70	-1,648.29	8,613.89	6,122.62	6,035.77	86.84	70.502	
20,215.00	7,104.00	3,512.00	3,448.77	215.88	10.54	12.70	-1,648.29	8,613.89	6,134.46	6,047.65	86.81	70.669	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #270 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	163.00	163.00	3.28	1.73	95.59	-581.48	5,942.97	5,971.35				
100.00	100.00	263.01	263.00	3.29	3.05	95.59	-581.48	5,942.97	5,971.35	5,965.00	6.34	941.663	
200.00	200.00	363.01	363.00	3.34	5.02	95.59	-581.48	5,942.97	5,971.35	5,962.99	8.35	714.744	
300.00	300.00	463.01	463.00	3.42	6.99	95.59	-581.48	5,942.97	5,971.35	5,960.94	10.40	573.897	
340.31	340.31	502.91	502.89	3.46	7.77	95.58	-580.40	5,942.97	5,971.24	5,960.01	11.23	531.567	
400.00	400.00	561.42	561.39	3.54	8.92	95.58	-580.50	5,942.97	5,971.25	5,958.79	12.46	479.293	
500.00	500.00	659.43	659.40	3.69	10.85	95.58	-580.94	5,942.97	5,971.29	5,956.76	14.54	410.807	
600.00	599.98	763.04	762.98	3.86	12.86	-54.44	-581.48	5,942.97	5,970.33	5,953.61	16.72	357.078	
700.00	699.84	862.89	862.84	4.04	14.76	-54.53	-581.48	5,942.97	5,967.29	5,948.48	18.80	317.364	
800.00	799.45	962.51	962.45	4.26	16.65	-54.68	-581.48	5,942.97	5,962.23	5,941.32	20.91	285.202	
849.50	848.63	1,011.38	1,011.32	4.37	17.58	-54.78	-580.94	5,942.97	5,958.93	5,936.98	21.95	271.518	
900.00	898.77	1,061.03	1,060.97	4.49	18.52	-63.12	-580.99	5,942.97	5,955.78	5,932.77	23.01	258.840	
973.84	972.07	1,133.65	1,133.58	4.68	19.90	-75.35	-581.14	5,942.97	5,952.63	5,928.06	24.57	242.247	
1,000.00	998.03	1,159.37	1,159.31	4.74	20.39	-75.38	-581.22	5,942.97	5,951.83	5,926.70	25.13	236.854	
1,100.00	1,097.29	1,260.38	1,260.29	5.02	22.33	-75.49	-581.48	5,942.97	5,948.77	5,921.43	27.34	217.577	
1,200.00	1,196.54	1,359.63	1,359.54	5.30	24.29	-75.60	-581.48	5,942.97	5,945.71	5,916.12	29.58	200.986	
1,300.00	1,295.80	1,458.89	1,458.80	5.61	26.24	-75.72	-581.48	5,942.97	5,942.67	5,910.83	31.84	186.656	
1,400.00	1,395.06	1,557.34	1,557.25	5.92	28.18	-75.84	-580.67	5,942.97	5,939.59	5,905.50	34.09	174.245	
1,500.00	1,494.31	1,655.44	1,655.35	6.24	30.11	-75.95	-580.94	5,942.97	5,936.62	5,900.28	36.34	163.362	
1,600.00	1,593.57	1,756.70	1,756.57	6.57	32.11	-76.06	-581.48	5,942.97	5,933.70	5,895.03	38.66	153.472	
1,700.00	1,692.82	1,855.95	1,855.82	6.91	34.06	-76.17	-581.48	5,942.97	5,930.75	5,889.80	40.95	144.817	
1,800.00	1,792.08	1,955.21	1,955.08	7.25	36.02	-76.28	-581.48	5,942.97	5,927.83	5,884.58	43.25	137.060	
1,900.00	1,891.33	2,053.90	2,053.76	7.60	37.96	-76.40	-580.70	5,942.97	5,924.88	5,879.34	45.54	130.102	
2,000.00	1,990.59	2,152.08	2,151.94	7.95	39.90	-76.51	-580.95	5,942.97	5,922.03	5,874.20	47.83	123.826	
2,100.00	2,089.85	2,253.02	2,252.85	8.30	41.89	-76.62	-581.48	5,942.97	5,919.22	5,869.05	50.17	117.987	
2,200.00	2,189.10	2,352.27	2,352.10	8.66	43.84	-76.74	-581.48	5,942.97	5,916.39	5,863.91	52.48	112.732	
2,300.00	2,288.36	2,451.53	2,451.36	9.02	45.80	-76.85	-581.48	5,942.97	5,913.59	5,858.79	54.80	107.916	
2,400.00	2,387.61	2,549.64	2,549.45	9.39	47.73	-76.97	-580.96	5,942.97	5,910.78	5,853.68	57.09	103.526	
2,500.00	2,486.87	2,647.78	2,647.59	9.76	49.66	-77.08	-581.42	5,942.97	5,908.05	5,848.66	59.39	99.471	
2,600.00	2,586.12	2,749.33	2,749.12	10.13	51.73	-77.19	-581.48	5,942.97	5,905.33	5,843.50	61.83	95.511	
2,700.00	2,685.38	2,848.59	2,848.38	10.50	53.75	-77.31	-581.48	5,942.97	5,902.62	5,838.39	64.22	91.907	
2,800.00	2,784.63	2,946.91	2,946.70	10.87	55.76	-77.43	-580.94	5,942.97	5,899.91	5,833.30	66.60	88.584	
2,900.00	2,883.89	3,045.20	3,044.98	11.24	57.76	-77.54	-581.38	5,942.97	5,897.27	5,828.29	68.98	85.491	
3,000.00	2,983.15	3,146.40	3,146.15	11.62	59.89	-77.65	-581.48	5,942.97	5,894.64	5,823.16	71.48	82.461	
3,100.00	3,082.40	3,245.54	3,245.28	12.00	61.99	-77.78	-580.71	5,942.97	5,891.99	5,818.04	73.96	79.668	
3,200.00	3,181.66	3,343.45	3,343.19	12.38	64.06	-77.89	-580.98	5,942.97	5,889.42	5,813.02	76.40	77.083	
3,300.00	3,280.91	3,444.22	3,443.91	12.75	66.19	-78.00	-581.48	5,942.97	5,886.88	5,807.97	78.91	74.599	
3,400.00	3,380.17	3,543.48	3,543.17	13.13	68.29	-78.11	-581.48	5,942.97	5,884.34	5,802.95	81.39	72.295	
3,500.00	3,479.42	3,597.00	3,596.66	13.52	69.42	-78.18	-581.48	5,942.97	5,882.01	5,799.10	82.91	70.948	
3,600.00	3,578.68	3,597.00	3,596.66	13.90	69.42	-78.18	-581.48	5,942.97	5,881.13	5,797.86	83.27	70.628	
3,604.45	3,583.10	3,597.00	3,596.66	13.91	69.42	-78.18	-581.48	5,942.97	5,881.13	5,797.84	83.29	70.614	
3,700.00	3,677.94	3,597.00	3,596.66	14.28	69.42	-78.18	-581.48	5,942.97	5,881.95	5,798.34	83.61	70.349	
3,800.00	3,777.19	3,597.00	3,596.66	14.66	69.42	-78.18	-581.48	5,942.97	5,884.47	5,800.54	83.93	70.111	
3,900.00	3,876.45	3,597.00	3,596.66	15.05	69.42	-78.18	-581.48	5,942.97	5,888.68	5,804.46	84.23	69.914	
4,000.00	3,975.70	3,597.00	3,596.66	15.43	69.42	-78.18	-581.48	5,942.97	5,894.59	5,810.09	84.50	69.757	
4,100.00	4,074.96	3,597.00	3,596.66	15.82	69.42	-78.18	-581.48	5,942.97	5,902.19	5,817.44	84.75	69.640	
4,200.00	4,174.21	3,597.00	3,596.66	16.20	69.42	-78.18	-581.48	5,942.97	5,911.48	5,826.49	84.98	69.561	
4,300.00	4,273.47	3,597.00	3,596.66	16.59	69.42	-78.18	-581.48	5,942.97	5,922.43	5,837.24	85.19	69.522	
4,400.00	4,372.73	3,597.00	3,596.66	16.97	69.42	-78.18	-581.48	5,942.97	5,935.05	5,849.68	85.37	69.520	
4,500.00	4,471.98	3,597.00	3,596.66	17.36	69.42	-78.18	-581.48	5,942.97	5,949.33	5,863.79	85.53	69.556	
4,600.00	4,571.24	3,597.00	3,596.66	17.75	69.42	-78.18	-581.48	5,942.97	5,965.24	5,879.57	85.67	69.629	
4,700.00	4,670.49	3,597.00	3,596.66	18.13	69.42	-78.18	-581.48	5,942.97	5,982.79	5,897.00	85.79	69.739	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #270 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	3,597.00	3,596.66	18.52	69.42	-78.18	-581.48	5,942.97	6,001.95	5,916.07	85.88	69.885	
4,900.00	4,869.00	3,597.00	3,596.66	18.91	69.42	-78.18	-581.48	5,942.97	6,022.71	5,936.75	85.96	70.066	
5,000.00	4,968.26	3,597.00	3,596.66	19.30	69.42	-78.18	-581.48	5,942.97	6,045.06	5,959.05	86.01	70.282	
5,100.00	5,067.51	3,597.00	3,596.66	19.69	69.42	-78.18	-581.48	5,942.97	6,068.97	5,982.92	86.04	70.533	
5,200.00	5,166.77	3,597.00	3,596.66	20.07	69.42	-78.18	-581.48	5,942.97	6,094.42	6,008.37	86.06	70.817	
5,300.00	5,266.03	3,597.00	3,596.66	20.46	69.42	-78.18	-581.48	5,942.97	6,121.41	6,035.36	86.05	71.135	
5,400.00	5,365.28	3,597.00	3,596.66	20.85	69.42	-78.18	-581.48	5,942.97	6,149.90	6,063.87	86.03	71.486	
5,500.00	5,464.54	3,597.00	3,596.66	21.24	69.42	-78.18	-581.48	5,942.97	6,179.88	6,093.90	85.99	71.870	
5,600.00	5,563.79	3,597.00	3,596.66	21.63	69.42	-78.18	-581.48	5,942.97	6,211.33	6,125.40	85.93	72.285	
5,700.00	5,663.05	3,597.00	3,596.66	22.02	69.42	-78.18	-581.48	5,942.97	6,244.22	6,158.36	85.85	72.731	
5,800.00	5,762.30	3,597.00	3,596.66	22.41	69.42	-78.18	-581.48	5,942.97	6,278.53	6,192.76	85.76	73.209	
5,900.00	5,861.56	3,597.00	3,596.66	22.80	69.42	-78.18	-581.48	5,942.97	6,314.23	6,228.58	85.66	73.716	
6,000.00	5,960.82	3,597.00	3,596.66	23.19	69.42	-78.18	-581.48	5,942.97	6,351.31	6,265.78	85.54	74.253	
6,100.00	6,060.07	3,597.00	3,596.66	23.58	69.42	-78.18	-581.48	5,942.97	6,389.74	6,304.34	85.40	74.820	
6,200.00	6,159.33	3,597.00	3,596.66	23.97	69.42	-78.18	-581.48	5,942.97	6,429.50	6,344.25	85.25	75.415	
6,300.00	6,258.58	3,597.00	3,596.66	24.36	69.42	-78.18	-581.48	5,942.97	6,470.56	6,385.46	85.10	76.038	
6,400.00	6,357.84	3,597.00	3,596.66	24.76	69.42	-78.18	-581.48	5,942.97	6,512.89	6,427.97	84.93	76.689	
6,500.00	6,457.09	3,597.00	3,596.66	25.15	69.42	-78.18	-581.48	5,942.97	6,556.48	6,471.73	84.75	77.367	
6,528.17	6,485.05	3,597.00	3,596.66	25.26	69.42	-78.18	-581.48	5,942.97	6,568.98	6,484.29	84.69	77.562	
6,550.00	6,506.71	3,597.00	3,596.66	25.34	69.42	-63.48	-581.48	5,942.97	6,578.40	6,493.75	84.65	77.713	
6,600.00	6,556.11	3,597.00	3,596.66	25.54	69.42	-40.23	-581.48	5,942.97	6,597.62	6,513.08	84.54	78.039	
6,650.00	6,605.00	3,597.00	3,596.66	25.74	69.42	-27.91	-581.48	5,942.97	6,613.50	6,529.08	84.42	78.337	
6,700.00	6,653.07	3,597.00	3,596.66	25.93	69.42	-20.95	-581.48	5,942.97	6,625.97	6,541.67	84.30	78.604	
6,750.00	6,700.02	3,597.00	3,596.66	26.12	69.42	-16.63	-581.48	5,942.97	6,634.96	6,550.80	84.16	78.839	
6,800.00	6,745.56	3,597.00	3,596.66	26.31	69.42	-13.72	-581.48	5,942.97	6,640.44	6,556.43	84.01	79.041	
6,850.00	6,789.42	3,597.00	3,596.66	26.50	69.42	-11.66	-581.48	5,942.97	6,642.39	6,558.53	83.86	79.210	
6,900.00	6,831.32	3,597.00	3,596.66	26.69	69.42	-10.13	-581.48	5,942.97	6,640.78	6,557.09	83.70	79.345	
6,950.00	6,871.01	3,597.00	3,596.66	26.87	69.42	-8.95	-581.48	5,942.97	6,635.64	6,552.11	83.53	79.445	
7,000.00	6,908.23	3,597.00	3,596.66	27.05	69.42	-8.01	-581.48	5,942.97	6,626.98	6,543.63	83.35	79.510	
7,050.00	6,942.77	3,597.00	3,596.66	27.23	69.42	-7.26	-581.48	5,942.97	6,614.84	6,531.68	83.17	79.539	
7,100.00	6,974.40	3,597.00	3,596.66	27.41	69.42	-6.64	-581.48	5,942.97	6,599.29	6,516.31	82.98	79.531	
7,150.00	7,002.93	3,597.00	3,596.66	27.60	69.42	-6.11	-581.48	5,942.97	6,580.38	6,497.59	82.79	79.488	
7,200.00	7,028.20	3,597.00	3,596.66	27.80	69.42	-5.66	-581.48	5,942.97	6,558.21	6,475.62	82.59	79.407	
7,250.00	7,050.03	3,597.00	3,596.66	28.00	69.42	-5.27	-581.48	5,942.97	6,532.89	6,450.50	82.39	79.288	
7,300.00	7,068.30	3,597.00	3,596.66	28.22	69.42	-4.91	-581.48	5,942.97	6,504.53	6,422.33	82.20	79.133	
7,350.00	7,082.89	3,597.00	3,596.66	28.45	69.42	-4.59	-581.48	5,942.97	6,473.27	6,391.27	82.00	78.940	
7,400.00	7,093.72	3,597.00	3,596.66	28.70	69.42	-4.27	-581.48	5,942.97	6,439.27	6,357.46	81.81	78.709	
7,450.00	7,100.71	3,597.00	3,596.66	28.96	69.42	-3.95	-581.48	5,942.97	6,402.68	6,321.06	81.62	78.442	
7,500.00	7,103.82	3,597.00	3,596.66	29.24	69.42	-3.61	-581.48	5,942.97	6,363.70	6,282.25	81.44	78.138	
7,515.00	7,104.00	3,597.00	3,596.66	29.32	69.42	-3.50	-581.48	5,942.97	6,351.56	6,270.17	81.39	78.037	
7,600.00	7,104.00	3,597.00	3,596.66	29.84	69.42	-3.50	-581.48	5,942.97	6,282.45	6,201.37	81.08	77.485	
7,700.00	7,104.00	3,597.00	3,596.66	30.51	69.42	-3.50	-581.48	5,942.97	6,201.65	6,120.94	80.71	76.842	
7,800.00	7,104.00	3,597.00	3,596.66	31.26	69.42	-3.50	-581.48	5,942.97	6,121.41	6,041.08	80.33	76.205	
7,900.00	7,104.00	3,597.00	3,596.66	32.07	69.42	-3.50	-581.48	5,942.97	6,041.76	5,961.82	79.94	75.575	
8,000.00	7,104.00	3,597.00	3,596.66	32.94	69.42	-3.50	-581.48	5,942.97	5,962.73	5,883.17	79.56	74.950	
8,100.00	7,104.00	3,597.00	3,596.66	33.86	69.42	-3.50	-581.48	5,942.97	5,884.33	5,805.17	79.16	74.333	
8,200.00	7,104.00	3,597.00	3,596.66	34.84	69.42	-3.50	-581.48	5,942.97	5,806.60	5,727.83	78.76	73.722	
8,300.00	7,104.00	3,597.00	3,596.66	35.86	69.42	-3.50	-581.48	5,942.97	5,729.55	5,651.19	78.36	73.118	
8,400.00	7,104.00	3,597.00	3,596.66	36.92	69.42	-3.50	-581.48	5,942.97	5,653.23	5,575.28	77.95	72.522	
8,500.00	7,104.00	3,597.00	3,596.66	38.02	69.42	-3.50	-581.48	5,942.97	5,577.66	5,500.12	77.54	71.934	
8,600.00	7,104.00	3,597.00	3,596.66	39.15	69.42	-3.50	-581.48	5,942.97	5,502.86	5,425.74	77.12	71.354	
8,700.00	7,104.00	3,597.00	3,596.66	40.32	69.42	-3.50	-581.48	5,942.97	5,428.88	5,352.18	76.70	70.783	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #270 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	3,597.00	3,596.66	41.52	69.42	-3.50	-581.48	5,942.97	5,355.74	5,279.47	76.27	70.221	
8,900.00	7,104.00	3,597.00	3,596.66	42.74	69.42	-3.50	-581.48	5,942.97	5,283.48	5,207.64	75.84	69.668	
9,000.00	7,104.00	3,597.00	3,596.66	43.99	69.42	-3.50	-581.48	5,942.97	5,212.14	5,136.74	75.40	69.126	
9,100.00	7,104.00	3,597.00	3,596.66	45.26	69.42	-3.50	-581.48	5,942.97	5,141.75	5,066.80	74.96	68.596	
9,200.00	7,104.00	3,597.00	3,596.66	46.55	69.42	-3.50	-581.48	5,942.97	5,072.36	4,997.85	74.51	68.077	
9,300.00	7,104.00	3,597.00	3,596.66	47.85	69.42	-3.50	-581.48	5,942.97	5,004.01	4,929.95	74.06	67.571	
9,400.00	7,104.00	3,597.00	3,596.66	49.18	69.42	-3.50	-581.48	5,942.97	4,936.73	4,863.13	73.60	67.078	
9,500.00	7,104.00	3,597.00	3,596.66	50.52	69.42	-3.50	-581.48	5,942.97	4,870.58	4,797.45	73.13	66.600	
9,600.00	7,104.00	3,597.00	3,596.66	51.88	69.42	-3.50	-581.48	5,942.97	4,805.60	4,732.94	72.66	66.137	
9,700.00	7,104.00	3,597.00	3,596.66	53.25	69.42	-3.50	-581.48	5,942.97	4,741.84	4,669.65	72.18	65.692	
9,800.00	7,104.00	3,597.00	3,596.66	54.63	69.42	-3.50	-581.48	5,942.97	4,679.34	4,607.64	71.70	65.264	
9,900.00	7,104.00	3,597.00	3,596.66	56.03	69.42	-3.50	-581.48	5,942.97	4,618.17	4,546.96	71.21	64.856	
10,000.00	7,104.00	3,597.00	3,596.66	57.43	69.42	-3.50	-581.48	5,942.97	4,558.37	4,487.66	70.71	64.470	
10,100.00	7,104.00	3,597.00	3,596.66	58.85	69.42	-3.50	-581.48	5,942.97	4,499.99	4,429.80	70.20	64.105	
10,200.00	7,104.00	3,597.00	3,596.66	60.27	69.42	-3.50	-581.48	5,942.97	4,443.10	4,373.42	69.68	63.765	
10,300.00	7,104.00	3,597.00	3,596.66	61.71	69.42	-3.50	-581.48	5,942.97	4,387.75	4,318.60	69.15	63.451	
10,400.00	7,104.00	3,597.00	3,596.66	63.15	69.42	-3.50	-581.48	5,942.97	4,334.01	4,265.39	68.61	63.166	
10,500.00	7,104.00	3,597.00	3,596.66	64.60	69.42	-3.50	-581.48	5,942.97	4,281.92	4,213.86	68.06	62.909	
10,600.00	7,104.00	3,597.00	3,596.66	66.05	69.42	-3.50	-581.48	5,942.97	4,231.56	4,164.05	67.51	62.685	
10,700.00	7,104.00	3,597.00	3,596.66	67.52	69.42	-3.50	-581.48	5,942.97	4,182.98	4,116.04	66.93	62.494	
10,800.00	7,104.00	3,597.00	3,596.66	68.99	69.42	-3.50	-581.48	5,942.97	4,136.25	4,069.90	66.35	62.339	
10,900.00	7,104.00	3,597.00	3,596.66	70.46	69.42	-3.50	-581.48	5,942.97	4,091.43	4,025.67	65.76	62.221	
11,000.00	7,104.00	3,597.00	3,596.66	71.94	69.42	-3.50	-581.48	5,942.97	4,048.58	3,983.43	65.15	62.143	
11,100.00	7,104.00	3,597.00	3,596.66	73.43	69.42	-3.50	-581.48	5,942.97	4,007.77	3,943.24	64.53	62.105	
11,200.00	7,104.00	3,597.00	3,596.66	74.92	69.42	-3.50	-581.48	5,942.97	3,969.06	3,905.16	63.90	62.109	
11,300.00	7,104.00	3,597.00	3,596.66	76.41	69.42	-3.50	-581.48	5,942.97	3,932.52	3,869.25	63.27	62.155	
11,400.00	7,104.00	3,597.00	3,596.66	77.91	69.42	-3.50	-581.48	5,942.97	3,898.19	3,835.57	62.63	62.244	
11,500.00	7,104.00	3,597.00	3,596.66	79.41	69.42	-3.50	-581.48	5,942.97	3,866.15	3,804.17	61.98	62.374	
11,600.00	7,104.00	3,597.00	3,596.66	80.92	69.42	-3.50	-581.48	5,942.97	3,836.45	3,775.11	61.34	62.542	
11,700.00	7,104.00	3,597.00	3,596.66	82.43	69.42	-3.50	-581.48	5,942.97	3,809.15	3,748.44	60.71	62.744	
11,800.00	7,104.00	3,597.00	3,596.66	83.94	69.42	-3.50	-581.48	5,942.97	3,784.29	3,724.20	60.09	62.973	
11,900.00	7,104.00	3,597.00	3,596.66	85.46	69.42	-3.50	-581.48	5,942.97	3,761.92	3,702.42	59.51	63.219	
12,000.00	7,104.00	3,597.00	3,596.66	86.98	69.42	-3.50	-581.48	5,942.97	3,742.10	3,683.14	58.96	63.467	
12,100.00	7,104.00	3,597.00	3,596.66	88.50	69.42	-3.50	-581.48	5,942.97	3,724.85	3,666.37	58.48	63.695	
12,200.00	7,104.00	3,597.00	3,596.66	90.03	69.42	-3.50	-581.48	5,942.97	3,710.22	3,652.14	58.09	63.875	
12,300.00	7,104.00	3,597.00	3,596.66	91.55	69.42	-3.50	-581.48	5,942.97	3,698.24	3,640.43	57.81	63.972	
12,400.00	7,104.00	3,597.00	3,596.66	93.08	69.42	-3.50	-581.48	5,942.97	3,688.93	3,631.24	57.69	63.944	
12,500.00	7,104.00	3,597.00	3,596.66	94.62	69.42	-3.50	-581.48	5,942.97	3,682.32	3,624.55	57.77	63.746	
12,600.00	7,104.00	3,597.00	3,596.66	96.15	69.42	-3.50	-581.48	5,942.97	3,678.41	3,620.33	58.07	63.340	
12,693.85	7,104.00	3,597.00	3,596.66	97.59	69.42	-3.50	-581.48	5,942.97	3,677.21	3,618.61	58.60	62.752 CC	
12,700.00	7,104.00	3,597.00	3,596.66	97.69	69.42	-3.50	-581.48	5,942.97	3,677.22	3,618.57	58.64	62.707 ES	
12,800.00	7,104.00	3,597.00	3,596.66	99.23	69.42	-3.50	-581.48	5,942.97	3,678.74	3,619.27	59.48	61.852	
12,900.00	7,104.00	3,597.00	3,596.66	100.77	69.42	-3.50	-581.48	5,942.97	3,682.98	3,622.42	60.56	60.811	
13,000.00	7,104.00	3,597.00	3,596.66	102.31	69.42	-3.50	-581.48	5,942.97	3,689.93	3,628.06	61.87	59.637	
13,100.00	7,104.00	3,597.00	3,596.66	103.86	69.42	-3.50	-581.48	5,942.97	3,699.57	3,636.21	63.36	58.389	
13,200.00	7,104.00	3,597.00	3,596.66	105.40	69.42	-3.50	-581.48	5,942.97	3,711.88	3,646.90	64.98	57.122	
13,300.00	7,104.00	3,597.00	3,596.66	106.95	69.42	-3.50	-581.48	5,942.97	3,726.83	3,660.14	66.70	55.876	
13,400.00	7,104.00	3,597.00	3,596.66	108.50	69.42	-3.50	-581.48	5,942.97	3,744.40	3,675.92	68.48	54.682	
13,500.00	7,104.00	3,597.00	3,596.66	110.05	69.42	-3.50	-581.48	5,942.97	3,764.54	3,694.25	70.29	53.559	
13,600.00	7,104.00	3,597.00	3,596.66	111.60	69.42	-3.50	-581.48	5,942.97	3,787.21	3,715.10	72.11	52.519	
13,700.00	7,104.00	3,597.00	3,596.66	113.16	69.42	-3.50	-581.48	5,942.97	3,812.38	3,738.45	73.93	51.568	
13,800.00	7,104.00	3,597.00	3,596.66	114.71	69.42	-3.50	-581.48	5,942.97	3,839.98	3,764.25	75.73	50.707	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #270 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	3,597.00	3,596.66	116.27	69.42	-3.50	-581.48	5,942.97	3,869.97	3,792.47	77.50	49.936	
14,000.00	7,104.00	3,597.00	3,596.66	117.83	69.42	-3.50	-581.48	5,942.97	3,902.29	3,823.06	79.23	49.251	
14,100.00	7,104.00	3,597.00	3,596.66	119.38	69.42	-3.50	-581.48	5,942.97	3,936.89	3,855.97	80.92	48.650	
14,200.00	7,104.00	3,597.00	3,596.66	120.94	69.42	-3.50	-581.48	5,942.97	3,973.71	3,891.14	82.57	48.127	
14,300.00	7,104.00	3,597.00	3,596.66	122.50	69.42	-3.50	-581.48	5,942.97	4,012.68	3,928.52	84.16	47.680	
14,400.00	7,104.00	3,597.00	3,596.66	124.07	69.42	-3.50	-581.48	5,942.97	4,053.74	3,968.05	85.70	47.303	
14,500.00	7,104.00	3,597.00	3,596.66	125.63	69.42	-3.50	-581.48	5,942.97	4,096.83	4,009.65	87.18	46.993	
14,600.00	7,104.00	3,597.00	3,596.66	127.19	69.42	-3.50	-581.48	5,942.97	4,141.89	4,053.29	88.61	46.744	
14,700.00	7,104.00	3,597.00	3,596.66	128.76	69.42	-3.50	-581.48	5,942.97	4,188.86	4,098.88	89.98	46.553	
14,800.00	7,104.00	3,597.00	3,596.66	130.32	69.42	-3.50	-581.48	5,942.97	4,237.66	4,146.36	91.30	46.417	
14,900.00	7,104.00	3,597.00	3,596.66	131.89	69.42	-3.50	-581.48	5,942.97	4,288.24	4,195.68	92.56	46.331	
15,000.00	7,104.00	3,597.00	3,596.66	133.46	69.42	-3.50	-581.48	5,942.97	4,340.53	4,246.77	93.76	46.293 SF	
15,100.00	7,104.00	3,597.00	3,596.66	135.02	69.42	-3.50	-581.48	5,942.97	4,394.48	4,299.56	94.91	46.299	
15,200.00	7,104.00	3,597.00	3,596.66	136.59	69.42	-3.50	-581.48	5,942.97	4,450.02	4,354.00	96.01	46.347	
15,300.00	7,104.00	3,597.00	3,596.66	138.16	69.42	-3.50	-581.48	5,942.97	4,507.09	4,410.03	97.06	46.434	
15,400.00	7,104.00	3,597.00	3,596.66	139.73	69.42	-3.50	-581.48	5,942.97	4,565.65	4,467.58	98.07	46.557	
15,500.00	7,104.00	3,597.00	3,596.66	141.30	69.42	-3.50	-581.48	5,942.97	4,625.62	4,526.60	99.02	46.715	
15,600.00	7,104.00	3,597.00	3,596.66	142.88	69.42	-3.50	-581.48	5,942.97	4,686.96	4,587.03	99.93	46.904	
15,700.00	7,104.00	3,597.00	3,596.66	144.45	69.42	-3.50	-581.48	5,942.97	4,749.61	4,648.82	100.79	47.124	
15,800.00	7,104.00	3,597.00	3,596.66	146.02	69.42	-3.50	-581.48	5,942.97	4,813.53	4,711.91	101.61	47.371	
15,900.00	7,104.00	3,597.00	3,596.66	147.60	69.42	-3.50	-581.48	5,942.97	4,878.66	4,776.26	102.39	47.646	
16,000.00	7,104.00	3,597.00	3,596.66	149.17	69.42	-3.50	-581.48	5,942.97	4,944.95	4,841.81	103.14	47.945	
16,100.00	7,104.00	3,597.00	3,596.66	150.74	69.42	-3.50	-581.48	5,942.97	5,012.36	4,908.51	103.85	48.267	
16,200.00	7,104.00	3,597.00	3,596.66	152.32	69.42	-3.50	-581.48	5,942.97	5,080.84	4,976.33	104.52	48.612	
16,300.00	7,104.00	3,597.00	3,596.66	153.89	69.42	-3.50	-581.48	5,942.97	5,150.36	5,045.20	105.16	48.978	
16,400.00	7,104.00	3,597.00	3,596.66	155.47	69.42	-3.50	-581.48	5,942.97	5,220.86	5,115.10	105.76	49.363	
16,500.00	7,104.00	3,597.00	3,596.66	157.05	69.42	-3.50	-581.48	5,942.97	5,292.32	5,185.98	106.34	49.767	
16,600.00	7,104.00	3,597.00	3,596.66	158.63	69.42	-3.50	-581.48	5,942.97	5,364.69	5,257.80	106.89	50.188	
16,700.00	7,104.00	3,597.00	3,596.66	160.20	69.42	-3.50	-581.48	5,942.97	5,437.93	5,330.52	107.41	50.626	
16,800.00	7,104.00	3,597.00	3,596.66	161.78	69.42	-3.50	-581.48	5,942.97	5,512.02	5,404.11	107.91	51.080	
16,900.00	7,104.00	3,597.00	3,596.66	163.36	69.42	-3.50	-581.48	5,942.97	5,586.91	5,478.53	108.38	51.548	
17,000.00	7,104.00	3,597.00	3,596.66	164.94	69.42	-3.50	-581.48	5,942.97	5,662.58	5,553.75	108.83	52.030	
17,100.00	7,104.00	3,597.00	3,596.66	166.52	69.42	-3.50	-581.48	5,942.97	5,738.99	5,629.73	109.26	52.526	
17,200.00	7,104.00	3,597.00	3,596.66	168.10	69.42	-3.50	-581.48	5,942.97	5,816.12	5,706.45	109.67	53.034	
17,300.00	7,104.00	3,597.00	3,596.66	169.68	69.42	-3.50	-581.48	5,942.97	5,893.94	5,783.88	110.06	53.554	
17,400.00	7,104.00	3,597.00	3,596.66	171.26	69.42	-3.50	-581.48	5,942.97	5,972.41	5,861.99	110.43	54.085	
17,500.00	7,104.00	3,597.00	3,596.66	172.84	69.42	-3.50	-581.48	5,942.97	6,051.53	5,940.75	110.78	54.627	
17,600.00	7,104.00	3,597.00	3,596.66	174.42	69.42	-3.50	-581.48	5,942.97	6,131.25	6,020.13	111.12	55.179	
17,700.00	7,104.00	3,597.00	3,596.66	176.00	69.42	-3.50	-581.48	5,942.97	6,211.56	6,100.12	111.44	55.741	
17,800.00	7,104.00	3,597.00	3,596.66	177.59	69.42	-3.50	-581.48	5,942.97	6,292.43	6,180.68	111.74	56.311	
17,900.00	7,104.00	3,597.00	3,596.66	179.17	69.42	-3.50	-581.48	5,942.97	6,373.84	6,261.81	112.04	56.891	
18,000.00	7,104.00	3,597.00	3,596.66	180.75	69.42	-3.50	-581.48	5,942.97	6,455.78	6,343.46	112.32	57.478	
18,100.00	7,104.00	3,597.00	3,596.66	182.33	69.42	-3.50	-581.48	5,942.97	6,538.22	6,425.64	112.58	58.074	
18,200.00	7,104.00	3,597.00	3,596.66	183.92	69.42	-3.50	-581.48	5,942.97	6,621.15	6,508.30	112.84	58.677	
18,300.00	7,104.00	3,597.00	3,596.66	185.50	69.42	-3.50	-581.48	5,942.97	6,704.54	6,591.45	113.09	59.287	
18,400.00	7,104.00	3,597.00	3,596.66	187.09	69.42	-3.50	-581.48	5,942.97	6,788.37	6,675.05	113.32	59.903	
18,500.00	7,104.00	3,597.00	3,596.66	188.67	69.42	-3.50	-581.48	5,942.97	6,872.65	6,759.10	113.55	60.526	
18,600.00	7,104.00	3,597.00	3,596.66	190.26	69.42	-3.50	-581.48	5,942.97	6,957.33	6,843.57	113.76	61.155	
18,700.00	7,104.00	3,597.00	3,596.66	191.84	69.42	-3.50	-581.48	5,942.97	7,042.42	6,928.45	113.97	61.790	
18,800.00	7,104.00	3,597.00	3,596.66	193.43	69.42	-3.50	-581.48	5,942.97	7,127.90	7,013.73	114.17	62.431	
18,900.00	7,104.00	3,597.00	3,596.66	195.01	69.42	-3.50	-581.48	5,942.97	7,213.75	7,099.38	114.37	63.076	
19,000.00	7,104.00	3,597.00	3,596.66	196.60	69.42	-3.50	-581.48	5,942.97	7,299.96	7,185.41	114.55	63.727	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #270 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	3,597.00	3,596.66	198.18	69.42	-3.50	-581.48	5,942.97	7,386.52	7,271.79	114.73	64.382	
19,200.00	7,104.00	3,597.00	3,596.66	199.77	69.42	-3.50	-581.48	5,942.97	7,473.41	7,358.51	114.90	65.042	
19,300.00	7,104.00	3,597.00	3,596.66	201.36	69.42	-3.50	-581.48	5,942.97	7,560.63	7,445.56	115.07	65.706	
19,400.00	7,104.00	3,597.00	3,596.66	202.94	69.42	-3.50	-581.48	5,942.97	7,648.16	7,532.93	115.23	66.374	
19,500.00	7,104.00	3,597.00	3,596.66	204.53	69.42	-3.50	-581.48	5,942.97	7,735.99	7,620.61	115.38	67.045	
19,600.00	7,104.00	3,597.00	3,596.66	206.12	69.42	-3.50	-581.48	5,942.97	7,824.12	7,708.58	115.53	67.721	
19,700.00	7,104.00	3,597.00	3,596.66	207.70	69.42	-3.50	-581.48	5,942.97	7,912.52	7,796.84	115.68	68.400	
19,800.00	7,104.00	3,597.00	3,596.66	209.29	69.42	-3.50	-581.48	5,942.97	8,001.20	7,885.38	115.82	69.082	
19,900.00	7,104.00	3,597.00	3,596.66	210.88	69.42	-3.50	-581.48	5,942.97	8,090.15	7,974.19	115.96	69.768	
20,000.00	7,104.00	3,597.00	3,596.66	212.47	69.42	-3.50	-581.48	5,942.97	8,179.35	8,063.26	116.09	70.456	
20,100.00	7,104.00	3,597.00	3,596.66	214.05	69.42	-3.50	-581.48	5,942.97	8,268.79	8,152.57	116.22	71.147	
20,200.00	7,104.00	3,597.00	3,596.66	215.64	69.42	-3.50	-581.48	5,942.97	8,358.48	8,242.13	116.35	71.841	
20,215.00	7,104.00	3,597.00	3,596.66	215.88	69.42	-3.50	-581.48	5,942.97	8,371.96	8,255.59	116.37	71.946	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #271A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	613.28	612.62	3.28	1.80	90.87	-211.35	13,896.63	13,906.37				
100.00	100.00	667.37	666.31	3.29	1.96	90.90	-217.57	13,894.75	13,903.08	13,897.83	5.25	2,648.785	
200.00	200.00	706.00	704.59	3.34	2.08	90.92	-222.71	13,893.58	13,900.22	13,894.81	5.41	2,568.641	
300.00	300.00	732.98	731.27	3.42	2.16	90.93	-226.65	13,892.88	13,897.85	13,892.27	5.58	2,492.288	
400.00	400.00	767.00	764.85	3.54	2.26	90.96	-232.04	13,892.19	13,895.99	13,890.20	5.80	2,397.202	
500.00	500.00	793.50	790.96	3.69	2.34	90.98	-236.56	13,891.77	13,894.64	13,888.61	6.03	2,305.864	
600.00	599.98	828.00	824.88	3.86	2.44	-59.03	-242.86	13,891.37	13,892.87	13,886.58	6.30	2,205.933	
700.00	699.84	889.00	884.52	4.04	2.63	-59.04	-255.60	13,890.78	13,889.62	13,882.95	6.67	2,083.259	
800.00	799.45	965.98	959.02	4.26	2.86	-59.07	-274.92	13,890.13	13,884.76	13,877.66	7.11	1,953.116	
849.50	848.63	1,009.00	1,000.24	4.37	2.99	-59.09	-287.27	13,889.89	13,881.85	13,874.50	7.35	1,888.288	
900.00	898.77	1,009.00	1,000.24	4.49	2.99	-67.37	-287.27	13,889.89	13,879.13	13,871.66	7.47	1,857.592	
973.84	972.07	1,049.54	1,038.83	4.68	3.11	-79.47	-299.68	13,889.76	13,876.84	13,869.06	7.78	1,784.158	
1,000.00	998.03	1,068.00	1,056.35	4.74	3.17	-79.46	-305.50	13,889.76	13,876.40	13,868.50	7.90	1,756.266	
1,100.00	1,097.29	1,102.40	1,088.94	5.02	3.27	-79.43	-316.53	13,889.83	13,874.99	13,866.72	8.28	1,676.510	
1,200.00	1,196.54	1,154.37	1,138.06	5.30	3.43	-79.38	-333.48	13,890.12	13,874.00	13,865.28	8.72	1,591.192	
1,300.00	1,295.80	1,344.20	1,317.17	5.61	4.00	-79.22	-396.35	13,890.79	13,872.86	13,863.28	9.59	1,446.741	
1,400.00	1,395.06	1,376.00	1,347.16	5.92	4.09	-79.19	-406.94	13,890.88	13,871.67	13,861.67	10.00	1,387.745	
1,500.00	1,494.31	1,438.00	1,405.64	6.24	4.28	-79.13	-427.51	13,891.29	13,870.88	13,860.38	10.50	1,320.713	
1,600.00	1,593.57	1,480.34	1,445.57	6.57	4.41	-79.09	-441.61	13,891.69	13,870.42	13,859.46	10.96	1,265.745	
1,666.62	1,659.69	1,512.91	1,476.21	6.79	4.50	-79.06	-452.65	13,892.10	13,870.35	13,859.07	11.28	1,229.754	
1,700.00	1,692.82	1,534.89	1,496.85	6.91	4.57	-79.04	-460.18	13,892.40	13,870.36	13,858.90	11.46	1,210.596	
1,800.00	1,792.08	1,629.00	1,585.14	7.25	4.85	-78.95	-492.73	13,893.71	13,870.46	13,858.38	12.08	1,148.094	
1,900.00	1,891.33	1,720.54	1,671.16	7.60	5.13	-78.87	-524.01	13,895.08	13,870.67	13,857.97	12.70	1,091.966	
2,000.00	1,990.59	1,853.94	1,796.21	7.95	5.53	-78.74	-570.45	13,896.78	13,870.72	13,857.26	13.45	1,030.991	
2,100.00	2,089.85	1,983.63	1,918.29	8.30	5.92	-78.62	-614.18	13,898.22	13,870.61	13,856.42	14.20	976.960	
2,187.79	2,176.99	2,047.98	1,979.04	8.62	6.11	-78.56	-635.40	13,898.92	13,870.52	13,855.81	14.71	943.243	
2,200.00	2,189.10	2,055.75	1,986.37	8.66	6.13	-78.56	-637.97	13,899.01	13,870.52	13,855.75	14.77	938.954	
2,300.00	2,288.36	2,426.53	2,336.38	9.02	7.25	-78.23	-760.30	13,900.36	13,870.07	13,853.83	16.24	853.817	
2,400.00	2,387.61	2,579.00	2,480.62	9.39	7.70	-78.10	-809.65	13,898.78	13,867.85	13,850.79	17.07	812.632	
2,500.00	2,486.87	2,643.00	2,541.47	9.76	7.90	-78.04	-829.48	13,898.01	13,865.60	13,847.98	17.62	786.753	
2,600.00	2,586.12	2,706.00	2,601.32	10.13	8.09	-77.99	-849.14	13,897.56	13,863.79	13,845.61	18.18	762.527	
2,700.00	2,685.38	2,895.00	2,781.99	10.50	8.65	-77.86	-904.53	13,895.68	13,861.44	13,842.32	19.12	725.072	
2,800.00	2,784.63	2,895.00	2,781.99	10.87	8.65	-77.86	-904.53	13,895.68	13,859.51	13,840.02	19.49	711.100	
2,900.00	2,883.89	2,958.00	2,843.12	11.24	8.84	-77.82	-919.73	13,895.70	13,858.12	13,838.07	20.05	691.080	
3,000.00	2,983.15	2,958.00	2,843.12	11.62	8.84	-77.82	-919.73	13,895.70	13,857.18	13,836.76	20.43	678.340	
3,100.00	3,082.40	3,260.00	3,140.97	12.00	9.74	-77.77	-967.90	13,897.81	13,856.48	13,834.77	21.71	638.296	
3,200.00	3,181.66	3,527.00	3,407.78	12.38	10.54	-77.87	-976.30	13,897.18	13,853.73	13,830.85	22.88	605.388	
3,300.00	3,280.91	3,527.00	3,407.78	12.75	10.54	-77.87	-976.30	13,897.18	13,850.87	13,827.60	23.26	595.374	
3,400.00	3,380.17	3,527.00	3,407.78	13.13	10.54	-77.87	-976.30	13,897.18	13,848.72	13,825.08	23.64	585.699	
3,500.00	3,479.42	3,527.00	3,407.78	13.52	10.54	-77.87	-976.30	13,897.18	13,847.30	13,823.28	24.03	576.352	
3,600.00	3,578.68	3,527.00	3,407.78	13.90	10.54	-77.87	-976.30	13,897.18	13,846.60	13,822.20	24.41	567.321	
3,646.81	3,625.14	3,527.00	3,407.78	14.08	10.54	-77.87	-976.30	13,897.18	13,846.52	13,821.94	24.59	563.199	
3,700.00	3,677.94	3,527.00	3,407.78	14.28	10.54	-77.87	-976.30	13,897.18	13,846.63	13,821.84	24.79	558.594	
3,800.00	3,777.19	3,527.00	3,407.78	14.66	10.54	-77.87	-976.30	13,897.18	13,847.37	13,822.20	25.17	550.160	
3,900.00	3,876.45	3,527.00	3,407.78	15.05	10.54	-77.87	-976.30	13,897.18	13,848.84	13,823.29	25.55	542.008	
4,000.00	3,975.70	3,527.00	3,407.78	15.43	10.54	-77.87	-976.30	13,897.18	13,851.03	13,825.09	25.93	534.127	
4,100.00	4,074.96	3,527.00	3,407.78	15.82	10.54	-77.87	-976.30	13,897.18	13,853.94	13,827.62	26.31	526.508	
4,200.00	4,174.21	3,527.00	3,407.78	16.20	10.54	-77.87	-976.30	13,897.18	13,857.57	13,830.88	26.69	519.140	
4,300.00	4,273.47	3,527.00	3,407.78	16.59	10.54	-77.87	-976.30	13,897.18	13,861.92	13,834.85	27.07	512.014	
4,400.00	4,372.73	3,527.00	3,407.78	16.97	10.54	-77.87	-976.30	13,897.18	13,866.99	13,839.54	27.45	505.121	
4,500.00	4,471.98	3,527.00	3,407.78	17.36	10.54	-77.87	-976.30	13,897.18	13,872.78	13,844.95	27.83	498.453	
4,600.00	4,571.24	3,527.00	3,407.78	17.75	10.54	-77.87	-976.30	13,897.18	13,879.29	13,851.08	28.21	492.002	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #271A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,700.00	4,670.49	3,527.00	3,407.78	18.13	10.54	-77.87	-976.30	13,897.18	13,886.52	13,857.93	28.59	485.759	
4,800.00	4,769.75	3,527.00	3,407.78	18.52	10.54	-77.87	-976.30	13,897.18	13,894.46	13,865.50	28.96	479.716	
4,900.00	4,869.00	3,527.00	3,407.78	18.91	10.54	-77.87	-976.30	13,897.18	13,903.12	13,873.78	29.34	473.867	
5,000.00	4,968.26	3,527.00	3,407.78	19.30	10.54	-77.87	-976.30	13,897.18	13,912.49	13,882.77	29.71	468.205	
5,100.00	5,067.51	3,527.00	3,407.78	19.69	10.54	-77.87	-976.30	13,897.18	13,922.57	13,892.48	30.09	462.723	
5,200.00	5,166.77	3,527.00	3,407.78	20.07	10.54	-77.87	-976.30	13,897.18	13,933.36	13,902.90	30.46	457.414	
5,300.00	5,266.03	3,527.00	3,407.78	20.46	10.54	-77.87	-976.30	13,897.18	13,944.86	13,914.03	30.83	452.272	
5,400.00	5,365.28	3,527.00	3,407.78	20.85	10.54	-77.87	-976.30	13,897.18	13,957.07	13,925.87	31.20	447.292	
5,500.00	5,464.54	3,527.00	3,407.78	21.24	10.54	-77.87	-976.30	13,897.18	13,969.99	13,938.41	31.57	442.468	
5,600.00	5,563.79	3,527.00	3,407.78	21.63	10.54	-77.87	-976.30	13,897.18	13,983.60	13,951.66	31.94	437.794	
5,700.00	5,663.05	3,527.00	3,407.78	22.02	10.54	-77.87	-976.30	13,897.18	13,997.92	13,965.61	32.31	433.265	
5,800.00	5,762.30	3,527.00	3,407.78	22.41	10.54	-77.87	-976.30	13,897.18	14,012.94	13,980.26	32.67	428.877	
5,900.00	5,861.56	3,527.00	3,407.78	22.80	10.54	-77.87	-976.30	13,897.18	14,028.65	13,995.61	33.04	424.623	
6,000.00	5,960.82	3,527.00	3,407.78	23.19	10.54	-77.87	-976.30	13,897.18	14,045.06	14,011.66	33.40	420.501	
6,100.00	6,060.07	3,527.00	3,407.78	23.58	10.54	-77.87	-976.30	13,897.18	14,062.16	14,028.40	33.76	416.505	
6,200.00	6,159.33	3,527.00	3,407.78	23.97	10.54	-77.87	-976.30	13,897.18	14,079.95	14,045.83	34.12	412.632	
6,300.00	6,258.58	3,527.00	3,407.78	24.36	10.54	-77.87	-976.30	13,897.18	14,098.43	14,063.94	34.48	408.876	
6,400.00	6,357.84	3,527.00	3,407.78	24.76	10.54	-77.87	-976.30	13,897.18	14,117.59	14,082.75	34.84	405.235	
6,500.00	6,457.09	3,527.00	3,407.78	25.15	10.54	-77.87	-976.30	13,897.18	14,137.43	14,102.23	35.19	401.704	
6,528.17	6,485.05	3,527.00	3,407.78	25.26	10.54	-77.87	-976.30	13,897.18	14,143.14	14,107.85	35.29	400.729	
6,550.00	6,506.71	3,527.00	3,407.78	25.34	10.54	-63.15	-976.30	13,897.18	14,147.24	14,111.87	35.37	399.975	
6,600.00	6,556.11	3,527.00	3,407.78	25.54	10.54	-39.87	-976.30	13,897.18	14,153.96	14,118.42	35.55	398.192	
6,650.00	6,605.00	3,527.00	3,407.78	25.74	10.54	-27.51	-976.30	13,897.18	14,156.96	14,121.24	35.72	396.342	
6,700.00	6,653.07	3,527.00	3,407.78	25.93	10.54	-20.51	-976.30	13,897.18	14,156.21	14,120.32	35.89	394.432	
6,750.00	6,700.02	3,527.00	3,407.78	26.12	10.54	-16.13	-976.30	13,897.18	14,151.72	14,115.66	36.06	392.474	
6,800.00	6,745.56	3,527.00	3,407.78	26.31	10.54	-13.18	-976.30	13,897.18	14,143.52	14,107.30	36.22	390.482	
6,850.00	6,789.42	3,527.00	3,407.78	26.50	10.54	-11.06	-976.30	13,897.18	14,131.64	14,095.26	36.38	388.467	
6,900.00	6,831.32	3,527.00	3,407.78	26.69	10.54	-9.47	-976.30	13,897.18	14,116.15	14,079.63	36.53	386.444	
6,950.00	6,871.01	3,527.00	3,407.78	26.87	10.54	-8.22	-976.30	13,897.18	14,097.14	14,060.47	36.67	384.423	
7,000.00	6,908.23	3,527.00	3,407.78	27.05	10.54	-7.21	-976.30	13,897.18	14,074.71	14,037.91	36.80	382.417	
7,050.00	6,942.77	3,527.00	3,407.78	27.23	10.54	-6.36	-976.30	13,897.18	14,048.98	14,012.06	36.93	380.434	
7,100.00	6,974.40	3,527.00	3,407.78	27.41	10.54	-5.63	-976.30	13,897.18	14,020.10	13,983.05	37.04	378.486	
7,150.00	7,002.93	3,527.00	3,407.78	27.60	10.54	-4.97	-976.30	13,897.18	13,988.21	13,951.07	37.15	376.581	
7,200.00	7,028.20	3,527.00	3,407.78	27.80	10.54	-4.35	-976.30	13,897.18	13,953.50	13,916.27	37.24	374.727	
7,250.00	7,050.03	3,527.00	3,407.78	28.00	10.54	-3.74	-976.30	13,897.18	13,916.17	13,878.85	37.32	372.931	
7,300.00	7,068.30	3,527.00	3,407.78	28.22	10.54	-3.09	-976.30	13,897.18	13,876.41	13,839.03	37.38	371.198	
7,350.00	7,082.89	3,527.00	3,407.78	28.45	10.54	-2.38	-976.30	13,897.18	13,834.46	13,797.03	37.44	369.534	
7,400.00	7,093.72	3,527.00	3,407.78	28.70	10.54	-1.52	-976.30	13,897.18	13,790.56	13,753.08	37.48	367.940	
7,450.00	7,100.71	3,527.00	3,407.78	28.96	10.54	-0.39	-976.30	13,897.18	13,744.96	13,707.45	37.51	366.418	
7,500.00	7,103.82	3,527.00	3,407.78	29.24	10.54	1.24	-976.30	13,897.18	13,697.93	13,660.40	37.53	364.966	
7,515.00	7,104.00	3,527.00	3,407.78	29.32	10.54	1.89	-976.30	13,897.18	13,683.57	13,646.04	37.54	364.528	
7,600.00	7,104.00	3,527.00	3,407.78	29.84	10.54	1.89	-976.30	13,897.18	13,602.01	13,564.45	37.55	362.216	
7,700.00	7,104.00	3,527.00	3,407.78	30.51	10.54	1.89	-976.30	13,897.18	13,506.09	13,468.52	37.57	359.483	
7,800.00	7,104.00	3,527.00	3,407.78	31.26	10.54	1.89	-976.30	13,897.18	13,410.24	13,372.65	37.59	356.726	
7,900.00	7,104.00	3,527.00	3,407.78	32.07	10.54	1.89	-976.30	13,897.18	13,314.45	13,276.83	37.62	353.946	
8,000.00	7,104.00	3,527.00	3,407.78	32.94	10.54	1.89	-976.30	13,897.18	13,218.72	13,181.07	37.64	351.143	
8,100.00	7,104.00	3,527.00	3,407.78	33.86	10.54	1.89	-976.30	13,897.18	13,123.05	13,085.38	37.68	348.317	
8,200.00	7,104.00	3,527.00	3,407.78	34.84	10.54	1.89	-976.30	13,897.18	13,027.45	12,989.74	37.71	345.467	
8,300.00	7,104.00	3,527.00	3,407.78	35.86	10.54	1.89	-976.30	13,897.18	12,931.92	12,894.17	37.75	342.594	
8,400.00	7,104.00	3,527.00	3,407.78	36.92	10.54	1.89	-976.30	13,897.18	12,836.45	12,798.66	37.79	339.698	
8,500.00	7,104.00	3,527.00	3,407.78	38.02	10.54	1.89	-976.30	13,897.18	12,741.05	12,703.22	37.83	336.780	
8,600.00	7,104.00	3,527.00	3,407.78	39.15	10.54	1.89	-976.30	13,897.18	12,645.73	12,607.85	37.88	333.838	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #271A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	7,104.00	3,527.00	3,407.78	40.32	10.54	1.89	-976.30	13,897.18	12,550.47	12,512.54	37.93	330.873	
8,800.00	7,104.00	3,527.00	3,407.78	41.52	10.54	1.89	-976.30	13,897.18	12,455.29	12,417.31	37.99	327.886	
8,900.00	7,104.00	3,527.00	3,407.78	42.74	10.54	1.89	-976.30	13,897.18	12,360.19	12,322.15	38.05	324.876	
9,000.00	7,104.00	3,527.00	3,407.78	43.99	10.54	1.89	-976.30	13,897.18	12,265.17	12,227.06	38.11	321.844	
9,100.00	7,104.00	3,527.00	3,407.78	45.26	10.54	1.89	-976.30	13,897.18	12,170.22	12,132.05	38.18	318.790	
9,200.00	7,104.00	3,527.00	3,407.78	46.55	10.54	1.89	-976.30	13,897.18	12,075.36	12,037.11	38.25	315.713	
9,300.00	7,104.00	3,527.00	3,407.78	47.85	10.54	1.89	-976.30	13,897.18	11,980.58	11,942.26	38.32	312.616	
9,400.00	7,104.00	3,527.00	3,407.78	49.18	10.54	1.89	-976.30	13,897.18	11,885.88	11,847.48	38.40	309.496	
9,500.00	7,104.00	3,527.00	3,407.78	50.52	10.54	1.89	-976.30	13,897.18	11,791.28	11,752.79	38.49	306.356	
9,600.00	7,104.00	3,527.00	3,407.78	51.88	10.54	1.89	-976.30	13,897.18	11,696.76	11,658.18	38.58	303.195	
9,700.00	7,104.00	3,527.00	3,407.78	53.25	10.54	1.89	-976.30	13,897.18	11,602.34	11,563.66	38.67	300.014	
9,800.00	7,104.00	3,527.00	3,407.78	54.63	10.54	1.89	-976.30	13,897.18	11,508.00	11,469.23	38.77	296.813	
9,900.00	7,104.00	3,527.00	3,407.78	56.03	10.54	1.89	-976.30	13,897.18	11,413.77	11,374.89	38.88	293.592	
10,000.00	7,104.00	3,527.00	3,407.78	57.43	10.54	1.89	-976.30	13,897.18	11,319.64	11,280.65	38.99	290.352	
10,100.00	7,104.00	3,527.00	3,407.78	58.85	10.54	1.89	-976.30	13,897.18	11,225.60	11,186.50	39.10	287.093	
10,200.00	7,104.00	3,527.00	3,407.78	60.27	10.54	1.89	-976.30	13,897.18	11,131.67	11,092.45	39.22	283.816	
10,300.00	7,104.00	3,527.00	3,407.78	61.71	10.54	1.89	-976.30	13,897.18	11,037.85	10,998.50	39.35	280.521	
10,400.00	7,104.00	3,527.00	3,407.78	63.15	10.54	1.89	-976.30	13,897.18	10,944.13	10,904.65	39.48	277.210	
10,500.00	7,104.00	3,527.00	3,407.78	64.60	10.54	1.89	-976.30	13,897.18	10,850.53	10,810.91	39.62	273.882	
10,600.00	7,104.00	3,527.00	3,407.78	66.05	10.54	1.89	-976.30	13,897.18	10,757.05	10,717.28	39.76	270.538	
10,700.00	7,104.00	3,527.00	3,407.78	67.52	10.54	1.89	-976.30	13,897.18	10,663.68	10,623.77	39.91	267.179	
10,800.00	7,104.00	3,527.00	3,407.78	68.99	10.54	1.89	-976.30	13,897.18	10,570.43	10,530.36	40.07	263.806	
10,900.00	7,104.00	3,527.00	3,407.78	70.46	10.54	1.89	-976.30	13,897.18	10,477.31	10,437.07	40.23	260.419	
11,000.00	7,104.00	3,527.00	3,407.78	71.94	10.54	1.89	-976.30	13,897.18	10,384.31	10,343.91	40.40	257.019	
11,100.00	7,104.00	3,527.00	3,407.78	73.43	10.54	1.89	-976.30	13,897.18	10,291.45	10,250.87	40.58	253.606	
11,200.00	7,104.00	3,527.00	3,407.78	74.92	10.54	1.89	-976.30	13,897.18	10,198.72	10,157.96	40.77	250.183	
11,300.00	7,104.00	3,527.00	3,407.78	76.41	10.54	1.89	-976.30	13,897.18	10,106.13	10,065.17	40.96	246.749	
11,400.00	7,104.00	3,527.00	3,407.78	77.91	10.54	1.89	-976.30	13,897.18	10,013.68	9,972.53	41.16	243.306	
11,500.00	7,104.00	3,527.00	3,407.78	79.41	10.54	1.89	-976.30	13,897.18	9,921.38	9,880.02	41.36	239.854	
11,600.00	7,104.00	3,527.00	3,407.78	80.92	10.54	1.89	-976.30	13,897.18	9,829.23	9,787.65	41.58	236.395	
11,700.00	7,104.00	3,527.00	3,407.78	82.43	10.54	1.89	-976.30	13,897.18	9,737.24	9,695.44	41.80	232.929	
11,800.00	7,104.00	3,527.00	3,407.78	83.94	10.54	1.89	-976.30	13,897.18	9,645.40	9,603.37	42.04	229.457	
11,900.00	7,104.00	3,527.00	3,407.78	85.46	10.54	1.89	-976.30	13,897.18	9,553.73	9,511.46	42.28	225.981	
12,000.00	7,104.00	3,527.00	3,407.78	86.98	10.54	1.89	-976.30	13,897.18	9,462.23	9,419.70	42.53	222.502	
12,100.00	7,104.00	3,527.00	3,407.78	88.50	10.54	1.89	-976.30	13,897.18	9,370.90	9,328.11	42.79	219.020	
12,200.00	7,104.00	3,527.00	3,407.78	90.03	10.54	1.89	-976.30	13,897.18	9,279.75	9,236.69	43.05	215.537	
12,300.00	7,104.00	3,527.00	3,407.78	91.55	10.54	1.89	-976.30	13,897.18	9,188.78	9,145.45	43.33	212.054	
12,400.00	7,104.00	3,527.00	3,407.78	93.08	10.54	1.89	-976.30	13,897.18	9,098.01	9,054.38	43.62	208.573	
12,500.00	7,104.00	3,527.00	3,407.78	94.62	10.54	1.89	-976.30	13,897.18	9,007.42	8,963.51	43.92	205.094	
12,600.00	7,104.00	3,527.00	3,407.78	96.15	10.54	1.89	-976.30	13,897.18	8,917.04	8,872.82	44.23	201.619	
12,700.00	7,104.00	3,527.00	3,407.78	97.69	10.54	1.89	-976.30	13,897.18	8,826.87	8,782.32	44.55	198.149	
12,800.00	7,104.00	3,527.00	3,407.78	99.23	10.54	1.89	-976.30	13,897.18	8,736.91	8,692.03	44.88	194.685	
12,900.00	7,104.00	3,527.00	3,407.78	100.77	10.54	1.89	-976.30	13,897.18	8,647.17	8,601.95	45.22	191.229	
13,000.00	7,104.00	3,527.00	3,407.78	102.31	10.54	1.89	-976.30	13,897.18	8,557.66	8,512.09	45.57	187.781	
13,100.00	7,104.00	3,527.00	3,407.78	103.86	10.54	1.89	-976.30	13,897.18	8,468.39	8,422.45	45.94	184.344	
13,200.00	7,104.00	3,527.00	3,407.78	105.40	10.54	1.89	-976.30	13,897.18	8,379.35	8,333.04	46.32	180.919	
13,300.00	7,104.00	3,527.00	3,407.78	106.95	10.54	1.89	-976.30	13,897.18	8,290.57	8,243.86	46.71	177.507	
13,400.00	7,104.00	3,527.00	3,407.78	108.50	10.54	1.89	-976.30	13,897.18	8,202.04	8,154.93	47.11	174.109	
13,500.00	7,104.00	3,527.00	3,407.78	110.05	10.54	1.89	-976.30	13,897.18	8,113.78	8,066.26	47.53	170.727	
13,600.00	7,104.00	3,527.00	3,407.78	111.60	10.54	1.89	-976.30	13,897.18	8,025.80	7,977.85	47.95	167.361	
13,700.00	7,104.00	3,527.00	3,407.78	113.16	10.54	1.89	-976.30	13,897.18	7,938.10	7,889.70	48.40	164.015	
13,800.00	7,104.00	3,527.00	3,407.78	114.71	10.54	1.89	-976.30	13,897.18	7,850.70	7,801.84	48.86	160.688	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #271A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 330-MWD-SDI

