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 / NWSW / 36.856045 / -107.373405

County or Parish/State: RIO ARRIBA / NM

Well Number: 752H

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: 3003931460

Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2787454

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 04/29/2024

Time Sundry Submitted: 03:26

Date proposed operation will begin: 04/29/2024

Procedure Description: LOGOS Operating request a change in plans for the following (based on KB elevation): Original surface-hole location from 2612' FSL & 952' FWL to new surface-hole location 2611' FNL & 950' FWL Original bottom-hole location from 1101' FSL & 167' FWL to new bottom-hole location 1006' FSL & 167' FWL Original TD @ 16,782' (MD) 7,054' (TVD) to new TD @ 16,874' (MD) 7,062' (TVD). Geology tops have been updated per changes. Original KOP @ 6,715' MD 6,541' TVD to new KOP @ 6,678' MD 6,475' TVD Original Landing point @ 7,604' MD 7,084' TVD to new Landing point @ 7,674' MD 7,084' TVD Original 13.375" Surface casing @ 320' MD to new 20" Surface casing @ 350' MD Original 9,625" casing Intermediate @ 6,511' MD to new 9.625" Intermediate casing @ 6,540' MD Original 5.5" casing Production casing @ 16,782' MD to new 5.5" Production casing @ 16,874' MD All cementing bbls and sacks have been updated per casing depth changes. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_005_Rosa_Unit_752H_Change_in_Plan_5__20240429_20240429152427.pdf

CONFIDENTIAL

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 33 / NWSW / 36.856045 / -107.373405

County or Parish/State: RIO ARRIBA / NM

Well Number: 752H

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: 3003931460

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 29, 2024 03:25 PM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: Farmington **State:** NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

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

Phone:

Email address:

BLM Point of Contact

BLM POC Name: 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 752H

2. Name of Operator: LOGOS OPERATING, LLC

9. API Well No.: 30-039-31460

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 2611' FNL 950' 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 2612' FSL & 952' FWL to **new surface-hole location 2611' FNL & 950' FWL**
Original bottom-hole location from 1101' FSL & 167' FWL to **new bottom-hole location 1006' FSL & 167' FWL**
Original TD @ 16,782' (MD) 7,054' (TVD) to **new TD @ 16,874' (MD) 7,062' (TVD)**.

Geology tops have been updated per changes.
Original KOP @ 6,715' MD 6,541' TVD to **new KOP @ 6,678' MD 6,475' TVD**
Original Landing point @ 7,604' MD 7,084' TVD to **new Landing point @ 7,674' MD 7,084' TVD**

Original 13.375" Surface casing @ 320' MD to **new 20" Surface casing @ 350' MD**
Original 9,625" casing Intermediate @ 6,511' MD to **new 9.625" Intermediate casing @ 6,540' MD**
Original 5.5" casing Production casing @ 16,782' MD to **new 5.5" Production casing @ 16,874' 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: 4/29/2024

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 9:40:12 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
30-039-31460	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	752H

[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		2611	NORTH	950	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
N	31	31N	5W	4	1006	SOUTH	167	WEST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
872.99	S/2 - Sections 31, 32, 33			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 — 4/29/2024
Signature — Date

Etta Trujillo
Printed Name

etrujillo@logosresourcesllc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