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	7,104.00	3,527.00	3,407.78	116.27	10.54	1.89	-976.30	13,897.18	7,763.60	7,714.27	49.33	157.383	
14,000.00	7,104.00	3,527.00	3,407.78	117.83	10.54	1.89	-976.30	13,897.18	7,676.81	7,626.99	49.82	154.100	
14,100.00	7,104.00	3,527.00	3,407.78	119.38	10.54	1.89	-976.30	13,897.18	7,590.35	7,540.03	50.32	150.841	
14,200.00	7,104.00	3,527.00	3,407.78	120.94	10.54	1.89	-976.30	13,897.18	7,504.22	7,453.38	50.84	147.607	
14,300.00	7,104.00	3,527.00	3,407.78	122.50	10.54	1.89	-976.30	13,897.18	7,418.45	7,367.07	51.37	144.400	
14,400.00	7,104.00	3,527.00	3,407.78	124.07	10.54	1.89	-976.30	13,897.18	7,333.03	7,281.10	51.93	141.221	
14,500.00	7,104.00	3,527.00	3,407.78	125.63	10.54	1.89	-976.30	13,897.18	7,247.99	7,195.49	52.49	138.071	
14,600.00	7,104.00	3,527.00	3,407.78	127.19	10.54	1.89	-976.30	13,897.18	7,163.33	7,110.25	53.08	134.952	
14,700.00	7,104.00	3,527.00	3,407.78	128.76	10.54	1.89	-976.30	13,897.18	7,079.07	7,025.39	53.68	131.864	
14,800.00	7,104.00	3,527.00	3,407.78	130.32	10.54	1.89	-976.30	13,897.18	6,995.23	6,940.92	54.31	128.810	
14,900.00	7,104.00	3,527.00	3,407.78	131.89	10.54	1.89	-976.30	13,897.18	6,911.82	6,856.87	54.95	125.790	
15,000.00	7,104.00	3,527.00	3,407.78	133.46	10.54	1.89	-976.30	13,897.18	6,828.85	6,773.25	55.61	122.805	
15,100.00	7,104.00	3,527.00	3,407.78	135.02	10.54	1.89	-976.30	13,897.18	6,746.35	6,690.06	56.29	119.857	
15,200.00	7,104.00	3,527.00	3,407.78	136.59	10.54	1.89	-976.30	13,897.18	6,664.32	6,607.34	56.99	116.947	
15,300.00	7,104.00	3,527.00	3,407.78	138.16	10.54	1.89	-976.30	13,897.18	6,582.79	6,525.09	57.71	114.076	
15,400.00	7,104.00	3,527.00	3,407.78	139.73	10.54	1.89	-976.30	13,897.18	6,501.78	6,443.33	58.45	111.244	
15,500.00	7,104.00	3,527.00	3,407.78	141.30	10.54	1.89	-976.30	13,897.18	6,421.30	6,362.10	59.21	108.454	
15,600.00	7,104.00	3,527.00	3,407.78	142.88	10.54	1.89	-976.30	13,897.18	6,341.38	6,281.39	59.99	105.706	
15,700.00	7,104.00	3,527.00	3,407.78	144.45	10.54	1.89	-976.30	13,897.18	6,262.04	6,201.24	60.80	103.001	
15,800.00	7,104.00	3,527.00	3,407.78	146.02	10.54	1.89	-976.30	13,897.18	6,183.29	6,121.67	61.62	100.339	
15,900.00	7,104.00	3,527.00	3,407.78	147.60	10.54	1.89	-976.30	13,897.18	6,105.17	6,042.69	62.47	97.722	
16,000.00	7,104.00	3,527.00	3,407.78	149.17	10.54	1.89	-976.30	13,897.18	6,027.69	5,964.34	63.35	95.152	
16,100.00	7,104.00	3,527.00	3,407.78	150.74	10.54	1.89	-976.30	13,897.18	5,950.88	5,886.64	64.25	92.627	
16,200.00	7,104.00	3,527.00	3,407.78	152.32	10.54	1.89	-976.30	13,897.18	5,874.78	5,809.61	65.17	90.150	
16,300.00	7,104.00	3,527.00	3,407.78	153.89	10.54	1.89	-976.30	13,897.18	5,799.40	5,733.28	66.11	87.720	
16,400.00	7,104.00	3,527.00	3,407.78	155.47	10.54	1.89	-976.30	13,897.18	5,724.77	5,657.69	67.08	85.340	
16,500.00	7,104.00	3,527.00	3,407.78	157.05	10.54	1.89	-976.30	13,897.18	5,650.92	5,582.85	68.08	83.008	
16,600.00	7,104.00	3,527.00	3,407.78	158.63	10.54	1.89	-976.30	13,897.18	5,577.90	5,508.80	69.10	80.727	
16,700.00	7,104.00	3,527.00	3,407.78	160.20	10.54	1.89	-976.30	13,897.18	5,505.72	5,435.58	70.14	78.496	
16,800.00	7,104.00	3,527.00	3,407.78	161.78	10.54	1.89	-976.30	13,897.18	5,434.42	5,363.21	71.21	76.316	
16,900.00	7,104.00	3,527.00	3,407.78	163.36	10.54	1.89	-976.30	13,897.18	5,364.04	5,291.73	72.30	74.188	
17,000.00	7,104.00	3,527.00	3,407.78	164.94	10.54	1.89	-976.30	13,897.18	5,294.61	5,221.18	73.42	72.111	
17,100.00	7,104.00	3,527.00	3,407.78	166.52	10.54	1.89	-976.30	13,897.18	5,226.17	5,151.60	74.57	70.087	
17,200.00	7,104.00	3,527.00	3,407.78	168.10	10.54	1.89	-976.30	13,897.18	5,158.76	5,083.03	75.74	68.115	
17,300.00	7,104.00	3,527.00	3,407.78	169.68	10.54	1.89	-976.30	13,897.18	5,092.43	5,015.50	76.93	66.196	
17,400.00	7,104.00	3,527.00	3,407.78	171.26	10.54	1.89	-976.30	13,897.18	5,027.20	4,949.06	78.15	64.330	
17,500.00	7,104.00	3,527.00	3,407.78	172.84	10.54	1.89	-976.30	13,897.18	4,963.14	4,883.75	79.39	62.518	
17,600.00	7,104.00	3,527.00	3,407.78	174.42	10.54	1.89	-976.30	13,897.18	4,900.28	4,819.63	80.65	60.759	
17,700.00	7,104.00	3,527.00	3,407.78	176.00	10.54	1.89	-976.30	13,897.18	4,838.67	4,756.73	81.94	59.055	
17,800.00	7,104.00	3,527.00	3,407.78	177.59	10.54	1.89	-976.30	13,897.18	4,778.36	4,695.12	83.24	57.403	
17,900.00	7,104.00	3,527.00	3,407.78	179.17	10.54	1.89	-976.30	13,897.18	4,719.40	4,634.83	84.57	55.806	
18,000.00	7,104.00	3,527.00	3,407.78	180.75	10.54	1.89	-976.30	13,897.18	4,661.83	4,575.92	85.91	54.263	
18,100.00	7,104.00	3,527.00	3,407.78	182.33	10.54	1.89	-976.30	13,897.18	4,605.72	4,518.45	87.27	52.773	
18,200.00	7,104.00	3,527.00	3,407.78	183.92	10.54	1.89	-976.30	13,897.18	4,551.11	4,462.46	88.65	51.337	
18,300.00	7,104.00	3,527.00	3,407.78	185.50	10.54	1.89	-976.30	13,897.18	4,498.07	4,408.03	90.04	49.955	
18,400.00	7,104.00	3,527.00	3,407.78	187.09	10.54	1.89	-976.30	13,897.18	4,446.64	4,355.20	91.44	48.627	
18,500.00	7,104.00	3,527.00	3,407.78	188.67	10.54	1.89	-976.30	13,897.18	4,396.88	4,304.03	92.86	47.352	
18,600.00	7,104.00	3,527.00	3,407.78	190.26	10.54	1.89	-976.30	13,897.18	4,348.86	4,254.58	94.27	46.130	
18,700.00	7,104.00	3,527.00	3,407.78	191.84	10.54	1.89	-976.30	13,897.18	4,302.62	4,206.92	95.70	44.961	
18,800.00	7,104.00	3,527.00	3,407.78	193.43	10.54	1.89	-976.30	13,897.18	4,258.23	4,161.11	97.12	43.845	
18,900.00	7,104.00	3,527.00	3,407.78	195.01	10.54	1.89	-976.30	13,897.18	4,215.75	4,117.20	98.54	42.781	
19,000.00	7,104.00	3,527.00	3,407.78	196.60	10.54	1.89	-976.30	13,897.18	4,175.22	4,075.26	99.96	41.769	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #271A - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 330-MWD-SDI — **Rule Assigned:** — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	3,527.00	3,407.78	198.18	10.54	1.89	-976.30	13,897.18	4,136.72	4,035.36	101.37	40.809	
19,200.00	7,104.00	3,527.00	3,407.78	199.77	10.54	1.89	-976.30	13,897.18	4,100.30	3,997.54	102.76	39.900	
19,300.00	7,104.00	3,527.00	3,407.78	201.36	10.54	1.89	-976.30	13,897.18	4,066.01	3,961.87	104.14	39.042	
19,400.00	7,104.00	3,527.00	3,407.78	202.94	10.54	1.89	-976.30	13,897.18	4,033.91	3,928.41	105.50	38.235	
19,500.00	7,104.00	3,527.00	3,407.78	204.53	10.54	1.89	-976.30	13,897.18	4,004.05	3,897.21	106.84	37.477	
19,600.00	7,104.00	3,527.00	3,407.78	206.12	10.54	1.89	-976.30	13,897.18	3,976.48	3,868.33	108.15	36.769	
19,700.00	7,104.00	3,527.00	3,407.78	207.70	10.54	1.89	-976.30	13,897.18	3,951.25	3,841.83	109.42	36.110	
19,800.00	7,104.00	3,527.00	3,407.78	209.29	10.54	1.89	-976.30	13,897.18	3,928.40	3,817.74	110.66	35.499	
19,900.00	7,104.00	3,527.00	3,407.78	210.88	10.54	1.89	-976.30	13,897.18	3,907.98	3,796.12	111.86	34.936	
20,000.00	7,104.00	3,527.00	3,407.78	212.47	10.54	1.89	-976.30	13,897.18	3,890.03	3,777.01	113.02	34.420	
20,100.00	7,104.00	3,527.00	3,407.78	214.05	10.54	1.89	-976.30	13,897.18	3,874.57	3,760.45	114.12	33.951	
20,200.00	7,104.00	3,527.00	3,407.78	215.64	10.54	1.89	-976.30	13,897.18	3,861.64	3,746.46	115.18	33.528	
20,215.00	7,104.00	3,527.00	3,407.78	215.88	10.54	1.89	-976.30	13,897.18	3,859.92	3,744.59	115.33	33.468	CC, ES, SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #272 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	154.00	154.00	3.28	1.42	90.75	-135.76	10,400.37	10,401.26				
100.00	100.00	254.00	254.00	3.29	2.52	90.75	-135.76	10,400.37	10,401.26	10,395.45	5.81	1,789.342	
200.00	200.00	354.00	354.00	3.34	4.37	90.75	-135.76	10,400.37	10,401.26	10,393.55	7.71	1,349.414	
300.00	300.00	454.00	454.00	3.42	6.22	90.75	-135.76	10,400.37	10,401.26	10,391.62	9.64	1,078.945	
340.97	340.97	494.96	494.95	3.46	6.98	90.74	-135.21	10,400.37	10,401.25	10,390.81	10.44	996.128	
400.00	400.00	553.84	553.84	3.54	8.07	90.75	-135.25	10,400.37	10,401.25	10,389.65	11.60	896.353	
500.00	500.00	653.61	653.60	3.69	9.91	90.75	-135.45	10,400.37	10,401.26	10,387.66	13.60	764.937	
600.00	599.98	754.00	753.98	3.86	11.77	-59.28	-135.76	10,400.37	10,400.37	10,384.74	15.63	665.376	
700.00	699.84	853.86	853.84	4.04	13.67	-59.35	-135.76	10,400.37	10,397.69	10,379.98	17.72	586.940	
800.00	799.45	953.38	953.36	4.26	15.56	-59.47	-135.36	10,400.37	10,393.24	10,373.42	19.82	524.442	
849.50	848.63	1,002.43	1,002.41	4.37	16.50	-59.54	-135.43	10,400.37	10,390.39	10,369.52	20.86	498.018	
900.00	898.77	1,052.44	1,052.42	4.49	17.45	-67.85	-135.55	10,400.37	10,387.67	10,365.74	21.93	473.583	
973.84	972.07	1,126.11	1,126.07	4.68	18.85	-80.04	-135.76	10,400.37	10,385.21	10,361.69	23.52	441.555	
1,000.00	998.03	1,152.08	1,152.03	4.74	19.34	-80.06	-135.76	10,400.37	10,384.66	10,360.58	24.08	431.230	
1,100.00	1,097.29	1,251.33	1,251.29	5.02	21.23	-80.12	-135.76	10,400.37	10,382.55	10,356.30	26.24	395.646	
1,200.00	1,196.54	1,350.59	1,350.54	5.30	23.12	-80.19	-135.76	10,400.37	10,380.45	10,352.03	28.42	365.278	
1,300.00	1,295.80	1,449.68	1,449.63	5.61	25.00	-80.26	-135.08	10,400.37	10,378.36	10,347.76	30.60	339.119	
1,400.00	1,395.06	1,548.83	1,548.78	5.92	26.89	-80.32	-135.47	10,400.37	10,376.29	10,343.49	32.80	316.331	
1,500.00	1,494.31	1,648.39	1,648.31	6.24	28.79	-80.38	-135.76	10,400.37	10,374.24	10,339.22	35.02	296.258	
1,600.00	1,593.57	1,747.64	1,747.57	6.57	30.68	-80.45	-135.76	10,400.37	10,372.20	10,334.96	37.24	278.554	
1,700.00	1,692.82	1,846.89	1,846.81	6.91	32.56	-80.52	-135.25	10,400.37	10,370.17	10,330.71	39.46	262.796	
1,800.00	1,792.08	1,946.14	1,946.06	7.25	34.45	-80.58	-135.38	10,400.37	10,368.15	10,326.46	41.69	248.685	
1,900.00	1,891.33	2,045.44	2,045.36	7.60	36.34	-80.65	-135.69	10,400.37	10,366.15	10,322.23	43.93	235.976	
2,000.00	1,990.59	2,144.69	2,144.59	7.95	38.28	-80.71	-135.76	10,400.37	10,364.17	10,317.95	46.22	224.239	
2,100.00	2,089.85	2,243.95	2,243.85	8.30	40.23	-80.78	-135.76	10,400.37	10,362.20	10,313.67	48.52	213.552	
2,200.00	2,189.10	2,343.27	2,343.16	8.66	42.18	-80.85	-135.03	10,400.37	10,360.24	10,309.41	50.83	203.816	
2,300.00	2,288.36	2,442.70	2,442.59	9.02	44.13	-80.91	-135.31	10,400.37	10,358.29	10,305.15	53.14	194.907	
2,400.00	2,387.61	2,541.75	2,541.61	9.39	46.09	-80.98	-135.76	10,400.37	10,356.36	10,300.90	55.46	186.720	
2,500.00	2,486.87	2,641.01	2,640.87	9.76	48.10	-81.04	-135.76	10,400.37	10,354.44	10,296.60	57.84	179.006	
2,600.00	2,586.12	2,740.31	2,740.16	10.13	50.11	-81.11	-135.10	10,400.37	10,352.55	10,292.32	60.23	171.894	
2,700.00	2,685.38	2,839.91	2,839.76	10.50	52.13	-81.18	-135.31	10,400.37	10,350.66	10,288.04	62.62	165.302	
2,800.00	2,784.63	2,938.82	2,938.63	10.87	54.14	-81.24	-135.76	10,400.37	10,348.78	10,283.78	65.00	159.223	
2,900.00	2,883.89	3,038.08	3,037.89	11.24	56.16	-81.31	-135.76	10,400.37	10,346.92	10,279.53	67.39	153.544	
3,000.00	2,983.15	3,137.33	3,137.15	11.62	58.17	-81.38	-135.76	10,400.37	10,345.07	10,275.29	69.78	148.252	
3,100.00	3,082.40	3,236.86	3,236.66	12.00	60.20	-81.45	-134.67	10,400.37	10,343.25	10,271.07	72.18	143.298	
3,200.00	3,181.66	3,336.69	3,336.49	12.38	62.23	-81.51	-135.01	10,400.37	10,341.43	10,266.84	74.59	138.649	
3,300.00	3,280.91	3,436.62	3,436.41	12.75	64.26	-81.58	-135.69	10,400.37	10,339.62	10,262.62	77.00	134.286	
3,400.00	3,380.17	3,534.42	3,534.17	13.13	66.19	-81.64	-135.76	10,400.37	10,337.82	10,258.52	79.31	130.351	
3,500.00	3,479.42	3,569.00	3,568.74	13.52	66.87	-81.66	-135.76	10,400.37	10,336.25	10,255.88	80.37	128.610	
3,600.00	3,578.68	3,569.00	3,568.74	13.90	66.87	-81.66	-135.76	10,400.37	10,335.59	10,254.84	80.74	128.004	
3,618.71	3,597.25	3,569.00	3,568.74	13.97	66.87	-81.66	-135.76	10,400.37	10,335.57	10,254.75	80.81	127.894	
3,700.00	3,677.94	3,569.00	3,568.74	14.28	66.87	-81.66	-135.76	10,400.37	10,335.89	10,254.77	81.11	127.426	
3,800.00	3,777.19	3,569.00	3,568.74	14.66	66.87	-81.66	-135.76	10,400.37	10,337.16	10,255.68	81.48	126.875	
3,900.00	3,876.45	3,569.00	3,568.74	15.05	66.87	-81.66	-135.76	10,400.37	10,339.40	10,257.56	81.83	126.351	
4,000.00	3,975.70	3,569.00	3,568.74	15.43	66.87	-81.66	-135.76	10,400.37	10,342.60	10,260.42	82.18	125.854	
4,100.00	4,074.96	3,569.00	3,568.74	15.82	66.87	-81.66	-135.76	10,400.37	10,346.77	10,264.25	82.52	125.383	
4,200.00	4,174.21	3,569.00	3,568.74	16.20	66.87	-81.66	-135.76	10,400.37	10,351.90	10,269.05	82.86	124.938	
4,300.00	4,273.47	3,569.00	3,568.74	16.59	66.87	-81.66	-135.76	10,400.37	10,358.00	10,274.81	83.18	124.519	
4,400.00	4,372.73	3,569.00	3,568.74	16.97	66.87	-81.66	-135.76	10,400.37	10,365.06	10,281.55	83.50	124.125	
4,500.00	4,471.98	3,569.00	3,568.74	17.36	66.87	-81.66	-135.76	10,400.37	10,373.07	10,289.26	83.82	123.757	
4,600.00	4,571.24	3,569.00	3,568.74	17.75	66.87	-81.66	-135.76	10,400.37	10,382.05	10,297.92	84.12	123.413	
4,700.00	4,670.49	3,569.00	3,568.74	18.13	66.87	-81.66	-135.76	10,400.37	10,391.98	10,307.55	84.42	123.094	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #272 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	3,569.00	3,568.74	18.52	66.87	-81.66	-135.76	10,400.37	10,402.86	10,318.14	84.71	122.799	
4,900.00	4,869.00	3,569.00	3,568.74	18.91	66.87	-81.66	-135.76	10,400.37	10,414.69	10,329.69	85.00	122.527	
5,000.00	4,968.26	3,569.00	3,568.74	19.30	66.87	-81.66	-135.76	10,400.37	10,427.46	10,342.19	85.28	122.280	
5,100.00	5,067.51	3,569.00	3,568.74	19.69	66.87	-81.66	-135.76	10,400.37	10,441.18	10,355.63	85.54	122.055	
5,200.00	5,166.77	3,569.00	3,568.74	20.07	66.87	-81.66	-135.76	10,400.37	10,455.83	10,370.03	85.81	121.854	
5,300.00	5,266.03	3,569.00	3,568.74	20.46	66.87	-81.66	-135.76	10,400.37	10,471.42	10,385.36	86.06	121.674	
5,400.00	5,365.28	3,569.00	3,568.74	20.85	66.87	-81.66	-135.76	10,400.37	10,487.94	10,401.64	86.31	121.518	
5,500.00	5,464.54	3,569.00	3,568.74	21.24	66.87	-81.66	-135.76	10,400.37	10,505.39	10,418.84	86.55	121.383	
5,600.00	5,563.79	3,569.00	3,568.74	21.63	66.87	-81.66	-135.76	10,400.37	10,523.76	10,436.98	86.78	121.270	
5,700.00	5,663.05	3,569.00	3,568.74	22.02	66.87	-81.66	-135.76	10,400.37	10,543.04	10,456.04	87.00	121.178	
5,800.00	5,762.30	3,569.00	3,568.74	22.41	66.87	-81.66	-135.76	10,400.37	10,563.24	10,476.02	87.22	121.107	
5,900.00	5,861.56	3,569.00	3,568.74	22.80	66.87	-81.66	-135.76	10,400.37	10,584.34	10,496.91	87.43	121.056	
6,000.00	5,960.82	3,569.00	3,568.74	23.19	66.87	-81.66	-135.76	10,400.37	10,606.34	10,518.71	87.64	121.026	
6,100.00	6,060.07	3,569.00	3,568.74	23.58	66.87	-81.66	-135.76	10,400.37	10,629.24	10,541.41	87.83	121.017	
6,200.00	6,159.33	3,569.00	3,568.74	23.97	66.87	-81.66	-135.76	10,400.37	10,653.03	10,565.01	88.02	121.026	
6,300.00	6,258.58	3,569.00	3,568.74	24.36	66.87	-81.66	-135.76	10,400.37	10,677.70	10,589.50	88.20	121.056	
6,400.00	6,357.84	3,569.00	3,568.74	24.76	66.87	-81.66	-135.76	10,400.37	10,703.25	10,614.87	88.38	121.104	
6,500.00	6,457.09	3,569.00	3,568.74	25.15	66.87	-81.66	-135.76	10,400.37	10,729.67	10,641.12	88.55	121.172	
6,528.17	6,485.05	3,569.00	3,568.74	25.26	66.87	-81.66	-135.76	10,400.37	10,737.27	10,648.67	88.60	121.194	
6,550.00	6,506.71	3,569.00	3,568.74	25.34	66.87	-66.92	-135.76	10,400.37	10,742.84	10,654.21	88.63	121.209	
6,600.00	6,556.11	3,569.00	3,568.74	25.54	66.87	-43.58	-135.76	10,400.37	10,753.02	10,664.32	88.71	121.218	
6,650.00	6,605.00	3,569.00	3,568.74	25.74	66.87	-31.20	-135.76	10,400.37	10,759.56	10,670.78	88.78	121.190	
6,700.00	6,653.07	3,569.00	3,568.74	25.93	66.87	-24.20	-135.76	10,400.37	10,762.42	10,673.57	88.85	121.125	
6,750.00	6,700.02	3,569.00	3,568.74	26.12	66.87	-19.84	-135.76	10,400.37	10,761.59	10,672.67	88.92	121.024	
6,800.00	6,745.56	3,569.00	3,568.74	26.31	66.87	-16.93	-135.76	10,400.37	10,757.08	10,668.09	88.98	120.887	
6,850.00	6,789.42	3,569.00	3,568.74	26.50	66.87	-14.88	-135.76	10,400.37	10,748.89	10,659.85	89.04	120.716	
6,900.00	6,831.32	3,569.00	3,568.74	26.69	66.87	-13.38	-135.76	10,400.37	10,737.09	10,647.99	89.10	120.511	
6,950.00	6,871.01	3,569.00	3,568.74	26.87	66.87	-12.25	-135.76	10,400.37	10,721.73	10,632.58	89.14	120.274	
7,000.00	6,908.23	3,569.00	3,568.74	27.05	66.87	-11.39	-135.76	10,400.37	10,702.88	10,613.70	89.19	120.006	
7,050.00	6,942.77	3,569.00	3,568.74	27.23	66.87	-10.73	-135.76	10,400.37	10,680.65	10,591.43	89.22	119.709	
7,100.00	6,974.40	3,569.00	3,568.74	27.41	66.87	-10.23	-135.76	10,400.37	10,655.16	10,565.91	89.25	119.384	
7,150.00	7,002.93	3,569.00	3,568.74	27.60	66.87	-9.86	-135.76	10,400.37	10,626.53	10,537.26	89.28	119.031	
7,200.00	7,028.20	3,569.00	3,568.74	27.80	66.87	-9.60	-135.76	10,400.37	10,594.93	10,505.63	89.29	118.654	
7,250.00	7,050.03	3,569.00	3,568.74	28.00	66.87	-9.45	-135.76	10,400.37	10,560.51	10,471.20	89.30	118.253	
7,300.00	7,068.30	3,569.00	3,568.74	28.22	66.87	-9.39	-135.76	10,400.37	10,523.46	10,434.15	89.31	117.830	
7,350.00	7,082.89	3,569.00	3,568.74	28.45	66.87	-9.44	-135.76	10,400.37	10,483.99	10,394.68	89.31	117.387	
7,400.00	7,093.72	3,569.00	3,568.74	28.70	66.87	-9.61	-135.76	10,400.37	10,442.32	10,353.01	89.31	116.925	
7,450.00	7,100.71	3,569.00	3,568.74	28.96	66.87	-9.93	-135.76	10,400.37	10,398.67	10,309.36	89.30	116.446	
7,500.00	7,103.82	3,569.00	3,568.74	29.24	66.87	-10.45	-135.76	10,400.37	10,353.29	10,264.00	89.29	115.951	
7,515.00	7,104.00	3,569.00	3,568.74	29.32	66.87	-10.66	-135.76	10,400.37	10,339.37	10,250.08	89.29	115.796	
7,600.00	7,104.00	3,569.00	3,568.74	29.84	66.87	-10.66	-135.76	10,400.37	10,260.22	10,170.96	89.26	114.946	
7,700.00	7,104.00	3,569.00	3,568.74	30.51	66.87	-10.66	-135.76	10,400.37	10,167.22	10,077.99	89.23	113.944	
7,800.00	7,104.00	3,569.00	3,568.74	31.26	66.87	-10.66	-135.76	10,400.37	10,074.36	9,985.15	89.20	112.939	
7,900.00	7,104.00	3,569.00	3,568.74	32.07	66.87	-10.66	-135.76	10,400.37	9,981.63	9,892.45	89.18	111.932	
8,000.00	7,104.00	3,569.00	3,568.74	32.94	66.87	-10.66	-135.76	10,400.37	9,889.04	9,799.89	89.15	110.922	
8,100.00	7,104.00	3,569.00	3,568.74	33.86	66.87	-10.66	-135.76	10,400.37	9,796.60	9,707.47	89.13	109.910	
8,200.00	7,104.00	3,569.00	3,568.74	34.84	66.87	-10.66	-135.76	10,400.37	9,704.31	9,615.19	89.12	108.895	
8,300.00	7,104.00	3,569.00	3,568.74	35.86	66.87	-10.66	-135.76	10,400.37	9,612.17	9,523.07	89.10	107.878	
8,400.00	7,104.00	3,569.00	3,568.74	36.92	66.87	-10.66	-135.76	10,400.37	9,520.20	9,431.10	89.09	106.858	
8,500.00	7,104.00	3,569.00	3,568.74	38.02	66.87	-10.66	-135.76	10,400.37	9,428.38	9,339.30	89.09	105.835	
8,600.00	7,104.00	3,569.00	3,568.74	39.15	66.87	-10.66	-135.76	10,400.37	9,336.73	9,247.65	89.08	104.811	
8,700.00	7,104.00	3,569.00	3,568.74	40.32	66.87	-10.66	-135.76	10,400.37	9,245.26	9,156.18	89.08	103.783	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #272 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	3,569.00	3,568.74	41.52	66.87	-10.66	-135.76	10,400.37	9,153.97	9,064.88	89.09	102.754	
8,900.00	7,104.00	3,569.00	3,568.74	42.74	66.87	-10.66	-135.76	10,400.37	9,062.86	8,973.76	89.09	101.722	
9,000.00	7,104.00	3,569.00	3,568.74	43.99	66.87	-10.66	-135.76	10,400.37	8,971.93	8,882.83	89.11	100.688	
9,100.00	7,104.00	3,569.00	3,568.74	45.26	66.87	-10.66	-135.76	10,400.37	8,881.21	8,792.08	89.12	99.651	
9,200.00	7,104.00	3,569.00	3,568.74	46.55	66.87	-10.66	-135.76	10,400.37	8,790.68	8,701.54	89.14	98.613	
9,300.00	7,104.00	3,569.00	3,568.74	47.85	66.87	-10.66	-135.76	10,400.37	8,700.36	8,611.20	89.17	97.573	
9,400.00	7,104.00	3,569.00	3,568.74	49.18	66.87	-10.66	-135.76	10,400.37	8,610.26	8,521.06	89.20	96.531	
9,500.00	7,104.00	3,569.00	3,568.74	50.52	66.87	-10.66	-135.76	10,400.37	8,520.38	8,431.15	89.23	95.487	
9,600.00	7,104.00	3,569.00	3,568.74	51.88	66.87	-10.66	-135.76	10,400.37	8,430.72	8,341.45	89.27	94.441	
9,700.00	7,104.00	3,569.00	3,568.74	53.25	66.87	-10.66	-135.76	10,400.37	8,341.30	8,251.99	89.31	93.394	
9,800.00	7,104.00	3,569.00	3,568.74	54.63	66.87	-10.66	-135.76	10,400.37	8,252.13	8,162.76	89.36	92.345	
9,900.00	7,104.00	3,569.00	3,568.74	56.03	66.87	-10.66	-135.76	10,400.37	8,163.20	8,073.78	89.42	91.295	
10,000.00	7,104.00	3,569.00	3,568.74	57.43	66.87	-10.66	-135.76	10,400.37	8,074.53	7,985.06	89.47	90.244	
10,100.00	7,104.00	3,569.00	3,568.74	58.85	66.87	-10.66	-135.76	10,400.37	7,986.13	7,896.59	89.54	89.192	
10,200.00	7,104.00	3,569.00	3,568.74	60.27	66.87	-10.66	-135.76	10,400.37	7,898.01	7,808.40	89.61	88.139	
10,300.00	7,104.00	3,569.00	3,568.74	61.71	66.87	-10.66	-135.76	10,400.37	7,810.17	7,720.49	89.68	87.085	
10,400.00	7,104.00	3,569.00	3,568.74	63.15	66.87	-10.66	-135.76	10,400.37	7,722.63	7,632.87	89.77	86.031	
10,500.00	7,104.00	3,569.00	3,568.74	64.60	66.87	-10.66	-135.76	10,400.37	7,635.40	7,545.55	89.85	84.977	
10,600.00	7,104.00	3,569.00	3,568.74	66.05	66.87	-10.66	-135.76	10,400.37	7,548.48	7,458.53	89.95	83.923	
10,700.00	7,104.00	3,569.00	3,568.74	67.52	66.87	-10.66	-135.76	10,400.37	7,461.89	7,371.85	90.04	82.869	
10,800.00	7,104.00	3,569.00	3,568.74	68.99	66.87	-10.66	-135.76	10,400.37	7,375.64	7,285.49	90.15	81.816	
10,900.00	7,104.00	3,569.00	3,568.74	70.46	66.87	-10.66	-135.76	10,400.37	7,289.74	7,199.48	90.26	80.763	
11,000.00	7,104.00	3,569.00	3,568.74	71.94	66.87	-10.66	-135.76	10,400.37	7,204.20	7,113.82	90.38	79.712	
11,100.00	7,104.00	3,569.00	3,568.74	73.43	66.87	-10.66	-135.76	10,400.37	7,119.04	7,028.54	90.50	78.662	
11,200.00	7,104.00	3,569.00	3,568.74	74.92	66.87	-10.66	-135.76	10,400.37	7,034.28	6,943.64	90.63	77.613	
11,300.00	7,104.00	3,569.00	3,568.74	76.41	66.87	-10.66	-135.76	10,400.37	6,949.91	6,859.14	90.77	76.567	
11,400.00	7,104.00	3,569.00	3,568.74	77.91	66.87	-10.66	-135.76	10,400.37	6,865.97	6,775.06	90.91	75.523	
11,500.00	7,104.00	3,569.00	3,568.74	79.41	66.87	-10.66	-135.76	10,400.37	6,782.46	6,691.40	91.06	74.481	
11,600.00	7,104.00	3,569.00	3,568.74	80.92	66.87	-10.66	-135.76	10,400.37	6,699.40	6,608.19	91.22	73.443	
11,700.00	7,104.00	3,569.00	3,568.74	82.43	66.87	-10.66	-135.76	10,400.37	6,616.82	6,525.44	91.38	72.409	
11,800.00	7,104.00	3,569.00	3,568.74	83.94	66.87	-10.66	-135.76	10,400.37	6,534.72	6,443.17	91.55	71.378	
11,900.00	7,104.00	3,569.00	3,568.74	85.46	66.87	-10.66	-135.76	10,400.37	6,453.12	6,361.39	91.73	70.352	
12,000.00	7,104.00	3,569.00	3,568.74	86.98	66.87	-10.66	-135.76	10,400.37	6,372.05	6,280.14	91.91	69.330	
12,100.00	7,104.00	3,569.00	3,568.74	88.50	66.87	-10.66	-135.76	10,400.37	6,291.52	6,199.43	92.10	68.314	
12,200.00	7,104.00	3,569.00	3,568.74	90.03	66.87	-10.66	-135.76	10,400.37	6,211.56	6,119.27	92.29	67.304	
12,300.00	7,104.00	3,569.00	3,568.74	91.55	66.87	-10.66	-135.76	10,400.37	6,132.19	6,039.70	92.49	66.300	
12,400.00	7,104.00	3,569.00	3,568.74	93.08	66.87	-10.66	-135.76	10,400.37	6,053.43	5,960.73	92.70	65.303	
12,500.00	7,104.00	3,569.00	3,568.74	94.62	66.87	-10.66	-135.76	10,400.37	5,975.30	5,882.39	92.91	64.313	
12,600.00	7,104.00	3,569.00	3,568.74	96.15	66.87	-10.66	-135.76	10,400.37	5,897.84	5,804.71	93.13	63.331	
12,700.00	7,104.00	3,569.00	3,568.74	97.69	66.87	-10.66	-135.76	10,400.37	5,821.06	5,727.71	93.35	62.358	
12,800.00	7,104.00	3,569.00	3,568.74	99.23	66.87	-10.66	-135.76	10,400.37	5,745.00	5,651.42	93.58	61.394	
12,900.00	7,104.00	3,569.00	3,568.74	100.77	66.87	-10.66	-135.76	10,400.37	5,669.68	5,575.87	93.81	60.440	
13,000.00	7,104.00	3,569.00	3,568.74	102.31	66.87	-10.66	-135.76	10,400.37	5,595.13	5,501.09	94.04	59.496	
13,100.00	7,104.00	3,569.00	3,568.74	103.86	66.87	-10.66	-135.76	10,400.37	5,521.39	5,427.11	94.28	58.563	
13,200.00	7,104.00	3,569.00	3,568.74	105.40	66.87	-10.66	-135.76	10,400.37	5,448.48	5,353.96	94.52	57.642	
13,300.00	7,104.00	3,569.00	3,568.74	106.95	66.87	-10.66	-135.76	10,400.37	5,376.45	5,281.68	94.77	56.733	
13,400.00	7,104.00	3,569.00	3,568.74	108.50	66.87	-10.66	-135.76	10,400.37	5,305.32	5,210.31	95.01	55.838	
13,500.00	7,104.00	3,569.00	3,568.74	110.05	66.87	-10.66	-135.76	10,400.37	5,235.14	5,139.88	95.26	54.956	
13,600.00	7,104.00	3,569.00	3,568.74	111.60	66.87	-10.66	-135.76	10,400.37	5,165.94	5,070.44	95.51	54.089	
13,700.00	7,104.00	3,569.00	3,568.74	113.16	66.87	-10.66	-135.76	10,400.37	5,097.77	5,002.01	95.75	53.238	
13,800.00	7,104.00	3,569.00	3,568.74	114.71	66.87	-10.66	-135.76	10,400.37	5,030.65	4,934.65	96.00	52.403	
13,900.00	7,104.00	3,569.00	3,568.74	116.27	66.87	-10.66	-135.76	10,400.37	4,964.65	4,868.40	96.24	51.584	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #272 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	3,569.00	3,568.74	117.83	66.87	-10.66	-135.76	10,400.37	4,899.79	4,803.31	96.48	50.784	
14,100.00	7,104.00	3,569.00	3,568.74	119.38	66.87	-10.66	-135.76	10,400.37	4,836.13	4,739.42	96.72	50.002	
14,200.00	7,104.00	3,569.00	3,568.74	120.94	66.87	-10.66	-135.76	10,400.37	4,773.72	4,676.78	96.95	49.239	
14,300.00	7,104.00	3,569.00	3,568.74	122.50	66.87	-10.66	-135.76	10,400.37	4,712.61	4,615.44	97.17	48.497	
14,400.00	7,104.00	3,569.00	3,568.74	124.07	66.87	-10.66	-135.76	10,400.37	4,652.84	4,555.45	97.39	47.776	
14,500.00	7,104.00	3,569.00	3,568.74	125.63	66.87	-10.66	-135.76	10,400.37	4,594.47	4,496.88	97.60	47.077	
14,600.00	7,104.00	3,569.00	3,568.74	127.19	66.87	-10.66	-135.76	10,400.37	4,537.56	4,439.77	97.79	46.400	
14,700.00	7,104.00	3,569.00	3,568.74	128.76	66.87	-10.66	-135.76	10,400.37	4,482.15	4,384.17	97.98	45.747	
14,800.00	7,104.00	3,569.00	3,568.74	130.32	66.87	-10.66	-135.76	10,400.37	4,428.31	4,330.16	98.15	45.118	
14,900.00	7,104.00	3,569.00	3,568.74	131.89	66.87	-10.66	-135.76	10,400.37	4,376.09	4,277.79	98.31	44.515	
15,000.00	7,104.00	3,569.00	3,568.74	133.46	66.87	-10.66	-135.76	10,400.37	4,325.56	4,227.11	98.45	43.937	
15,100.00	7,104.00	3,569.00	3,568.74	135.02	66.87	-10.66	-135.76	10,400.37	4,276.76	4,178.19	98.57	43.386	
15,200.00	7,104.00	3,569.00	3,568.74	136.59	66.87	-10.66	-135.76	10,400.37	4,229.77	4,131.08	98.68	42.862	
15,300.00	7,104.00	3,569.00	3,568.74	138.16	66.87	-10.66	-135.76	10,400.37	4,184.63	4,085.86	98.77	42.366	
15,400.00	7,104.00	3,569.00	3,568.74	139.73	66.87	-10.66	-135.76	10,400.37	4,141.43	4,042.58	98.85	41.898	
15,500.00	7,104.00	3,569.00	3,568.74	141.30	66.87	-10.66	-135.76	10,400.37	4,100.20	4,001.30	98.90	41.459	
15,600.00	7,104.00	3,569.00	3,568.74	142.88	66.87	-10.66	-135.76	10,400.37	4,061.02	3,962.09	98.93	41.048	
15,700.00	7,104.00	3,569.00	3,568.74	144.45	66.87	-10.66	-135.76	10,400.37	4,023.95	3,924.99	98.95	40.665	
15,800.00	7,104.00	3,569.00	3,568.74	146.02	66.87	-10.66	-135.76	10,400.37	3,989.04	3,890.08	98.96	40.311	
15,900.00	7,104.00	3,569.00	3,568.74	147.60	66.87	-10.66	-135.76	10,400.37	3,956.34	3,857.40	98.95	39.985	
16,000.00	7,104.00	3,569.00	3,568.74	149.17	66.87	-10.66	-135.76	10,400.37	3,925.93	3,827.00	98.93	39.684	
16,100.00	7,104.00	3,569.00	3,568.74	150.74	66.87	-10.66	-135.76	10,400.37	3,897.84	3,798.93	98.91	39.409	
16,200.00	7,104.00	3,569.00	3,568.74	152.32	66.87	-10.66	-135.76	10,400.37	3,872.13	3,773.24	98.89	39.157	
16,300.00	7,104.00	3,569.00	3,568.74	153.89	66.87	-10.66	-135.76	10,400.37	3,848.85	3,749.97	98.88	38.925	
16,400.00	7,104.00	3,569.00	3,568.74	155.47	66.87	-10.66	-135.76	10,400.37	3,828.04	3,729.15	98.89	38.710	
16,500.00	7,104.00	3,569.00	3,568.74	157.05	66.87	-10.66	-135.76	10,400.37	3,809.74	3,710.81	98.94	38.507	
16,600.00	7,104.00	3,569.00	3,568.74	158.63	66.87	-10.66	-135.76	10,400.37	3,793.99	3,694.96	99.03	38.311	
16,700.00	7,104.00	3,569.00	3,568.74	160.20	66.87	-10.66	-135.76	10,400.37	3,780.82	3,681.63	99.19	38.117	
16,800.00	7,104.00	3,569.00	3,568.74	161.78	66.87	-10.66	-135.76	10,400.37	3,770.26	3,670.83	99.43	37.919	
16,900.00	7,104.00	3,569.00	3,568.74	163.36	66.87	-10.66	-135.76	10,400.37	3,762.33	3,662.56	99.77	37.712	
17,000.00	7,104.00	3,569.00	3,568.74	164.94	66.87	-10.66	-135.76	10,400.37	3,757.04	3,656.83	100.22	37.490	
17,100.00	7,104.00	3,569.00	3,568.74	166.52	66.87	-10.66	-135.76	10,400.37	3,754.41	3,653.62	100.79	37.250	
17,148.76	7,104.00	3,569.00	3,568.74	167.29	66.87	-10.66	-135.76	10,400.37	3,754.10	3,652.98	101.12	37.127 CC	
17,200.00	7,104.00	3,569.00	3,568.74	168.10	66.87	-10.66	-135.76	10,400.37	3,754.45	3,652.95	101.49	36.993 ES	
17,300.00	7,104.00	3,569.00	3,568.74	169.68	66.87	-10.66	-135.76	10,400.37	3,757.14	3,654.82	102.32	36.719	
17,400.00	7,104.00	3,569.00	3,568.74	171.26	66.87	-10.66	-135.76	10,400.37	3,762.49	3,659.23	103.27	36.434	
17,500.00	7,104.00	3,569.00	3,568.74	172.84	66.87	-10.66	-135.76	10,400.37	3,770.49	3,666.17	104.32	36.143	
17,600.00	7,104.00	3,569.00	3,568.74	174.42	66.87	-10.66	-135.76	10,400.37	3,781.12	3,675.66	105.46	35.854	
17,700.00	7,104.00	3,569.00	3,568.74	176.00	66.87	-10.66	-135.76	10,400.37	3,794.35	3,687.69	106.67	35.572	
17,800.00	7,104.00	3,569.00	3,568.74	177.59	66.87	-10.66	-135.76	10,400.37	3,810.16	3,702.24	107.92	35.306	
17,900.00	7,104.00	3,569.00	3,568.74	179.17	66.87	-10.66	-135.76	10,400.37	3,828.52	3,719.32	109.20	35.060	
18,000.00	7,104.00	3,569.00	3,568.74	180.75	66.87	-10.66	-135.76	10,400.37	3,849.40	3,738.90	110.49	34.838	
18,100.00	7,104.00	3,569.00	3,568.74	182.33	66.87	-10.66	-135.76	10,400.37	3,872.74	3,760.95	111.78	34.645	
18,200.00	7,104.00	3,569.00	3,568.74	183.92	66.87	-10.66	-135.76	10,400.37	3,898.50	3,785.44	113.06	34.482	
18,300.00	7,104.00	3,569.00	3,568.74	185.50	66.87	-10.66	-135.76	10,400.37	3,926.65	3,812.34	114.31	34.351	
18,400.00	7,104.00	3,569.00	3,568.74	187.09	66.87	-10.66	-135.76	10,400.37	3,957.12	3,841.60	115.53	34.253	
18,500.00	7,104.00	3,569.00	3,568.74	188.67	66.87	-10.66	-135.76	10,400.37	3,989.87	3,873.17	116.70	34.188	
18,600.00	7,104.00	3,569.00	3,568.74	190.26	66.87	-10.66	-135.76	10,400.37	4,024.84	3,907.00	117.84	34.156 SF	
18,700.00	7,104.00	3,569.00	3,568.74	191.84	66.87	-10.66	-135.76	10,400.37	4,061.97	3,943.04	118.92	34.156	
18,800.00	7,104.00	3,569.00	3,568.74	193.43	66.87	-10.66	-135.76	10,400.37	4,101.20	3,981.24	119.96	34.189	
18,900.00	7,104.00	3,569.00	3,568.74	195.01	66.87	-10.66	-135.76	10,400.37	4,142.47	4,021.53	120.94	34.252	
19,000.00	7,104.00	3,569.00	3,568.74	196.60	66.87	-10.66	-135.76	10,400.37	4,185.73	4,063.86	121.87	34.346	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #272 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 235-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	7,104.00	3,569.00	3,568.74	198.18	66.87	-10.66	-135.76	10,400.37	4,230.91	4,108.16	122.75	34.468	
19,200.00	7,104.00	3,569.00	3,568.74	199.77	66.87	-10.66	-135.76	10,400.37	4,277.94	4,154.37	123.57	34.619	
19,300.00	7,104.00	3,569.00	3,568.74	201.36	66.87	-10.66	-135.76	10,400.37	4,326.78	4,202.44	124.35	34.797	
19,400.00	7,104.00	3,569.00	3,568.74	202.94	66.87	-10.66	-135.76	10,400.37	4,377.36	4,252.29	125.07	35.000	
19,500.00	7,104.00	3,569.00	3,568.74	204.53	66.87	-10.66	-135.76	10,400.37	4,429.62	4,303.88	125.74	35.228	
19,600.00	7,104.00	3,569.00	3,568.74	206.12	66.87	-10.66	-135.76	10,400.37	4,483.50	4,357.13	126.37	35.480	
19,700.00	7,104.00	3,569.00	3,568.74	207.70	66.87	-10.66	-135.76	10,400.37	4,538.95	4,412.00	126.95	35.754	
19,800.00	7,104.00	3,569.00	3,568.74	209.29	66.87	-10.66	-135.76	10,400.37	4,595.90	4,468.41	127.49	36.050	
19,900.00	7,104.00	3,569.00	3,568.74	210.88	66.87	-10.66	-135.76	10,400.37	4,654.30	4,526.32	127.98	36.367	
20,000.00	7,104.00	3,569.00	3,568.74	212.47	66.87	-10.66	-135.76	10,400.37	4,714.11	4,585.67	128.44	36.703	
20,100.00	7,104.00	3,569.00	3,568.74	214.05	66.87	-10.66	-135.76	10,400.37	4,775.25	4,646.40	128.86	37.059	
20,200.00	7,104.00	3,569.00	3,568.74	215.64	66.87	-10.66	-135.76	10,400.37	4,837.69	4,708.45	129.24	37.432	
20,215.00	7,104.00	3,569.00	3,568.74	215.88	66.87	-10.66	-135.76	10,400.37	4,847.17	4,717.88	129.29	37.490	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #334A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-92.69	-134.77	-2,869.45	2,872.75				
100.00	100.00	72.00	72.00	3.29	0.71	-92.69	-134.77	-2,869.45	2,872.61	2,868.61	4.00	718.346	
200.00	200.00	172.00	172.00	3.34	1.69	-92.69	-134.77	-2,869.45	2,872.61	2,867.58	5.03	571.052	
300.00	300.00	272.00	272.00	3.42	2.68	-92.69	-134.77	-2,869.45	2,872.61	2,866.51	6.10	470.997	
400.00	400.00	372.01	372.00	3.54	4.07	-92.69	-134.77	-2,869.45	2,872.61	2,865.01	7.60	377.741	
500.00	500.00	472.01	472.00	3.69	6.11	-92.69	-134.77	-2,869.45	2,872.61	2,862.82	9.80	293.185 CC	
600.00	599.98	571.96	571.95	3.86	8.15	117.34	-134.02	-2,869.45	2,873.38	2,861.37	12.01	239.261	
700.00	699.84	671.47	671.45	4.04	10.19	117.39	-134.18	-2,869.45	2,875.80	2,861.57	14.23	202.103	
800.00	799.45	770.78	770.76	4.26	12.22	117.46	-134.62	-2,869.45	2,879.84	2,863.37	16.47	174.853	
849.50	848.63	820.70	820.63	4.37	13.26	117.51	-134.77	-2,869.45	2,882.45	2,864.82	17.62	163.555	
900.00	898.77	870.83	870.77	4.49	14.32	109.34	-134.77	-2,869.45	2,884.88	2,866.07	18.81	153.375	
973.84	972.07	944.13	944.07	4.68	15.88	97.38	-134.77	-2,869.45	2,886.94	2,866.39	20.55	140.470	
1,000.00	998.03	970.10	970.03	4.74	16.43	97.44	-134.77	-2,869.45	2,887.35	2,866.18	21.17	136.379	
1,100.00	1,097.29	1,069.28	1,069.21	5.02	18.54	97.70	-133.69	-2,869.45	2,888.93	2,865.38	23.55	122.666	
1,200.00	1,196.54	1,168.31	1,168.23	5.30	20.64	97.93	-133.95	-2,869.45	2,890.61	2,864.67	25.94	111.423	
1,300.00	1,295.80	1,267.43	1,267.34	5.61	22.75	98.16	-134.55	-2,869.45	2,892.34	2,863.99	28.35	102.025	
1,400.00	1,395.06	1,367.20	1,367.06	5.92	24.93	98.39	-134.77	-2,869.45	2,894.11	2,863.27	30.84	93.833	
1,500.00	1,494.31	1,466.45	1,466.31	6.24	27.13	98.63	-134.77	-2,869.45	2,895.93	2,862.57	33.36	86.810	
1,600.00	1,593.57	1,565.69	1,565.54	6.57	29.32	98.88	-133.70	-2,869.45	2,897.78	2,861.90	35.88	80.757	
1,700.00	1,692.82	1,664.92	1,664.77	6.91	31.52	99.12	-133.95	-2,869.45	2,899.70	2,861.29	38.41	75.487	
1,800.00	1,792.08	1,764.25	1,764.08	7.25	33.71	99.34	-134.55	-2,869.45	2,901.67	2,860.72	40.95	70.857	
1,900.00	1,891.33	1,863.57	1,863.33	7.60	35.98	99.57	-134.77	-2,869.45	2,903.69	2,860.13	43.56	66.659	
2,000.00	1,990.59	1,962.83	1,962.59	7.95	38.26	99.81	-134.77	-2,869.45	2,905.75	2,859.55	46.20	62.898	
2,100.00	2,089.85	2,062.11	2,061.86	8.30	40.55	100.07	-133.39	-2,869.45	2,907.88	2,859.04	48.84	59.539	
2,200.00	2,189.10	2,161.60	2,161.34	8.66	42.84	100.30	-133.68	-2,869.45	2,910.05	2,858.56	51.49	56.517	
2,300.00	2,288.36	2,261.20	2,260.93	9.02	45.14	100.52	-134.38	-2,869.45	2,912.25	2,858.10	54.15	53.785	
2,400.00	2,387.61	2,359.97	2,359.61	9.39	47.31	100.74	-134.77	-2,869.45	2,914.50	2,857.82	56.68	51.421	
2,500.00	2,486.87	2,459.22	2,458.87	9.76	49.42	100.98	-134.77	-2,869.45	2,916.81	2,857.66	59.16	49.306	
2,600.00	2,586.12	2,558.55	2,558.17	10.13	51.53	101.24	-133.45	-2,869.45	2,919.22	2,857.58	61.64	47.360	
2,700.00	2,685.38	2,658.31	2,657.93	10.50	53.66	101.46	-133.74	-2,869.45	2,921.62	2,857.49	64.13	45.557	
2,800.00	2,784.63	2,758.20	2,757.81	10.87	55.78	101.68	-134.48	-2,869.45	2,924.05	2,857.43	66.63	43.886	
2,900.00	2,883.89	2,856.32	2,855.89	11.24	57.93	101.91	-134.77	-2,869.45	2,926.55	2,857.40	69.15	42.321	
3,000.00	2,983.15	2,955.58	2,955.15	11.62	60.13	102.14	-134.77	-2,869.45	2,929.10	2,857.38	71.73	40.838 ES	
3,100.00	3,082.40	3,055.03	3,054.59	12.00	62.34	102.38	-134.07	-2,869.45	2,931.74	2,857.44	74.31	39.455	
3,200.00	3,181.66	3,154.80	3,154.36	12.38	64.55	102.61	-134.34	-2,869.45	2,934.38	2,857.49	76.89	38.161	
3,300.00	3,280.91	3,253.44	3,252.91	12.75	66.78	102.83	-134.77	-2,869.45	2,937.06	2,857.55	79.51	36.942	
3,400.00	3,380.17	3,352.69	3,352.17	13.13	69.26	103.06	-134.77	-2,869.45	2,939.80	2,857.45	82.36	35.697	
3,500.00	3,479.42	3,451.95	3,451.42	13.52	71.73	103.29	-134.77	-2,869.45	2,942.60	2,857.39	85.21	34.535	
3,600.00	3,578.68	3,468.00	3,467.40	13.90	72.13	103.33	-134.77	-2,869.45	2,946.62	2,860.68	85.94	34.285	
3,700.00	3,677.94	3,468.00	3,467.40	14.28	72.13	103.33	-134.77	-2,869.45	2,953.98	2,867.79	86.19	34.274 SF	
3,800.00	3,777.19	3,468.00	3,467.40	14.66	72.13	103.33	-134.77	-2,869.45	2,964.69	2,878.35	86.34	34.338	
3,900.00	3,876.45	3,468.00	3,467.40	15.05	72.13	103.33	-134.77	-2,869.45	2,978.73	2,892.33	86.40	34.476	
4,000.00	3,975.70	3,468.00	3,467.40	15.43	72.13	103.33	-134.77	-2,869.45	2,996.04	2,909.67	86.37	34.688	
4,100.00	4,074.96	3,468.00	3,467.40	15.82	72.13	103.33	-134.77	-2,869.45	3,016.57	2,930.31	86.26	34.972	
4,200.00	4,174.21	3,468.00	3,467.40	16.20	72.13	103.33	-134.77	-2,869.45	3,040.24	2,954.18	86.06	35.326	
4,300.00	4,273.47	3,468.00	3,467.40	16.59	72.13	103.33	-134.77	-2,869.45	3,067.00	2,981.21	85.79	35.750	
4,400.00	4,372.73	3,468.00	3,467.40	16.97	72.13	103.33	-134.77	-2,869.45	3,096.76	3,011.31	85.45	36.242	
4,500.00	4,471.98	3,468.00	3,467.40	17.36	72.13	103.33	-134.77	-2,869.45	3,129.43	3,044.39	85.04	36.801	
4,600.00	4,571.24	3,468.00	3,467.40	17.75	72.13	103.33	-134.77	-2,869.45	3,164.93	3,080.36	84.57	37.425	
4,700.00	4,670.49	3,468.00	3,467.40	18.13	72.13	103.33	-134.77	-2,869.45	3,203.15	3,119.11	84.04	38.113	
4,800.00	4,769.75	3,468.00	3,467.40	18.52	72.13	103.33	-134.77	-2,869.45	3,244.01	3,160.54	83.47	38.863	
4,900.00	4,869.00	3,468.00	3,467.40	18.91	72.13	103.33	-134.77	-2,869.45	3,287.40	3,204.55	82.86	39.675	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #334A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	3,468.00	3,467.40	19.30	72.13	103.33	-134.77	-2,869.45	3,333.23	3,251.03	82.21	40.546	
5,100.00	5,067.51	3,468.00	3,467.40	19.69	72.13	103.33	-134.77	-2,869.45	3,381.40	3,299.87	81.53	41.476	
5,200.00	5,166.77	3,468.00	3,467.40	20.07	72.13	103.33	-134.77	-2,869.45	3,431.81	3,350.99	80.82	42.463	
5,300.00	5,266.03	3,468.00	3,467.40	20.46	72.13	103.33	-134.77	-2,869.45	3,484.35	3,404.26	80.09	43.505	
5,400.00	5,365.28	3,468.00	3,467.40	20.85	72.13	103.33	-134.77	-2,869.45	3,538.94	3,459.60	79.35	44.602	
5,500.00	5,464.54	3,468.00	3,467.40	21.24	72.13	103.33	-134.77	-2,869.45	3,595.49	3,516.90	78.59	45.751	
5,600.00	5,563.79	3,468.00	3,467.40	21.63	72.13	103.33	-134.77	-2,869.45	3,653.90	3,576.07	77.82	46.951	
5,700.00	5,663.05	3,468.00	3,467.40	22.02	72.13	103.33	-134.77	-2,869.45	3,714.08	3,637.02	77.06	48.200	
5,800.00	5,762.30	3,468.00	3,467.40	22.41	72.13	103.33	-134.77	-2,869.45	3,775.95	3,699.67	76.29	49.498	
5,900.00	5,861.56	3,468.00	3,467.40	22.80	72.13	103.33	-134.77	-2,869.45	3,839.43	3,763.91	75.52	50.841	
6,000.00	5,960.82	3,468.00	3,467.40	23.19	72.13	103.33	-134.77	-2,869.45	3,904.44	3,829.69	74.75	52.230	
6,100.00	6,060.07	3,468.00	3,467.40	23.58	72.13	103.33	-134.77	-2,869.45	3,970.90	3,896.90	74.00	53.662	
6,200.00	6,159.33	3,468.00	3,467.40	23.97	72.13	103.33	-134.77	-2,869.45	4,038.75	3,965.50	73.25	55.136	
6,300.00	6,258.58	3,468.00	3,467.40	24.36	72.13	103.33	-134.77	-2,869.45	4,107.91	4,035.39	72.51	56.650	
6,400.00	6,357.84	3,468.00	3,467.40	24.76	72.13	103.33	-134.77	-2,869.45	4,178.32	4,106.53	71.79	58.203	
6,500.00	6,457.09	3,468.00	3,467.40	25.15	72.13	103.33	-134.77	-2,869.45	4,249.91	4,178.83	71.08	59.792	
6,528.17	6,485.05	3,468.00	3,467.40	25.26	72.13	103.33	-134.77	-2,869.45	4,270.29	4,199.41	70.88	60.246	
6,550.00	6,506.71	3,468.00	3,467.40	25.34	72.13	118.19	-134.77	-2,869.45	4,286.39	4,215.66	70.73	60.599	
6,600.00	6,556.11	3,468.00	3,467.40	25.54	72.13	141.89	-134.77	-2,869.45	4,325.27	4,254.85	70.43	61.415	
6,650.00	6,605.00	3,468.00	3,467.40	25.74	72.13	154.77	-134.77	-2,869.45	4,366.69	4,296.53	70.16	62.238	
6,700.00	6,653.07	3,468.00	3,467.40	25.93	72.13	162.47	-134.77	-2,869.45	4,410.32	4,340.38	69.94	63.063	
6,750.00	6,700.02	3,468.00	3,467.40	26.12	72.13	167.84	-134.77	-2,869.45	4,455.82	4,386.07	69.75	63.882	
6,800.00	6,745.56	3,468.00	3,467.40	26.31	72.13	172.32	-134.77	-2,869.45	4,502.87	4,433.26	69.61	64.689	
6,850.00	6,789.42	3,468.00	3,467.40	26.50	72.13	177.09	-134.77	-2,869.45	4,551.14	4,481.63	69.51	65.476	
6,900.00	6,831.32	3,468.00	3,467.40	26.69	72.13	-175.75	-134.77	-2,869.45	4,600.28	4,530.83	69.45	66.238	
6,950.00	6,871.01	3,468.00	3,467.40	26.87	72.13	-156.89	-134.77	-2,869.45	4,649.98	4,580.55	69.43	66.970	
7,000.00	6,908.23	3,468.00	3,467.40	27.05	72.13	-73.87	-134.77	-2,869.45	4,699.92	4,630.46	69.46	67.665	
7,050.00	6,942.77	3,468.00	3,467.40	27.23	72.13	-31.17	-134.77	-2,869.45	4,749.78	4,680.26	69.52	68.318	
7,100.00	6,974.40	3,468.00	3,467.40	27.41	72.13	-21.23	-134.77	-2,869.45	4,799.27	4,729.64	69.63	68.926	
7,150.00	7,002.93	3,468.00	3,467.40	27.60	72.13	-16.97	-134.77	-2,869.45	4,848.10	4,778.33	69.77	69.483	
7,200.00	7,028.20	3,468.00	3,467.40	27.80	72.13	-14.58	-134.77	-2,869.45	4,895.98	4,826.03	69.96	69.986	
7,250.00	7,050.03	3,468.00	3,467.40	28.00	72.13	-13.03	-134.77	-2,869.45	4,942.67	4,872.49	70.18	70.431	
7,300.00	7,068.30	3,468.00	3,467.40	28.22	72.13	-11.96	-134.77	-2,869.45	4,987.90	4,917.46	70.43	70.816	
7,350.00	7,082.89	3,468.00	3,467.40	28.45	72.13	-11.18	-134.77	-2,869.45	5,031.43	4,960.71	70.73	71.138	
7,400.00	7,093.72	3,468.00	3,467.40	28.70	72.13	-10.60	-134.77	-2,869.45	5,073.06	5,002.00	71.06	71.394	
7,450.00	7,100.71	3,468.00	3,467.40	28.96	72.13	-10.18	-134.77	-2,869.45	5,112.57	5,041.15	71.42	71.583	
7,500.00	7,103.82	3,468.00	3,467.40	29.24	72.13	-9.87	-134.77	-2,869.45	5,149.77	5,077.95	71.82	71.703	
7,515.00	7,104.00	3,468.00	3,467.40	29.32	72.13	-9.80	-134.77	-2,869.45	5,160.45	5,088.51	71.94	71.729	
7,600.00	7,104.00	3,468.00	3,467.40	29.84	72.13	-9.80	-134.77	-2,869.45	5,220.69	5,148.01	72.68	71.835	
7,700.00	7,104.00	3,468.00	3,467.40	30.51	72.13	-9.80	-134.77	-2,869.45	5,292.42	5,218.90	73.52	71.985	
7,800.00	7,104.00	3,468.00	3,467.40	31.26	72.13	-9.80	-134.77	-2,869.45	5,365.06	5,290.72	74.35	72.164	
7,900.00	7,104.00	3,468.00	3,467.40	32.07	72.13	-9.80	-134.77	-2,869.45	5,438.57	5,363.42	75.15	72.369	
8,000.00	7,104.00	3,468.00	3,467.40	32.94	72.13	-9.80	-134.77	-2,869.45	5,512.92	5,436.98	75.94	72.599	
8,100.00	7,104.00	3,468.00	3,467.40	33.86	72.13	-9.80	-134.77	-2,869.45	5,588.06	5,511.36	76.70	72.855	
8,200.00	7,104.00	3,468.00	3,467.40	34.84	72.13	-9.80	-134.77	-2,869.45	5,663.97	5,586.53	77.45	73.134	
8,300.00	7,104.00	3,468.00	3,467.40	35.86	72.13	-9.80	-134.77	-2,869.45	5,740.63	5,662.45	78.17	73.435	
8,400.00	7,104.00	3,468.00	3,467.40	36.92	72.13	-9.80	-134.77	-2,869.45	5,817.99	5,739.11	78.88	73.757	
8,500.00	7,104.00	3,468.00	3,467.40	38.02	72.13	-9.80	-134.77	-2,869.45	5,896.03	5,816.46	79.57	74.100	
8,600.00	7,104.00	3,468.00	3,467.40	39.15	72.13	-9.80	-134.77	-2,869.45	5,974.72	5,894.48	80.24	74.463	
8,700.00	7,104.00	3,468.00	3,467.40	40.32	72.13	-9.80	-134.77	-2,869.45	6,054.05	5,973.16	80.89	74.843	
8,800.00	7,104.00	3,468.00	3,467.40	41.52	72.13	-9.80	-134.77	-2,869.45	6,133.97	6,052.45	81.52	75.242	
8,900.00	7,104.00	3,468.00	3,467.40	42.74	72.13	-9.80	-134.77	-2,869.45	6,214.48	6,132.34	82.14	75.657	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #334A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
9,000.00	7,104.00	3,468.00	3,467.40	43.99	72.13	-9.80	-134.77	-2,869.45	6,295.55	6,212.81	82.74	76.088	
9,100.00	7,104.00	3,468.00	3,467.40	45.26	72.13	-9.80	-134.77	-2,869.45	6,377.16	6,293.84	83.32	76.534	
9,200.00	7,104.00	3,468.00	3,467.40	46.55	72.13	-9.80	-134.77	-2,869.45	6,459.28	6,375.39	83.89	76.995	
9,300.00	7,104.00	3,468.00	3,467.40	47.85	72.13	-9.80	-134.77	-2,869.45	6,541.90	6,457.46	84.44	77.470	
9,400.00	7,104.00	3,468.00	3,467.40	49.18	72.13	-9.80	-134.77	-2,869.45	6,625.00	6,540.02	84.98	77.958	
9,500.00	7,104.00	3,468.00	3,467.40	50.52	72.13	-9.80	-134.77	-2,869.45	6,708.57	6,623.06	85.51	78.458	
9,600.00	7,104.00	3,468.00	3,467.40	51.88	72.13	-9.80	-134.77	-2,869.45	6,792.57	6,706.56	86.01	78.970	
9,700.00	7,104.00	3,468.00	3,467.40	53.25	72.13	-9.80	-134.77	-2,869.45	6,877.01	6,790.50	86.51	79.493	
9,800.00	7,104.00	3,468.00	3,467.40	54.63	72.13	-9.80	-134.77	-2,869.45	6,961.85	6,874.86	86.99	80.027	
9,900.00	7,104.00	3,468.00	3,467.40	56.03	72.13	-9.80	-134.77	-2,869.45	7,047.10	6,959.63	87.46	80.572	
10,000.00	7,104.00	3,468.00	3,467.40	57.43	72.13	-9.80	-134.77	-2,869.45	7,132.72	7,044.80	87.92	81.126	
10,100.00	7,104.00	3,468.00	3,467.40	58.85	72.13	-9.80	-134.77	-2,869.45	7,218.72	7,130.35	88.37	81.690	
10,200.00	7,104.00	3,468.00	3,467.40	60.27	72.13	-9.80	-134.77	-2,869.45	7,305.07	7,216.27	88.80	82.262	
10,300.00	7,104.00	3,468.00	3,467.40	61.71	72.13	-9.80	-134.77	-2,869.45	7,391.77	7,302.54	89.23	82.843	
10,400.00	7,104.00	3,468.00	3,467.40	63.15	72.13	-9.80	-134.77	-2,869.45	7,478.80	7,389.16	89.64	83.432	
10,500.00	7,104.00	3,468.00	3,467.40	64.60	72.13	-9.80	-134.77	-2,869.45	7,566.15	7,476.11	90.04	84.029	
10,600.00	7,104.00	3,468.00	3,467.40	66.05	72.13	-9.80	-134.77	-2,869.45	7,653.81	7,563.37	90.44	84.633	
10,700.00	7,104.00	3,468.00	3,467.40	67.52	72.13	-9.80	-134.77	-2,869.45	7,741.77	7,650.95	90.82	85.244	
10,800.00	7,104.00	3,468.00	3,467.40	68.99	72.13	-9.80	-134.77	-2,869.45	7,830.01	7,738.82	91.19	85.862	
10,900.00	7,104.00	3,468.00	3,467.40	70.46	72.13	-9.80	-134.77	-2,869.45	7,918.54	7,826.98	91.56	86.486	
11,000.00	7,104.00	3,468.00	3,467.40	71.94	72.13	-9.80	-134.77	-2,869.45	8,007.34	7,915.42	91.92	87.116	
11,100.00	7,104.00	3,468.00	3,467.40	73.43	72.13	-9.80	-134.77	-2,869.45	8,096.40	8,004.13	92.26	87.752	
11,200.00	7,104.00	3,468.00	3,467.40	74.92	72.13	-9.80	-134.77	-2,869.45	8,185.71	8,093.10	92.61	88.393	
11,300.00	7,104.00	3,468.00	3,467.40	76.41	72.13	-9.80	-134.77	-2,869.45	8,275.26	8,182.32	92.94	89.040	
11,400.00	7,104.00	3,468.00	3,467.40	77.91	72.13	-9.80	-134.77	-2,869.45	8,365.06	8,271.79	93.26	89.692	
11,500.00	7,104.00	3,468.00	3,467.40	79.41	72.13	-9.80	-134.77	-2,869.45	8,455.08	8,361.49	93.58	90.348	
11,600.00	7,104.00	3,468.00	3,467.40	80.92	72.13	-9.80	-134.77	-2,869.45	8,545.32	8,451.43	93.90	91.009	
11,700.00	7,104.00	3,468.00	3,467.40	82.43	72.13	-9.80	-134.77	-2,869.45	8,635.78	8,541.58	94.20	91.674	
11,800.00	7,104.00	3,468.00	3,467.40	83.94	72.13	-9.80	-134.77	-2,869.45	8,726.45	8,631.95	94.50	92.344	
11,900.00	7,104.00	3,468.00	3,467.40	85.46	72.13	-9.80	-134.77	-2,869.45	8,817.31	8,722.52	94.79	93.017	
12,000.00	7,104.00	3,468.00	3,467.40	86.98	72.13	-9.80	-134.77	-2,869.45	8,908.38	8,813.30	95.08	93.694	
12,100.00	7,104.00	3,468.00	3,467.40	88.50	72.13	-9.80	-134.77	-2,869.45	8,999.63	8,904.27	95.36	94.375	
12,200.00	7,104.00	3,468.00	3,467.40	90.03	72.13	-9.80	-134.77	-2,869.45	9,091.07	8,995.43	95.64	95.059	
12,300.00	7,104.00	3,468.00	3,467.40	91.55	72.13	-9.80	-134.77	-2,869.45	9,182.69	9,086.78	95.91	95.747	
12,400.00	7,104.00	3,468.00	3,467.40	93.08	72.13	-9.80	-134.77	-2,869.45	9,274.48	9,178.30	96.17	96.437	
12,500.00	7,104.00	3,468.00	3,467.40	94.62	72.13	-9.80	-134.77	-2,869.45	9,366.43	9,270.00	96.43	97.131	
12,600.00	7,104.00	3,468.00	3,467.40	96.15	72.13	-9.80	-134.77	-2,869.45	9,458.55	9,361.87	96.69	97.827	
12,700.00	7,104.00	3,468.00	3,467.40	97.69	72.13	-9.80	-134.77	-2,869.45	9,550.83	9,453.90	96.94	98.526	
12,800.00	7,104.00	3,468.00	3,467.40	99.23	72.13	-9.80	-134.77	-2,869.45	9,643.27	9,546.08	97.18	99.227	
12,900.00	7,104.00	3,468.00	3,467.40	100.77	72.13	-9.80	-134.77	-2,869.45	9,735.85	9,638.42	97.43	99.931	
13,000.00	7,104.00	3,468.00	3,467.40	102.31	72.13	-9.80	-134.77	-2,869.45	9,828.58	9,730.91	97.66	100.637	
13,100.00	7,104.00	3,468.00	3,467.40	103.86	72.13	-9.80	-134.77	-2,869.45	9,921.45	9,823.55	97.90	101.345	
13,200.00	7,104.00	3,468.00	3,467.40	105.40	72.13	-9.80	-134.77	-2,869.45	10,014.45	9,916.33	98.13	102.055	
13,300.00	7,104.00	3,468.00	3,467.40	106.95	72.13	-9.80	-134.77	-2,869.45	10,107.59	10,009.24	98.35	102.767	
13,400.00	7,104.00	3,468.00	3,467.40	108.50	72.13	-9.80	-134.77	-2,869.45	10,200.86	10,102.29	98.58	103.481	
13,500.00	7,104.00	3,468.00	3,467.40	110.05	72.13	-9.80	-134.77	-2,869.45	10,294.26	10,195.46	98.80	104.197	
13,600.00	7,104.00	3,468.00	3,467.40	111.60	72.13	-9.80	-134.77	-2,869.45	10,387.78	10,288.77	99.01	104.914	
13,700.00	7,104.00	3,468.00	3,467.40	113.16	72.13	-9.80	-134.77	-2,869.45	10,481.42	10,382.19	99.23	105.633	
13,800.00	7,104.00	3,468.00	3,467.40	114.71	72.13	-9.80	-134.77	-2,869.45	10,575.18	10,475.74	99.43	106.353	
13,900.00	7,104.00	3,468.00	3,467.40	116.27	72.13	-9.80	-134.77	-2,869.45	10,669.04	10,569.40	99.64	107.075	
14,000.00	7,104.00	3,468.00	3,467.40	117.83	72.13	-9.80	-134.77	-2,869.45	10,763.02	10,663.18	99.84	107.797	
14,100.00	7,104.00	3,468.00	3,467.40	119.38	72.13	-9.80	-134.77	-2,869.45	10,857.11	10,757.07	100.05	108.521	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #334A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	3,468.00	3,467.40	120.94	72.13	-9.80	-134.77	-2,869.45	10,951.30	10,851.06	100.24	109.246	
14,300.00	7,104.00	3,468.00	3,467.40	122.50	72.13	-9.80	-134.77	-2,869.45	11,045.60	10,945.16	100.44	109.973	
14,400.00	7,104.00	3,468.00	3,467.40	124.07	72.13	-9.80	-134.77	-2,869.45	11,139.99	11,039.36	100.63	110.700	
14,500.00	7,104.00	3,468.00	3,467.40	125.63	72.13	-9.80	-134.77	-2,869.45	11,234.48	11,133.66	100.82	111.428	
14,600.00	7,104.00	3,468.00	3,467.40	127.19	72.13	-9.80	-134.77	-2,869.45	11,329.07	11,228.05	101.01	112.157	
14,700.00	7,104.00	3,468.00	3,467.40	128.76	72.13	-9.80	-134.77	-2,869.45	11,423.74	11,322.55	101.20	112.886	
14,800.00	7,104.00	3,468.00	3,467.40	130.32	72.13	-9.80	-134.77	-2,869.45	11,518.51	11,417.13	101.38	113.616	
14,900.00	7,104.00	3,468.00	3,467.40	131.89	72.13	-9.80	-134.77	-2,869.45	11,613.37	11,511.80	101.56	114.347	
15,000.00	7,104.00	3,468.00	3,467.40	133.46	72.13	-9.80	-134.77	-2,869.45	11,708.31	11,606.56	101.74	115.079	
15,100.00	7,104.00	3,468.00	3,467.40	135.02	72.13	-9.80	-134.77	-2,869.45	11,803.33	11,701.41	101.92	115.811	
15,200.00	7,104.00	3,468.00	3,467.40	136.59	72.13	-9.80	-134.77	-2,869.45	11,898.44	11,796.34	102.09	116.543	
15,300.00	7,104.00	3,468.00	3,467.40	138.16	72.13	-9.80	-134.77	-2,869.45	11,993.62	11,891.35	102.27	117.276	
15,400.00	7,104.00	3,468.00	3,467.40	139.73	72.13	-9.80	-134.77	-2,869.45	12,088.88	11,986.44	102.44	118.009	
15,500.00	7,104.00	3,468.00	3,467.40	141.30	72.13	-9.80	-134.77	-2,869.45	12,184.22	12,081.61	102.61	118.743	
15,600.00	7,104.00	3,468.00	3,467.40	142.88	72.13	-9.80	-134.77	-2,869.45	12,279.64	12,176.86	102.78	119.476	
15,700.00	7,104.00	3,468.00	3,467.40	144.45	72.13	-9.80	-134.77	-2,869.45	12,375.12	12,272.18	102.95	120.210	
15,800.00	7,104.00	3,468.00	3,467.40	146.02	72.13	-9.80	-134.77	-2,869.45	12,470.68	12,367.57	103.11	120.944	
15,900.00	7,104.00	3,468.00	3,467.40	147.60	72.13	-9.80	-134.77	-2,869.45	12,566.30	12,463.03	103.27	121.678	
16,000.00	7,104.00	3,468.00	3,467.40	149.17	72.13	-9.80	-134.77	-2,869.45	12,662.00	12,558.56	103.44	122.413	
16,100.00	7,104.00	3,468.00	3,467.40	150.74	72.13	-9.80	-134.77	-2,869.45	12,757.76	12,654.16	103.60	123.147	
16,200.00	7,104.00	3,468.00	3,467.40	152.32	72.13	-9.80	-134.77	-2,869.45	12,853.58	12,749.82	103.76	123.881	
16,300.00	7,104.00	3,468.00	3,467.40	153.89	72.13	-9.80	-134.77	-2,869.45	12,949.47	12,845.55	103.92	124.616	
16,400.00	7,104.00	3,468.00	3,467.40	155.47	72.13	-9.80	-134.77	-2,869.45	13,045.42	12,941.34	104.07	125.350	
16,500.00	7,104.00	3,468.00	3,467.40	157.05	72.13	-9.80	-134.77	-2,869.45	13,141.42	13,037.20	104.23	126.084	
16,600.00	7,104.00	3,468.00	3,467.40	158.63	72.13	-9.80	-134.77	-2,869.45	13,237.49	13,133.11	104.38	126.818	
16,700.00	7,104.00	3,468.00	3,467.40	160.20	72.13	-9.80	-134.77	-2,869.45	13,333.62	13,229.08	104.54	127.551	
16,800.00	7,104.00	3,468.00	3,467.40	161.78	72.13	-9.80	-134.77	-2,869.45	13,429.80	13,325.11	104.69	128.285	
16,900.00	7,104.00	3,468.00	3,467.40	163.36	72.13	-9.80	-134.77	-2,869.45	13,526.04	13,421.20	104.84	129.018	
17,000.00	7,104.00	3,468.00	3,467.40	164.94	72.13	-9.80	-134.77	-2,869.45	13,622.33	13,517.34	104.99	129.751	
17,100.00	7,104.00	3,468.00	3,467.40	166.52	72.13	-9.80	-134.77	-2,869.45	13,718.68	13,613.54	105.14	130.483	
17,200.00	7,104.00	3,468.00	3,467.40	168.10	72.13	-9.80	-134.77	-2,869.45	13,815.07	13,709.79	105.29	131.216	
17,300.00	7,104.00	3,468.00	3,467.40	169.68	72.13	-9.80	-134.77	-2,869.45	13,911.52	13,806.09	105.43	131.947	
17,400.00	7,104.00	3,468.00	3,467.40	171.26	72.13	-9.80	-134.77	-2,869.45	14,008.02	13,902.44	105.58	132.679	
17,500.00	7,104.00	3,468.00	3,467.40	172.84	72.13	-9.80	-134.77	-2,869.45	14,104.57	13,998.84	105.72	133.410	
17,600.00	7,104.00	3,468.00	3,467.40	174.42	72.13	-9.80	-134.77	-2,869.45	14,201.16	14,095.29	105.87	134.140	
17,700.00	7,104.00	3,468.00	3,467.40	176.00	72.13	-9.80	-134.77	-2,869.45	14,297.80	14,191.79	106.01	134.870	
17,800.00	7,104.00	3,468.00	3,467.40	177.59	72.13	-9.80	-134.77	-2,869.45	14,394.49	14,288.33	106.15	135.600	
17,900.00	7,104.00	3,468.00	3,467.40	179.17	72.13	-9.80	-134.77	-2,869.45	14,491.22	14,384.92	106.30	136.329	
18,000.00	7,104.00	3,468.00	3,467.40	180.75	72.13	-9.80	-134.77	-2,869.45	14,588.00	14,481.56	106.44	137.057	
18,100.00	7,104.00	3,468.00	3,467.40	182.33	72.13	-9.80	-134.77	-2,869.45	14,684.82	14,578.24	106.58	137.785	
18,200.00	7,104.00	3,468.00	3,467.40	183.92	72.13	-9.80	-134.77	-2,869.45	14,781.68	14,674.96	106.72	138.512	
18,300.00	7,104.00	3,468.00	3,467.40	185.50	72.13	-9.80	-134.77	-2,869.45	14,878.58	14,771.72	106.86	139.238	
18,400.00	7,104.00	3,468.00	3,467.40	187.09	72.13	-9.80	-134.77	-2,869.45	14,975.52	14,868.53	107.00	139.964	
18,500.00	7,104.00	3,468.00	3,467.40	188.67	72.13	-9.80	-134.77	-2,869.45	15,072.51	14,965.38	107.13	140.690	
18,600.00	7,104.00	3,468.00	3,467.40	190.26	72.13	-9.80	-134.77	-2,869.45	15,169.53	15,062.26	107.27	141.414	
18,700.00	7,104.00	3,468.00	3,467.40	191.84	72.13	-9.80	-134.77	-2,869.45	15,266.59	15,159.19	107.41	142.138	
18,800.00	7,104.00	3,468.00	3,467.40	193.43	72.13	-9.80	-134.77	-2,869.45	15,363.69	15,256.15	107.54	142.861	
18,900.00	7,104.00	3,468.00	3,467.40	195.01	72.13	-9.80	-134.77	-2,869.45	15,460.83	15,353.15	107.68	143.583	
19,000.00	7,104.00	3,468.00	3,467.40	196.60	72.13	-9.80	-134.77	-2,869.45	15,558.00	15,450.19	107.81	144.305	
19,100.00	7,104.00	3,468.00	3,467.40	198.18	72.13	-9.80	-134.77	-2,869.45	15,655.21	15,547.26	107.95	145.025	
19,200.00	7,104.00	3,468.00	3,467.40	199.77	72.13	-9.80	-134.77	-2,869.45	15,752.45	15,644.37	108.08	145.745	
19,300.00	7,104.00	3,468.00	3,467.40	201.36	72.13	-9.80	-134.77	-2,869.45	15,849.73	15,741.51	108.22	146.464	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #334A - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 334-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	7,104.00	3,468.00	3,467.40	202.94	72.13	-9.80	-134.77	-2,869.45	15,947.04	15,838.69	108.35	147.183	
19,500.00	7,104.00	3,468.00	3,467.40	204.53	72.13	-9.80	-134.77	-2,869.45	16,044.38	15,935.90	108.48	147.900	
19,600.00	7,104.00	3,468.00	3,467.40	206.12	72.13	-9.80	-134.77	-2,869.45	16,141.76	16,033.15	108.61	148.617	
19,700.00	7,104.00	3,468.00	3,467.40	207.70	72.13	-9.80	-134.77	-2,869.45	16,239.17	16,130.42	108.75	149.332	
19,800.00	7,104.00	3,468.00	3,467.40	209.29	72.13	-9.80	-134.77	-2,869.45	16,336.61	16,227.73	108.88	150.047	
19,900.00	7,104.00	3,468.00	3,467.40	210.88	72.13	-9.80	-134.77	-2,869.45	16,434.08	16,325.07	109.01	150.761	
20,000.00	7,104.00	3,468.00	3,467.40	212.47	72.13	-9.80	-134.77	-2,869.45	16,531.58	16,422.44	109.14	151.474	
20,100.00	7,104.00	3,468.00	3,467.40	214.05	72.13	-9.80	-134.77	-2,869.45	16,629.11	16,519.84	109.27	152.186	
20,200.00	7,104.00	3,468.00	3,467.40	215.64	72.13	-9.80	-134.77	-2,869.45	16,726.67	16,617.27	109.40	152.897	
20,215.00	7,104.00	3,468.00	3,467.40	215.88	72.13	-9.80	-134.77	-2,869.45	16,741.31	16,631.89	109.42	153.003	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #337 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	0.00	-97.16	-599.75	-4,773.48	4,811.17				
100.00	100.00	61.00	61.00	3.29	0.60	-97.16	-599.75	-4,773.48	4,811.01	4,807.12	3.89	1,236.591	
200.00	200.00	161.00	161.00	3.34	1.62	-97.16	-599.75	-4,773.48	4,811.01	4,806.06	4.95	971.173	
300.00	300.00	261.00	261.00	3.42	3.66	-97.16	-599.75	-4,773.48	4,811.01	4,803.93	7.08	679.370	
341.16	341.16	302.16	302.15	3.46	4.50	-97.16	-599.28	-4,773.48	4,810.95	4,802.99	7.97	603.825	CC
400.00	400.00	359.44	359.43	3.54	5.67	-97.16	-599.36	-4,773.48	4,810.96	4,801.75	9.21	522.254	
500.00	500.00	461.04	461.00	3.69	7.75	-97.16	-599.75	-4,773.48	4,811.01	4,799.57	11.44	420.611	
600.00	599.98	561.02	560.98	3.86	9.80	112.85	-599.75	-4,773.48	4,811.69	4,798.04	13.65	352.474	
700.00	699.84	660.88	660.84	4.04	11.84	112.87	-599.75	-4,773.48	4,813.72	4,797.85	15.88	303.143	
800.00	799.45	760.49	760.45	4.26	13.87	112.90	-599.75	-4,773.48	4,817.12	4,799.00	18.13	265.737	
849.50	848.63	809.67	809.63	4.37	14.88	112.92	-599.75	-4,773.48	4,819.32	4,800.07	19.25	250.397	
900.00	898.77	859.80	859.77	4.49	15.91	104.71	-599.75	-4,773.48	4,821.29	4,800.90	20.39	236.424	
973.84	972.07	932.92	932.86	4.68	17.40	92.71	-597.71	-4,773.48	4,822.40	4,800.33	22.07	218.471	
1,000.00	998.03	958.61	958.56	4.74	17.93	92.75	-597.73	-4,773.48	4,822.55	4,799.89	22.67	212.755	
1,100.00	1,097.29	1,056.89	1,056.82	5.02	19.94	92.89	-597.90	-4,773.48	4,823.18	4,798.23	24.95	193.319	
1,200.00	1,196.54	1,155.21	1,155.14	5.30	21.95	93.03	-598.25	-4,773.48	4,823.85	4,796.60	27.25	177.035	
1,300.00	1,295.80	1,253.58	1,253.50	5.61	23.96	93.16	-598.78	-4,773.48	4,824.57	4,795.01	29.56	163.210	
1,400.00	1,395.06	1,351.99	1,351.91	5.92	25.97	93.30	-599.49	-4,773.48	4,825.34	4,793.46	31.89	151.335	
1,500.00	1,494.31	1,455.46	1,455.31	6.24	28.09	93.44	-599.75	-4,773.48	4,826.09	4,791.77	34.32	140.609	
1,600.00	1,593.57	1,554.72	1,554.57	6.57	30.12	93.59	-599.75	-4,773.48	4,826.84	4,790.16	36.68	131.586	
1,700.00	1,692.82	1,653.44	1,653.28	6.91	32.13	93.74	-599.02	-4,773.48	4,827.55	4,788.52	39.04	123.666	
1,800.00	1,792.08	1,751.42	1,751.26	7.25	34.14	93.88	-599.27	-4,773.48	4,828.39	4,787.01	41.38	116.676	
1,900.00	1,891.33	1,852.54	1,852.33	7.60	36.21	94.02	-599.75	-4,773.48	4,829.28	4,785.49	43.80	110.262	
2,000.00	1,990.59	1,951.79	1,951.59	7.95	38.24	94.16	-599.75	-4,773.48	4,830.16	4,783.98	46.18	104.595	
2,100.00	2,089.85	2,051.05	2,050.85	8.30	40.27	94.30	-599.75	-4,773.48	4,831.06	4,782.50	48.57	99.476	
2,200.00	2,189.10	2,149.49	2,149.28	8.66	42.28	94.46	-598.72	-4,773.48	4,831.91	4,780.97	50.94	94.860	
2,300.00	2,288.36	2,247.40	2,247.18	9.02	44.28	94.59	-599.08	-4,773.48	4,832.91	4,779.61	53.30	90.671	
2,400.00	2,387.61	2,348.87	2,348.61	9.39	46.36	94.73	-599.75	-4,773.48	4,833.96	4,778.22	55.74	86.721	
2,500.00	2,486.87	2,448.13	2,447.87	9.76	48.39	94.87	-599.75	-4,773.48	4,834.99	4,776.85	58.14	83.164	
2,600.00	2,586.12	2,547.38	2,547.12	10.13	50.42	95.02	-599.75	-4,773.48	4,836.05	4,775.51	60.54	79.886	
2,700.00	2,685.38	2,646.31	2,646.04	10.50	52.44	95.17	-598.90	-4,773.48	4,837.07	4,774.14	62.93	76.864	
2,800.00	2,784.63	2,744.75	2,744.48	10.87	54.45	95.31	-599.11	-4,773.48	4,838.21	4,772.89	65.32	74.074	
2,900.00	2,883.89	2,843.24	2,842.97	11.24	56.47	95.44	-599.56	-4,773.48	4,839.39	4,771.69	67.70	71.478	
3,000.00	2,983.15	2,944.47	2,944.15	11.62	58.59	95.59	-599.75	-4,773.48	4,840.58	4,770.38	70.21	68.949	
3,100.00	3,082.40	3,043.73	3,043.40	12.00	60.70	95.73	-599.75	-4,773.48	4,841.79	4,769.10	72.69	66.608	
3,200.00	3,181.66	3,141.56	3,141.22	12.38	62.78	95.88	-599.23	-4,773.48	4,843.00	4,767.85	75.15	64.447	
3,300.00	3,280.91	3,242.29	3,241.91	12.75	64.92	96.01	-599.75	-4,773.48	4,844.30	4,766.64	77.67	62.374	
3,400.00	3,380.17	3,341.54	3,341.17	13.13	67.03	96.16	-599.75	-4,773.48	4,845.60	4,765.45	80.15	60.453	ES
3,500.00	3,479.42	3,351.00	3,350.60	13.52	67.23	96.17	-599.75	-4,773.48	4,847.76	4,767.05	80.72	60.057	
3,600.00	3,578.68	3,351.00	3,350.60	13.90	67.23	96.17	-599.75	-4,773.48	4,851.98	4,770.93	81.05	59.863	
3,700.00	3,677.94	3,351.00	3,350.60	14.28	67.23	96.17	-599.75	-4,773.48	4,858.25	4,776.90	81.35	59.719	
3,800.00	3,777.19	3,351.00	3,350.60	14.66	67.23	96.17	-599.75	-4,773.48	4,866.56	4,784.95	81.62	59.625	
3,900.00	3,876.45	3,351.00	3,350.60	15.05	67.23	96.17	-599.75	-4,773.48	4,876.92	4,795.06	81.85	59.580	SF
4,000.00	3,975.70	3,351.00	3,350.60	15.43	67.23	96.17	-599.75	-4,773.48	4,889.29	4,807.24	82.06	59.584	
4,100.00	4,074.96	3,351.00	3,350.60	15.82	67.23	96.17	-599.75	-4,773.48	4,903.68	4,821.45	82.23	59.635	
4,200.00	4,174.21	3,351.00	3,350.60	16.20	67.23	96.17	-599.75	-4,773.48	4,920.06	4,837.69	82.37	59.733	
4,300.00	4,273.47	3,351.00	3,350.60	16.59	67.23	96.17	-599.75	-4,773.48	4,938.40	4,855.93	82.48	59.877	
4,400.00	4,372.73	3,351.00	3,350.60	16.97	67.23	96.17	-599.75	-4,773.48	4,958.70	4,876.15	82.55	60.066	
4,500.00	4,471.98	3,351.00	3,350.60	17.36	67.23	96.17	-599.75	-4,773.48	4,980.92	4,898.32	82.60	60.300	
4,600.00	4,571.24	3,351.00	3,350.60	17.75	67.23	96.17	-599.75	-4,773.48	5,005.04	4,922.42	82.62	60.578	
4,700.00	4,670.49	3,351.00	3,350.60	18.13	67.23	96.17	-599.75	-4,773.48	5,031.04	4,948.42	82.61	60.899	
4,800.00	4,769.75	3,351.00	3,350.60	18.52	67.23	96.17	-599.75	-4,773.48	5,058.87	4,976.30	82.58	61.262	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #337 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,869.00	3,351.00	3,350.60	18.91	67.23	96.17	-599.75	-4,773.48	5,088.53	5,006.01	82.52	61.666	
5,000.00	4,968.26	3,351.00	3,350.60	19.30	67.23	96.17	-599.75	-4,773.48	5,119.96	5,037.53	82.43	62.112	
5,100.00	5,067.51	3,351.00	3,350.60	19.69	67.23	96.17	-599.75	-4,773.48	5,153.14	5,070.82	82.32	62.598	
5,200.00	5,166.77	3,351.00	3,350.60	20.07	67.23	96.17	-599.75	-4,773.48	5,188.04	5,105.85	82.19	63.123	
5,300.00	5,266.03	3,351.00	3,350.60	20.46	67.23	96.17	-599.75	-4,773.48	5,224.61	5,142.58	82.04	63.686	
5,400.00	5,365.28	3,351.00	3,350.60	20.85	67.23	96.17	-599.75	-4,773.48	5,262.84	5,180.97	81.86	64.288	
5,500.00	5,464.54	3,351.00	3,350.60	21.24	67.23	96.17	-599.75	-4,773.48	5,302.67	5,221.00	81.67	64.926	
5,600.00	5,563.79	3,351.00	3,350.60	21.63	67.23	96.17	-599.75	-4,773.48	5,344.08	5,262.62	81.46	65.601	
5,700.00	5,663.05	3,351.00	3,350.60	22.02	67.23	96.17	-599.75	-4,773.48	5,387.03	5,305.79	81.24	66.311	
5,800.00	5,762.30	3,351.00	3,350.60	22.41	67.23	96.17	-599.75	-4,773.48	5,431.48	5,350.48	81.00	67.056	
5,900.00	5,861.56	3,351.00	3,350.60	22.80	67.23	96.17	-599.75	-4,773.48	5,477.39	5,396.65	80.75	67.835	
6,000.00	5,960.82	3,351.00	3,350.60	23.19	67.23	96.17	-599.75	-4,773.48	5,524.74	5,444.26	80.48	68.648	
6,100.00	6,060.07	3,351.00	3,350.60	23.58	67.23	96.17	-599.75	-4,773.48	5,573.47	5,493.27	80.20	69.492	
6,200.00	6,159.33	3,351.00	3,350.60	23.97	67.23	96.17	-599.75	-4,773.48	5,623.56	5,543.65	79.92	70.369	
6,300.00	6,258.58	3,351.00	3,350.60	24.36	67.23	96.17	-599.75	-4,773.48	5,674.98	5,595.36	79.62	71.276	
6,400.00	6,357.84	3,351.00	3,350.60	24.76	67.23	96.17	-599.75	-4,773.48	5,727.67	5,648.36	79.32	72.214	
6,500.00	6,457.09	3,351.00	3,350.60	25.15	67.23	96.17	-599.75	-4,773.48	5,781.62	5,702.61	79.00	73.181	
6,528.17	6,485.05	3,351.00	3,350.60	25.26	67.23	96.17	-599.75	-4,773.48	5,797.04	5,718.12	78.92	73.458	
6,550.00	6,506.71	3,351.00	3,350.60	25.34	67.23	110.82	-599.75	-4,773.48	5,809.36	5,730.51	78.85	73.676	
6,600.00	6,556.11	3,351.00	3,350.60	25.54	67.23	133.90	-599.75	-4,773.48	5,840.05	5,761.34	78.71	74.198	
6,650.00	6,605.00	3,351.00	3,350.60	25.74	67.23	145.98	-599.75	-4,773.48	5,873.97	5,795.39	78.58	74.750	
6,700.00	6,653.07	3,351.00	3,350.60	25.93	67.23	152.61	-599.75	-4,773.48	5,910.87	5,832.40	78.47	75.330	
6,750.00	6,700.02	3,351.00	3,350.60	26.12	67.23	156.48	-599.75	-4,773.48	5,950.46	5,872.09	78.37	75.932	
6,800.00	6,745.56	3,351.00	3,350.60	26.31	67.23	158.75	-599.75	-4,773.48	5,992.44	5,914.16	78.28	76.551	
6,850.00	6,789.42	3,351.00	3,350.60	26.50	67.23	159.93	-599.75	-4,773.48	6,036.52	5,958.31	78.21	77.183	
6,900.00	6,831.32	3,351.00	3,350.60	26.69	67.23	160.17	-599.75	-4,773.48	6,082.37	6,004.21	78.16	77.822	
6,950.00	6,871.01	3,351.00	3,350.60	26.87	67.23	159.30	-599.75	-4,773.48	6,129.68	6,051.55	78.12	78.463	
7,000.00	6,908.23	3,351.00	3,350.60	27.05	67.23	156.64	-599.75	-4,773.48	6,178.12	6,100.01	78.10	79.101	
7,050.00	6,942.77	3,351.00	3,350.60	27.23	67.23	149.62	-599.75	-4,773.48	6,227.37	6,149.27	78.11	79.730	
7,100.00	6,974.40	3,351.00	3,350.60	27.41	67.23	124.83	-599.75	-4,773.48	6,277.12	6,199.00	78.13	80.347	
7,150.00	7,002.93	3,351.00	3,350.60	27.60	67.23	46.60	-599.75	-4,773.48	6,327.05	6,248.89	78.16	80.946	
7,200.00	7,028.20	3,351.00	3,350.60	27.80	67.23	15.07	-599.75	-4,773.48	6,376.86	6,298.63	78.22	81.521	
7,250.00	7,050.03	3,351.00	3,350.60	28.00	67.23	6.41	-599.75	-4,773.48	6,426.23	6,347.92	78.30	82.069	
7,300.00	7,068.30	3,351.00	3,350.60	28.22	67.23	2.68	-599.75	-4,773.48	6,474.88	6,396.48	78.40	82.585	
7,350.00	7,082.89	3,351.00	3,350.60	28.45	67.23	0.66	-599.75	-4,773.48	6,522.53	6,444.00	78.52	83.063	
7,400.00	7,093.72	3,351.00	3,350.60	28.70	67.23	-0.60	-599.75	-4,773.48	6,568.91	6,490.24	78.67	83.501	
7,450.00	7,100.71	3,351.00	3,350.60	28.96	67.23	-1.47	-599.75	-4,773.48	6,613.76	6,534.93	78.84	83.893	
7,500.00	7,103.82	3,351.00	3,350.60	29.24	67.23	-2.12	-599.75	-4,773.48	6,656.85	6,577.82	79.03	84.236	
7,515.00	7,104.00	3,351.00	3,350.60	29.32	67.23	-2.28	-599.75	-4,773.48	6,669.40	6,590.31	79.09	84.331	
7,600.00	7,104.00	3,351.00	3,350.60	29.84	67.23	-2.28	-599.75	-4,773.48	6,740.13	6,660.68	79.45	84.834	
7,700.00	7,104.00	3,351.00	3,350.60	30.51	67.23	-2.28	-599.75	-4,773.48	6,823.77	6,743.90	79.88	85.431	
7,800.00	7,104.00	3,351.00	3,350.60	31.26	67.23	-2.28	-599.75	-4,773.48	6,907.85	6,827.55	80.29	86.035	
7,900.00	7,104.00	3,351.00	3,350.60	32.07	67.23	-2.28	-599.75	-4,773.48	6,992.34	6,911.64	80.70	86.646	
8,000.00	7,104.00	3,351.00	3,350.60	32.94	67.23	-2.28	-599.75	-4,773.48	7,077.24	6,996.13	81.10	87.264	
8,100.00	7,104.00	3,351.00	3,350.60	33.86	67.23	-2.28	-599.75	-4,773.48	7,162.52	7,081.03	81.49	87.889	
8,200.00	7,104.00	3,351.00	3,350.60	34.84	67.23	-2.28	-599.75	-4,773.48	7,248.19	7,166.31	81.88	88.521	
8,300.00	7,104.00	3,351.00	3,350.60	35.86	67.23	-2.28	-599.75	-4,773.48	7,334.21	7,251.95	82.26	89.159	
8,400.00	7,104.00	3,351.00	3,350.60	36.92	67.23	-2.28	-599.75	-4,773.48	7,420.59	7,337.96	82.63	89.803	
8,500.00	7,104.00	3,351.00	3,350.60	38.02	67.23	-2.28	-599.75	-4,773.48	7,507.30	7,424.31	83.00	90.453	
8,600.00	7,104.00	3,351.00	3,350.60	39.15	67.23	-2.28	-599.75	-4,773.48	7,594.35	7,510.99	83.35	91.109	
8,700.00	7,104.00	3,351.00	3,350.60	40.32	67.23	-2.28	-599.75	-4,773.48	7,681.70	7,598.00	83.71	91.770	
8,800.00	7,104.00	3,351.00	3,350.60	41.52	67.23	-2.28	-599.75	-4,773.48	7,769.36	7,685.31	84.05	92.437	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #337 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	3,351.00	3,350.60	42.74	67.23	-2.28	-599.75	-4,773.48	7,857.32	7,772.93	84.39	93.109	
9,000.00	7,104.00	3,351.00	3,350.60	43.99	67.23	-2.28	-599.75	-4,773.48	7,945.56	7,860.84	84.72	93.786	
9,100.00	7,104.00	3,351.00	3,350.60	45.26	67.23	-2.28	-599.75	-4,773.48	8,034.08	7,949.03	85.05	94.467	
9,200.00	7,104.00	3,351.00	3,350.60	46.55	67.23	-2.28	-599.75	-4,773.48	8,122.86	8,037.50	85.37	95.154	
9,300.00	7,104.00	3,351.00	3,350.60	47.85	67.23	-2.28	-599.75	-4,773.48	8,211.90	8,126.22	85.68	95.844	
9,400.00	7,104.00	3,351.00	3,350.60	49.18	67.23	-2.28	-599.75	-4,773.48	8,301.19	8,215.21	85.99	96.539	
9,500.00	7,104.00	3,351.00	3,350.60	50.52	67.23	-2.28	-599.75	-4,773.48	8,390.73	8,304.44	86.29	97.238	
9,600.00	7,104.00	3,351.00	3,350.60	51.88	67.23	-2.28	-599.75	-4,773.48	8,480.49	8,393.91	86.59	97.941	
9,700.00	7,104.00	3,351.00	3,350.60	53.25	67.23	-2.28	-599.75	-4,773.48	8,570.49	8,483.61	86.88	98.648	
9,800.00	7,104.00	3,351.00	3,350.60	54.63	67.23	-2.28	-599.75	-4,773.48	8,660.70	8,573.53	87.17	99.359	
9,900.00	7,104.00	3,351.00	3,350.60	56.03	67.23	-2.28	-599.75	-4,773.48	8,751.12	8,663.68	87.45	100.073	
10,000.00	7,104.00	3,351.00	3,350.60	57.43	67.23	-2.28	-599.75	-4,773.48	8,841.76	8,754.03	87.72	100.790	
10,100.00	7,104.00	3,351.00	3,350.60	58.85	67.23	-2.28	-599.75	-4,773.48	8,932.59	8,844.59	88.00	101.510	
10,200.00	7,104.00	3,351.00	3,350.60	60.27	67.23	-2.28	-599.75	-4,773.48	9,023.61	8,935.35	88.26	102.234	
10,300.00	7,104.00	3,351.00	3,350.60	61.71	67.23	-2.28	-599.75	-4,773.48	9,114.83	9,026.30	88.53	102.961	
10,400.00	7,104.00	3,351.00	3,350.60	63.15	67.23	-2.28	-599.75	-4,773.48	9,206.22	9,117.44	88.79	103.690	
10,500.00	7,104.00	3,351.00	3,350.60	64.60	67.23	-2.28	-599.75	-4,773.48	9,297.79	9,208.75	89.04	104.422	
10,600.00	7,104.00	3,351.00	3,350.60	66.05	67.23	-2.28	-599.75	-4,773.48	9,389.54	9,300.25	89.29	105.157	
10,700.00	7,104.00	3,351.00	3,350.60	67.52	67.23	-2.28	-599.75	-4,773.48	9,481.45	9,391.91	89.54	105.894	
10,800.00	7,104.00	3,351.00	3,350.60	68.99	67.23	-2.28	-599.75	-4,773.48	9,573.53	9,483.75	89.78	106.634	
10,900.00	7,104.00	3,351.00	3,350.60	70.46	67.23	-2.28	-599.75	-4,773.48	9,665.76	9,575.74	90.02	107.375	
11,000.00	7,104.00	3,351.00	3,350.60	71.94	67.23	-2.28	-599.75	-4,773.48	9,758.14	9,667.89	90.25	108.119	
11,100.00	7,104.00	3,351.00	3,350.60	73.43	67.23	-2.28	-599.75	-4,773.48	9,850.67	9,760.19	90.49	108.865	
11,200.00	7,104.00	3,351.00	3,350.60	74.92	67.23	-2.28	-599.75	-4,773.48	9,943.35	9,852.64	90.71	109.613	
11,300.00	7,104.00	3,351.00	3,350.60	76.41	67.23	-2.28	-599.75	-4,773.48	10,036.17	9,945.23	90.94	110.363	
11,400.00	7,104.00	3,351.00	3,350.60	77.91	67.23	-2.28	-599.75	-4,773.48	10,129.13	10,037.97	91.16	111.114	
11,500.00	7,104.00	3,351.00	3,350.60	79.41	67.23	-2.28	-599.75	-4,773.48	10,222.21	10,130.84	91.38	111.867	
11,600.00	7,104.00	3,351.00	3,350.60	80.92	67.23	-2.28	-599.75	-4,773.48	10,315.43	10,223.84	91.59	112.622	
11,700.00	7,104.00	3,351.00	3,350.60	82.43	67.23	-2.28	-599.75	-4,773.48	10,408.77	10,316.97	91.81	113.378	
11,800.00	7,104.00	3,351.00	3,350.60	83.94	67.23	-2.28	-599.75	-4,773.48	10,502.24	10,410.23	92.02	114.136	
11,900.00	7,104.00	3,351.00	3,350.60	85.46	67.23	-2.28	-599.75	-4,773.48	10,595.83	10,503.60	92.22	114.894	
12,000.00	7,104.00	3,351.00	3,350.60	86.98	67.23	-2.28	-599.75	-4,773.48	10,689.53	10,597.10	92.43	115.654	
12,100.00	7,104.00	3,351.00	3,350.60	88.50	67.23	-2.28	-599.75	-4,773.48	10,783.34	10,690.71	92.63	116.416	
12,200.00	7,104.00	3,351.00	3,350.60	90.03	67.23	-2.28	-599.75	-4,773.48	10,877.27	10,784.44	92.83	117.178	
12,300.00	7,104.00	3,351.00	3,350.60	91.55	67.23	-2.28	-599.75	-4,773.48	10,971.30	10,878.28	93.02	117.941	
12,400.00	7,104.00	3,351.00	3,350.60	93.08	67.23	-2.28	-599.75	-4,773.48	11,065.44	10,972.22	93.22	118.706	
12,500.00	7,104.00	3,351.00	3,350.60	94.62	67.23	-2.28	-599.75	-4,773.48	11,159.67	11,066.27	93.41	119.471	
12,600.00	7,104.00	3,351.00	3,350.60	96.15	67.23	-2.28	-599.75	-4,773.48	11,254.01	11,160.41	93.60	120.237	
12,700.00	7,104.00	3,351.00	3,350.60	97.69	67.23	-2.28	-599.75	-4,773.48	11,348.45	11,254.66	93.79	121.004	
12,800.00	7,104.00	3,351.00	3,350.60	99.23	67.23	-2.28	-599.75	-4,773.48	11,442.98	11,349.01	93.97	121.771	
12,900.00	7,104.00	3,351.00	3,350.60	100.77	67.23	-2.28	-599.75	-4,773.48	11,537.60	11,443.45	94.15	122.539	
13,000.00	7,104.00	3,351.00	3,350.60	102.31	67.23	-2.28	-599.75	-4,773.48	11,632.31	11,537.98	94.34	123.308	
13,100.00	7,104.00	3,351.00	3,350.60	103.86	67.23	-2.28	-599.75	-4,773.48	11,727.11	11,632.60	94.51	124.077	
13,200.00	7,104.00	3,351.00	3,350.60	105.40	67.23	-2.28	-599.75	-4,773.48	11,822.00	11,727.30	94.69	124.846	
13,300.00	7,104.00	3,351.00	3,350.60	106.95	67.23	-2.28	-599.75	-4,773.48	11,916.97	11,822.10	94.87	125.616	
13,400.00	7,104.00	3,351.00	3,350.60	108.50	67.23	-2.28	-599.75	-4,773.48	12,012.02	11,916.98	95.04	126.387	
13,500.00	7,104.00	3,351.00	3,350.60	110.05	67.23	-2.28	-599.75	-4,773.48	12,107.15	12,011.93	95.21	127.157	
13,600.00	7,104.00	3,351.00	3,350.60	111.60	67.23	-2.28	-599.75	-4,773.48	12,202.36	12,106.97	95.38	127.928	
13,700.00	7,104.00	3,351.00	3,350.60	113.16	67.23	-2.28	-599.75	-4,773.48	12,297.64	12,202.09	95.55	128.699	
13,800.00	7,104.00	3,351.00	3,350.60	114.71	67.23	-2.28	-599.75	-4,773.48	12,393.00	12,297.28	95.72	129.471	
13,900.00	7,104.00	3,351.00	3,350.60	116.27	67.23	-2.28	-599.75	-4,773.48	12,488.43	12,392.54	95.89	130.242	
14,000.00	7,104.00	3,351.00	3,350.60	117.83	67.23	-2.28	-599.75	-4,773.48	12,583.93	12,487.88	96.05	131.013	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #337 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,104.00	3,351.00	3,350.60	119.38	67.23	-2.28	-599.75	-4,773.48	12,679.50	12,583.29	96.21	131.785	
14,200.00	7,104.00	3,351.00	3,350.60	120.94	67.23	-2.28	-599.75	-4,773.48	12,775.14	12,678.77	96.38	132.556	
14,300.00	7,104.00	3,351.00	3,350.60	122.50	67.23	-2.28	-599.75	-4,773.48	12,870.85	12,774.31	96.54	133.328	
14,400.00	7,104.00	3,351.00	3,350.60	124.07	67.23	-2.28	-599.75	-4,773.48	12,966.62	12,869.93	96.69	134.099	
14,500.00	7,104.00	3,351.00	3,350.60	125.63	67.23	-2.28	-599.75	-4,773.48	13,062.45	12,965.60	96.85	134.870	
14,600.00	7,104.00	3,351.00	3,350.60	127.19	67.23	-2.28	-599.75	-4,773.48	13,158.35	13,061.34	97.01	135.641	
14,700.00	7,104.00	3,351.00	3,350.60	128.76	67.23	-2.28	-599.75	-4,773.48	13,254.31	13,157.14	97.16	136.412	
14,800.00	7,104.00	3,351.00	3,350.60	130.32	67.23	-2.28	-599.75	-4,773.48	13,350.32	13,253.00	97.32	137.182	
14,900.00	7,104.00	3,351.00	3,350.60	131.89	67.23	-2.28	-599.75	-4,773.48	13,446.40	13,348.93	97.47	137.953	
15,000.00	7,104.00	3,351.00	3,350.60	133.46	67.23	-2.28	-599.75	-4,773.48	13,542.53	13,444.90	97.62	138.723	
15,100.00	7,104.00	3,351.00	3,350.60	135.02	67.23	-2.28	-599.75	-4,773.48	13,638.71	13,540.94	97.77	139.492	
15,200.00	7,104.00	3,351.00	3,350.60	136.59	67.23	-2.28	-599.75	-4,773.48	13,734.95	13,637.03	97.92	140.261	
15,300.00	7,104.00	3,351.00	3,350.60	138.16	67.23	-2.28	-599.75	-4,773.48	13,831.25	13,733.18	98.07	141.030	
15,400.00	7,104.00	3,351.00	3,350.60	139.73	67.23	-2.28	-599.75	-4,773.48	13,927.60	13,829.37	98.22	141.799	
15,500.00	7,104.00	3,351.00	3,350.60	141.30	67.23	-2.28	-599.75	-4,773.48	14,023.99	13,925.63	98.37	142.567	
15,600.00	7,104.00	3,351.00	3,350.60	142.88	67.23	-2.28	-599.75	-4,773.48	14,120.44	14,021.93	98.51	143.334	
15,700.00	7,104.00	3,351.00	3,350.60	144.45	67.23	-2.28	-599.75	-4,773.48	14,216.94	14,118.28	98.66	144.101	
15,800.00	7,104.00	3,351.00	3,350.60	146.02	67.23	-2.28	-599.75	-4,773.48	14,313.48	14,214.68	98.80	144.867	
15,900.00	7,104.00	3,351.00	3,350.60	147.60	67.23	-2.28	-599.75	-4,773.48	14,410.08	14,311.13	98.95	145.633	
16,000.00	7,104.00	3,351.00	3,350.60	149.17	67.23	-2.28	-599.75	-4,773.48	14,506.71	14,407.62	99.09	146.398	
16,100.00	7,104.00	3,351.00	3,350.60	150.74	67.23	-2.28	-599.75	-4,773.48	14,603.40	14,504.16	99.23	147.163	
16,200.00	7,104.00	3,351.00	3,350.60	152.32	67.23	-2.28	-599.75	-4,773.48	14,700.12	14,600.75	99.37	147.927	
16,300.00	7,104.00	3,351.00	3,350.60	153.89	67.23	-2.28	-599.75	-4,773.48	14,796.90	14,697.38	99.52	148.690	
16,400.00	7,104.00	3,351.00	3,350.60	155.47	67.23	-2.28	-599.75	-4,773.48	14,893.71	14,794.06	99.66	149.453	
16,500.00	7,104.00	3,351.00	3,350.60	157.05	67.23	-2.28	-599.75	-4,773.48	14,990.57	14,890.77	99.79	150.215	
16,600.00	7,104.00	3,351.00	3,350.60	158.63	67.23	-2.28	-599.75	-4,773.48	15,087.46	14,987.53	99.93	150.976	
16,700.00	7,104.00	3,351.00	3,350.60	160.20	67.23	-2.28	-599.75	-4,773.48	15,184.40	15,084.33	100.07	151.736	
16,800.00	7,104.00	3,351.00	3,350.60	161.78	67.23	-2.28	-599.75	-4,773.48	15,281.38	15,181.17	100.21	152.496	
16,900.00	7,104.00	3,351.00	3,350.60	163.36	67.23	-2.28	-599.75	-4,773.48	15,378.39	15,278.05	100.35	153.254	
17,000.00	7,104.00	3,351.00	3,350.60	164.94	67.23	-2.28	-599.75	-4,773.48	15,475.45	15,374.96	100.48	154.012	
17,100.00	7,104.00	3,351.00	3,350.60	166.52	67.23	-2.28	-599.75	-4,773.48	15,572.54	15,471.92	100.62	154.769	
17,200.00	7,104.00	3,351.00	3,350.60	168.10	67.23	-2.28	-599.75	-4,773.48	15,669.66	15,568.91	100.75	155.526	
17,300.00	7,104.00	3,351.00	3,350.60	169.68	67.23	-2.28	-599.75	-4,773.48	15,766.83	15,665.94	100.89	156.281	
17,400.00	7,104.00	3,351.00	3,350.60	171.26	67.23	-2.28	-599.75	-4,773.48	15,864.03	15,763.00	101.02	157.035	
17,500.00	7,104.00	3,351.00	3,350.60	172.84	67.23	-2.28	-599.75	-4,773.48	15,961.26	15,860.10	101.16	157.789	
17,600.00	7,104.00	3,351.00	3,350.60	174.42	67.23	-2.28	-599.75	-4,773.48	16,058.53	15,957.24	101.29	158.542	
17,700.00	7,104.00	3,351.00	3,350.60	176.00	67.23	-2.28	-599.75	-4,773.48	16,155.83	16,054.40	101.42	159.293	
17,800.00	7,104.00	3,351.00	3,350.60	177.59	67.23	-2.28	-599.75	-4,773.48	16,253.16	16,151.60	101.55	160.044	
17,900.00	7,104.00	3,351.00	3,350.60	179.17	67.23	-2.28	-599.75	-4,773.48	16,350.52	16,248.84	101.69	160.794	
18,000.00	7,104.00	3,351.00	3,350.60	180.75	67.23	-2.28	-599.75	-4,773.48	16,447.92	16,346.10	101.82	161.542	
18,100.00	7,104.00	3,351.00	3,350.60	182.33	67.23	-2.28	-599.75	-4,773.48	16,545.35	16,443.40	101.95	162.290	
18,200.00	7,104.00	3,351.00	3,350.60	183.92	67.23	-2.28	-599.75	-4,773.48	16,642.81	16,540.73	102.08	163.037	
18,300.00	7,104.00	3,351.00	3,350.60	185.50	67.23	-2.28	-599.75	-4,773.48	16,740.30	16,638.09	102.21	163.783	
18,400.00	7,104.00	3,351.00	3,350.60	187.09	67.23	-2.28	-599.75	-4,773.48	16,837.81	16,735.47	102.34	164.527	
18,500.00	7,104.00	3,351.00	3,350.60	188.67	67.23	-2.28	-599.75	-4,773.48	16,935.36	16,832.89	102.47	165.271	
18,600.00	7,104.00	3,351.00	3,350.60	190.26	67.23	-2.28	-599.75	-4,773.48	17,032.94	16,930.34	102.60	166.013	
18,700.00	7,104.00	3,351.00	3,350.60	191.84	67.23	-2.28	-599.75	-4,773.48	17,130.54	17,027.81	102.73	166.755	
18,800.00	7,104.00	3,351.00	3,350.60	193.43	67.23	-2.28	-599.75	-4,773.48	17,228.17	17,125.31	102.86	167.495	
18,900.00	7,104.00	3,351.00	3,350.60	195.01	67.23	-2.28	-599.75	-4,773.48	17,325.83	17,222.84	102.99	168.234	
19,000.00	7,104.00	3,351.00	3,350.60	196.60	67.23	-2.28	-599.75	-4,773.48	17,423.51	17,320.40	103.11	168.972	
19,100.00	7,104.00	3,351.00	3,350.60	198.18	67.23	-2.28	-599.75	-4,773.48	17,521.22	17,417.98	103.24	169.709	
19,200.00	7,104.00	3,351.00	3,350.60	199.77	67.23	-2.28	-599.75	-4,773.48	17,618.96	17,515.59	103.37	170.445	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - (O) RU #337 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 158-A027Ua_INC-ONLY

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	7,104.00	3,351.00	3,350.60	201.36	67.23	-2.28	-599.75	-4,773.48	17,716.72	17,613.22	103.50	171.180	
19,400.00	7,104.00	3,351.00	3,350.60	202.94	67.23	-2.28	-599.75	-4,773.48	17,814.51	17,710.88	103.63	171.913	
19,500.00	7,104.00	3,351.00	3,350.60	204.53	67.23	-2.28	-599.75	-4,773.48	17,912.32	17,808.57	103.75	172.645	
19,600.00	7,104.00	3,351.00	3,350.60	206.12	67.23	-2.28	-599.75	-4,773.48	18,010.15	17,906.27	103.88	173.376	
19,700.00	7,104.00	3,351.00	3,350.60	207.70	67.23	-2.28	-599.75	-4,773.48	18,108.01	18,004.01	104.01	174.106	
19,800.00	7,104.00	3,351.00	3,350.60	209.29	67.23	-2.28	-599.75	-4,773.48	18,205.89	18,101.76	104.13	174.835	
19,900.00	7,104.00	3,351.00	3,350.60	210.88	67.23	-2.28	-599.75	-4,773.48	18,303.80	18,199.54	104.26	175.562	
20,000.00	7,104.00	3,351.00	3,350.60	212.47	67.23	-2.28	-599.75	-4,773.48	18,401.72	18,297.34	104.38	176.289	
20,100.00	7,104.00	3,351.00	3,350.60	214.05	67.23	-2.28	-599.75	-4,773.48	18,499.67	18,395.16	104.51	177.014	
20,200.00	7,104.00	3,351.00	3,350.60	215.64	67.23	-2.28	-599.75	-4,773.48	18,597.65	18,493.01	104.64	177.738	
20,215.00	7,104.00	3,351.00	3,350.60	215.88	67.23	-2.28	-599.75	-4,773.48	18,612.35	18,507.69	104.65	177.846	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - 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:** 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	17.82	2,273.62	730.76	2,388.54				
100.00	100.00	77.17	77.17	3.29	3.28	17.81	2,273.45	730.28	2,387.93	2,381.36	6.57	363.411	
200.00	200.00	340.83	340.33	3.34	3.48	17.56	2,266.71	717.36	2,384.49	2,377.72	6.77	352.101	
300.00	300.00	480.22	478.98	3.42	3.59	17.37	2,257.72	706.18	2,375.89	2,368.95	6.94	342.306	
400.00	400.00	828.65	823.17	3.54	3.98	17.06	2,212.64	679.18	2,360.82	2,353.51	7.31	322.909	
500.00	500.00	930.32	922.84	3.69	4.20	17.05	2,193.65	672.67	2,341.08	2,333.45	7.63	306.773	
600.00	599.98	1,039.72	1,030.00	3.86	4.47	-133.25	2,172.37	667.15	2,322.17	2,314.16	8.01	289.981	
700.00	699.84	1,129.37	1,117.76	4.04	4.73	-133.53	2,154.35	663.80	2,305.39	2,297.00	8.39	274.651	
800.00	799.45	1,209.17	1,195.98	4.26	4.97	-133.78	2,138.63	661.96	2,291.78	2,282.98	8.80	260.562	
849.50	848.63	1,249.91	1,235.90	4.37	5.10	-133.89	2,130.58	661.95	2,286.21	2,277.20	9.01	253.706	
900.00	898.77	1,297.28	1,282.32	4.49	5.25	-142.08	2,121.13	662.73	2,281.25	2,271.99	9.25	246.537	
973.84	972.07	1,381.27	1,364.50	4.68	5.52	-154.05	2,104.00	665.22	2,274.89	2,265.23	9.65	235.640	
1,000.00	998.03	1,428.37	1,410.48	4.74	5.69	-154.00	2,093.91	666.89	2,272.61	2,262.77	9.84	230.928	
1,100.00	1,097.29	1,574.47	1,552.44	5.02	6.23	-153.80	2,059.97	673.12	2,262.31	2,251.79	10.52	215.136	
1,200.00	1,196.54	1,698.98	1,672.73	5.30	6.73	-153.57	2,028.57	679.93	2,250.41	2,239.23	11.18	201.288	
1,300.00	1,295.80	1,834.92	1,803.66	5.61	7.32	-153.30	1,992.75	687.34	2,237.52	2,225.61	11.91	187.876	
1,400.00	1,395.06	1,921.63	1,887.07	5.92	7.71	-153.14	1,969.44	691.56	2,223.90	2,211.38	12.53	177.551	
1,500.00	1,494.31	2,009.29	1,971.57	6.24	8.11	-152.99	1,946.46	695.39	2,210.82	2,197.66	13.16	168.029	
1,600.00	1,593.57	2,087.39	2,047.04	6.57	8.47	-152.86	1,926.58	698.58	2,198.44	2,184.67	13.77	159.641	
1,700.00	1,692.82	2,173.44	2,130.39	6.91	8.86	-152.73	1,905.51	702.07	2,186.97	2,172.55	14.42	151.693	
1,800.00	1,792.08	2,274.33	2,228.24	7.25	9.33	-152.59	1,881.19	705.66	2,175.76	2,160.64	15.12	143.924	
1,900.00	1,891.33	2,384.60	2,335.02	7.60	9.84	-152.41	1,854.05	710.12	2,164.21	2,148.36	15.86	136.461	
2,000.00	1,990.59	2,517.02	2,462.80	7.95	10.48	-152.17	1,819.83	716.30	2,151.69	2,135.01	16.69	128.949	
2,100.00	2,089.85	2,636.58	2,577.65	8.30	11.08	-151.92	1,787.15	722.21	2,137.79	2,120.30	17.49	122.239	
2,200.00	2,189.10	2,733.76	2,670.88	8.66	11.57	-151.71	1,760.12	726.99	2,123.47	2,105.24	18.23	116.494	
2,300.00	2,288.36	2,836.36	2,769.41	9.02	12.09	-151.49	1,731.93	731.71	2,109.41	2,090.42	18.99	111.079	
2,400.00	2,387.61	2,961.86	2,889.66	9.39	12.74	-151.22	1,696.44	737.22	2,094.54	2,074.70	19.83	105.606	
2,500.00	2,486.87	3,066.43	2,989.49	9.76	13.30	-150.97	1,665.74	742.49	2,078.84	2,058.22	20.62	100.806	
2,600.00	2,586.12	3,173.55	3,091.39	10.13	13.88	-150.66	1,633.44	749.26	2,062.81	2,041.38	21.43	96.242	
2,700.00	2,685.38	3,251.99	3,165.92	10.50	14.31	-150.41	1,609.55	754.58	2,046.78	2,024.62	22.16	92.366	
2,800.00	2,784.63	3,346.99	3,256.57	10.87	14.82	-150.14	1,581.76	760.55	2,031.73	2,008.79	22.94	88.572	
2,900.00	2,883.89	3,400.82	3,308.25	11.24	15.10	-150.00	1,567.04	763.57	2,018.12	1,994.55	23.57	85.611	
3,000.00	2,983.15	3,467.62	3,372.75	11.62	15.43	-149.86	1,549.96	766.79	2,006.18	1,981.94	24.24	82.756	
3,100.00	3,082.40	3,534.99	3,438.22	12.00	15.76	-149.76	1,534.24	768.97	1,995.86	1,970.96	24.90	80.150	
3,200.00	3,181.66	3,609.75	3,511.23	12.38	16.11	-149.68	1,518.24	770.45	1,986.97	1,961.40	25.57	77.705	
3,300.00	3,280.91	3,693.00	3,592.83	12.75	16.48	-149.63	1,501.77	771.64	1,979.36	1,953.10	26.26	75.371	
3,400.00	3,380.17	3,866.47	3,762.32	13.13	17.28	-149.50	1,464.96	773.61	1,970.57	1,943.31	27.26	72.298	
3,500.00	3,479.42	3,997.09	3,888.62	13.52	17.94	-149.27	1,431.94	777.68	1,958.33	1,930.19	28.14	69.591	
3,600.00	3,578.68	4,106.27	3,993.65	13.90	18.51	-149.00	1,402.69	783.35	1,945.48	1,916.50	28.97	67.144	
3,700.00	3,677.94	4,205.04	4,088.47	14.28	19.03	-148.73	1,375.51	788.61	1,932.01	1,902.22	29.78	64.871	
3,800.00	3,777.19	4,301.43	4,181.05	14.66	19.54	-148.46	1,349.32	794.20	1,919.07	1,888.48	30.59	62.740	
3,900.00	3,876.45	4,415.53	4,290.35	15.05	20.15	-148.11	1,317.40	801.66	1,905.68	1,874.22	31.46	60.571	
4,000.00	3,975.70	4,519.84	4,390.03	15.43	20.72	-147.76	1,287.46	808.63	1,891.72	1,859.41	32.31	58.547	
4,100.00	4,074.96	4,617.08	4,483.01	15.82	21.24	-147.45	1,259.67	814.64	1,877.74	1,844.60	33.14	56.664	
4,200.00	4,174.21	4,706.09	4,568.19	16.20	21.72	-147.16	1,234.43	820.24	1,864.09	1,830.15	33.94	54.921	
4,300.00	4,273.47	4,805.71	4,663.49	16.59	22.26	-146.81	1,206.26	827.14	1,850.80	1,816.01	34.79	53.205	
4,400.00	4,372.73	4,938.79	4,790.02	16.97	23.01	-146.30	1,166.16	836.68	1,835.71	1,799.95	35.76	51.341	
4,500.00	4,471.98	5,004.99	4,853.22	17.36	23.38	-146.05	1,147.01	841.23	1,821.78	1,785.27	36.51	49.903	
4,600.00	4,571.24	5,078.96	4,924.23	17.75	23.77	-145.80	1,126.88	846.16	1,809.49	1,772.22	37.27	48.553	
4,700.00	4,670.49	5,221.05	5,060.02	18.13	24.55	-145.26	1,086.32	856.31	1,796.28	1,758.01	38.27	46.932	
4,800.00	4,769.75	5,304.10	5,139.25	18.52	25.01	-144.94	1,062.10	861.98	1,782.49	1,743.40	39.09	45.601	
4,900.00	4,869.00	5,383.99	5,215.87	18.91	25.44	-144.67	1,039.99	866.76	1,769.79	1,729.91	39.88	44.376	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - 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: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	5,570.37	5,394.19	19.30	26.46	-144.06	986.58	875.59	1,756.24	1,715.25	40.98	42.852	
5,100.00	5,067.51	5,653.38	5,472.70	19.69	26.94	-143.71	960.04	880.30	1,739.59	1,697.76	41.83	41.592	
5,200.00	5,166.77	5,735.01	5,550.24	20.07	27.40	-143.39	934.90	884.68	1,723.95	1,681.30	42.66	40.416	
5,300.00	5,266.03	5,808.19	5,620.17	20.46	27.80	-143.14	913.59	887.81	1,709.49	1,666.05	43.45	39.347	
5,400.00	5,365.28	5,880.79	5,690.02	20.85	28.19	-142.93	893.96	890.59	1,696.72	1,652.51	44.22	38.372	
5,500.00	5,464.54	5,961.32	5,767.86	21.24	28.60	-142.72	873.48	893.18	1,685.21	1,640.21	45.00	37.451	
5,600.00	5,563.79	6,045.58	5,849.60	21.63	29.02	-142.53	853.22	895.74	1,674.87	1,629.09	45.78	36.588	
5,700.00	5,663.05	6,135.29	5,936.80	22.02	29.46	-142.35	832.27	897.95	1,664.95	1,618.39	46.56	35.757	
5,800.00	5,762.30	6,206.69	6,006.51	22.41	29.80	-142.24	816.88	899.22	1,656.34	1,609.07	47.27	35.039	
5,900.00	5,861.56	6,284.55	6,082.88	22.80	30.15	-142.16	801.78	900.16	1,649.36	1,601.38	47.98	34.377	
6,000.00	5,960.82	6,360.99	6,158.12	23.19	30.48	-142.13	788.31	900.56	1,643.67	1,595.01	48.66	33.779	
6,100.00	6,060.07	6,423.99	6,220.35	23.58	30.73	-142.13	778.52	900.57	1,639.67	1,590.41	49.26	33.285	
6,200.00	6,159.33	6,486.99	6,282.79	23.97	30.98	-142.15	770.09	900.54	1,637.70	1,587.86	49.83	32.864	
6,252.13	6,211.07	6,531.61	6,327.11	24.18	31.14	-142.18	764.93	900.57	1,637.43	1,587.26	50.17	32.637	
6,300.00	6,258.58	6,571.16	6,366.43	24.36	31.24	-142.22	760.72	900.56	1,637.56	1,587.14	50.42	32.478	
6,400.00	6,357.84	6,751.51	6,544.78	24.76	31.49	-142.15	736.35	905.00	1,637.09	1,586.08	51.01	32.092	
6,500.00	6,457.09	6,845.16	6,634.69	25.15	31.68	-141.64	714.16	917.04	1,631.83	1,580.24	51.59	31.633	
6,528.17	6,485.05	6,857.40	6,646.08	25.26	31.71	-141.53	710.79	920.00	1,630.86	1,579.13	51.73	31.529	
6,550.00	6,506.71	6,885.99	6,672.29	25.34	31.77	-126.56	702.81	928.11	1,630.37	1,578.47	51.91	31.410	
6,600.00	6,556.11	6,885.99	6,672.29	25.54	31.77	-103.46	702.81	928.11	1,627.72	1,575.68	52.05	31.274	
6,650.00	6,605.00	6,885.99	6,672.29	25.74	31.77	-91.32	702.81	928.11	1,624.72	1,572.58	52.13	31.164	
6,700.00	6,653.07	6,922.03	6,704.66	25.93	31.87	-84.42	692.92	940.48	1,620.23	1,567.81	52.42	30.910	
6,750.00	6,700.02	6,939.24	6,719.87	26.12	31.91	-80.38	688.40	947.15	1,615.19	1,562.64	52.56	30.733	
6,800.00	6,745.56	6,980.99	6,755.97	26.31	32.02	-77.80	677.98	965.31	1,609.85	1,556.99	52.86	30.453	
6,850.00	6,789.42	6,980.99	6,755.97	26.50	32.02	-76.31	677.98	965.31	1,602.68	1,549.86	52.82	30.344	
6,900.00	6,831.32	6,980.99	6,755.97	26.69	32.02	-75.38	677.98	965.31	1,595.25	1,542.52	52.73	30.254	
6,950.00	6,871.01	6,980.99	6,755.97	26.87	32.02	-74.84	677.98	965.31	1,587.62	1,535.02	52.60	30.182	
7,000.00	6,908.23	7,027.96	6,795.21	27.05	32.14	-74.84	667.27	988.80	1,577.95	1,524.99	52.96	29.797	
7,050.00	6,942.77	7,074.99	6,832.92	27.23	32.27	-75.21	657.71	1,015.19	1,569.03	1,515.70	53.33	29.422	
7,100.00	6,974.40	7,074.99	6,832.92	27.41	32.27	-75.55	657.71	1,015.19	1,558.18	1,505.01	53.17	29.304	
7,150.00	7,002.93	7,074.99	6,832.92	27.60	32.27	-76.01	657.71	1,015.19	1,547.36	1,494.36	53.01	29.192	
7,200.00	7,028.20	7,074.99	6,832.92	27.80	32.27	-76.56	657.71	1,015.19	1,536.64	1,483.81	52.83	29.085	
7,250.00	7,050.03	7,116.29	6,864.55	28.00	32.37	-77.83	650.32	1,040.69	1,524.61	1,471.39	53.21	28.651	
7,300.00	7,068.30	7,133.26	6,877.10	28.22	32.41	-78.90	647.58	1,051.78	1,512.84	1,459.55	53.29	28.387	
7,350.00	7,082.89	7,169.99	6,903.30	28.45	32.51	-80.46	642.23	1,076.95	1,501.28	1,447.62	53.66	27.976	
7,400.00	7,093.72	7,169.99	6,903.30	28.70	32.51	-81.43	642.23	1,076.95	1,489.04	1,435.48	53.57	27.798	
7,450.00	7,100.71	7,169.99	6,903.30	28.96	32.51	-82.40	642.23	1,076.95	1,477.36	1,423.87	53.49	27.617	
7,500.00	7,103.82	7,204.51	6,926.59	29.24	32.60	-84.24	637.76	1,102.03	1,465.51	1,411.56	53.95	27.165	
7,515.00	7,104.00	7,210.24	6,930.32	29.32	32.61	-84.69	637.06	1,106.32	1,462.06	1,408.03	54.02	27.063	
7,600.00	7,104.00	7,264.99	6,963.87	29.84	32.76	-86.02	630.83	1,149.11	1,444.44	1,389.65	54.79	26.364	
7,700.00	7,104.00	7,322.35	6,993.91	30.51	32.94	-87.22	624.00	1,197.45	1,426.65	1,370.98	55.66	25.630	
7,800.00	7,104.00	7,425.91	7,032.35	31.26	33.32	-88.78	608.47	1,292.16	1,409.65	1,352.39	57.26	24.620	
7,900.00	7,104.00	7,515.88	7,053.51	32.07	33.69	-89.65	593.86	1,378.37	1,393.17	1,334.44	58.73	23.722	
8,000.00	7,104.00	7,590.01	7,068.57	32.94	34.03	-90.28	582.39	1,450.03	1,377.94	1,317.92	60.03	22.955	
8,100.00	7,104.00	7,641.98	7,076.87	33.86	34.28	-90.63	575.26	1,500.84	1,365.12	1,304.13	60.99	22.384	
8,200.00	7,104.00	7,688.70	7,081.87	34.84	34.50	-90.84	570.51	1,547.02	1,356.01	1,294.13	61.88	21.913	
8,300.00	7,104.00	7,736.98	7,083.73	35.86	34.73	-90.92	568.34	1,595.21	1,351.61	1,288.82	62.79	21.526	
8,400.00	7,104.00	7,803.59	7,084.50	36.92	35.04	-90.96	567.44	1,661.80	1,350.52	1,286.47	64.05	21.085	
8,500.00	7,104.00	7,934.78	7,087.41	38.02	35.74	-91.08	565.03	1,792.93	1,349.38	1,282.76	66.62	20.256	
8,600.00	7,104.00	8,039.01	7,087.62	39.15	36.38	-91.09	561.46	1,897.10	1,346.51	1,277.72	68.79	19.575	
8,700.00	7,104.00	8,142.97	7,086.39	40.32	37.08	-91.04	557.51	2,000.97	1,343.23	1,272.20	71.03	18.911	
8,800.00	7,104.00	8,241.91	7,083.43	41.52	37.81	-90.92	553.63	2,099.79	1,339.80	1,266.56	73.24	18.294	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - 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: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,900.00	7,104.00	8,340.14	7,079.76	42.74	38.60	-90.76	550.07	2,197.89	1,336.66	1,261.17	75.49	17.707	
9,000.00	7,104.00	8,442.46	7,076.55	43.99	39.47	-90.63	546.08	2,300.08	1,333.26	1,255.36	77.91	17.114	
9,100.00	7,104.00	8,540.03	7,073.76	45.26	40.35	-90.51	542.43	2,397.54	1,330.03	1,249.76	80.27	16.570	
9,200.00	7,104.00	8,646.06	7,073.43	46.55	41.37	-90.49	538.34	2,503.49	1,326.73	1,243.81	82.91	16.001	
9,300.00	7,104.00	8,747.45	7,073.98	47.85	42.39	-90.52	533.91	2,604.78	1,322.90	1,237.41	85.49	15.474	
9,400.00	7,104.00	8,844.33	7,074.56	49.18	43.41	-90.55	529.86	2,701.58	1,319.27	1,231.27	88.00	14.992	
9,500.00	7,104.00	8,940.76	7,075.17	50.52	44.45	-90.57	526.05	2,797.93	1,315.87	1,225.34	90.53	14.535	
9,600.00	7,104.00	9,038.13	7,075.96	51.88	45.54	-90.61	522.45	2,895.23	1,312.73	1,219.61	93.12	14.097	
9,700.00	7,104.00	9,112.47	7,076.59	53.25	46.39	-90.64	520.29	2,969.53	1,310.44	1,215.36	95.08	13.782	
9,741.50	7,104.00	9,140.36	7,076.75	53.82	46.71	-90.65	519.97	2,997.42	1,310.20	1,214.39	95.80	13.676	
9,800.00	7,104.00	9,194.09	7,077.00	54.63	47.33	-90.66	519.87	3,051.15	1,310.39	1,213.14	97.25	13.475	
9,900.00	7,104.00	9,292.85	7,077.45	56.03	48.48	-90.68	519.48	3,149.91	1,310.56	1,210.61	99.95	13.112	
10,000.00	7,104.00	9,384.46	7,076.59	57.43	49.58	-90.64	519.71	3,241.51	1,311.33	1,208.88	102.45	12.800	
10,100.00	7,104.00	9,478.45	7,076.20	58.85	50.72	-90.62	520.35	3,335.50	1,312.56	1,207.52	105.04	12.495	
10,200.00	7,104.00	9,570.73	7,076.24	60.27	51.86	-90.62	521.51	3,427.77	1,314.36	1,206.76	107.60	12.215	
10,300.00	7,104.00	9,664.82	7,074.76	61.71	53.03	-90.56	523.20	3,521.83	1,316.68	1,206.45	110.23	11.945	
10,400.00	7,104.00	9,757.28	7,073.69	63.15	54.20	-90.51	525.24	3,614.26	1,319.42	1,206.60	112.82	11.695	
10,500.00	7,104.00	9,848.04	7,073.35	64.60	55.36	-90.49	527.95	3,704.98	1,322.94	1,207.57	115.37	11.467	
10,600.00	7,104.00	9,963.34	7,073.06	66.05	56.86	-90.48	531.47	3,820.23	1,326.60	1,207.84	118.76	11.170	
10,700.00	7,104.00	10,111.48	7,071.47	67.52	58.84	-90.41	531.66	3,968.35	1,327.19	1,203.97	123.21	10.771	
10,794.44	7,104.00	10,193.98	7,071.22	68.90	59.96	-90.40	530.80	4,050.84	1,326.71	1,201.11	125.59	10.563	
10,800.00	7,104.00	10,193.98	7,071.22	68.99	59.96	-90.40	530.80	4,050.84	1,326.71	1,201.13	125.58	10.565	
10,900.00	7,104.00	10,288.98	7,071.08	70.46	61.25	-90.39	530.76	4,145.84	1,327.21	1,198.87	128.35	10.341	
11,000.00	7,104.00	10,402.54	7,070.82	71.94	62.82	-90.38	530.11	4,259.40	1,327.16	1,195.43	131.73	10.075	
11,016.50	7,104.00	10,414.77	7,070.77	72.19	62.99	-90.38	530.03	4,271.63	1,327.14	1,195.05	132.08	10.048	
11,100.00	7,104.00	10,477.98	7,070.46	73.43	63.87	-90.37	530.21	4,334.84	1,327.82	1,193.94	133.88	9.918	
11,200.00	7,104.00	10,630.20	7,072.25	74.92	66.00	-90.44	529.08	4,487.02	1,327.76	1,189.22	138.53	9.584	
11,300.00	7,104.00	10,738.93	7,074.00	76.41	67.55	-90.52	524.97	4,595.66	1,324.49	1,182.70	141.79	9.341	
11,400.00	7,104.00	10,830.21	7,075.67	77.91	68.86	-90.59	521.97	4,686.88	1,321.76	1,177.24	144.52	9.146	
11,500.00	7,104.00	10,922.88	7,077.72	79.41	70.20	-90.68	519.48	4,779.49	1,319.65	1,172.34	147.30	8.959	
11,600.00	7,104.00	11,019.53	7,079.16	80.92	71.59	-90.75	517.31	4,876.11	1,317.96	1,167.76	150.21	8.774	
11,700.00	7,104.00	11,107.37	7,078.62	82.43	72.87	-90.72	515.75	4,963.92	1,316.73	1,163.90	152.83	8.616	
11,800.00	7,104.00	11,202.26	7,078.66	83.94	74.24	-90.73	514.93	5,058.81	1,316.40	1,160.72	155.69	8.455	
11,900.00	7,104.00	11,302.07	7,078.96	85.46	75.70	-90.74	514.09	5,158.62	1,316.11	1,157.40	158.71	8.293	
11,957.20	7,104.00	11,355.72	7,078.45	86.33	76.48	-90.72	513.70	5,212.26	1,316.00	1,155.67	160.33	8.208	
12,000.00	7,104.00	11,393.95	7,078.01	86.98	77.04	-90.70	513.56	5,250.50	1,316.08	1,154.61	161.47	8.151	
12,100.00	7,104.00	11,496.28	7,077.06	88.50	78.54	-90.66	513.44	5,352.82	1,316.49	1,151.90	164.59	7.999	
12,200.00	7,104.00	11,583.85	7,076.84	90.03	79.82	-90.65	513.38	5,440.39	1,316.99	1,149.78	167.21	7.876	
12,300.00	7,104.00	11,675.64	7,076.40	91.55	81.17	-90.63	514.31	5,532.17	1,318.53	1,148.56	169.97	7.758	
12,400.00	7,104.00	11,776.35	7,075.42	93.08	82.66	-90.58	515.54	5,632.87	1,320.29	1,147.24	173.05	7.630	
12,500.00	7,104.00	11,894.62	7,074.01	94.62	84.41	-90.52	516.22	5,751.13	1,321.42	1,144.67	176.74	7.477	
12,600.00	7,104.00	11,979.10	7,072.71	96.15	85.67	-90.46	516.53	5,835.59	1,322.31	1,143.05	179.26	7.376	
12,700.00	7,104.00	12,081.57	7,070.70	97.69	87.19	-90.38	517.47	5,938.04	1,323.76	1,141.35	182.42	7.257	
12,800.00	7,104.00	12,182.22	7,068.60	99.23	88.69	-90.29	518.20	6,038.66	1,325.02	1,139.51	185.51	7.143	
12,900.00	7,104.00	12,279.78	7,066.44	100.77	90.15	-90.19	518.97	6,136.20	1,326.34	1,137.84	188.49	7.036	
13,000.00	7,104.00	12,375.60	7,064.00	102.31	91.59	-90.09	520.09	6,231.99	1,328.05	1,136.63	191.42	6.938	
13,100.00	7,104.00	12,502.89	7,062.50	103.86	93.51	-90.02	519.73	6,359.26	1,328.18	1,132.73	195.45	6.795	
13,200.00	7,104.00	12,601.55	7,061.91	105.40	95.00	-90.00	519.05	6,457.91	1,328.04	1,129.54	198.50	6.690	
13,300.00	7,104.00	12,708.13	7,061.35	106.95	96.62	-89.97	518.00	6,564.49	1,327.59	1,125.78	201.81	6.578	
13,400.00	7,104.00	12,804.51	7,060.66	108.50	98.08	-89.94	516.79	6,660.86	1,326.88	1,122.10	204.79	6.479	
13,468.76	7,104.00	12,867.52	7,060.02	109.57	99.04	-89.92	516.31	6,723.86	1,326.74	1,120.02	206.73	6.418	
13,500.00	7,104.00	12,896.37	7,059.75	110.05	99.48	-89.90	516.18	6,752.71	1,326.77	1,119.16	207.61	6.391	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - 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: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	7,104.00	12,989.05	7,058.92	111.60	100.89	-89.87	516.10	6,845.38	1,327.23	1,116.77	210.46	6.306	
13,700.00	7,104.00	13,084.60	7,057.97	113.16	102.34	-89.83	516.48	6,940.93	1,328.17	1,114.76	213.41	6.224	
13,800.00	7,104.00	13,184.90	7,057.87	114.71	103.87	-89.82	517.04	7,041.23	1,329.27	1,112.74	216.53	6.139	
13,900.00	7,104.00	13,267.64	7,059.38	116.27	105.13	-89.89	517.76	7,123.95	1,330.73	1,111.72	219.01	6.076	
14,000.00	7,104.00	13,380.84	7,061.48	117.83	106.85	-89.98	520.10	7,237.10	1,333.45	1,110.83	222.62	5.990	
14,100.00	7,104.00	13,526.39	7,062.76	119.38	109.09	-90.03	518.48	7,382.62	1,332.78	1,105.51	227.26	5.864	
14,200.00	7,104.00	13,673.22	7,062.75	120.94	111.36	-90.03	512.75	7,529.34	1,329.64	1,097.95	231.69	5.739	
14,300.00	7,104.00	13,787.29	7,063.18	122.50	113.13	-90.05	504.88	7,643.14	1,323.25	1,088.09	235.16	5.627	
14,400.00	7,104.00	13,878.97	7,063.69	124.07	114.56	-90.07	498.50	7,734.59	1,316.84	1,078.74	238.09	5.531	
14,500.00	7,104.00	13,961.26	7,063.85	125.63	115.84	-90.08	493.57	7,816.73	1,311.40	1,070.63	240.77	5.447	
14,600.00	7,104.00	14,040.93	7,063.45	127.19	117.07	-90.06	490.00	7,896.32	1,307.46	1,064.13	243.33	5.373	
14,700.00	7,104.00	14,124.37	7,063.02	128.76	118.37	-90.05	487.48	7,979.72	1,304.98	1,059.02	245.96	5.306	
14,800.00	7,104.00	14,213.87	7,062.97	130.32	119.76	-90.04	485.72	8,069.21	1,303.55	1,054.80	248.76	5.240	
14,900.00	7,104.00	14,303.85	7,062.93	131.89	121.15	-90.04	484.55	8,159.17	1,302.80	1,051.24	251.55	5.179	
15,000.00	7,104.00	14,407.37	7,062.60	133.46	122.75	-90.03	483.85	8,262.69	1,302.67	1,047.86	254.81	5.112	
15,100.00	7,104.00	14,504.24	7,062.30	135.02	124.25	-90.01	482.55	8,359.55	1,301.89	1,044.05	257.84	5.049	
15,130.63	7,104.00	14,530.26	7,062.30	135.51	124.66	-90.01	482.36	8,385.57	1,301.83	1,043.19	258.64	5.033	
15,200.00	7,104.00	14,585.05	7,062.32	136.59	125.51	-90.01	482.35	8,440.37	1,302.20	1,041.91	260.29	5.003	
15,300.00	7,104.00	14,670.93	7,062.10	138.16	126.83	-90.01	483.51	8,526.23	1,304.06	1,041.17	262.89	4.960	
15,400.00	7,104.00	14,769.05	7,061.73	139.73	128.35	-89.99	485.15	8,624.34	1,306.28	1,040.32	265.96	4.912	
15,500.00	7,104.00	14,864.09	7,062.21	141.30	129.82	-90.01	487.05	8,719.36	1,308.83	1,039.92	268.90	4.867	
15,600.00	7,104.00	14,966.27	7,063.10	142.88	131.40	-90.05	489.33	8,821.51	1,311.60	1,039.47	272.13	4.820	
15,700.00	7,104.00	15,070.65	7,064.20	144.45	133.01	-90.10	491.15	8,925.87	1,313.88	1,038.43	275.45	4.770	
15,800.00	7,104.00	15,163.97	7,065.16	146.02	134.46	-90.14	492.85	9,019.16	1,316.26	1,037.93	278.33	4.729	
15,900.00	7,104.00	15,268.48	7,066.02	147.60	136.08	-90.18	495.19	9,123.65	1,319.06	1,037.40	281.66	4.683	
16,000.00	7,104.00	15,370.34	7,067.11	149.17	137.66	-90.22	496.85	9,225.49	1,321.24	1,036.35	284.88	4.638	
16,100.00	7,104.00	15,476.16	7,068.23	150.74	139.31	-90.27	498.47	9,331.29	1,323.32	1,035.06	288.26	4.591	
16,200.00	7,104.00	15,569.30	7,069.30	152.32	140.75	-90.32	499.82	9,424.41	1,325.32	1,034.18	291.14	4.552	
16,300.00	7,104.00	15,692.18	7,071.06	153.89	142.67	-90.39	501.03	9,547.27	1,326.88	1,031.73	295.15	4.496	
16,400.00	7,104.00	15,803.28	7,072.99	155.47	144.40	-90.48	500.35	9,658.36	1,326.80	1,028.10	298.70	4.442	
16,500.00	7,104.00	15,906.77	7,073.03	157.05	146.02	-90.48	499.65	9,761.84	1,326.68	1,024.71	301.97	4.393	
16,600.00	7,104.00	16,010.33	7,073.04	158.63	147.64	-90.48	498.11	9,865.38	1,325.72	1,020.48	305.24	4.343	
16,700.00	7,104.00	16,113.06	7,073.00	160.20	149.25	-90.48	496.88	9,968.11	1,325.08	1,016.59	308.49	4.295	
16,800.00	7,104.00	16,214.92	7,073.40	161.78	150.85	-90.49	495.11	10,069.95	1,323.88	1,012.18	311.70	4.247	
16,900.00	7,104.00	16,309.47	7,074.30	163.36	152.34	-90.53	493.69	10,164.49	1,322.94	1,008.25	314.69	4.204	
17,000.00	7,104.00	16,439.49	7,075.64	164.94	154.38	-90.59	491.04	10,294.47	1,321.57	1,002.81	318.76	4.146	
17,100.00	7,104.00	16,589.72	7,073.44	166.52	156.75	-90.50	481.88	10,444.38	1,315.65	992.56	323.09	4.072	
17,200.00	7,104.00	16,680.25	7,071.46	168.10	158.18	-90.42	475.41	10,534.66	1,309.05	982.98	326.06	4.015	
17,300.00	7,104.00	16,760.61	7,069.56	169.68	159.45	-90.33	470.63	10,614.85	1,303.64	974.85	328.79	3.965	
17,400.00	7,104.00	16,834.65	7,067.86	171.26	160.61	-90.26	467.48	10,688.81	1,299.95	968.69	331.26	3.924	
17,500.00	7,104.00	16,903.97	7,066.45	172.84	161.70	-90.20	466.16	10,758.10	1,298.56	965.12	333.44	3.894	
17,594.83	7,104.00	16,997.97	7,064.90	174.34	163.18	-90.13	465.46	10,852.08	1,298.36	961.95	336.41	3.859 CC	
17,600.00	7,104.00	16,997.97	7,064.90	174.42	163.18	-90.13	465.46	10,852.08	1,298.37	961.97	336.39	3.860	
17,700.00	7,104.00	17,081.63	7,063.75	176.00	164.49	-90.08	465.50	10,935.73	1,299.00	960.06	338.94	3.833	
17,800.00	7,104.00	17,168.63	7,062.49	177.59	165.85	-90.02	466.79	11,022.71	1,301.02	959.44	341.58	3.809	
17,900.00	7,104.00	17,265.06	7,060.89	179.17	167.36	-89.95	468.85	11,119.11	1,303.69	959.11	344.59	3.783	
18,000.00	7,104.00	17,370.84	7,059.87	180.75	169.02	-89.91	470.99	11,224.86	1,306.27	958.27	347.99	3.754	
18,100.00	7,104.00	17,471.46	7,060.07	182.33	170.59	-89.92	472.72	11,325.47	1,308.53	957.35	351.18	3.726	
18,200.00	7,104.00	17,582.17	7,060.65	183.92	172.33	-89.94	474.06	11,436.17	1,310.27	955.50	354.78	3.693	
18,300.00	7,104.00	17,677.20	7,061.32	185.50	173.82	-89.97	475.09	11,531.19	1,311.90	954.15	357.75	3.667	
18,400.00	7,104.00	17,772.23	7,062.06	187.09	175.32	-90.00	476.45	11,626.21	1,313.88	953.16	360.72	3.642	
18,500.00	7,104.00	17,868.63	7,062.97	188.67	176.83	-90.04	478.29	11,722.58	1,316.33	952.59	363.74	3.619	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - 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: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,600.00	7,104.00	17,978.04	7,064.29	190.26	178.55	-90.10	479.85	11,831.98	1,318.28	950.99	367.29	3.589	
18,700.00	7,104.00	18,084.59	7,065.63	191.84	180.22	-90.16	481.05	11,938.51	1,319.97	949.26	370.71	3.561	
18,800.00	7,104.00	18,189.50	7,066.90	193.43	181.87	-90.21	481.36	12,043.41	1,320.81	946.74	374.07	3.531	
18,900.00	7,104.00	18,301.05	7,067.67	195.01	183.63	-90.25	481.50	12,154.95	1,321.50	943.85	377.66	3.499	
19,000.00	7,104.00	18,408.36	7,067.37	196.60	185.32	-90.23	480.52	12,262.26	1,321.12	940.05	381.08	3.467	
19,061.19	7,104.00	18,462.28	7,066.75	197.57	186.17	-90.21	480.05	12,316.18	1,320.93	938.16	382.77	3.451	
19,100.00	7,104.00	18,495.53	7,066.33	198.18	186.70	-90.19	479.94	12,349.42	1,321.01	937.21	383.80	3.442	
19,200.00	7,104.00	18,608.64	7,065.01	199.77	188.48	-90.13	479.44	12,462.53	1,321.13	933.71	387.43	3.410	
19,300.00	7,104.00	18,706.63	7,064.15	201.36	190.03	-90.09	478.43	12,560.50	1,320.64	930.11	390.53	3.382	
19,380.45	7,104.00	18,781.57	7,063.44	202.63	191.21	-90.06	477.87	12,635.44	1,320.48	927.58	392.89	3.361	
19,400.00	7,104.00	18,799.94	7,063.23	202.94	191.50	-90.05	477.78	12,653.80	1,320.49	927.01	393.47	3.356	
19,500.00	7,104.00	18,897.00	7,062.12	204.53	193.03	-90.01	477.47	12,750.87	1,320.72	924.18	396.54	3.331	
19,600.00	7,104.00	19,005.39	7,060.90	206.12	194.74	-89.95	476.87	12,859.24	1,320.70	920.69	400.00	3.302	
19,700.00	7,104.00	19,110.34	7,060.05	207.70	196.40	-89.92	475.71	12,964.18	1,320.14	916.80	403.34	3.273	
19,800.00	7,104.00	19,212.68	7,059.33	209.29	198.02	-89.88	474.38	13,066.51	1,319.39	912.80	406.59	3.245	
19,900.00	7,104.00	19,314.75	7,058.71	210.88	199.64	-89.86	472.80	13,168.57	1,318.38	908.55	409.83	3.217	
20,000.00	7,104.00	19,409.41	7,058.65	212.47	201.13	-89.86	471.42	13,263.22	1,317.47	904.63	412.83	3.191	
20,100.00	7,104.00	19,506.44	7,058.58	214.05	202.67	-89.85	470.52	13,360.24	1,317.09	901.18	415.91	3.167	
20,200.00	7,104.00	19,602.05	7,058.36	215.64	204.18	-89.84	469.63	13,455.85	1,316.71	897.77	418.94	3.143	
20,208.00	7,104.00	19,609.15	7,058.35	215.77	204.29	-89.84	469.59	13,462.95	1,316.70	897.54	419.16	3.141	
20,215.00	7,104.00	19,615.37	7,058.34	215.88	204.39	-89.84	469.56	13,469.16	1,316.71	897.35	419.35	3.140	ES, SF

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 750H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-2.35	49.88	-2.05	49.92				
100.00	100.00	100.00	100.00	3.29	3.29	-2.35	49.88	-2.05	49.92	43.34	6.58	7.588	
200.00	200.00	200.00	200.00	3.34	3.34	-2.35	49.88	-2.05	49.92	43.25	6.67	7.482	
300.00	300.00	300.00	300.00	3.42	3.42	-2.35	49.88	-2.05	49.92	43.08	6.84	7.299	
400.00	400.00	400.00	400.00	3.54	3.54	-2.35	49.88	-2.05	49.92	42.85	7.08	7.055	
500.00	500.00	500.00	500.00	3.69	3.69	-2.35	49.88	-2.05	49.92	42.55	7.37	6.769	CC
600.00	599.98	601.46	601.44	3.86	3.86	-154.40	48.32	-2.95	50.00	42.29	7.71	6.484	ES
700.00	699.84	702.66	702.49	4.04	4.05	-160.42	43.68	-5.63	50.62	42.54	8.08	6.265	SF
800.00	799.45	802.34	801.93	4.26	4.26	-168.21	37.75	-9.05	54.11	45.60	8.50	6.364	
849.50	848.63	851.59	851.07	4.37	4.37	-171.87	34.82	-10.75	57.45	48.72	8.73	6.582	
900.00	898.77	901.92	901.28	4.49	4.49	176.85	31.82	-12.47	61.46	52.49	8.96	6.856	
973.84	972.07	976.30	975.48	4.68	4.67	162.82	27.03	-14.15	66.64	57.32	9.32	7.150	
1,000.00	998.03	1,002.40	1,001.52	4.74	4.74	162.60	25.30	-14.63	68.35	58.90	9.45	7.232	
1,100.00	1,097.29	1,102.18	1,101.07	5.02	5.00	161.87	18.68	-16.44	74.90	64.93	9.97	7.511	
1,200.00	1,196.54	1,201.96	1,200.61	5.30	5.28	161.24	12.07	-18.24	81.46	70.94	10.52	7.744	
1,300.00	1,295.80	1,301.74	1,300.16	5.61	5.56	160.72	5.45	-20.05	88.03	76.94	11.09	7.940	
1,400.00	1,395.06	1,401.52	1,399.70	5.92	5.86	160.26	-1.16	-21.86	94.60	82.93	11.67	8.103	
1,500.00	1,494.31	1,501.30	1,499.25	6.24	6.16	159.87	-7.78	-23.67	101.18	88.90	12.28	8.240	
1,600.00	1,593.57	1,601.08	1,598.79	6.57	6.47	159.52	-14.39	-25.48	107.76	94.87	12.90	8.355	
1,700.00	1,692.82	1,700.86	1,698.34	6.91	6.79	159.21	-21.01	-27.29	114.35	100.82	13.53	8.453	
1,800.00	1,792.08	1,800.65	1,797.88	7.25	7.11	158.94	-27.62	-29.10	120.94	106.77	14.17	8.535	
1,900.00	1,891.33	1,900.43	1,897.43	7.60	7.44	158.69	-34.24	-30.91	127.53	112.71	14.82	8.606	
2,000.00	1,990.59	2,000.21	1,996.97	7.95	7.77	158.47	-40.86	-32.72	134.13	118.65	15.48	8.666	
2,100.00	2,089.85	2,099.99	2,096.52	8.30	8.11	158.27	-47.47	-34.53	140.73	124.58	16.14	8.717	
2,200.00	2,189.10	2,199.77	2,196.06	8.66	8.44	158.09	-54.09	-36.33	147.32	130.51	16.82	8.761	
2,300.00	2,288.36	2,299.55	2,295.61	9.02	8.78	157.92	-60.70	-38.14	153.92	136.43	17.49	8.799	
2,400.00	2,387.61	2,399.33	2,395.15	9.39	9.13	157.77	-67.32	-39.95	160.52	142.35	18.17	8.832	
2,500.00	2,486.87	2,499.11	2,494.70	9.76	9.47	157.63	-73.93	-41.76	167.13	148.26	18.86	8.861	
2,600.00	2,586.12	2,598.89	2,594.24	10.13	9.82	157.50	-80.55	-43.57	173.73	154.18	19.55	8.886	
2,700.00	2,685.38	2,698.67	2,693.79	10.50	10.17	157.38	-87.16	-45.38	180.33	160.09	20.25	8.907	
2,800.00	2,784.63	2,798.46	2,793.33	10.87	10.52	157.26	-93.78	-47.19	186.94	165.99	20.94	8.926	
2,900.00	2,883.89	2,898.24	2,892.88	11.24	10.87	157.16	-100.39	-49.00	193.54	171.90	21.64	8.943	
3,000.00	2,983.15	2,998.02	2,992.42	11.62	11.22	157.06	-107.01	-50.81	200.15	177.80	22.35	8.957	
3,100.00	3,082.40	3,097.80	3,091.97	12.00	11.57	156.97	-113.63	-52.61	206.75	183.70	23.05	8.970	
3,200.00	3,181.66	3,197.58	3,191.51	12.38	11.93	156.88	-120.24	-54.42	213.36	189.60	23.76	8.981	
3,300.00	3,280.91	3,297.36	3,291.06	12.75	12.28	156.80	-126.86	-56.23	219.97	195.50	24.47	8.991	
3,400.00	3,380.17	3,397.14	3,390.60	13.13	12.64	156.73	-133.47	-58.04	226.57	201.40	25.18	8.999	
3,500.00	3,479.42	3,496.92	3,490.15	13.52	13.00	156.66	-140.09	-59.85	233.18	207.29	25.89	9.007	
3,600.00	3,578.68	3,596.70	3,589.69	13.90	13.35	156.59	-146.70	-61.66	239.79	213.18	26.60	9.013	
3,700.00	3,677.94	3,696.48	3,689.24	14.28	13.71	156.52	-153.32	-63.47	246.40	219.08	27.32	9.019	
3,800.00	3,777.19	3,796.27	3,788.78	14.66	14.07	156.46	-159.93	-65.28	253.01	224.97	28.04	9.024	
3,900.00	3,876.45	3,896.05	3,888.33	15.05	14.43	156.41	-166.55	-67.09	259.61	230.86	28.75	9.029	
4,000.00	3,975.70	3,995.83	3,987.87	15.43	14.79	156.35	-173.17	-68.90	266.22	236.75	29.47	9.033	
4,100.00	4,074.96	4,095.61	4,087.42	15.82	15.15	156.30	-179.78	-70.70	272.83	242.64	30.19	9.036	
4,200.00	4,174.21	4,195.39	4,186.96	16.20	15.52	156.25	-186.40	-72.51	279.44	248.53	30.91	9.039	
4,300.00	4,273.47	4,295.17	4,286.51	16.59	15.88	156.20	-193.01	-74.32	286.05	254.42	31.64	9.042	
4,400.00	4,372.73	4,394.95	4,386.05	16.97	16.24	156.16	-199.63	-76.13	292.66	260.30	32.36	9.044	
4,500.00	4,471.98	4,494.73	4,485.60	17.36	16.60	156.11	-206.24	-77.94	299.27	266.19	33.08	9.046	
4,600.00	4,571.24	4,594.51	4,585.14	17.75	16.97	156.07	-212.86	-79.75	305.88	272.08	33.81	9.048	
4,700.00	4,670.49	4,694.30	4,684.69	18.13	17.33	156.03	-219.47	-81.56	312.49	277.96	34.53	9.049	
4,800.00	4,769.75	4,794.08	4,784.23	18.52	17.69	155.99	-226.09	-83.37	319.10	283.85	35.26	9.051	
4,900.00	4,869.00	4,893.86	4,883.78	18.91	18.06	155.96	-232.70	-85.18	325.71	289.73	35.98	9.052	

Rule Assigned:

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 750H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,993.64	4,983.32	19.30	18.42	155.92	-239.32	-86.99	332.33	295.61	36.71	9.052	
5,100.00	5,067.51	5,093.42	5,082.87	19.69	18.78	155.89	-245.94	-88.79	338.94	301.50	37.44	9.053	
5,200.00	5,166.77	5,193.20	5,182.41	20.07	19.15	155.86	-252.55	-90.60	345.55	307.38	38.17	9.054	
5,300.00	5,266.03	5,292.98	5,281.96	20.46	19.51	155.83	-259.17	-92.41	352.16	313.26	38.89	9.054	
5,400.00	5,365.28	5,392.76	5,381.50	20.85	19.88	155.80	-265.78	-94.22	358.77	319.15	39.62	9.055	
5,500.00	5,464.54	5,492.54	5,481.05	21.24	20.24	155.77	-272.40	-96.03	365.38	325.03	40.35	9.055	
5,600.00	5,563.79	5,592.32	5,580.59	21.63	20.61	155.74	-279.01	-97.84	371.99	330.91	41.08	9.055	
5,700.00	5,663.05	5,692.11	5,680.14	22.02	20.98	155.71	-285.63	-99.65	378.60	336.79	41.81	9.055	
5,800.00	5,762.30	5,791.89	5,779.68	22.41	21.34	155.69	-292.24	-101.46	385.22	342.67	42.54	9.055	
5,900.00	5,861.56	5,891.67	5,879.23	22.80	21.71	155.66	-298.86	-103.27	391.83	348.55	43.27	9.055	
6,000.00	5,960.82	5,991.45	5,978.77	23.19	22.07	155.64	-305.47	-105.08	398.44	354.44	44.00	9.055	
6,100.00	6,060.07	6,091.23	6,078.32	23.58	22.44	155.61	-312.09	-106.88	405.05	360.32	44.74	9.054	
6,200.00	6,159.33	6,191.01	6,177.86	23.97	22.81	155.59	-318.71	-108.69	411.66	366.20	45.47	9.054	
6,300.00	6,258.58	6,290.79	6,277.41	24.36	23.17	155.57	-325.32	-110.50	418.28	372.08	46.20	9.054	
6,400.00	6,357.84	6,390.57	6,376.95	24.76	23.54	155.55	-331.94	-112.31	424.89	377.96	46.93	9.053	
6,500.00	6,457.09	6,490.35	6,476.50	25.15	23.91	155.53	-338.55	-114.12	431.50	383.84	47.66	9.053	
6,528.17	6,485.05	6,511.70	6,497.79	25.26	23.99	155.50	-339.97	-114.75	433.55	385.73	47.83	9.065	
6,550.00	6,506.71	6,527.38	6,513.40	25.34	24.04	170.29	-341.00	-115.67	435.70	387.75	47.94	9.088	
6,600.00	6,556.11	6,562.55	6,548.33	25.54	24.17	-166.42	-343.31	-119.11	443.34	395.15	48.18	9.202	
6,650.00	6,605.00	6,600.00	6,585.24	25.74	24.31	-154.34	-345.74	-124.90	454.85	406.42	48.43	9.392	
6,700.00	6,653.07	6,627.13	6,611.74	25.93	24.41	-147.33	-347.48	-130.45	470.25	421.74	48.51	9.694	
6,750.00	6,700.02	6,650.00	6,633.88	26.12	24.50	-142.63	-348.93	-136.00	489.73	441.26	48.47	10.103	
6,800.00	6,745.56	6,680.33	6,662.90	26.31	24.61	-139.68	-350.83	-144.59	513.10	464.52	48.58	10.561	
6,850.00	6,789.42	6,700.00	6,681.49	26.50	24.68	-136.63	-352.04	-150.89	540.38	491.90	48.48	11.147	
6,900.00	6,831.32	6,720.28	6,700.45	26.69	24.75	-133.82	-353.27	-157.99	571.26	522.84	48.42	11.799	
6,950.00	6,871.01	6,735.35	6,714.39	26.87	24.81	-130.46	-354.18	-163.66	605.41	557.13	48.28	12.541	
7,000.00	6,908.23	6,750.00	6,727.80	27.05	24.86	-126.74	-355.04	-169.48	642.43	594.25	48.19	13.332	
7,050.00	6,942.77	6,750.00	6,727.80	27.23	24.86	-120.73	-355.04	-169.48	681.92	634.13	47.79	14.269	
7,100.00	6,974.40	6,763.09	6,739.67	27.41	24.91	-115.55	-355.81	-174.94	723.26	675.45	47.82	15.125	
7,150.00	7,002.93	6,767.27	6,743.44	27.60	24.92	-108.35	-356.06	-176.74	766.19	718.50	47.70	16.064	
7,200.00	7,028.20	6,769.31	6,745.27	27.80	24.93	-99.98	-356.17	-177.62	810.23	762.63	47.60	17.021	
7,250.00	7,050.03	6,769.42	6,745.36	28.00	24.93	-90.69	-356.18	-177.67	854.97	807.44	47.54	17.985	
7,300.00	7,068.30	6,767.79	6,743.91	28.22	24.92	-81.02	-356.09	-176.96	900.08	852.57	47.51	18.946	
7,350.00	7,082.89	6,764.62	6,741.05	28.45	24.91	-71.61	-355.90	-175.60	945.21	897.70	47.51	19.896	
7,400.00	7,093.72	6,750.00	6,727.80	28.70	24.86	-61.98	-355.04	-169.48	990.19	942.86	47.32	20.924	
7,450.00	7,100.71	6,750.00	6,727.80	28.96	24.86	-55.22	-355.04	-169.48	1,034.40	986.89	47.51	21.771	
7,500.00	7,103.82	6,750.00	6,727.80	29.24	24.86	-49.52	-355.04	-169.48	1,077.92	1,030.18	47.74	22.580	
7,515.00	7,104.00	6,750.00	6,727.80	29.32	24.86	-48.00	-355.04	-169.48	1,090.82	1,043.01	47.81	22.816	
7,600.00	7,104.00	6,732.58	6,711.83	29.84	24.80	-46.89	-354.01	-162.59	1,164.12	1,116.22	47.90	24.302	
7,700.00	7,104.00	6,719.23	6,699.47	30.51	24.75	-46.06	-353.21	-157.61	1,251.90	1,203.79	48.11	26.022	
7,800.00	7,104.00	6,700.00	6,681.49	31.26	24.68	-44.90	-352.04	-150.89	1,341.10	1,292.90	48.19	27.828	
7,900.00	7,104.00	6,700.00	6,681.49	32.07	24.68	-44.90	-352.04	-150.89	1,431.35	1,382.83	48.53	29.495	
8,000.00	7,104.00	6,700.00	6,681.49	32.94	24.68	-44.90	-352.04	-150.89	1,522.83	1,474.02	48.81	31.198	
8,100.00	7,104.00	6,677.22	6,659.95	33.86	24.60	-43.57	-350.64	-143.64	1,614.76	1,565.97	48.79	33.098	
8,200.00	7,104.00	6,668.89	6,652.00	34.84	24.56	-43.10	-350.12	-141.19	1,707.62	1,658.70	48.92	34.905	
8,300.00	7,104.00	6,650.00	6,633.88	35.86	24.50	-42.06	-348.93	-136.00	1,801.26	1,752.33	48.93	36.813	
8,400.00	7,104.00	6,650.00	6,633.88	36.92	24.50	-42.06	-348.93	-136.00	1,895.20	1,846.08	49.12	38.581	
8,500.00	7,104.00	6,650.00	6,633.88	38.02	24.50	-42.06	-348.93	-136.00	1,989.74	1,940.44	49.29	40.365	
8,600.00	7,104.00	6,650.00	6,633.88	39.15	24.50	-42.06	-348.93	-136.00	2,084.78	2,035.33	49.45	42.163	
8,700.00	7,104.00	6,650.00	6,633.88	40.32	24.50	-42.06	-348.93	-136.00	2,180.27	2,130.68	49.58	43.972	
8,800.00	7,104.00	6,650.00	6,633.88	41.52	24.50	-42.06	-348.93	-136.00	2,276.14	2,226.43	49.71	45.790	
8,900.00	7,104.00	6,625.67	6,610.32	42.74	24.41	-40.77	-347.39	-130.12	2,371.78	2,322.14	49.63	47.786	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 750H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	6,621.06	6,605.83	43.99	24.39	-40.54	-347.09	-129.11	2,468.06	2,418.34	49.71	49.648	
9,100.00	7,104.00	6,600.00	6,585.24	45.26	24.31	-39.49	-345.74	-124.90	2,564.86	2,515.19	49.66	51.643	
9,200.00	7,104.00	6,600.00	6,585.24	46.55	24.31	-39.49	-345.74	-124.90	2,661.49	2,611.72	49.77	53.477	
9,300.00	7,104.00	6,600.00	6,585.24	47.85	24.31	-39.49	-345.74	-124.90	2,758.36	2,708.50	49.87	55.317	
9,400.00	7,104.00	6,600.00	6,585.24	49.18	24.31	-39.49	-345.74	-124.90	2,855.45	2,805.50	49.96	57.160	
9,500.00	7,104.00	6,600.00	6,585.24	50.52	24.31	-39.49	-345.74	-124.90	2,952.74	2,902.70	50.04	59.006	
9,600.00	7,104.00	6,600.00	6,585.24	51.88	24.31	-39.49	-345.74	-124.90	3,050.20	3,000.07	50.12	60.855	
9,700.00	7,104.00	6,600.00	6,585.24	53.25	24.31	-39.49	-345.74	-124.90	3,147.82	3,097.62	50.20	62.706	
9,800.00	7,104.00	6,600.00	6,585.24	54.63	24.31	-39.49	-345.74	-124.90	3,245.58	3,195.30	50.27	64.558	
9,900.00	7,104.00	6,600.00	6,585.24	56.03	24.31	-39.49	-345.74	-124.90	3,343.48	3,293.13	50.35	66.411	
10,000.00	7,104.00	6,600.00	6,585.24	57.43	24.31	-39.49	-345.74	-124.90	3,441.49	3,391.08	50.41	68.264	
10,100.00	7,104.00	6,600.00	6,585.24	58.85	24.31	-39.49	-345.74	-124.90	3,539.62	3,489.14	50.48	70.118	
10,200.00	7,104.00	6,600.00	6,585.24	60.27	24.31	-39.49	-345.74	-124.90	3,637.85	3,587.30	50.55	71.971	
10,300.00	7,104.00	6,600.00	6,585.24	61.71	24.31	-39.49	-345.74	-124.90	3,736.17	3,685.56	50.61	73.824	
10,400.00	7,104.00	6,577.83	6,563.43	63.15	24.23	-38.43	-344.31	-121.21	3,834.14	3,783.58	50.56	75.834	
10,500.00	7,104.00	6,575.75	6,561.37	64.60	24.22	-38.33	-344.17	-120.91	3,932.54	3,881.93	50.61	77.700	
10,600.00	7,104.00	6,573.75	6,559.40	66.05	24.21	-38.24	-344.04	-120.62	4,031.02	3,980.35	50.66	79.563	
10,700.00	7,104.00	6,571.84	6,557.52	67.52	24.21	-38.15	-343.92	-120.35	4,129.56	4,078.84	50.72	81.424	
10,800.00	7,104.00	6,550.00	6,535.89	68.99	24.13	-37.17	-342.49	-117.66	4,228.52	4,177.85	50.67	83.445	
10,900.00	7,104.00	6,550.00	6,535.89	70.46	24.13	-37.17	-342.49	-117.66	4,327.12	4,276.39	50.74	85.286	
11,000.00	7,104.00	6,550.00	6,535.89	71.94	24.13	-37.17	-342.49	-117.66	4,425.79	4,374.99	50.80	87.126	
11,100.00	7,104.00	6,550.00	6,535.89	73.43	24.13	-37.17	-342.49	-117.66	4,524.51	4,473.65	50.86	88.963	
11,200.00	7,104.00	6,550.00	6,535.89	74.92	24.13	-37.17	-342.49	-117.66	4,623.29	4,572.37	50.92	90.798	
11,300.00	7,104.00	6,550.00	6,535.89	76.41	24.13	-37.17	-342.49	-117.66	4,722.12	4,671.14	50.98	92.629	
11,400.00	7,104.00	6,550.00	6,535.89	77.91	24.13	-37.17	-342.49	-117.66	4,821.00	4,769.96	51.04	94.458	
11,500.00	7,104.00	6,550.00	6,535.89	79.41	24.13	-37.17	-342.49	-117.66	4,919.92	4,868.82	51.10	96.284	
11,600.00	7,104.00	6,550.00	6,535.89	80.92	24.13	-37.17	-342.49	-117.66	5,018.88	4,967.73	51.16	98.106	
11,700.00	7,104.00	6,550.00	6,535.89	82.43	24.13	-37.17	-342.49	-117.66	5,117.89	5,066.67	51.22	99.925	
11,800.00	7,104.00	6,550.00	6,535.89	83.94	24.13	-37.17	-342.49	-117.66	5,216.93	5,165.66	51.28	101.741	
11,900.00	7,104.00	6,550.00	6,535.89	85.46	24.13	-37.17	-342.49	-117.66	5,316.01	5,264.68	51.34	103.553	
12,000.00	7,104.00	6,550.00	6,535.89	86.98	24.13	-37.17	-342.49	-117.66	5,415.13	5,363.73	51.40	105.361	
12,100.00	7,104.00	6,550.00	6,535.89	88.50	24.13	-37.17	-342.49	-117.66	5,514.27	5,462.82	51.46	107.165	
12,200.00	7,104.00	6,550.00	6,535.89	90.03	24.13	-37.17	-342.49	-117.66	5,613.45	5,561.93	51.52	108.965	
12,300.00	7,104.00	6,550.00	6,535.89	91.55	24.13	-37.17	-342.49	-117.66	5,712.65	5,661.07	51.58	110.761	
12,400.00	7,104.00	6,550.00	6,535.89	93.08	24.13	-37.17	-342.49	-117.66	5,811.88	5,760.25	51.64	112.552	
12,500.00	7,104.00	6,550.00	6,535.89	94.62	24.13	-37.17	-342.49	-117.66	5,911.14	5,859.44	51.70	114.340	
12,600.00	7,104.00	6,550.00	6,535.89	96.15	24.13	-37.17	-342.49	-117.66	6,010.42	5,958.66	51.76	116.122	
12,700.00	7,104.00	6,550.00	6,535.89	97.69	24.13	-37.17	-342.49	-117.66	6,109.73	6,057.91	51.82	117.901	
12,800.00	7,104.00	6,550.00	6,535.89	99.23	24.13	-37.17	-342.49	-117.66	6,209.06	6,157.17	51.88	119.674	
12,900.00	7,104.00	6,550.00	6,535.89	100.77	24.13	-37.17	-342.49	-117.66	6,308.41	6,256.46	51.95	121.443	
13,000.00	7,104.00	6,550.00	6,535.89	102.31	24.13	-37.17	-342.49	-117.66	6,407.77	6,355.77	52.01	123.207	
13,100.00	7,104.00	6,550.00	6,535.89	103.86	24.13	-37.17	-342.49	-117.66	6,507.16	6,455.09	52.07	124.966	
13,200.00	7,104.00	6,550.00	6,535.89	105.40	24.13	-37.17	-342.49	-117.66	6,606.57	6,554.44	52.13	126.721	
13,300.00	7,104.00	6,550.00	6,535.89	106.95	24.13	-37.17	-342.49	-117.66	6,705.99	6,653.80	52.20	128.470	
13,400.00	7,104.00	6,550.00	6,535.89	108.50	24.13	-37.17	-342.49	-117.66	6,805.44	6,753.17	52.26	130.214	
13,500.00	7,104.00	6,550.00	6,535.89	110.05	24.13	-37.17	-342.49	-117.66	6,904.89	6,852.57	52.33	131.953	
13,600.00	7,104.00	6,550.00	6,535.89	111.60	24.13	-37.17	-342.49	-117.66	7,004.37	6,951.97	52.39	133.686	
13,700.00	7,104.00	6,550.00	6,535.89	113.16	24.13	-37.17	-342.49	-117.66	7,103.86	7,051.40	52.46	135.415	
13,800.00	7,104.00	6,550.00	6,535.89	114.71	24.13	-37.17	-342.49	-117.66	7,203.36	7,150.83	52.53	137.138	
13,900.00	7,104.00	6,550.00	6,535.89	116.27	24.13	-37.17	-342.49	-117.66	7,302.87	7,250.28	52.59	138.855	
14,000.00	7,104.00	6,550.00	6,535.89	117.83	24.13	-37.17	-342.49	-117.66	7,402.40	7,349.74	52.66	140.567	
14,100.00	7,104.00	6,550.00	6,535.89	119.38	24.13	-37.17	-342.49	-117.66	7,501.94	7,449.21	52.73	142.274	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 750H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	6,550.00	6,535.89	120.94	24.13	-37.17	-342.49	-117.66	7,601.50	7,548.70	52.80	143.975	
14,300.00	7,104.00	6,550.00	6,535.89	122.50	24.13	-37.17	-342.49	-117.66	7,701.06	7,648.20	52.87	145.670	
14,400.00	7,104.00	6,550.00	6,535.89	124.07	24.13	-37.17	-342.49	-117.66	7,800.64	7,747.70	52.94	147.360	
14,500.00	7,104.00	6,550.00	6,535.89	125.63	24.13	-37.17	-342.49	-117.66	7,900.22	7,847.22	53.01	149.044	
14,600.00	7,104.00	6,550.00	6,535.89	127.19	24.13	-37.17	-342.49	-117.66	7,999.82	7,946.74	53.08	150.722	
14,700.00	7,104.00	6,550.00	6,535.89	128.76	24.13	-37.17	-342.49	-117.66	8,099.43	8,046.28	53.15	152.394	
14,800.00	7,104.00	6,550.00	6,535.89	130.32	24.13	-37.17	-342.49	-117.66	8,199.05	8,145.83	53.22	154.061	
14,900.00	7,104.00	6,550.00	6,535.89	131.89	24.13	-37.17	-342.49	-117.66	8,298.67	8,245.38	53.29	155.721	
15,000.00	7,104.00	6,550.00	6,535.89	133.46	24.13	-37.17	-342.49	-117.66	8,398.31	8,344.94	53.36	157.376	
15,100.00	7,104.00	6,550.00	6,535.89	135.02	24.13	-37.17	-342.49	-117.66	8,497.95	8,444.51	53.44	159.025	
15,200.00	7,104.00	6,550.00	6,535.89	136.59	24.13	-37.17	-342.49	-117.66	8,597.60	8,544.09	53.51	160.668	
15,300.00	7,104.00	6,550.00	6,535.89	138.16	24.13	-37.17	-342.49	-117.66	8,697.26	8,643.67	53.59	162.304	
15,400.00	7,104.00	6,550.00	6,535.89	139.73	24.13	-37.17	-342.49	-117.66	8,796.93	8,743.27	53.66	163.935	
15,500.00	7,104.00	6,550.00	6,535.89	141.30	24.13	-37.17	-342.49	-117.66	8,896.60	8,842.87	53.74	165.560	
15,600.00	7,104.00	6,526.55	6,512.59	142.88	24.04	-36.16	-340.95	-115.61	8,995.82	8,942.09	53.73	167.419	
15,700.00	7,104.00	6,526.10	6,512.14	144.45	24.04	-36.14	-340.92	-115.58	9,095.49	9,041.69	53.81	169.037	
15,800.00	7,104.00	6,525.66	6,511.70	146.02	24.04	-36.13	-340.89	-115.55	9,195.17	9,141.29	53.88	170.649	
15,900.00	7,104.00	6,525.23	6,511.27	147.60	24.04	-36.11	-340.86	-115.52	9,294.86	9,240.90	53.96	172.255	
16,000.00	7,104.00	6,524.80	6,510.84	149.17	24.03	-36.09	-340.83	-115.49	9,394.55	9,340.51	54.04	173.855	
16,100.00	7,104.00	6,524.39	6,510.43	150.74	24.03	-36.07	-340.80	-115.46	9,494.25	9,440.13	54.11	175.448	
16,200.00	7,104.00	6,523.98	6,510.02	152.32	24.03	-36.06	-340.78	-115.44	9,593.95	9,539.76	54.19	177.036	
16,300.00	7,104.00	6,523.58	6,509.63	153.89	24.03	-36.04	-340.75	-115.41	9,693.66	9,639.39	54.27	178.617	
16,400.00	7,104.00	6,500.00	6,486.12	155.47	23.94	-35.09	-339.19	-114.32	9,793.82	9,739.55	54.27	180.455	
16,500.00	7,104.00	6,500.00	6,486.12	157.05	23.94	-35.09	-339.19	-114.32	9,893.53	9,839.17	54.35	182.020	
16,600.00	7,104.00	6,500.00	6,486.12	158.63	23.94	-35.09	-339.19	-114.32	9,993.24	9,938.80	54.44	183.579	
16,700.00	7,104.00	6,500.00	6,486.12	160.20	23.94	-35.09	-339.19	-114.32	10,092.96	10,038.44	54.52	185.131	
16,800.00	7,104.00	6,500.00	6,486.12	161.78	23.94	-35.09	-339.19	-114.32	10,192.68	10,138.08	54.60	186.677	
16,900.00	7,104.00	6,500.00	6,486.12	163.36	23.94	-35.09	-339.19	-114.32	10,292.41	10,237.72	54.68	188.217	
17,000.00	7,104.00	6,500.00	6,486.12	164.94	23.94	-35.09	-339.19	-114.32	10,392.14	10,337.37	54.77	189.751	
17,100.00	7,104.00	6,500.00	6,486.12	166.52	23.94	-35.09	-339.19	-114.32	10,491.88	10,437.03	54.85	191.278	
17,200.00	7,104.00	6,500.00	6,486.12	168.10	23.94	-35.09	-339.19	-114.32	10,591.62	10,536.68	54.94	192.799	
17,300.00	7,104.00	6,500.00	6,486.12	169.68	23.94	-35.09	-339.19	-114.32	10,691.37	10,636.35	55.02	194.313	
17,400.00	7,104.00	6,500.00	6,486.12	171.26	23.94	-35.09	-339.19	-114.32	10,791.12	10,736.01	55.11	195.821	
17,500.00	7,104.00	6,500.00	6,486.12	172.84	23.94	-35.09	-339.19	-114.32	10,890.88	10,835.68	55.19	197.323	
17,600.00	7,104.00	6,500.00	6,486.12	174.42	23.94	-35.09	-339.19	-114.32	10,990.64	10,935.36	55.28	198.818	
17,700.00	7,104.00	6,500.00	6,486.12	176.00	23.94	-35.09	-339.19	-114.32	11,090.41	11,035.04	55.37	200.307	
17,800.00	7,104.00	6,500.00	6,486.12	177.59	23.94	-35.09	-339.19	-114.32	11,190.18	11,134.72	55.45	201.790	
17,900.00	7,104.00	6,500.00	6,486.12	179.17	23.94	-35.09	-339.19	-114.32	11,289.95	11,234.41	55.54	203.266	
18,000.00	7,104.00	6,500.00	6,486.12	180.75	23.94	-35.09	-339.19	-114.32	11,389.73	11,334.10	55.63	204.736	
18,100.00	7,104.00	6,500.00	6,486.12	182.33	23.94	-35.09	-339.19	-114.32	11,489.51	11,433.79	55.72	206.199	
18,200.00	7,104.00	6,500.00	6,486.12	183.92	23.94	-35.09	-339.19	-114.32	11,589.30	11,533.49	55.81	207.657	
18,300.00	7,104.00	6,500.00	6,486.12	185.50	23.94	-35.09	-339.19	-114.32	11,689.08	11,633.18	55.90	209.107	
18,400.00	7,104.00	6,500.00	6,486.12	187.09	23.94	-35.09	-339.19	-114.32	11,788.88	11,732.89	55.99	210.552	
18,500.00	7,104.00	6,500.00	6,486.12	188.67	23.94	-35.09	-339.19	-114.32	11,888.67	11,832.59	56.08	211.990	
18,600.00	7,104.00	6,500.00	6,486.12	190.26	23.94	-35.09	-339.19	-114.32	11,988.47	11,932.30	56.17	213.421	
18,700.00	7,104.00	6,500.00	6,486.12	191.84	23.94	-35.09	-339.19	-114.32	12,088.28	12,032.01	56.26	214.847	
18,800.00	7,104.00	6,500.00	6,486.12	193.43	23.94	-35.09	-339.19	-114.32	12,188.08	12,131.73	56.36	216.265	
18,900.00	7,104.00	6,500.00	6,486.12	195.01	23.94	-35.09	-339.19	-114.32	12,287.89	12,231.44	56.45	217.678	
19,000.00	7,104.00	6,500.00	6,486.12	196.60	23.94	-35.09	-339.19	-114.32	12,387.71	12,331.16	56.54	219.084	
19,100.00	7,104.00	6,500.00	6,486.12	198.18	23.94	-35.09	-339.19	-114.32	12,487.52	12,430.88	56.64	220.484	
19,200.00	7,104.00	6,500.00	6,486.12	199.77	23.94	-35.09	-339.19	-114.32	12,587.34	12,530.61	56.73	221.878	
19,300.00	7,104.00	6,500.00	6,486.12	201.36	23.94	-35.09	-339.19	-114.32	12,687.16	12,630.33	56.83	223.265	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 750H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	7,104.00	6,500.00	6,486.12	202.94	23.94	-35.09	-339.19	-114.32	12,786.98	12,730.06	56.92	224.646	
19,500.00	7,104.00	6,500.00	6,486.12	204.53	23.94	-35.09	-339.19	-114.32	12,886.81	12,829.80	57.02	226.021	
19,600.00	7,104.00	6,500.00	6,486.12	206.12	23.94	-35.09	-339.19	-114.32	12,986.64	12,929.53	57.11	227.389	
19,700.00	7,104.00	6,500.00	6,486.12	207.70	23.94	-35.09	-339.19	-114.32	13,086.47	13,029.26	57.21	228.752	
19,800.00	7,104.00	6,500.00	6,486.12	209.29	23.94	-35.09	-339.19	-114.32	13,186.31	13,129.00	57.30	230.107	
19,900.00	7,104.00	6,500.00	6,486.12	210.88	23.94	-35.09	-339.19	-114.32	13,286.14	13,228.74	57.40	231.457	
20,000.00	7,104.00	6,500.00	6,486.12	212.47	23.94	-35.09	-339.19	-114.32	13,385.98	13,328.48	57.50	232.801	
20,100.00	7,104.00	6,500.00	6,486.12	214.05	23.94	-35.09	-339.19	-114.32	13,485.83	13,428.23	57.60	234.138	
20,200.00	7,104.00	6,500.00	6,486.12	215.64	23.94	-35.09	-339.19	-114.32	13,585.67	13,527.97	57.70	235.469	
20,215.00	7,104.00	6,500.00	6,486.12	215.88	23.94	-35.09	-339.19	-114.32	13,600.65	13,542.94	57.71	235.668	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 752H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	-2.71	24.76	-1.17	24.78				
100.00	100.00	100.00	100.00	3.29	3.29	-2.71	24.76	-1.17	24.78	18.20	6.58	3.767	
200.00	200.00	200.00	200.00	3.34	3.34	-2.71	24.76	-1.17	24.78	18.11	6.67	3.714	
300.00	300.00	300.00	300.00	3.42	3.42	-2.71	24.76	-1.17	24.78	17.94	6.84	3.624	
400.00	400.00	400.00	400.00	3.54	3.54	-2.71	24.76	-1.17	24.78	17.71	7.08	3.502	
500.00	500.00	500.00	500.00	3.69	3.69	-2.71	24.76	-1.17	24.78	17.41	7.37	3.361	
600.00	599.98	600.86	600.84	3.86	3.86	-154.92	22.98	-1.23	24.60	16.89	7.71	3.191	
700.00	699.84	701.66	701.50	4.04	4.05	-161.72	17.66	-1.41	24.27	16.20	8.07	3.007	
732.18	731.93	734.08	733.82	4.11	4.11	-164.90	15.20	-1.49	24.23	16.03	8.20	2.956	
800.00	799.45	802.35	801.79	4.26	4.26	-173.11	8.82	-1.71	24.48	16.01	8.47	2.889	
849.50	848.63	852.13	851.25	4.37	4.37	179.85	3.15	-1.90	25.11	16.42	8.69	2.890	
900.00	898.77	902.91	901.58	4.49	4.49	164.68	-3.51	-2.12	25.73	16.81	8.92	2.883	
973.84	972.07	977.13	974.92	4.68	4.68	143.80	-14.86	-2.50	25.46	16.17	9.29	2.741	
1,000.00	998.03	1,003.40	1,000.81	4.74	4.75	140.55	-19.33	-2.65	25.06	15.63	9.43	2.658	
1,100.00	1,097.29	1,103.53	1,099.07	5.02	5.04	122.60	-38.55	-3.30	23.40	13.39	10.02	2.336	
1,133.40	1,130.44	1,136.84	1,131.61	5.11	5.15	114.45	-45.70	-3.54	23.21	12.98	10.23	2.268	CC, ES, SF
1,200.00	1,196.54	1,203.03	1,195.99	5.30	5.36	95.97	-61.03	-4.05	24.30	13.65	10.66	2.281	
1,300.00	1,295.80	1,301.85	1,291.47	5.61	5.70	69.99	-86.48	-4.91	31.21	20.02	11.19	2.789	
1,400.00	1,395.06	1,400.72	1,386.81	5.92	6.07	54.50	-112.67	-5.79	42.54	30.82	11.71	3.631	
1,500.00	1,494.31	1,499.59	1,482.15	6.24	6.45	45.84	-138.85	-6.67	55.62	43.34	12.28	4.528	
1,600.00	1,593.57	1,598.46	1,577.48	6.57	6.85	40.54	-165.04	-7.55	69.48	56.59	12.89	5.390	
1,700.00	1,692.82	1,697.33	1,672.82	6.91	7.26	37.01	-191.23	-8.43	83.73	70.20	13.52	6.191	
1,800.00	1,792.08	1,796.21	1,768.15	7.25	7.68	34.52	-217.41	-9.31	98.19	84.02	14.17	6.927	
1,900.00	1,891.33	1,895.08	1,863.49	7.60	8.11	32.67	-243.60	-10.19	112.80	97.96	14.84	7.601	
2,000.00	1,990.59	1,993.95	1,958.83	7.95	8.55	31.24	-269.79	-11.07	127.49	111.97	15.52	8.216	
2,100.00	2,089.85	2,092.82	2,054.16	8.30	8.99	30.11	-295.97	-11.95	142.24	126.04	16.20	8.779	
2,200.00	2,189.10	2,191.69	2,149.50	8.66	9.44	29.19	-322.16	-12.83	157.04	140.14	16.90	9.294	
2,300.00	2,288.36	2,290.56	2,244.83	9.02	9.89	28.43	-348.34	-13.71	171.87	154.27	17.60	9.766	
2,400.00	2,387.61	2,389.43	2,340.17	9.39	10.34	27.79	-374.53	-14.59	186.72	168.42	18.31	10.200	
2,500.00	2,486.87	2,488.30	2,435.51	9.76	10.80	27.25	-400.72	-15.47	201.60	182.58	19.02	10.600	
2,600.00	2,586.12	2,587.17	2,530.84	10.13	11.27	26.78	-426.90	-16.35	216.48	196.75	19.73	10.970	
2,700.00	2,685.38	2,686.04	2,626.18	10.50	11.73	26.37	-453.09	-17.23	231.39	210.93	20.46	11.311	
2,800.00	2,784.63	2,784.91	2,721.51	10.87	12.20	26.01	-479.28	-18.11	246.30	225.12	21.18	11.628	
2,900.00	2,883.89	2,883.78	2,816.85	11.24	12.67	25.69	-505.46	-18.99	261.22	239.31	21.91	11.923	
3,000.00	2,983.15	2,982.66	2,912.19	11.62	13.14	25.41	-531.65	-19.87	276.15	253.51	22.64	12.197	
3,100.00	3,082.40	3,081.53	3,007.52	12.00	13.62	25.15	-557.84	-20.75	291.08	267.71	23.37	12.453	
3,200.00	3,181.66	3,180.40	3,102.86	12.38	14.09	24.92	-584.02	-21.63	306.02	281.91	24.11	12.693	
3,300.00	3,280.91	3,279.27	3,198.19	12.75	14.57	24.71	-610.21	-22.51	320.96	296.11	24.85	12.917	
3,400.00	3,380.17	3,378.14	3,293.53	13.13	15.05	24.52	-636.39	-23.39	335.91	310.32	25.59	13.128	
3,500.00	3,479.42	3,477.01	3,388.87	13.52	15.53	24.35	-662.58	-24.27	350.86	324.53	26.33	13.325	
3,600.00	3,578.68	3,575.88	3,484.20	13.90	16.01	24.19	-688.77	-25.15	365.81	338.74	27.07	13.512	
3,700.00	3,677.94	3,674.75	3,579.54	14.28	16.49	24.04	-714.95	-26.03	380.76	352.95	27.82	13.687	
3,800.00	3,777.19	3,773.62	3,674.87	14.66	16.97	23.90	-741.14	-26.91	395.72	367.16	28.57	13.853	
3,900.00	3,876.45	3,872.49	3,770.21	15.05	17.45	23.78	-767.33	-27.79	410.68	381.37	29.31	14.010	
4,000.00	3,975.70	3,971.36	3,865.54	15.43	17.93	23.66	-793.51	-28.67	425.64	395.58	30.06	14.159	
4,100.00	4,074.96	4,070.23	3,960.88	15.82	18.42	23.55	-819.70	-29.55	440.61	409.79	30.81	14.300	
4,200.00	4,174.21	4,169.10	4,056.22	16.20	18.90	23.45	-845.89	-30.43	455.57	424.01	31.56	14.434	
4,300.00	4,273.47	4,267.98	4,151.55	16.59	19.39	23.35	-872.07	-31.31	470.54	438.22	32.32	14.561	
4,400.00	4,372.73	4,366.85	4,246.89	16.97	19.87	23.26	-898.26	-32.19	485.50	452.43	33.07	14.682	
4,500.00	4,471.98	4,465.72	4,342.22	17.36	20.36	23.18	-924.44	-33.07	500.47	466.65	33.82	14.797	
4,600.00	4,571.24	4,564.59	4,437.56	17.75	20.85	23.10	-950.63	-33.95	515.44	480.86	34.58	14.907	
4,700.00	4,670.49	4,663.46	4,532.90	18.13	21.33	23.02	-976.82	-34.83	530.41	495.08	35.33	15.012	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 752H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,769.75	4,762.33	4,628.23	18.52	21.82	22.95	-1,003.00	-35.71	545.38	509.29	36.09	15.112	
4,900.00	4,869.00	4,861.20	4,723.57	18.91	22.31	22.88	-1,029.19	-36.59	560.35	523.51	36.85	15.208	
5,000.00	4,968.26	4,960.07	4,818.90	19.30	22.80	22.82	-1,055.38	-37.47	575.33	537.72	37.60	15.300	
5,100.00	5,067.51	5,058.94	4,914.24	19.69	23.29	22.76	-1,081.56	-38.35	590.30	551.94	38.36	15.388	
5,200.00	5,166.77	5,157.81	5,009.58	20.07	23.78	22.70	-1,107.75	-39.23	605.27	566.15	39.12	15.473	
5,300.00	5,266.03	5,256.68	5,104.91	20.46	24.26	22.65	-1,133.93	-40.11	620.25	580.37	39.88	15.554	
5,400.00	5,365.28	5,355.55	5,200.25	20.85	24.75	22.60	-1,160.12	-40.99	635.22	594.58	40.64	15.632	
5,500.00	5,464.54	5,454.43	5,295.58	21.24	25.24	22.55	-1,186.31	-41.87	650.20	608.80	41.40	15.706	
5,600.00	5,563.79	5,553.30	5,390.92	21.63	25.73	22.50	-1,212.49	-42.75	665.17	623.01	42.16	15.778	
5,700.00	5,663.05	5,652.17	5,486.26	22.02	26.22	22.45	-1,238.68	-43.63	680.15	637.23	42.92	15.848	
5,800.00	5,762.30	5,751.04	5,581.59	22.41	26.71	22.41	-1,264.87	-44.51	695.12	651.45	43.68	15.914	
5,900.00	5,861.56	5,849.91	5,676.93	22.80	27.20	22.37	-1,291.05	-45.39	710.10	665.66	44.44	15.979	
6,000.00	5,960.82	5,948.78	5,772.26	23.19	27.70	22.33	-1,317.24	-46.27	725.08	679.88	45.20	16.041	
6,100.00	6,060.07	6,047.65	5,867.60	23.58	28.19	22.29	-1,343.43	-47.14	740.06	694.09	45.97	16.100	
6,200.00	6,159.33	6,146.52	5,962.94	23.97	28.68	22.25	-1,369.61	-48.02	755.03	708.31	46.73	16.158	
6,300.00	6,258.58	6,245.39	6,058.27	24.36	29.17	22.22	-1,395.80	-48.90	770.01	722.52	47.49	16.214	
6,400.00	6,357.84	6,344.26	6,153.61	24.76	29.66	22.18	-1,421.98	-49.78	784.99	736.74	48.25	16.268	
6,500.00	6,457.09	6,443.13	6,248.94	25.15	30.15	22.15	-1,448.17	-50.66	799.97	750.95	49.02	16.320	
6,528.17	6,485.05	6,470.99	6,275.80	25.26	30.29	22.14	-1,455.55	-50.91	804.19	754.96	49.23	16.335	
6,550.00	6,506.71	6,492.55	6,296.60	25.34	30.40	36.60	-1,461.26	-51.10	807.54	758.14	49.40	16.347	
6,600.00	6,556.11	6,541.74	6,344.02	25.54	30.64	59.41	-1,474.29	-51.54	815.80	766.00	49.80	16.382	
6,650.00	6,605.00	6,590.38	6,390.93	25.74	30.88	71.47	-1,487.17	-51.98	824.87	774.66	50.21	16.428	
6,700.00	6,653.07	6,638.18	6,437.01	25.93	31.12	78.31	-1,499.83	-52.40	834.81	784.17	50.64	16.484	
6,750.00	6,700.02	6,683.02	6,480.25	26.12	31.35	82.59	-1,511.71	-52.82	845.69	794.62	51.07	16.559	
6,800.00	6,745.56	6,715.71	6,511.74	26.31	31.51	85.28	-1,520.35	-54.22	858.03	806.61	51.42	16.686	
6,850.00	6,789.42	6,750.00	6,544.66	26.50	31.68	87.25	-1,529.38	-57.49	872.26	820.43	51.83	16.831	
6,900.00	6,831.32	6,771.40	6,565.09	26.69	31.78	88.16	-1,534.98	-60.46	888.46	836.33	52.13	17.044	
6,950.00	6,871.01	6,800.00	6,592.24	26.87	31.92	88.93	-1,542.42	-65.53	906.86	854.31	52.55	17.257	
7,000.00	6,908.23	6,812.88	6,604.39	27.05	31.98	88.52	-1,545.75	-68.23	927.40	874.58	52.82	17.557	
7,050.00	6,942.77	6,828.41	6,618.95	27.23	32.06	87.83	-1,549.74	-71.82	950.16	897.00	53.16	17.872	
7,100.00	6,974.40	6,850.00	6,639.07	27.41	32.16	87.15	-1,555.24	-77.42	975.12	921.48	53.64	18.179	
7,150.00	7,002.93	6,850.00	6,639.07	27.60	32.16	84.76	-1,555.24	-77.42	1,001.89	948.04	53.85	18.604	
7,200.00	7,028.20	6,850.00	6,639.07	27.80	32.16	81.98	-1,555.24	-77.42	1,030.56	976.46	54.10	19.049	
7,250.00	7,050.03	6,850.00	6,639.07	28.00	32.16	78.85	-1,555.24	-77.42	1,060.80	1,006.41	54.39	19.504	
7,300.00	7,068.30	6,850.00	6,639.07	28.22	32.16	75.45	-1,555.24	-77.42	1,092.30	1,037.59	54.72	19.963	
7,350.00	7,082.89	6,850.00	6,639.07	28.45	32.16	71.82	-1,555.24	-77.42	1,124.78	1,069.69	55.08	20.419	
7,400.00	7,093.72	6,850.00	6,639.07	28.70	32.16	68.06	-1,555.24	-77.42	1,157.94	1,102.46	55.49	20.868	
7,450.00	7,100.71	6,850.00	6,639.07	28.96	32.16	64.23	-1,555.24	-77.42	1,191.56	1,135.63	55.92	21.307	
7,500.00	7,103.82	6,850.00	6,639.07	29.24	32.16	60.40	-1,555.24	-77.42	1,225.38	1,168.99	56.38	21.733	
7,515.00	7,104.00	6,850.00	6,639.07	29.32	32.16	59.26	-1,555.24	-77.42	1,235.53	1,179.01	56.52	21.859	
7,600.00	7,104.00	6,850.00	6,639.07	29.84	32.16	59.26	-1,555.24	-77.42	1,294.57	1,237.27	57.30	22.593	
7,700.00	7,104.00	6,831.62	6,621.95	30.51	32.07	58.19	-1,550.56	-72.61	1,367.20	1,309.33	57.87	23.626	
7,800.00	7,104.00	6,822.82	6,613.72	31.26	32.03	57.68	-1,548.31	-70.49	1,443.02	1,384.52	58.50	24.667	
7,900.00	7,104.00	6,800.00	6,592.24	32.07	31.92	56.35	-1,542.42	-65.53	1,521.72	1,462.85	58.87	25.848	
8,000.00	7,104.00	6,800.00	6,592.24	32.94	31.92	56.35	-1,542.42	-65.53	1,602.34	1,542.86	59.48	26.941	
8,100.00	7,104.00	6,800.00	6,592.24	33.86	31.92	56.35	-1,542.42	-65.53	1,685.04	1,625.03	60.01	28.080	
8,200.00	7,104.00	6,800.00	6,592.24	34.84	31.92	56.35	-1,542.42	-65.53	1,769.53	1,709.05	60.48	29.258	
8,300.00	7,104.00	6,800.00	6,592.24	35.86	31.92	56.35	-1,542.42	-65.53	1,855.56	1,794.66	60.90	30.471	
8,400.00	7,104.00	6,800.00	6,592.24	36.92	31.92	56.35	-1,542.42	-65.53	1,942.92	1,881.66	61.27	31.712	
8,500.00	7,104.00	6,780.72	6,573.97	38.02	31.83	55.25	-1,537.42	-61.97	2,031.10	1,969.70	61.40	33.081	
8,600.00	7,104.00	6,776.55	6,570.00	39.15	31.81	55.01	-1,536.33	-61.28	2,120.49	2,058.83	61.66	34.391	
8,700.00	7,104.00	6,772.69	6,566.32	40.32	31.79	54.79	-1,535.32	-60.66	2,210.75	2,148.86	61.89	35.719	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 752H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	7,104.00	6,750.00	6,544.66	41.52	31.68	53.50	-1,529.38	-57.49	2,302.14	2,240.22	61.92	37.180	
8,900.00	7,104.00	6,750.00	6,544.66	42.74	31.68	53.50	-1,529.38	-57.49	2,393.77	2,331.62	62.15	38.517	
9,000.00	7,104.00	6,750.00	6,544.66	43.99	31.68	53.50	-1,529.38	-57.49	2,486.04	2,423.68	62.36	39.867	
9,100.00	7,104.00	6,750.00	6,544.66	45.26	31.68	53.50	-1,529.38	-57.49	2,578.89	2,516.34	62.55	41.230	
9,200.00	7,104.00	6,750.00	6,544.66	46.55	31.68	53.50	-1,529.38	-57.49	2,672.25	2,609.53	62.72	42.603	
9,300.00	7,104.00	6,750.00	6,544.66	47.85	31.68	53.50	-1,529.38	-57.49	2,766.08	2,703.20	62.89	43.985	
9,400.00	7,104.00	6,750.00	6,544.66	49.18	31.68	53.50	-1,529.38	-57.49	2,860.33	2,797.29	63.04	45.376	
9,500.00	7,104.00	6,750.00	6,544.66	50.52	31.68	53.50	-1,529.38	-57.49	2,954.95	2,891.78	63.17	46.774	
9,600.00	7,104.00	6,750.00	6,544.66	51.88	31.68	53.50	-1,529.38	-57.49	3,049.92	2,986.62	63.30	48.179	
9,700.00	7,104.00	6,750.00	6,544.66	53.25	31.68	53.50	-1,529.38	-57.49	3,145.20	3,081.78	63.43	49.589	
9,800.00	7,104.00	6,750.00	6,544.66	54.63	31.68	53.50	-1,529.38	-57.49	3,240.77	3,177.23	63.54	51.004	
9,900.00	7,104.00	6,750.00	6,544.66	56.03	31.68	53.50	-1,529.38	-57.49	3,336.59	3,272.95	63.65	52.424	
10,000.00	7,104.00	6,750.00	6,544.66	57.43	31.68	53.50	-1,529.38	-57.49	3,432.65	3,368.91	63.75	53.847	
10,100.00	7,104.00	6,750.00	6,544.66	58.85	31.68	53.50	-1,529.38	-57.49	3,528.94	3,465.09	63.84	55.274	
10,200.00	7,104.00	6,750.00	6,544.66	60.27	31.68	53.50	-1,529.38	-57.49	3,625.42	3,561.48	63.94	56.703	
10,300.00	7,104.00	6,750.00	6,544.66	61.71	31.68	53.50	-1,529.38	-57.49	3,722.09	3,658.06	64.02	58.135	
10,400.00	7,104.00	6,750.00	6,544.66	63.15	31.68	53.50	-1,529.38	-57.49	3,818.93	3,754.82	64.11	59.569	
10,500.00	7,104.00	6,750.00	6,544.66	64.60	31.68	53.50	-1,529.38	-57.49	3,915.93	3,851.74	64.19	61.005	
10,600.00	7,104.00	6,750.00	6,544.66	66.05	31.68	53.50	-1,529.38	-57.49	4,013.07	3,948.80	64.27	62.443	
10,700.00	7,104.00	6,750.00	6,544.66	67.52	31.68	53.50	-1,529.38	-57.49	4,110.35	4,046.01	64.34	63.881	
10,800.00	7,104.00	6,750.00	6,544.66	68.99	31.68	53.50	-1,529.38	-57.49	4,207.77	4,143.35	64.42	65.321	
10,900.00	7,104.00	6,727.65	6,523.22	70.46	31.57	52.24	-1,523.50	-55.15	4,304.85	4,240.53	64.32	66.931	
11,000.00	7,104.00	6,726.54	6,522.16	71.94	31.56	52.18	-1,523.21	-55.05	4,402.45	4,338.07	64.38	68.382	
11,100.00	7,104.00	6,725.48	6,521.14	73.43	31.56	52.12	-1,522.93	-54.97	4,500.15	4,435.71	64.44	69.834	
11,200.00	7,104.00	6,724.47	6,520.16	74.92	31.55	52.07	-1,522.66	-54.88	4,597.95	4,533.44	64.50	71.285	
11,300.00	7,104.00	6,723.49	6,519.22	76.41	31.55	52.01	-1,522.40	-54.80	4,695.83	4,631.27	64.56	72.736	
11,400.00	7,104.00	6,722.55	6,518.32	77.91	31.54	51.96	-1,522.16	-54.73	4,793.81	4,729.19	64.62	74.187	
11,500.00	7,104.00	6,700.00	6,496.62	79.41	31.43	50.72	-1,516.20	-53.34	4,892.27	4,827.76	64.51	75.834	
11,600.00	7,104.00	6,700.00	6,496.62	80.92	31.43	50.72	-1,516.20	-53.34	4,990.37	4,925.79	64.58	77.278	
11,700.00	7,104.00	6,700.00	6,496.62	82.43	31.43	50.72	-1,516.20	-53.34	5,088.54	5,023.90	64.64	78.721	
11,800.00	7,104.00	6,700.00	6,496.62	83.94	31.43	50.72	-1,516.20	-53.34	5,186.78	5,122.08	64.70	80.164	
11,900.00	7,104.00	6,700.00	6,496.62	85.46	31.43	50.72	-1,516.20	-53.34	5,285.09	5,220.32	64.76	81.605	
12,000.00	7,104.00	6,700.00	6,496.62	86.98	31.43	50.72	-1,516.20	-53.34	5,383.46	5,318.63	64.83	83.046	
12,100.00	7,104.00	6,700.00	6,496.62	88.50	31.43	50.72	-1,516.20	-53.34	5,481.88	5,417.00	64.89	84.485	
12,200.00	7,104.00	6,700.00	6,496.62	90.03	31.43	50.72	-1,516.20	-53.34	5,580.37	5,515.42	64.95	85.923	
12,300.00	7,104.00	6,700.00	6,496.62	91.55	31.43	50.72	-1,516.20	-53.34	5,678.90	5,613.90	65.01	87.359	
12,400.00	7,104.00	6,700.00	6,496.62	93.08	31.43	50.72	-1,516.20	-53.34	5,777.49	5,712.43	65.07	88.794	
12,500.00	7,104.00	6,700.00	6,496.62	94.62	31.43	50.72	-1,516.20	-53.34	5,876.13	5,811.00	65.13	90.228	
12,600.00	7,104.00	6,700.00	6,496.62	96.15	31.43	50.72	-1,516.20	-53.34	5,974.81	5,909.62	65.18	91.660	
12,700.00	7,104.00	6,700.00	6,496.62	97.69	31.43	50.72	-1,516.20	-53.34	6,073.53	6,008.29	65.24	93.090	
12,800.00	7,104.00	6,700.00	6,496.62	99.23	31.43	50.72	-1,516.20	-53.34	6,172.30	6,106.99	65.30	94.518	
12,900.00	7,104.00	6,700.00	6,496.62	100.77	31.43	50.72	-1,516.20	-53.34	6,271.10	6,205.74	65.36	95.944	
13,000.00	7,104.00	6,700.00	6,496.62	102.31	31.43	50.72	-1,516.20	-53.34	6,369.94	6,304.52	65.42	97.368	
13,100.00	7,104.00	6,700.00	6,496.62	103.86	31.43	50.72	-1,516.20	-53.34	6,468.82	6,403.34	65.48	98.790	
13,200.00	7,104.00	6,700.00	6,496.62	105.40	31.43	50.72	-1,516.20	-53.34	6,567.73	6,502.19	65.54	100.210	
13,300.00	7,104.00	6,700.00	6,496.62	106.95	31.43	50.72	-1,516.20	-53.34	6,666.67	6,601.07	65.60	101.628	
13,400.00	7,104.00	6,700.00	6,496.62	108.50	31.43	50.72	-1,516.20	-53.34	6,765.65	6,699.99	65.66	103.043	
13,500.00	7,104.00	6,700.00	6,496.62	110.05	31.43	50.72	-1,516.20	-53.34	6,864.65	6,798.93	65.72	104.456	
13,600.00	7,104.00	6,700.00	6,496.62	111.60	31.43	50.72	-1,516.20	-53.34	6,963.68	6,897.91	65.78	105.867	
13,700.00	7,104.00	6,700.00	6,496.62	113.16	31.43	50.72	-1,516.20	-53.34	7,062.74	6,996.91	65.84	107.275	
13,800.00	7,104.00	6,700.00	6,496.62	114.71	31.43	50.72	-1,516.20	-53.34	7,161.83	7,095.93	65.90	108.681	
13,900.00	7,104.00	6,700.00	6,496.62	116.27	31.43	50.72	-1,516.20	-53.34	7,260.94	7,194.98	65.96	110.084	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 752H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	7,104.00	6,700.00	6,496.62	117.83	31.43	50.72	-1,516.20	-53.34	7,360.08	7,294.06	66.02	111.484	
14,100.00	7,104.00	6,700.00	6,496.62	119.38	31.43	50.72	-1,516.20	-53.34	7,459.23	7,393.15	66.08	112.882	
14,200.00	7,104.00	6,700.00	6,496.62	120.94	31.43	50.72	-1,516.20	-53.34	7,558.41	7,492.27	66.14	114.277	
14,300.00	7,104.00	6,700.00	6,496.62	122.50	31.43	50.72	-1,516.20	-53.34	7,657.62	7,591.41	66.20	115.670	
14,400.00	7,104.00	6,700.00	6,496.62	124.07	31.43	50.72	-1,516.20	-53.34	7,756.84	7,690.57	66.26	117.059	
14,500.00	7,104.00	6,700.00	6,496.62	125.63	31.43	50.72	-1,516.20	-53.34	7,856.08	7,789.75	66.33	118.446	
14,600.00	7,104.00	6,700.00	6,496.62	127.19	31.43	50.72	-1,516.20	-53.34	7,955.34	7,888.95	66.39	119.829	
14,700.00	7,104.00	6,700.00	6,496.62	128.76	31.43	50.72	-1,516.20	-53.34	8,054.62	7,988.17	66.45	121.210	
14,800.00	7,104.00	6,700.00	6,496.62	130.32	31.43	50.72	-1,516.20	-53.34	8,153.92	8,087.40	66.51	122.588	
14,900.00	7,104.00	6,700.00	6,496.62	131.89	31.43	50.72	-1,516.20	-53.34	8,253.23	8,186.65	66.58	123.963	
15,000.00	7,104.00	6,700.00	6,496.62	133.46	31.43	50.72	-1,516.20	-53.34	8,352.56	8,285.92	66.64	125.334	
15,100.00	7,104.00	6,700.00	6,496.62	135.02	31.43	50.72	-1,516.20	-53.34	8,451.91	8,385.20	66.71	126.703	
15,200.00	7,104.00	6,700.00	6,496.62	136.59	31.43	50.72	-1,516.20	-53.34	8,551.27	8,484.50	66.77	128.068	
15,300.00	7,104.00	6,700.00	6,496.62	138.16	31.43	50.72	-1,516.20	-53.34	8,650.64	8,583.81	66.84	129.431	
15,400.00	7,104.00	6,700.00	6,496.62	139.73	31.43	50.72	-1,516.20	-53.34	8,750.03	8,683.13	66.90	130.790	
15,500.00	7,104.00	6,700.00	6,496.62	141.30	31.43	50.72	-1,516.20	-53.34	8,849.44	8,782.47	66.97	132.145	
15,600.00	7,104.00	6,700.00	6,496.62	142.88	31.43	50.72	-1,516.20	-53.34	8,948.86	8,881.82	67.03	133.498	
15,700.00	7,104.00	6,700.00	6,496.62	144.45	31.43	50.72	-1,516.20	-53.34	9,048.29	8,981.19	67.10	134.847	
15,800.00	7,104.00	6,700.00	6,496.62	146.02	31.43	50.72	-1,516.20	-53.34	9,147.73	9,080.56	67.17	136.193	
15,900.00	7,104.00	6,700.00	6,496.62	147.60	31.43	50.72	-1,516.20	-53.34	9,247.18	9,179.95	67.23	137.536	
16,000.00	7,104.00	6,700.00	6,496.62	149.17	31.43	50.72	-1,516.20	-53.34	9,346.65	9,279.35	67.30	138.875	
16,100.00	7,104.00	6,700.00	6,496.62	150.74	31.43	50.72	-1,516.20	-53.34	9,446.13	9,378.75	67.37	140.211	
16,200.00	7,104.00	6,700.00	6,496.62	152.32	31.43	50.72	-1,516.20	-53.34	9,545.61	9,478.17	67.44	141.544	
16,300.00	7,104.00	6,700.00	6,496.62	153.89	31.43	50.72	-1,516.20	-53.34	9,645.11	9,577.60	67.51	142.873	
16,400.00	7,104.00	6,700.00	6,496.62	155.47	31.43	50.72	-1,516.20	-53.34	9,744.62	9,677.04	67.58	144.198	
16,500.00	7,104.00	6,700.00	6,496.62	157.05	31.43	50.72	-1,516.20	-53.34	9,844.14	9,776.49	67.65	145.520	
16,600.00	7,104.00	6,700.00	6,496.62	158.63	31.43	50.72	-1,516.20	-53.34	9,943.67	9,875.95	67.72	146.839	
16,700.00	7,104.00	6,700.00	6,496.62	160.20	31.43	50.72	-1,516.20	-53.34	10,043.21	9,975.42	67.79	148.153	
16,800.00	7,104.00	6,700.00	6,496.62	161.78	31.43	50.72	-1,516.20	-53.34	10,142.76	10,074.89	67.86	149.465	
16,900.00	7,104.00	6,700.00	6,496.62	163.36	31.43	50.72	-1,516.20	-53.34	10,242.31	10,174.38	67.93	150.773	
17,000.00	7,104.00	6,700.00	6,496.62	164.94	31.43	50.72	-1,516.20	-53.34	10,341.88	10,273.87	68.00	152.077	
17,100.00	7,104.00	6,700.00	6,496.62	166.52	31.43	50.72	-1,516.20	-53.34	10,441.45	10,373.37	68.08	153.378	
17,200.00	7,104.00	6,700.00	6,496.62	168.10	31.43	50.72	-1,516.20	-53.34	10,541.03	10,472.88	68.15	154.674	
17,300.00	7,104.00	6,700.00	6,496.62	169.68	31.43	50.72	-1,516.20	-53.34	10,640.62	10,572.40	68.22	155.968	
17,400.00	7,104.00	6,700.00	6,496.62	171.26	31.43	50.72	-1,516.20	-53.34	10,740.22	10,671.92	68.30	157.257	
17,500.00	7,104.00	6,700.00	6,496.62	172.84	31.43	50.72	-1,516.20	-53.34	10,839.82	10,771.45	68.37	158.543	
17,600.00	7,104.00	6,700.00	6,496.62	174.42	31.43	50.72	-1,516.20	-53.34	10,939.43	10,870.98	68.45	159.826	
17,700.00	7,104.00	6,700.00	6,496.62	176.00	31.43	50.72	-1,516.20	-53.34	11,039.05	10,970.53	68.52	161.104	
17,800.00	7,104.00	6,700.00	6,496.62	177.59	31.43	50.72	-1,516.20	-53.34	11,138.67	11,070.08	68.60	162.379	
17,900.00	7,104.00	6,700.00	6,496.62	179.17	31.43	50.72	-1,516.20	-53.34	11,238.31	11,169.63	68.67	163.650	
18,000.00	7,104.00	6,700.00	6,496.62	180.75	31.43	50.72	-1,516.20	-53.34	11,337.94	11,269.19	68.75	164.917	
18,100.00	7,104.00	6,700.00	6,496.62	182.33	31.43	50.72	-1,516.20	-53.34	11,437.59	11,368.76	68.83	166.181	
18,200.00	7,104.00	6,700.00	6,496.62	183.92	31.43	50.72	-1,516.20	-53.34	11,537.24	11,468.33	68.90	167.441	
18,300.00	7,104.00	6,700.00	6,496.62	185.50	31.43	50.72	-1,516.20	-53.34	11,636.89	11,567.91	68.98	168.697	
18,400.00	7,104.00	6,700.00	6,496.62	187.09	31.43	50.72	-1,516.20	-53.34	11,736.56	11,667.50	69.06	169.949	
18,500.00	7,104.00	6,700.00	6,496.62	188.67	31.43	50.72	-1,516.20	-53.34	11,836.23	11,767.09	69.14	171.197	
18,600.00	7,104.00	6,700.00	6,496.62	190.26	31.43	50.72	-1,516.20	-53.34	11,935.90	11,866.68	69.22	172.442	
18,700.00	7,104.00	6,700.00	6,496.62	191.84	31.43	50.72	-1,516.20	-53.34	12,035.58	11,966.28	69.30	173.683	
18,800.00	7,104.00	6,700.00	6,496.62	193.43	31.43	50.72	-1,516.20	-53.34	12,135.26	12,065.89	69.38	174.919	
18,900.00	7,104.00	6,700.00	6,496.62	195.01	31.43	50.72	-1,516.20	-53.34	12,234.95	12,165.50	69.46	176.152	
19,000.00	7,104.00	6,700.00	6,496.62	196.60	31.43	50.72	-1,516.20	-53.34	12,334.65	12,265.11	69.54	177.382	
19,100.00	7,104.00	6,700.00	6,496.62	198.18	31.43	50.72	-1,516.20	-53.34	12,434.35	12,364.73	69.62	178.607	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 752H - OH - Plan #5

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	7,104.00	6,700.00	6,496.62	199.77	31.43	50.72	-1,516.20	-53.34	12,534.05	12,464.35	69.70	179.828	
19,300.00	7,104.00	6,700.00	6,496.62	201.36	31.43	50.72	-1,516.20	-53.34	12,633.76	12,563.98	69.78	181.046	
19,400.00	7,104.00	6,700.00	6,496.62	202.94	31.43	50.72	-1,516.20	-53.34	12,733.47	12,663.61	69.86	182.260	
19,500.00	7,104.00	6,700.00	6,496.62	204.53	31.43	50.72	-1,516.20	-53.34	12,833.19	12,763.24	69.95	183.469	
19,600.00	7,104.00	6,700.00	6,496.62	206.12	31.43	50.72	-1,516.20	-53.34	12,932.91	12,862.88	70.03	184.675	
19,700.00	7,104.00	6,700.00	6,496.62	207.70	31.43	50.72	-1,516.20	-53.34	13,032.64	12,962.53	70.11	185.877	
19,800.00	7,104.00	6,700.00	6,496.62	209.29	31.43	50.72	-1,516.20	-53.34	13,132.37	13,062.17	70.20	187.076	
19,900.00	7,104.00	6,700.00	6,496.62	210.88	31.43	50.72	-1,516.20	-53.34	13,232.11	13,161.82	70.28	188.270	
20,000.00	7,104.00	6,700.00	6,496.62	212.47	31.43	50.72	-1,516.20	-53.34	13,331.84	13,261.48	70.37	189.460	
20,100.00	7,104.00	6,700.00	6,496.62	214.05	31.43	50.72	-1,516.20	-53.34	13,431.59	13,361.13	70.45	190.646	
20,200.00	7,104.00	6,700.00	6,496.62	215.64	31.43	50.72	-1,516.20	-53.34	13,531.33	13,460.80	70.54	191.829	
20,215.00	7,104.00	6,700.00	6,496.62	215.88	31.43	50.72	-1,516.20	-53.34	13,546.30	13,475.75	70.55	192.006	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 756H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	3.28	3.28	177.33	-25.12	1.17	25.14				
100.00	100.00	100.00	100.00	3.29	3.29	177.33	-25.12	1.17	25.14	18.56	6.58	3.822	
200.00	200.00	200.00	200.00	3.34	3.34	177.33	-25.12	1.17	25.14	18.47	6.67	3.768	
300.00	300.00	300.00	300.00	3.42	3.42	177.33	-25.12	1.17	25.14	18.30	6.84	3.676	
400.00	400.00	400.00	400.00	3.54	3.54	177.33	-25.12	1.17	25.14	18.07	7.08	3.553	
500.00	500.00	500.00	500.00	3.69	3.69	177.33	-25.12	1.17	25.14	17.77	7.37	3.409	CC
600.00	599.98	599.12	599.10	3.86	3.85	29.01	-26.83	1.30	25.33	17.63	7.71	3.287	ES
700.00	699.84	698.22	698.06	4.04	4.04	33.85	-31.95	1.71	26.03	17.96	8.06	3.228	SF
800.00	799.45	797.24	796.71	4.26	4.25	41.26	-40.47	2.38	27.57	19.11	8.46	3.259	
849.50	848.63	846.22	845.38	4.37	4.36	45.55	-45.95	2.81	28.79	20.11	8.67	3.320	
900.00	898.77	896.19	894.92	4.49	4.48	40.64	-52.38	3.32	30.41	21.52	8.90	3.419	
973.84	972.07	969.23	967.13	4.68	4.66	29.56	-63.34	4.18	33.32	24.08	9.24	3.607	
1,000.00	998.03	995.08	992.62	4.74	4.73	29.13	-67.66	4.52	34.54	25.18	9.36	3.691	
1,100.00	1,097.29	1,093.64	1,089.40	5.02	5.01	26.60	-86.21	5.98	41.25	31.41	9.84	4.193	
1,200.00	1,196.54	1,191.63	1,184.93	5.30	5.32	23.50	-107.94	7.69	51.24	40.91	10.33	4.961	
1,300.00	1,295.80	1,288.81	1,278.88	5.61	5.66	20.57	-132.70	9.64	64.59	53.76	10.83	5.965	
1,400.00	1,395.06	1,385.95	1,371.97	5.92	6.02	18.12	-160.39	11.82	81.08	69.71	11.37	7.131	
1,500.00	1,494.31	1,484.42	1,466.13	6.24	6.41	16.39	-189.09	14.07	98.33	86.35	11.98	8.206	
1,600.00	1,593.57	1,582.89	1,560.29	6.57	6.82	15.18	-217.79	16.33	115.63	103.02	12.61	9.167	
1,700.00	1,692.82	1,681.35	1,654.46	6.91	7.24	14.29	-246.49	18.59	132.98	119.72	13.26	10.027	
1,800.00	1,792.08	1,779.82	1,748.62	7.25	7.68	13.60	-275.19	20.85	150.35	136.42	13.92	10.799	
1,900.00	1,891.33	1,878.28	1,842.78	7.60	8.12	13.05	-303.89	23.11	167.73	153.14	14.59	11.493	
2,000.00	1,990.59	1,976.75	1,936.95	7.95	8.57	12.61	-332.59	25.37	185.13	169.85	15.28	12.119	
2,100.00	2,089.85	2,075.22	2,031.11	8.30	9.03	12.24	-361.29	27.63	202.53	186.57	15.97	12.686	
2,200.00	2,189.10	2,173.68	2,125.27	8.66	9.50	11.93	-389.99	29.89	219.95	203.28	16.66	13.200	
2,300.00	2,288.36	2,272.15	2,219.44	9.02	9.97	11.67	-418.69	32.14	237.36	220.00	17.37	13.668	
2,400.00	2,387.61	2,370.61	2,313.60	9.39	10.45	11.44	-447.39	34.40	254.79	236.71	18.08	14.096	
2,500.00	2,486.87	2,469.08	2,407.76	9.76	10.93	11.24	-476.09	36.66	272.21	253.42	18.79	14.487	
2,600.00	2,586.12	2,567.55	2,501.93	10.13	11.41	11.07	-504.79	38.92	289.64	270.13	19.51	14.847	
2,700.00	2,685.38	2,666.01	2,596.09	10.50	11.90	10.91	-533.49	41.18	307.07	286.84	20.23	15.178	
2,800.00	2,784.63	2,764.48	2,690.26	10.87	12.39	10.77	-562.19	43.44	324.50	303.54	20.96	15.483	
2,900.00	2,883.89	2,862.94	2,784.42	11.24	12.88	10.65	-590.89	45.70	341.94	320.25	21.69	15.766	
3,000.00	2,983.15	2,961.41	2,878.58	11.62	13.37	10.54	-619.59	47.95	359.37	336.95	22.42	16.029	
3,100.00	3,082.40	3,059.88	2,972.75	12.00	13.87	10.43	-648.29	50.21	376.81	353.65	23.16	16.273	
3,200.00	3,181.66	3,158.34	3,066.91	12.38	14.36	10.34	-676.99	52.47	394.25	370.35	23.89	16.501	
3,300.00	3,280.91	3,256.81	3,161.07	12.75	14.86	10.26	-705.69	54.73	411.69	387.05	24.63	16.713	
3,400.00	3,380.17	3,355.27	3,255.24	13.13	15.36	10.18	-734.39	56.99	429.13	403.75	25.37	16.912	
3,500.00	3,479.42	3,453.74	3,349.40	13.52	15.86	10.11	-763.09	59.25	446.57	420.45	26.12	17.098	
3,600.00	3,578.68	3,552.21	3,443.56	13.90	16.36	10.04	-791.79	61.51	464.01	437.14	26.86	17.273	
3,700.00	3,677.94	3,650.67	3,537.73	14.28	16.87	9.98	-820.49	63.77	481.45	453.84	27.61	17.438	
3,800.00	3,777.19	3,749.14	3,631.89	14.66	17.37	9.92	-849.19	66.02	498.89	470.53	28.36	17.593	
3,900.00	3,876.45	3,847.60	3,726.05	15.05	17.88	9.87	-877.89	68.28	516.33	487.23	29.11	17.739	
4,000.00	3,975.70	3,946.07	3,820.22	15.43	18.38	9.82	-906.59	70.54	533.77	503.92	29.86	17.878	
4,100.00	4,074.96	4,044.54	3,914.38	15.82	18.89	9.77	-935.29	72.80	551.22	520.61	30.61	18.008	
4,200.00	4,174.21	4,143.00	4,008.54	16.20	19.39	9.73	-963.99	75.06	568.66	537.30	31.36	18.132	
4,300.00	4,273.47	4,241.47	4,102.71	16.59	19.90	9.69	-992.68	77.32	586.11	553.99	32.12	18.250	
4,400.00	4,372.73	4,339.93	4,196.87	16.97	20.41	9.65	-1,021.38	79.58	603.55	570.68	32.87	18.362	
4,500.00	4,471.98	4,438.40	4,291.03	17.36	20.92	9.61	-1,050.08	81.84	620.99	587.37	33.63	18.468	
4,600.00	4,571.24	4,536.87	4,385.20	17.75	21.43	9.57	-1,078.78	84.09	638.44	604.06	34.38	18.569	
4,700.00	4,670.49	4,635.33	4,479.36	18.13	21.94	9.54	-1,107.48	86.35	655.88	620.74	35.14	18.666	
4,800.00	4,769.75	4,733.80	4,573.52	18.52	22.45	9.51	-1,136.18	88.61	673.33	637.43	35.90	18.758	
4,900.00	4,869.00	4,832.26	4,667.69	18.91	22.96	9.48	-1,164.88	90.87	690.77	654.12	36.65	18.845	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 756H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,968.26	4,930.73	4,761.85	19.30	23.47	9.45	-1,193.58	93.13	708.22	670.80	37.41	18.929	
5,100.00	5,067.51	5,029.20	4,856.02	19.69	23.98	9.43	-1,222.28	95.39	725.66	687.49	38.17	19.010	
5,200.00	5,166.77	5,127.66	4,950.18	20.07	24.49	9.40	-1,250.98	97.65	743.11	704.18	38.93	19.087	
5,300.00	5,266.03	5,226.13	5,044.34	20.46	25.01	9.38	-1,279.68	99.91	760.56	720.86	39.69	19.160	
5,400.00	5,365.28	5,324.59	5,138.51	20.85	25.52	9.35	-1,308.38	102.16	778.00	737.55	40.46	19.231	
5,500.00	5,464.54	5,423.06	5,232.67	21.24	26.03	9.33	-1,337.08	104.42	795.45	754.23	41.22	19.299	
5,600.00	5,563.79	5,521.53	5,326.83	21.63	26.54	9.31	-1,365.78	106.68	812.89	770.91	41.98	19.364	
5,700.00	5,663.05	5,619.99	5,421.00	22.02	27.06	9.29	-1,394.48	108.94	830.34	787.60	42.74	19.427	
5,800.00	5,762.30	5,718.46	5,515.16	22.41	27.57	9.27	-1,423.18	111.20	847.79	804.28	43.50	19.487	
5,900.00	5,861.56	5,816.92	5,609.32	22.80	28.08	9.25	-1,451.88	113.46	865.23	820.96	44.27	19.546	
6,000.00	5,960.82	5,915.39	5,703.49	23.19	28.60	9.23	-1,480.58	115.72	882.68	837.65	45.03	19.602	
6,100.00	6,060.07	6,013.85	5,797.65	23.58	29.11	9.22	-1,509.28	117.98	900.13	854.33	45.80	19.656	
6,200.00	6,159.33	6,112.32	5,891.81	23.97	29.62	9.20	-1,537.98	120.23	917.57	871.01	46.56	19.708	
6,300.00	6,258.58	6,210.79	5,985.98	24.36	30.14	9.18	-1,566.68	122.49	935.02	887.69	47.32	19.758	
6,400.00	6,357.84	6,309.25	6,080.14	24.76	30.65	9.17	-1,595.38	124.75	952.47	904.38	48.09	19.806	
6,500.00	6,457.09	6,407.72	6,174.30	25.15	31.17	9.15	-1,624.08	127.01	969.91	921.06	48.85	19.853	
6,528.17	6,485.05	6,435.46	6,200.83	25.26	31.31	9.15	-1,632.17	127.65	974.83	925.76	49.07	19.866	
6,550.00	6,506.71	6,456.95	6,221.38	25.34	31.42	23.55	-1,638.43	128.14	978.63	929.39	49.24	19.876	
6,600.00	6,556.11	6,506.05	6,268.34	25.54	31.68	46.28	-1,652.74	129.27	987.30	937.68	49.63	19.895	
6,650.00	6,605.00	6,554.74	6,314.90	25.74	31.93	58.29	-1,666.93	130.38	995.91	945.89	50.02	19.910	
6,700.00	6,653.07	6,602.70	6,360.77	25.93	32.19	65.14	-1,680.91	131.48	1,004.48	954.06	50.42	19.923	
6,750.00	6,700.02	6,649.65	6,405.66	26.12	32.43	69.52	-1,694.60	132.56	1,013.09	962.27	50.82	19.934	
6,800.00	6,745.56	6,695.30	6,449.31	26.31	32.67	72.62	-1,707.90	133.61	1,021.84	970.60	51.24	19.943	
6,850.00	6,789.42	6,739.36	6,491.45	26.50	32.90	74.97	-1,720.75	134.62	1,030.88	979.21	51.67	19.953	
6,900.00	6,831.32	6,781.56	6,531.81	26.69	33.12	76.85	-1,733.05	135.59	1,040.34	988.23	52.11	19.964	
6,950.00	6,871.01	6,814.76	6,563.50	26.87	33.30	78.12	-1,742.85	136.80	1,050.52	998.00	52.52	20.004	
7,000.00	6,908.23	6,850.00	6,596.88	27.05	33.49	79.15	-1,753.74	139.84	1,061.71	1,008.73	52.98	20.041	
7,050.00	6,942.77	6,877.75	6,622.89	27.23	33.64	79.67	-1,762.65	143.54	1,073.88	1,020.46	53.42	20.103	
7,100.00	6,974.40	6,909.73	6,652.51	27.41	33.82	80.12	-1,773.26	149.22	1,087.04	1,033.10	53.94	20.151	
7,150.00	7,002.93	6,942.13	6,682.07	27.60	34.01	80.40	-1,784.36	156.50	1,101.15	1,046.63	54.52	20.197	
7,200.00	7,028.20	6,975.05	6,711.54	27.80	34.20	80.54	-1,795.98	165.46	1,116.18	1,061.04	55.14	20.242	
7,250.00	7,050.03	7,008.62	6,740.92	28.00	34.39	80.56	-1,808.13	176.19	1,132.09	1,076.28	55.81	20.285	
7,300.00	7,068.30	7,042.99	6,770.24	28.22	34.59	80.48	-1,820.87	188.81	1,148.82	1,092.31	56.52	20.328	
7,350.00	7,082.89	7,078.36	6,799.51	28.45	34.81	80.31	-1,834.25	203.50	1,166.33	1,109.08	57.25	20.372	
7,400.00	7,093.72	7,115.00	6,828.76	28.70	35.02	80.07	-1,848.35	220.46	1,184.55	1,126.55	58.00	20.422	
7,450.00	7,100.71	7,153.25	6,858.03	28.96	35.25	79.79	-1,863.29	240.02	1,203.41	1,144.65	58.76	20.479	
7,500.00	7,103.82	7,193.58	6,887.38	29.24	35.50	79.48	-1,879.21	262.62	1,222.83	1,163.31	59.52	20.546	
7,515.00	7,104.00	7,206.17	6,896.21	29.32	35.57	79.39	-1,884.21	270.07	1,228.76	1,169.02	59.74	20.568	
7,600.00	7,104.00	7,289.51	6,950.31	29.84	36.08	82.33	-1,917.47	323.95	1,263.15	1,202.17	60.99	20.712	
7,700.00	7,104.00	7,423.12	7,019.64	30.51	36.90	85.96	-1,970.27	424.90	1,303.77	1,241.38	62.39	20.897	
7,800.00	7,104.00	7,601.94	7,074.47	31.26	38.02	88.66	-2,036.37	581.08	1,341.06	1,277.31	63.75	21.035	
7,900.00	7,104.00	7,798.85	7,084.97	32.07	39.29	89.17	-2,097.77	767.46	1,371.64	1,306.37	65.28	21.013	
8,000.00	7,104.00	7,986.61	7,085.10	32.94	40.57	89.21	-2,143.92	949.43	1,395.71	1,328.78	66.93	20.854	
8,100.00	7,104.00	8,179.76	7,085.24	33.86	41.96	89.23	-2,178.85	1,139.36	1,413.27	1,344.64	68.63	20.593	
8,200.00	7,104.00	8,376.72	7,085.38	34.84	43.45	89.25	-2,201.21	1,335.01	1,424.09	1,353.75	70.33	20.247	
8,300.00	7,104.00	8,575.71	7,085.52	35.86	45.00	89.26	-2,210.09	1,533.76	1,428.01	1,356.01	72.00	19.833	
8,400.00	7,104.00	8,684.56	7,085.60	36.92	45.89	89.26	-2,210.56	1,642.60	1,427.87	1,353.78	74.08	19.274	
8,500.00	7,104.00	8,784.56	7,085.67	38.02	46.74	89.26	-2,210.93	1,742.60	1,427.70	1,351.42	76.28	18.717	
8,600.00	7,104.00	8,884.56	7,085.74	39.15	47.63	89.27	-2,211.31	1,842.60	1,427.53	1,348.98	78.55	18.175	
8,700.00	7,104.00	8,984.56	7,085.81	40.32	48.56	89.27	-2,211.68	1,942.60	1,427.36	1,346.49	80.87	17.649	
8,800.00	7,104.00	9,084.56	7,085.88	41.52	49.53	89.27	-2,212.06	2,042.60	1,427.19	1,343.93	83.26	17.141	
8,900.00	7,104.00	9,184.56	7,085.95	42.74	50.53	89.28	-2,212.44	2,142.60	1,427.02	1,341.32	85.70	16.651	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 756H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,104.00	9,284.56	7,086.03	43.99	51.56	89.28	-2,212.81	2,242.60	1,426.85	1,338.66	88.19	16.179	
9,100.00	7,104.00	9,384.56	7,086.10	45.26	52.62	89.28	-2,213.19	2,342.60	1,426.68	1,335.96	90.72	15.726	
9,200.00	7,104.00	9,484.56	7,086.17	46.55	53.71	89.28	-2,213.56	2,442.60	1,426.51	1,333.22	93.30	15.290	
9,300.00	7,104.00	9,584.55	7,086.24	47.85	54.82	89.29	-2,213.94	2,542.60	1,426.34	1,330.43	95.91	14.872	
9,400.00	7,104.00	9,684.55	7,086.31	49.18	55.96	89.29	-2,214.32	2,642.60	1,426.17	1,327.62	98.56	14.471	
9,500.00	7,104.00	9,784.55	7,086.38	50.52	57.13	89.29	-2,214.69	2,742.60	1,426.00	1,324.77	101.23	14.086	
9,600.00	7,104.00	9,884.55	7,086.45	51.88	58.31	89.29	-2,215.07	2,842.59	1,425.84	1,321.89	103.94	13.717	
9,700.00	7,104.00	9,984.55	7,086.52	53.25	59.52	89.30	-2,215.44	2,942.59	1,425.67	1,318.99	106.68	13.364	
9,800.00	7,104.00	10,084.55	7,086.60	54.63	60.74	89.30	-2,215.82	3,042.59	1,425.50	1,316.06	109.44	13.025	
9,900.00	7,104.00	10,184.55	7,086.67	56.03	61.99	89.30	-2,216.19	3,142.59	1,425.33	1,313.10	112.22	12.701	
10,000.00	7,104.00	10,284.55	7,086.74	57.43	63.25	89.31	-2,216.57	3,242.59	1,425.16	1,310.13	115.03	12.389	
10,100.00	7,104.00	10,384.55	7,086.81	58.85	64.52	89.31	-2,216.95	3,342.59	1,424.99	1,307.13	117.86	12.091	
10,200.00	7,104.00	10,484.55	7,086.88	60.27	65.81	89.31	-2,217.32	3,442.59	1,424.82	1,304.12	120.70	11.805	
10,300.00	7,104.00	10,584.55	7,086.95	61.71	67.12	89.31	-2,217.70	3,542.59	1,424.65	1,301.09	123.56	11.530	
10,400.00	7,104.00	10,684.55	7,087.02	63.15	68.43	89.32	-2,218.07	3,642.59	1,424.48	1,298.04	126.44	11.266	
10,500.00	7,104.00	10,784.55	7,087.09	64.60	69.76	89.32	-2,218.45	3,742.59	1,424.31	1,294.98	129.34	11.013	
10,600.00	7,104.00	10,884.55	7,087.16	66.05	71.10	89.32	-2,218.83	3,842.59	1,424.14	1,291.90	132.24	10.769	
10,700.00	7,104.00	10,984.55	7,087.24	67.52	72.46	89.33	-2,219.20	3,942.58	1,423.97	1,288.81	135.16	10.535	
10,800.00	7,104.00	11,084.55	7,087.31	68.99	73.82	89.33	-2,219.58	4,042.58	1,423.80	1,285.71	138.10	10.310	
10,900.00	7,104.00	11,184.55	7,087.38	70.46	75.19	89.33	-2,219.95	4,142.58	1,423.63	1,282.59	141.04	10.094	
11,000.00	7,104.00	11,284.55	7,087.45	71.94	76.57	89.33	-2,220.33	4,242.58	1,423.46	1,279.47	144.00	9.885	
11,100.00	7,104.00	11,384.55	7,087.52	73.43	77.96	89.34	-2,220.70	4,342.58	1,423.30	1,276.33	146.97	9.685	
11,200.00	7,104.00	11,484.55	7,087.59	74.92	79.36	89.34	-2,221.08	4,442.58	1,423.13	1,273.18	149.94	9.491	
11,300.00	7,104.00	11,584.55	7,087.66	76.41	80.77	89.34	-2,221.46	4,542.58	1,422.96	1,270.03	152.93	9.305	
11,400.00	7,104.00	11,684.55	7,087.73	77.91	82.18	89.34	-2,221.83	4,642.58	1,422.79	1,266.87	155.92	9.125	
11,500.00	7,104.00	11,784.55	7,087.81	79.41	83.60	89.35	-2,222.21	4,742.58	1,422.62	1,263.70	158.92	8.952	
11,600.00	7,104.00	11,884.55	7,087.88	80.92	85.03	89.35	-2,222.58	4,842.58	1,422.45	1,260.52	161.93	8.784	
11,700.00	7,104.00	11,984.55	7,087.95	82.43	86.46	89.35	-2,222.96	4,942.58	1,422.28	1,257.33	164.95	8.623	
11,800.00	7,104.00	12,084.55	7,088.02	83.94	87.90	89.36	-2,223.34	5,042.57	1,422.11	1,254.14	167.97	8.466	
11,900.00	7,104.00	12,184.55	7,088.09	85.46	89.34	89.36	-2,223.71	5,142.57	1,421.94	1,250.94	171.00	8.315	
12,000.00	7,104.00	12,284.55	7,088.16	86.98	90.79	89.36	-2,224.09	5,242.57	1,421.77	1,247.73	174.04	8.169	
12,100.00	7,104.00	12,384.55	7,088.23	88.50	92.25	89.36	-2,224.46	5,342.57	1,421.60	1,244.52	177.08	8.028	
12,200.00	7,104.00	12,484.55	7,088.30	90.03	93.71	89.37	-2,224.84	5,442.57	1,421.43	1,241.31	180.13	7.891	
12,300.00	7,104.00	12,584.55	7,088.37	91.55	95.17	89.37	-2,225.21	5,542.57	1,421.26	1,238.08	183.18	7.759	
12,400.00	7,104.00	12,684.55	7,088.45	93.08	96.64	89.37	-2,225.59	5,642.57	1,421.10	1,234.86	186.24	7.631	
12,500.00	7,104.00	12,784.55	7,088.52	94.62	98.11	89.38	-2,225.97	5,742.57	1,420.93	1,231.62	189.30	7.506	
12,600.00	7,104.00	12,884.55	7,088.59	96.15	99.59	89.38	-2,226.34	5,842.57	1,420.76	1,228.39	192.37	7.386	
12,700.00	7,104.00	12,984.55	7,088.66	97.69	101.07	89.38	-2,226.72	5,942.57	1,420.59	1,225.15	195.44	7.269	
12,800.00	7,104.00	13,084.55	7,088.73	99.23	102.56	89.38	-2,227.09	6,042.57	1,420.42	1,221.90	198.52	7.155	
12,900.00	7,104.00	13,184.55	7,088.80	100.77	104.04	89.39	-2,227.47	6,142.56	1,420.25	1,218.65	201.59	7.045	
13,000.00	7,104.00	13,284.55	7,088.87	102.31	105.54	89.39	-2,227.85	6,242.56	1,420.08	1,215.40	204.68	6.938	
13,100.00	7,104.00	13,384.55	7,088.94	103.86	107.03	89.39	-2,228.22	6,342.56	1,419.91	1,212.15	207.76	6.834	
13,200.00	7,104.00	13,484.55	7,089.02	105.40	108.53	89.40	-2,228.60	6,442.56	1,419.74	1,208.89	210.85	6.733	
13,300.00	7,104.00	13,584.55	7,089.09	106.95	110.03	89.40	-2,228.97	6,542.56	1,419.57	1,205.62	213.95	6.635	
13,400.00	7,104.00	13,684.55	7,089.16	108.50	111.53	89.40	-2,229.35	6,642.56	1,419.40	1,202.36	217.05	6.540	
13,500.00	7,104.00	13,784.55	7,089.23	110.05	113.04	89.40	-2,229.73	6,742.56	1,419.23	1,199.09	220.14	6.447	
13,600.00	7,104.00	13,884.55	7,089.30	111.60	114.55	89.41	-2,230.10	6,842.56	1,419.06	1,195.82	223.25	6.356	
13,700.00	7,104.00	13,984.55	7,089.37	113.16	116.06	89.41	-2,230.48	6,942.56	1,418.90	1,192.54	226.35	6.269	
13,800.00	7,104.00	14,084.55	7,089.44	114.71	117.57	89.41	-2,230.85	7,042.56	1,418.73	1,189.27	229.46	6.183	
13,900.00	7,104.00	14,184.55	7,089.51	116.27	119.09	89.41	-2,231.23	7,142.56	1,418.56	1,185.99	232.57	6.099	
14,000.00	7,104.00	14,284.55	7,089.59	117.83	120.61	89.42	-2,231.60	7,242.55	1,418.39	1,182.70	235.68	6.018	
14,100.00	7,104.00	14,384.55	7,089.66	119.38	122.13	89.42	-2,231.98	7,342.55	1,418.22	1,179.42	238.80	5.939	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 756H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,104.00	14,484.55	7,089.73	120.94	123.65	89.42	-2,232.36	7,442.55	1,418.05	1,176.13	241.92	5.862	
14,300.00	7,104.00	14,584.55	7,089.80	122.50	125.18	89.43	-2,232.73	7,542.55	1,417.88	1,172.84	245.04	5.786	
14,400.00	7,104.00	14,684.55	7,089.87	124.07	126.70	89.43	-2,233.11	7,642.55	1,417.71	1,169.55	248.16	5.713	
14,500.00	7,104.00	14,784.55	7,089.94	125.63	128.23	89.43	-2,233.48	7,742.55	1,417.54	1,166.26	251.28	5.641	
14,600.00	7,104.00	14,884.55	7,090.01	127.19	129.76	89.43	-2,233.86	7,842.55	1,417.37	1,162.97	254.41	5.571	
14,700.00	7,104.00	14,984.55	7,090.08	128.76	131.29	89.44	-2,234.24	7,942.55	1,417.20	1,159.67	257.54	5.503	
14,800.00	7,104.00	15,084.55	7,090.15	130.32	132.83	89.44	-2,234.61	8,042.55	1,417.03	1,156.37	260.66	5.436	
14,900.00	7,104.00	15,184.55	7,090.23	131.89	134.36	89.44	-2,234.99	8,142.55	1,416.87	1,153.07	263.80	5.371	
15,000.00	7,104.00	15,284.55	7,090.30	133.46	135.90	89.45	-2,235.36	8,242.55	1,416.70	1,149.77	266.93	5.307	
15,100.00	7,104.00	15,384.55	7,090.37	135.02	137.44	89.45	-2,235.74	8,342.54	1,416.53	1,146.46	270.06	5.245	
15,200.00	7,104.00	15,484.55	7,090.44	136.59	138.98	89.45	-2,236.11	8,442.54	1,416.36	1,143.16	273.20	5.184	
15,300.00	7,104.00	15,584.55	7,090.51	138.16	140.52	89.45	-2,236.49	8,542.54	1,416.19	1,139.85	276.34	5.125	
15,400.00	7,104.00	15,684.54	7,090.58	139.73	142.06	89.46	-2,236.87	8,642.54	1,416.02	1,136.54	279.48	5.067	
15,500.00	7,104.00	15,784.54	7,090.65	141.30	143.60	89.46	-2,237.24	8,742.54	1,415.85	1,133.23	282.62	5.010	
15,600.00	7,104.00	15,884.54	7,090.72	142.88	145.15	89.46	-2,237.62	8,842.54	1,415.68	1,129.92	285.76	4.954	
15,700.00	7,104.00	15,984.54	7,090.80	144.45	146.69	89.47	-2,237.99	8,942.54	1,415.51	1,126.61	288.90	4.900	
15,800.00	7,104.00	16,084.54	7,090.87	146.02	148.24	89.47	-2,238.37	9,042.54	1,415.34	1,123.30	292.04	4.846	
15,900.00	7,104.00	16,184.54	7,090.94	147.60	149.79	89.47	-2,238.75	9,142.54	1,415.17	1,119.98	295.19	4.794	
16,000.00	7,104.00	16,284.54	7,091.01	149.17	151.34	89.47	-2,239.12	9,242.54	1,415.00	1,116.67	298.34	4.743	
16,100.00	7,104.00	16,384.54	7,091.08	150.74	152.89	89.48	-2,239.50	9,342.54	1,414.84	1,113.35	301.49	4.693	
16,200.00	7,104.00	16,484.54	7,091.15	152.32	154.44	89.48	-2,239.87	9,442.54	1,414.67	1,110.03	304.63	4.644	
16,300.00	7,104.00	16,584.54	7,091.22	153.89	155.99	89.48	-2,240.25	9,542.53	1,414.50	1,106.71	307.78	4.596	
16,400.00	7,104.00	16,684.54	7,091.29	155.47	157.55	89.49	-2,240.62	9,642.53	1,414.33	1,103.39	310.94	4.549	
16,500.00	7,104.00	16,784.54	7,091.36	157.05	159.10	89.49	-2,241.00	9,742.53	1,414.16	1,100.07	314.09	4.502	
16,600.00	7,104.00	16,884.54	7,091.44	158.63	160.66	89.49	-2,241.38	9,842.53	1,413.99	1,096.75	317.24	4.457	
16,700.00	7,104.00	16,984.54	7,091.51	160.20	162.21	89.49	-2,241.75	9,942.53	1,413.82	1,093.43	320.40	4.413	
16,800.00	7,104.00	17,084.54	7,091.58	161.78	163.77	89.50	-2,242.13	10,042.53	1,413.65	1,090.10	323.55	4.369	
16,900.00	7,104.00	17,184.54	7,091.65	163.36	165.33	89.50	-2,242.50	10,142.53	1,413.48	1,086.78	326.71	4.326	
17,000.00	7,104.00	17,284.54	7,091.72	164.94	166.89	89.50	-2,242.88	10,242.53	1,413.31	1,083.45	329.86	4.285	
17,100.00	7,104.00	17,384.54	7,091.79	166.52	168.45	89.51	-2,243.26	10,342.53	1,413.14	1,080.12	333.02	4.243	
17,200.00	7,104.00	17,484.54	7,091.86	168.10	170.01	89.51	-2,243.63	10,442.53	1,412.98	1,076.80	336.18	4.203	
17,300.00	7,104.00	17,584.54	7,091.93	169.68	171.57	89.51	-2,244.01	10,542.53	1,412.81	1,073.47	339.34	4.163	
17,400.00	7,104.00	17,684.54	7,092.01	171.26	173.13	89.51	-2,244.38	10,642.52	1,412.64	1,070.14	342.50	4.124	
17,500.00	7,104.00	17,784.54	7,092.08	172.84	174.69	89.52	-2,244.76	10,742.52	1,412.47	1,066.81	345.66	4.086	
17,600.00	7,104.00	17,884.54	7,092.15	174.42	176.26	89.52	-2,245.13	10,842.52	1,412.30	1,063.48	348.82	4.049	
17,700.00	7,104.00	17,984.54	7,092.22	176.00	177.82	89.52	-2,245.51	10,942.52	1,412.13	1,060.15	351.98	4.012	
17,800.00	7,104.00	18,084.54	7,092.29	177.59	179.39	89.52	-2,245.89	11,042.52	1,411.96	1,056.81	355.15	3.976	
17,900.00	7,104.00	18,184.54	7,092.36	179.17	180.95	89.53	-2,246.26	11,142.52	1,411.79	1,053.48	358.31	3.940	
18,000.00	7,104.00	18,284.54	7,092.43	180.75	182.52	89.53	-2,246.64	11,242.52	1,411.62	1,050.15	361.48	3.905	
18,100.00	7,104.00	18,384.54	7,092.50	182.33	184.08	89.53	-2,247.01	11,342.52	1,411.45	1,046.81	364.64	3.871	
18,200.00	7,104.00	18,484.54	7,092.57	183.92	185.65	89.54	-2,247.39	11,442.52	1,411.29	1,043.48	367.81	3.837	
18,300.00	7,104.00	18,584.54	7,092.65	185.50	187.22	89.54	-2,247.77	11,542.52	1,411.12	1,040.14	370.97	3.804	
18,400.00	7,104.00	18,684.54	7,092.72	187.09	188.79	89.54	-2,248.14	11,642.52	1,410.95	1,036.81	374.14	3.771	
18,500.00	7,104.00	18,784.54	7,092.79	188.67	190.36	89.54	-2,248.52	11,742.51	1,410.78	1,033.47	377.31	3.739	
18,600.00	7,104.00	18,884.54	7,092.86	190.26	191.92	89.55	-2,248.89	11,842.51	1,410.61	1,030.13	380.48	3.707	
18,700.00	7,104.00	18,984.54	7,092.93	191.84	193.49	89.55	-2,249.27	11,942.51	1,410.44	1,026.80	383.64	3.676	
18,800.00	7,104.00	19,084.54	7,093.00	193.43	195.07	89.55	-2,249.65	12,042.51	1,410.27	1,023.46	386.81	3.646	
18,900.00	7,104.00	19,184.54	7,093.07	195.01	196.64	89.56	-2,250.02	12,142.51	1,410.10	1,020.12	389.98	3.616	
19,000.00	7,104.00	19,284.54	7,093.14	196.60	198.21	89.56	-2,250.40	12,242.51	1,409.93	1,016.78	393.15	3.586	
19,100.00	7,104.00	19,384.54	7,093.22	198.18	199.78	89.56	-2,250.77	12,342.51	1,409.76	1,013.44	396.33	3.557	
19,200.00	7,104.00	19,484.54	7,093.29	199.77	201.35	89.56	-2,251.15	12,442.51	1,409.60	1,010.10	399.50	3.528	
19,300.00	7,104.00	19,584.54	7,093.36	201.36	202.92	89.57	-2,251.52	12,542.51	1,409.43	1,006.76	402.67	3.500	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Offset Design: Rosa Unit 32 - Rosa Unit 756H - OH - Plan #6

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HRGM+MS

Rule Assigned:

Offset Well Error: 3.28 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,400.00	7,104.00	19,684.54	7,093.43	202.94	204.50	89.57	-2,251.90	12,642.51	1,409.26	1,003.42	405.84	3.472	
19,500.00	7,104.00	19,784.54	7,093.50	204.53	206.07	89.57	-2,252.28	12,742.51	1,409.09	1,000.07	409.01	3.445	
19,600.00	7,104.00	19,884.54	7,093.57	206.12	207.65	89.58	-2,252.65	12,842.50	1,408.92	996.73	412.19	3.418	
19,700.00	7,104.00	19,984.54	7,093.64	207.70	209.22	89.58	-2,253.03	12,942.50	1,408.75	993.39	415.36	3.392	
19,800.00	7,104.00	20,084.54	7,093.71	209.29	210.79	89.58	-2,253.40	13,042.50	1,408.58	990.05	418.53	3.366	
19,900.00	7,104.00	20,184.54	7,093.79	210.88	212.37	89.58	-2,253.78	13,142.50	1,408.41	986.70	421.71	3.340	
20,000.00	7,104.00	20,284.54	7,093.86	212.47	213.95	89.59	-2,254.16	13,242.50	1,408.24	983.36	424.88	3.314	
20,100.00	7,104.00	20,384.54	7,093.93	214.05	215.52	89.59	-2,254.53	13,342.50	1,408.07	980.02	428.06	3.289	
20,200.00	7,104.00	20,484.54	7,094.00	215.64	217.10	89.59	-2,254.91	13,442.50	1,407.91	976.67	431.23	3.265	
20,215.00	7,104.00	20,499.54	7,094.01	215.88	217.33	89.59	-2,254.96	13,457.50	1,407.88	976.17	431.71	3.261	

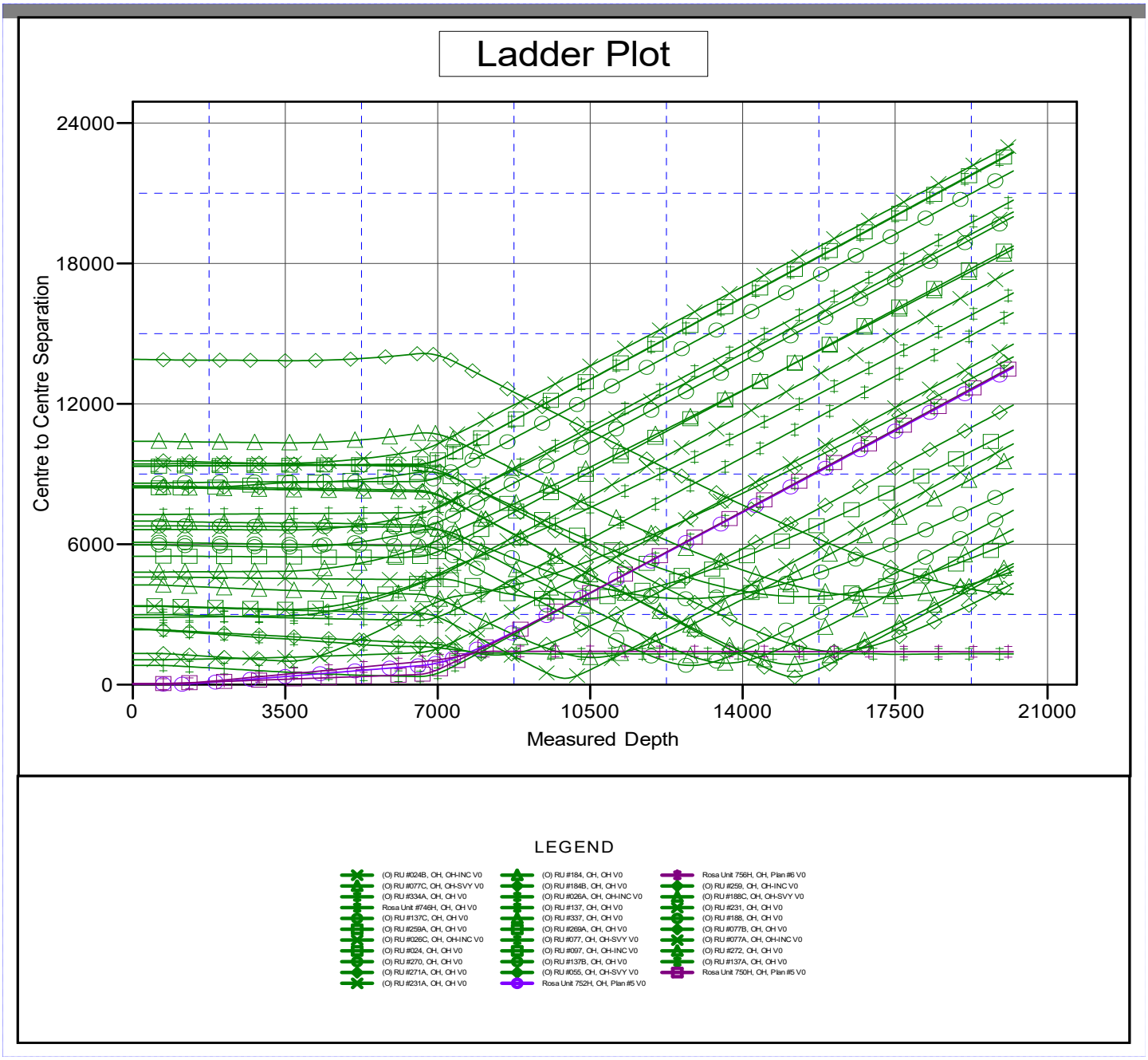
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6534+30 @ 6564.00usft (H&P 530)
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 754H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



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

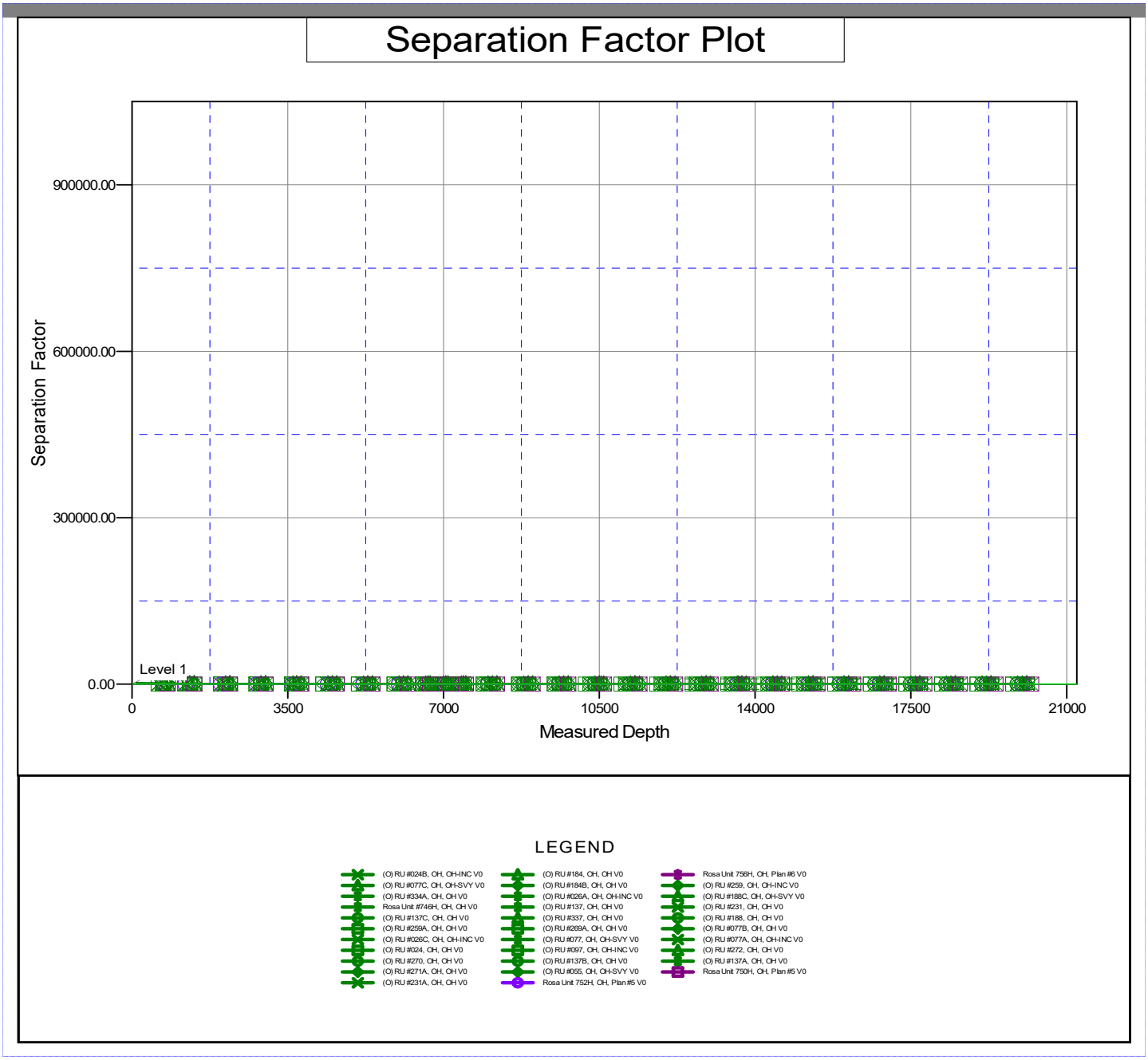
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Project:	Rio Arriba, NM (NAD83)	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Reference Site:	Rosa Unit 32	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.28 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM 5000 Multi User Db
Reference Design:	Plan #5	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 6534+30 @ 6564.00usft (H&P 530)
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 754H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



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Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 32
Rosa Unit 754H

OH

Plan: Plan #5

Standard Planning Report

19 April, 2024

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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 32				
Site Position:		**Northing:**	2,131,320.20 usft	**Latitude:**	36.856242
From:	Lat/Long	**Easting:**	2,857,795.25 usft	**Longitude:**	-107.372900
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "		

Well	Rosa Unit 754H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	2,131,273.03 usft	**Latitude:**	36.856114
	+E/-W	0.00 usft	**Easting:**	2,857,646.36 usft	**Longitude:**	-107.373409
Position Uncertainty		3.28 usft	**Wellhead Elevation:**	usft	**Ground Level:**	6,534.00 usft
Grid Convergence:		0.28 °				

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	11/21/2022	8.56	63.43	49,565.66399944

Design	Plan #5			
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	90.31

Plan Survey Tool Program **Date** 4/19/2024

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,214.91	Plan #5 (OH)	MWD+HRGM+MS	
				MWD + HRGM + Multi-Station	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
849.50	6.99	150.00	848.63	-18.44	10.65	2.00	2.00	0.00	150.00	
973.84	7.00	170.54	972.07	-32.46	15.68	2.00	0.00	16.52	100.07	
6,528.17	7.00	170.54	6,485.05	-699.70	126.91	0.00	0.00	0.00	0.00	
7,515.00	90.00	90.31	7,104.00	-778.00	762.98	9.00	8.41	-8.13	-80.29	RU 754H POE
20,215.00	90.00	90.31	7,104.00	-847.13	13,462.79	0.00	0.00	0.00	0.00	RU 754H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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	150.00	599.98	-1.51	0.87	0.88	2.00	2.00	0.00
700.00	4.00	150.00	699.84	-6.04	3.49	3.52	2.00	2.00	0.00
800.00	6.00	150.00	799.45	-13.59	7.85	7.92	2.00	2.00	0.00
849.50	6.99	150.00	848.63	-18.44	10.65	10.75	2.00	2.00	0.00
Start DLS 2.00 TFO 100.07									
900.00	6.89	158.32	898.77	-23.91	13.30	13.43	2.00	-0.21	16.48
973.84	7.00	170.54	972.07	-32.46	15.68	15.85	2.00	0.15	16.54
Start 5554.33 hold at 973.84 MD									
1,000.00	7.00	170.54	998.03	-35.61	16.20	16.39	0.00	0.00	0.00
1,100.00	7.00	170.54	1,097.29	-47.62	18.20	18.46	0.00	0.00	0.00
1,200.00	7.00	170.54	1,196.54	-59.63	20.20	20.53	0.00	0.00	0.00
1,300.00	7.00	170.54	1,295.80	-71.64	22.21	22.59	0.00	0.00	0.00
1,400.00	7.00	170.54	1,395.06	-83.66	24.21	24.66	0.00	0.00	0.00
1,500.00	7.00	170.54	1,494.31	-95.67	26.21	26.73	0.00	0.00	0.00
1,600.00	7.00	170.54	1,593.57	-107.68	28.21	28.80	0.00	0.00	0.00
1,700.00	7.00	170.54	1,692.82	-119.70	30.22	30.86	0.00	0.00	0.00
1,800.00	7.00	170.54	1,792.08	-131.71	32.22	32.93	0.00	0.00	0.00
1,900.00	7.00	170.54	1,891.33	-143.72	34.22	35.00	0.00	0.00	0.00
2,000.00	7.00	170.54	1,990.59	-155.73	36.23	37.07	0.00	0.00	0.00
2,100.00	7.00	170.54	2,089.85	-167.75	38.23	39.14	0.00	0.00	0.00
2,200.00	7.00	170.54	2,189.10	-179.76	40.23	41.20	0.00	0.00	0.00
2,300.00	7.00	170.54	2,288.36	-191.77	42.23	43.27	0.00	0.00	0.00
2,400.00	7.00	170.54	2,387.61	-203.79	44.24	45.34	0.00	0.00	0.00
2,500.00	7.00	170.54	2,486.87	-215.80	46.24	47.41	0.00	0.00	0.00
2,600.00	7.00	170.54	2,586.12	-227.81	48.24	49.47	0.00	0.00	0.00
2,700.00	7.00	170.54	2,685.38	-239.82	50.24	51.54	0.00	0.00	0.00
2,716.75	7.00	170.54	2,702.00	-241.84	50.58	51.89	0.00	0.00	0.00
Ojo Alamo									
2,800.00	7.00	170.54	2,784.63	-251.84	52.25	53.61	0.00	0.00	0.00
2,862.83	7.00	170.54	2,847.00	-259.38	53.50	54.91	0.00	0.00	0.00
Kirtland									
2,900.00	7.00	170.54	2,883.89	-263.85	54.25	55.68	0.00	0.00	0.00
3,000.00	7.00	170.54	2,983.15	-275.86	56.25	57.74	0.00	0.00	0.00
3,100.00	7.00	170.54	3,082.40	-287.88	58.25	59.81	0.00	0.00	0.00
3,200.00	7.00	170.54	3,181.66	-299.89	60.26	61.88	0.00	0.00	0.00
3,225.53	7.00	170.54	3,207.00	-302.96	60.77	62.41	0.00	0.00	0.00
Fruitland									
3,296.06	7.00	170.54	3,277.00	-311.43	62.18	63.86	0.00	0.00	0.00
T/Coals									
3,300.00	7.00	170.54	3,280.91	-311.90	62.26	63.95	0.00	0.00	0.00
3,400.00	7.00	170.54	3,380.17	-323.91	64.26	66.01	0.00	0.00	0.00
3,428.04	7.00	170.54	3,408.00	-327.28	64.82	66.59	0.00	0.00	0.00
B/Coals									
3,500.00	7.00	170.54	3,479.42	-335.93	66.27	68.08	0.00	0.00	0.00
3,590.25	7.00	170.54	3,569.00	-346.77	68.07	69.95	0.00	0.00	0.00
Pictured Cliffs									

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,600.00	7.00	170.54	3,578.68	-347.94	68.27	70.15	0.00	0.00	0.00
3,700.00	7.00	170.54	3,677.94	-359.95	70.27	72.22	0.00	0.00	0.00
3,700.06	7.00	170.54	3,678.00	-359.96	70.27	72.22	0.00	0.00	0.00
Lewis									
3,800.00	7.00	170.54	3,777.19	-371.96	72.27	74.28	0.00	0.00	0.00
3,900.00	7.00	170.54	3,876.45	-383.98	74.28	76.35	0.00	0.00	0.00
4,000.00	7.00	170.54	3,975.70	-395.99	76.28	78.42	0.00	0.00	0.00
4,100.00	7.00	170.54	4,074.96	-408.00	78.28	80.49	0.00	0.00	0.00
4,200.00	7.00	170.54	4,174.21	-420.02	80.28	82.55	0.00	0.00	0.00
4,300.00	7.00	170.54	4,273.47	-432.03	82.29	84.62	0.00	0.00	0.00
4,400.00	7.00	170.54	4,372.73	-444.04	84.29	86.69	0.00	0.00	0.00
4,500.00	7.00	170.54	4,471.98	-456.05	86.29	88.76	0.00	0.00	0.00
4,600.00	7.00	170.54	4,571.24	-468.07	88.29	90.83	0.00	0.00	0.00
4,700.00	7.00	170.54	4,670.49	-480.08	90.30	92.89	0.00	0.00	0.00
4,776.07	7.00	170.54	4,746.00	-489.22	91.82	94.47	0.00	0.00	0.00
Chacra									
4,800.00	7.00	170.54	4,769.75	-492.09	92.30	94.96	0.00	0.00	0.00
4,900.00	7.00	170.54	4,869.00	-504.11	94.30	97.03	0.00	0.00	0.00
5,000.00	7.00	170.54	4,968.26	-516.12	96.30	99.10	0.00	0.00	0.00
5,100.00	7.00	170.54	5,067.51	-528.13	98.31	101.16	0.00	0.00	0.00
5,200.00	7.00	170.54	5,166.77	-540.14	100.31	103.23	0.00	0.00	0.00
5,284.86	7.00	170.54	5,251.00	-550.34	102.01	104.99	0.00	0.00	0.00
U/Cliff House									
5,300.00	7.00	170.54	5,266.03	-552.16	102.31	105.30	0.00	0.00	0.00
5,400.00	7.00	170.54	5,365.28	-564.17	104.32	107.37	0.00	0.00	0.00
5,500.00	7.00	170.54	5,464.54	-576.18	106.32	109.43	0.00	0.00	0.00
5,600.00	7.00	170.54	5,563.79	-588.20	108.32	111.50	0.00	0.00	0.00
5,614.31	7.00	170.54	5,578.00	-589.92	108.61	111.80	0.00	0.00	0.00
Cliff House									
5,642.52	7.00	170.54	5,606.00	-593.30	109.17	112.38	0.00	0.00	0.00
Menefee									
5,700.00	7.00	170.54	5,663.05	-600.21	110.32	113.57	0.00	0.00	0.00
5,800.00	7.00	170.54	5,762.30	-612.22	112.33	115.64	0.00	0.00	0.00
5,857.12	7.00	170.54	5,819.00	-619.08	113.47	116.82	0.00	0.00	0.00
Point Lookout									
5,900.00	7.00	170.54	5,861.56	-624.23	114.33	117.70	0.00	0.00	0.00
6,000.00	7.00	170.54	5,960.82	-636.25	116.33	119.77	0.00	0.00	0.00
6,100.00	7.00	170.54	6,060.07	-648.26	118.33	121.84	0.00	0.00	0.00
6,200.00	7.00	170.54	6,159.33	-660.27	120.34	123.91	0.00	0.00	0.00
6,300.00	7.00	170.54	6,258.58	-672.29	122.34	125.97	0.00	0.00	0.00
6,331.65	7.00	170.54	6,290.00	-676.09	122.97	126.63	0.00	0.00	0.00
Mancos									
6,400.00	7.00	170.54	6,357.84	-684.30	124.34	128.04	0.00	0.00	0.00
6,500.00	7.00	170.54	6,457.09	-696.31	126.34	130.11	0.00	0.00	0.00
6,528.17	7.00	170.54	6,485.05	-699.70	126.91	130.69	0.00	0.00	0.00
Start DLS 9.00 TFO -80.29									
6,550.00	7.58	155.69	6,506.71	-702.32	127.72	131.52	9.00	2.66	-68.03
6,600.00	10.28	132.10	6,556.11	-708.32	132.39	136.22	9.00	5.42	-47.17
6,650.00	13.94	119.46	6,605.00	-714.28	140.95	144.82	9.00	7.32	-25.29
6,700.00	17.98	112.18	6,653.07	-720.16	153.35	157.25	9.00	8.08	-14.55
6,750.00	22.20	107.55	6,700.02	-725.92	169.51	173.44	9.00	8.43	-9.26
6,800.00	26.50	104.35	6,745.56	-731.54	189.33	193.29	9.00	8.61	-6.41
6,850.00	30.86	101.99	6,789.42	-736.97	212.69	216.68	9.00	8.71	-4.72

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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)
6,900.00	35.24	100.17	6,831.32	-742.18	239.45	243.46	9.00	8.78	-3.65
6,950.00	39.66	98.70	6,871.01	-747.14	269.44	273.48	9.00	8.82	-2.93
7,000.00	44.08	97.48	6,908.23	-751.82	302.47	306.53	9.00	8.85	-2.43
7,029.58	46.71	96.85	6,929.00	-754.45	323.36	327.44	9.00	8.87	-2.13
Black Top									
7,050.00	48.52	96.45	6,942.77	-756.19	338.34	342.43	9.00	8.88	-1.98
7,100.00	52.97	95.55	6,974.40	-760.23	376.84	380.94	9.00	8.89	-1.80
7,150.00	57.42	94.74	7,002.93	-763.90	417.71	421.84	9.00	8.90	-1.60
7,200.00	61.87	94.02	7,028.20	-767.19	460.72	464.87	9.00	8.91	-1.45
7,250.00	66.33	93.35	7,050.03	-770.07	505.60	509.76	9.00	8.92	-1.34
7,300.00	70.80	92.73	7,068.30	-772.54	552.06	556.23	9.00	8.92	-1.25
7,350.00	75.26	92.13	7,082.89	-774.56	599.83	604.01	9.00	8.93	-1.18
7,400.00	79.73	91.57	7,093.72	-776.13	648.60	652.79	9.00	8.93	-1.13
7,450.00	84.19	91.02	7,100.71	-777.25	698.09	702.28	9.00	8.93	-1.10
7,500.00	88.66	90.47	7,103.82	-777.90	747.97	752.17	9.00	8.93	-1.09
7,515.00	90.00	90.31	7,104.00	-778.00	762.98	767.17	9.00	8.93	-1.08
Start 12700.00 hold at 7515.00 MD									
7,600.00	90.00	90.31	7,104.00	-778.46	847.97	852.17	0.00	0.00	0.00
7,700.00	90.00	90.31	7,104.00	-779.01	947.97	952.17	0.00	0.00	0.00
7,800.00	90.00	90.31	7,104.00	-779.55	1,047.97	1,052.17	0.00	0.00	0.00
7,900.00	90.00	90.31	7,104.00	-780.10	1,147.97	1,152.17	0.00	0.00	0.00
8,000.00	90.00	90.31	7,104.00	-780.64	1,247.96	1,252.17	0.00	0.00	0.00
8,100.00	90.00	90.31	7,104.00	-781.18	1,347.96	1,352.17	0.00	0.00	0.00
8,200.00	90.00	90.31	7,104.00	-781.73	1,447.96	1,452.17	0.00	0.00	0.00
8,300.00	90.00	90.31	7,104.00	-782.27	1,547.96	1,552.17	0.00	0.00	0.00
8,400.00	90.00	90.31	7,104.00	-782.82	1,647.96	1,652.17	0.00	0.00	0.00
8,500.00	90.00	90.31	7,104.00	-783.36	1,747.96	1,752.17	0.00	0.00	0.00
8,600.00	90.00	90.31	7,104.00	-783.91	1,847.96	1,852.17	0.00	0.00	0.00
8,700.00	90.00	90.31	7,104.00	-784.45	1,947.95	1,952.17	0.00	0.00	0.00
8,800.00	90.00	90.31	7,104.00	-785.00	2,047.95	2,052.17	0.00	0.00	0.00
8,900.00	90.00	90.31	7,104.00	-785.54	2,147.95	2,152.17	0.00	0.00	0.00
9,000.00	90.00	90.31	7,104.00	-786.08	2,247.95	2,252.17	0.00	0.00	0.00
9,100.00	90.00	90.31	7,104.00	-786.63	2,347.95	2,352.17	0.00	0.00	0.00
9,200.00	90.00	90.31	7,104.00	-787.17	2,447.95	2,452.17	0.00	0.00	0.00
9,300.00	90.00	90.31	7,104.00	-787.72	2,547.94	2,552.17	0.00	0.00	0.00
9,400.00	90.00	90.31	7,104.00	-788.26	2,647.94	2,652.17	0.00	0.00	0.00
9,500.00	90.00	90.31	7,104.00	-788.81	2,747.94	2,752.17	0.00	0.00	0.00
9,600.00	90.00	90.31	7,104.00	-789.35	2,847.94	2,852.17	0.00	0.00	0.00
9,700.00	90.00	90.31	7,104.00	-789.89	2,947.94	2,952.17	0.00	0.00	0.00
9,800.00	90.00	90.31	7,104.00	-790.44	3,047.94	3,052.17	0.00	0.00	0.00
9,900.00	90.00	90.31	7,104.00	-790.98	3,147.94	3,152.17	0.00	0.00	0.00
10,000.00	90.00	90.31	7,104.00	-791.53	3,247.93	3,252.17	0.00	0.00	0.00
10,100.00	90.00	90.31	7,104.00	-792.07	3,347.93	3,352.17	0.00	0.00	0.00
10,200.00	90.00	90.31	7,104.00	-792.62	3,447.93	3,452.17	0.00	0.00	0.00
10,300.00	90.00	90.31	7,104.00	-793.16	3,547.93	3,552.17	0.00	0.00	0.00
10,400.00	90.00	90.31	7,104.00	-793.70	3,647.93	3,652.17	0.00	0.00	0.00
10,500.00	90.00	90.31	7,104.00	-794.25	3,747.93	3,752.17	0.00	0.00	0.00
10,600.00	90.00	90.31	7,104.00	-794.79	3,847.93	3,852.17	0.00	0.00	0.00
10,700.00	90.00	90.31	7,104.00	-795.34	3,947.92	3,952.17	0.00	0.00	0.00
10,800.00	90.00	90.31	7,104.00	-795.88	4,047.92	4,052.17	0.00	0.00	0.00
10,900.00	90.00	90.31	7,104.00	-796.43	4,147.92	4,152.17	0.00	0.00	0.00
11,000.00	90.00	90.31	7,104.00	-796.97	4,247.92	4,252.17	0.00	0.00	0.00
11,100.00	90.00	90.31	7,104.00	-797.51	4,347.92	4,352.17	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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	90.00	90.31	7,104.00	-798.06	4,447.92	4,452.17	0.00	0.00	0.00
11,300.00	90.00	90.31	7,104.00	-798.60	4,547.92	4,552.17	0.00	0.00	0.00
11,400.00	90.00	90.31	7,104.00	-799.15	4,647.91	4,652.17	0.00	0.00	0.00
11,500.00	90.00	90.31	7,104.00	-799.69	4,747.91	4,752.17	0.00	0.00	0.00
11,600.00	90.00	90.31	7,104.00	-800.24	4,847.91	4,852.17	0.00	0.00	0.00
11,700.00	90.00	90.31	7,104.00	-800.78	4,947.91	4,952.17	0.00	0.00	0.00
11,800.00	90.00	90.31	7,104.00	-801.32	5,047.91	5,052.17	0.00	0.00	0.00
11,900.00	90.00	90.31	7,104.00	-801.87	5,147.91	5,152.17	0.00	0.00	0.00
12,000.00	90.00	90.31	7,104.00	-802.41	5,247.90	5,252.17	0.00	0.00	0.00
12,100.00	90.00	90.31	7,104.00	-802.96	5,347.90	5,352.17	0.00	0.00	0.00
12,200.00	90.00	90.31	7,104.00	-803.50	5,447.90	5,452.17	0.00	0.00	0.00
12,300.00	90.00	90.31	7,104.00	-804.05	5,547.90	5,552.17	0.00	0.00	0.00
12,400.00	90.00	90.31	7,104.00	-804.59	5,647.90	5,652.17	0.00	0.00	0.00
12,500.00	90.00	90.31	7,104.00	-805.13	5,747.90	5,752.17	0.00	0.00	0.00
12,600.00	90.00	90.31	7,104.00	-805.68	5,847.90	5,852.17	0.00	0.00	0.00
12,700.00	90.00	90.31	7,104.00	-806.22	5,947.89	5,952.17	0.00	0.00	0.00
12,800.00	90.00	90.31	7,104.00	-806.77	6,047.89	6,052.17	0.00	0.00	0.00
12,900.00	90.00	90.31	7,104.00	-807.31	6,147.89	6,152.17	0.00	0.00	0.00
13,000.00	90.00	90.31	7,104.00	-807.86	6,247.89	6,252.17	0.00	0.00	0.00
13,100.00	90.00	90.31	7,104.00	-808.40	6,347.89	6,352.17	0.00	0.00	0.00
13,200.00	90.00	90.31	7,104.00	-808.95	6,447.89	6,452.17	0.00	0.00	0.00
13,300.00	90.00	90.31	7,104.00	-809.49	6,547.89	6,552.17	0.00	0.00	0.00
13,400.00	90.00	90.31	7,104.00	-810.03	6,647.88	6,652.17	0.00	0.00	0.00
13,500.00	90.00	90.31	7,104.00	-810.58	6,747.88	6,752.17	0.00	0.00	0.00
13,600.00	90.00	90.31	7,104.00	-811.12	6,847.88	6,852.17	0.00	0.00	0.00
13,700.00	90.00	90.31	7,104.00	-811.67	6,947.88	6,952.17	0.00	0.00	0.00
13,800.00	90.00	90.31	7,104.00	-812.21	7,047.88	7,052.17	0.00	0.00	0.00
13,900.00	90.00	90.31	7,104.00	-812.76	7,147.88	7,152.17	0.00	0.00	0.00
14,000.00	90.00	90.31	7,104.00	-813.30	7,247.88	7,252.17	0.00	0.00	0.00
14,100.00	90.00	90.31	7,104.00	-813.84	7,347.87	7,352.17	0.00	0.00	0.00
14,200.00	90.00	90.31	7,104.00	-814.39	7,447.87	7,452.17	0.00	0.00	0.00
14,300.00	90.00	90.31	7,104.00	-814.93	7,547.87	7,552.17	0.00	0.00	0.00
14,400.00	90.00	90.31	7,104.00	-815.48	7,647.87	7,652.17	0.00	0.00	0.00
14,500.00	90.00	90.31	7,104.00	-816.02	7,747.87	7,752.17	0.00	0.00	0.00
14,600.00	90.00	90.31	7,104.00	-816.57	7,847.87	7,852.17	0.00	0.00	0.00
14,700.00	90.00	90.31	7,104.00	-817.11	7,947.86	7,952.17	0.00	0.00	0.00
14,800.00	90.00	90.31	7,104.00	-817.65	8,047.86	8,052.17	0.00	0.00	0.00
14,900.00	90.00	90.31	7,104.00	-818.20	8,147.86	8,152.17	0.00	0.00	0.00
15,000.00	90.00	90.31	7,104.00	-818.74	8,247.86	8,252.17	0.00	0.00	0.00
15,100.00	90.00	90.31	7,104.00	-819.29	8,347.86	8,352.17	0.00	0.00	0.00
15,200.00	90.00	90.31	7,104.00	-819.83	8,447.86	8,452.17	0.00	0.00	0.00
15,300.00	90.00	90.31	7,104.00	-820.38	8,547.86	8,552.17	0.00	0.00	0.00
15,400.00	90.00	90.31	7,104.00	-820.92	8,647.85	8,652.17	0.00	0.00	0.00
15,500.00	90.00	90.31	7,104.00	-821.46	8,747.85	8,752.17	0.00	0.00	0.00
15,600.00	90.00	90.31	7,104.00	-822.01	8,847.85	8,852.17	0.00	0.00	0.00
15,700.00	90.00	90.31	7,104.00	-822.55	8,947.85	8,952.17	0.00	0.00	0.00
15,800.00	90.00	90.31	7,104.00	-823.10	9,047.85	9,052.17	0.00	0.00	0.00
15,900.00	90.00	90.31	7,104.00	-823.64	9,147.85	9,152.17	0.00	0.00	0.00
16,000.00	90.00	90.31	7,104.00	-824.19	9,247.85	9,252.17	0.00	0.00	0.00
16,100.00	90.00	90.31	7,104.00	-824.73	9,347.84	9,352.17	0.00	0.00	0.00
16,200.00	90.00	90.31	7,104.00	-825.27	9,447.84	9,452.17	0.00	0.00	0.00
16,300.00	90.00	90.31	7,104.00	-825.82	9,547.84	9,552.17	0.00	0.00	0.00
16,400.00	90.00	90.31	7,104.00	-826.36	9,647.84	9,652.17	0.00	0.00	0.00
16,500.00	90.00	90.31	7,104.00	-826.91	9,747.84	9,752.17	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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	90.00	90.31	7,104.00	-827.45	9,847.84	9,852.17	0.00	0.00	0.00
16,700.00	90.00	90.31	7,104.00	-828.00	9,947.84	9,952.17	0.00	0.00	0.00
16,800.00	90.00	90.31	7,104.00	-828.54	10,047.83	10,052.17	0.00	0.00	0.00
16,900.00	90.00	90.31	7,104.00	-829.08	10,147.83	10,152.17	0.00	0.00	0.00
17,000.00	90.00	90.31	7,104.00	-829.63	10,247.83	10,252.17	0.00	0.00	0.00
17,100.00	90.00	90.31	7,104.00	-830.17	10,347.83	10,352.17	0.00	0.00	0.00
17,200.00	90.00	90.31	7,104.00	-830.72	10,447.83	10,452.17	0.00	0.00	0.00
17,300.00	90.00	90.31	7,104.00	-831.26	10,547.83	10,552.17	0.00	0.00	0.00
17,400.00	90.00	90.31	7,104.00	-831.81	10,647.82	10,652.17	0.00	0.00	0.00
17,500.00	90.00	90.31	7,104.00	-832.35	10,747.82	10,752.17	0.00	0.00	0.00
17,600.00	90.00	90.31	7,104.00	-832.90	10,847.82	10,852.17	0.00	0.00	0.00
17,700.00	90.00	90.31	7,104.00	-833.44	10,947.82	10,952.17	0.00	0.00	0.00
17,800.00	90.00	90.31	7,104.00	-833.98	11,047.82	11,052.17	0.00	0.00	0.00
17,900.00	90.00	90.31	7,104.00	-834.53	11,147.82	11,152.17	0.00	0.00	0.00
18,000.00	90.00	90.31	7,104.00	-835.07	11,247.82	11,252.17	0.00	0.00	0.00
18,100.00	90.00	90.31	7,104.00	-835.62	11,347.81	11,352.17	0.00	0.00	0.00
18,200.00	90.00	90.31	7,104.00	-836.16	11,447.81	11,452.17	0.00	0.00	0.00
18,300.00	90.00	90.31	7,104.00	-836.71	11,547.81	11,552.17	0.00	0.00	0.00
18,400.00	90.00	90.31	7,104.00	-837.25	11,647.81	11,652.17	0.00	0.00	0.00
18,500.00	90.00	90.31	7,104.00	-837.79	11,747.81	11,752.17	0.00	0.00	0.00
18,600.00	90.00	90.31	7,104.00	-838.34	11,847.81	11,852.17	0.00	0.00	0.00
18,700.00	90.00	90.31	7,104.00	-838.88	11,947.81	11,952.17	0.00	0.00	0.00
18,800.00	90.00	90.31	7,104.00	-839.43	12,047.80	12,052.17	0.00	0.00	0.00
18,900.00	90.00	90.31	7,104.00	-839.97	12,147.80	12,152.17	0.00	0.00	0.00
19,000.00	90.00	90.31	7,104.00	-840.52	12,247.80	12,252.17	0.00	0.00	0.00
19,100.00	90.00	90.31	7,104.00	-841.06	12,347.80	12,352.17	0.00	0.00	0.00
19,200.00	90.00	90.31	7,104.00	-841.60	12,447.80	12,452.17	0.00	0.00	0.00
19,300.00	90.00	90.31	7,104.00	-842.15	12,547.80	12,552.17	0.00	0.00	0.00
19,400.00	90.00	90.31	7,104.00	-842.69	12,647.80	12,652.17	0.00	0.00	0.00
19,500.00	90.00	90.31	7,104.00	-843.24	12,747.79	12,752.17	0.00	0.00	0.00
19,600.00	90.00	90.31	7,104.00	-843.78	12,847.79	12,852.17	0.00	0.00	0.00
19,700.00	90.00	90.31	7,104.00	-844.33	12,947.79	12,952.17	0.00	0.00	0.00
19,800.00	90.00	90.31	7,104.00	-844.87	13,047.79	13,052.17	0.00	0.00	0.00
19,900.00	90.00	90.31	7,104.00	-845.41	13,147.79	13,152.17	0.00	0.00	0.00
20,000.00	90.00	90.31	7,104.00	-845.96	13,247.79	13,252.17	0.00	0.00	0.00
20,100.00	90.00	90.31	7,104.00	-846.50	13,347.79	13,352.17	0.00	0.00	0.00
20,200.00	90.00	90.31	7,104.00	-847.05	13,447.78	13,452.17	0.00	0.00	0.00
20,215.00	90.00	90.31	7,104.00	-847.13	13,462.79	13,467.17	0.00	0.00	0.00
TD at 20215.00									

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 754H
Company:	Logos Operating LLC	**TVD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	**MD Reference:**	6534+30 @ 6564.00usft (H&P 530)
Site:	Rosa Unit 32	**North Reference:**	True
Well:	Rosa Unit 754H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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 754H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,131,273.03	2,857,646.36	36.856114	-107.373409
RU 754H PBHL - plan hits target center - Point	0.00	0.00	7,104.00	-847.13	13,462.79	2,130,490.73	2,871,113.07	36.853778	-107.327394
RU 754H POE - plan hits target center - Point	0.00	0.00	7,104.00	-778.00	762.98	2,130,498.71	2,858,413.08	36.853977	-107.370801

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,716.75	2,702.00	Ojo Alamo		0.00	0.00
2,862.83	2,847.00	Kirtland		0.00	0.00
3,225.53	3,207.00	Fruitland		0.00	0.00
3,296.06	3,277.00	T/Coals		0.00	0.00
3,428.04	3,408.00	B/Coals		0.00	0.00
3,590.25	3,569.00	Pictured Cliffs		0.00	0.00
3,700.06	3,678.00	Lewis		0.00	0.00
4,776.07	4,746.00	Chacra		0.00	0.00
5,284.86	5,251.00	U/Cliff House		0.00	0.00
5,614.31	5,578.00	Cliff House		0.00	0.00
5,642.52	5,606.00	Menefee			
5,857.12	5,819.00	Point Lookout			
6,331.65	6,290.00	Mancos			
7,029.58	6,929.00	Black Top			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.00	500.00	0.00	0.00	Start Build 2.00
849.50	848.63	-18.44	10.65	Start DLS 2.00 TFO 100.07
973.84	972.07	-32.46	15.68	Start 5554.33 hold at 973.84 MD
6,528.17	6,485.05	-699.70	126.91	Start DLS 9.00 TFO -80.29
7,515.00	7,104.00	-778.00	762.98	Start 12700.00 hold at 7515.00 MD
20,215.00	7,104.00	-847.13	13,462.79	TD at 20215.00

LOGOS Operating, LLC
Operations Plan

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

Date:	April 29, 2024	Pool:	Basin Mancos
Well Name:	**Rosa Unit 754H**	GL Elevation:	6,534’
Surface Location:	Sec 33, T31N, R5W 2636’ FNL, 951’ FWL (36.856114º N, -170.373409º W – NAD83)	KB:	30’
Bottom Hole Location:	Sec 35, T31N, R5W 1780’ FSL, 1409’ FEL (36.853778º N, -107.327394º W – NAD83)	Measured Depth:	20,215’ (KB)
Lease Serial CA Serial	**# NMSF078773 # NMNM78407E**	County:	Rio Arriba

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2717’	2702’	*POINT LOOKOUT	5857’	5819’
KIRTLAND	2863’	2847’	*MANCOS	6332’	6290’
*FRUITLAND	3226’	3207’	KICKOFF POINT	6528'	6485’
*PICTURED CLIFFS	3590’	3569’	LANDING POINT	7515’	7104’
LEWIS	3700’	3678’	TD	20,215’	7104’
CHACRA	4776’	4746’			
*CLIFF HOUSE	5614’	5578’			
MENEFEE	5643’	5606’			

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

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

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

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

II. DRILLING

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

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

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

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

D. **Maximum Anticipated Pressure:** 7,104' TVD x 0.43 = 3,054 psi

E. **H2S Concerns**: There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	26" or 24"	350' or greater	20"	94 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,407'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,215'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 20" cement nose guide shoe. Place float shoe 1 joint above shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
2. INTERMEDIATE CASING: 9-5/8" cement float shoe. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.
3. PRODUCTION CASING: Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

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

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

Surface - 20" csg	Top	Footage	Cement (ft3/ft) Annular Capacity	Cement (bbl/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	350	0.9599	0.171	1.3	487	87	1.15	423	15.8
or Type III		350	0.9599	0.171	1.3	487	87	1.39	350	14.6
			24" hole							
Set Depth, ft RKB	350									

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 and optional ICP's above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine TOC.

Intermediate - 9-5/8" csg	Top	Footage	Cement (ft3/ft) Annular Capacity		Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,907	500	0.3132		1.3	221	39	1.10	201	15.8
Stage 1 Lead	4,851	1,056	0.3132		1.3	430	77	1.90	226	12.4
						651	**116**		**427**	
Stage 2 Tail	4,251	600	0.3132		1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,276	975	0.3132		1.3	397	71	1.90	209	12.4
						641	**114**		**364**	
Stage 3 Tail	2,626	650	0.3132		1.3	265	47	1.58	168	13.2
Stage 3 Lead	350	2,276	0.3132		1.3	927	165	1.58	587	12.4
Stage 3 Lead	-	350	1.4895	0.2653	1	521	93	1.90	274	12.4
						1,713	**305**		**1028**	
						3,005	**535**		**1,819**	
Set Depth, ft RKB	6407									

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

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

Production - 5-1/2"	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased hole Tail	**6,307**	**100**	**0.2531**	**1**	**25**	**5**	1.59	**16**	13.2
Open Hole Tail	**6,407**	**13,808**	**0.2291**	**1.15**	**3,648**	**650**	1.59	**2,295**	13.2
					3,674	**654**		**2,310**	
Set Depth, ft RKB	20215								

Calculations based on 15% excess for open hole and 100' overlap into intermediate casing. Actual volumes will vary.

Cement calculations are used for volume estimation. Well conditions will dictate final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum

BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

IV. COMPLETION

A. CBL

CBLs and/or Temperature Surveys will be performed as needed or required to determine cement top if cement is not circulated.

B. PRESSURE TEST

C. Pressure test 5-1/2" casing to 0.22 psi/ft * 7,104' TVD = 1563 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

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

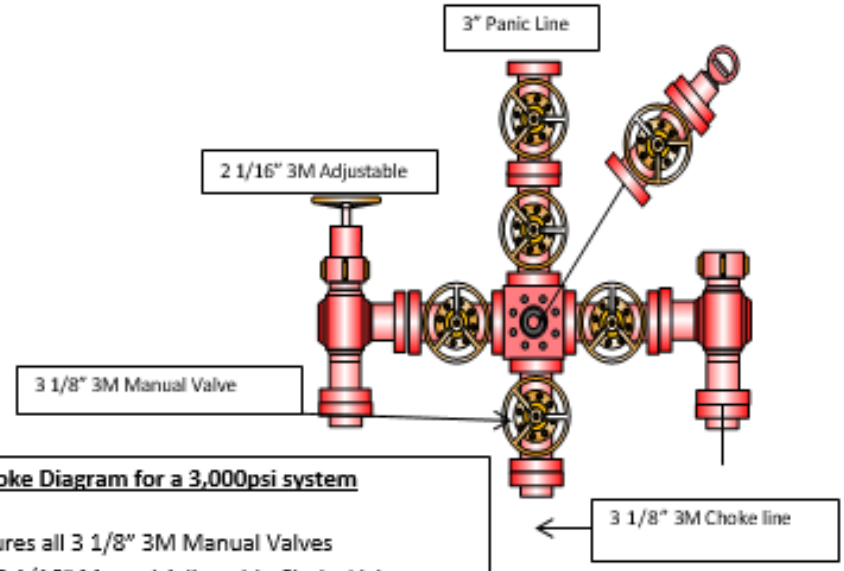
E. PRODUCTION TUBING

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

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

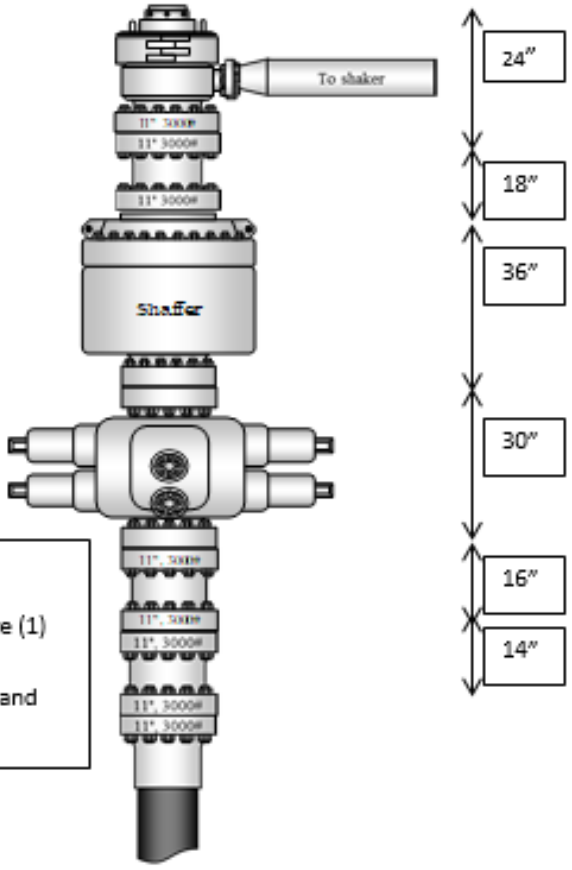
LOGOS OPERATING

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



Choke Diagram for a 3,000psi system

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



11" 3,000psi BOP

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

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1625 N. French Dr., Hobbs, NM 88240
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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 340632

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 340632
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	All original COA's still apply. Additionally, if cement is not circulated to surface during cementing operations, then a CBL is required.	5/21/2024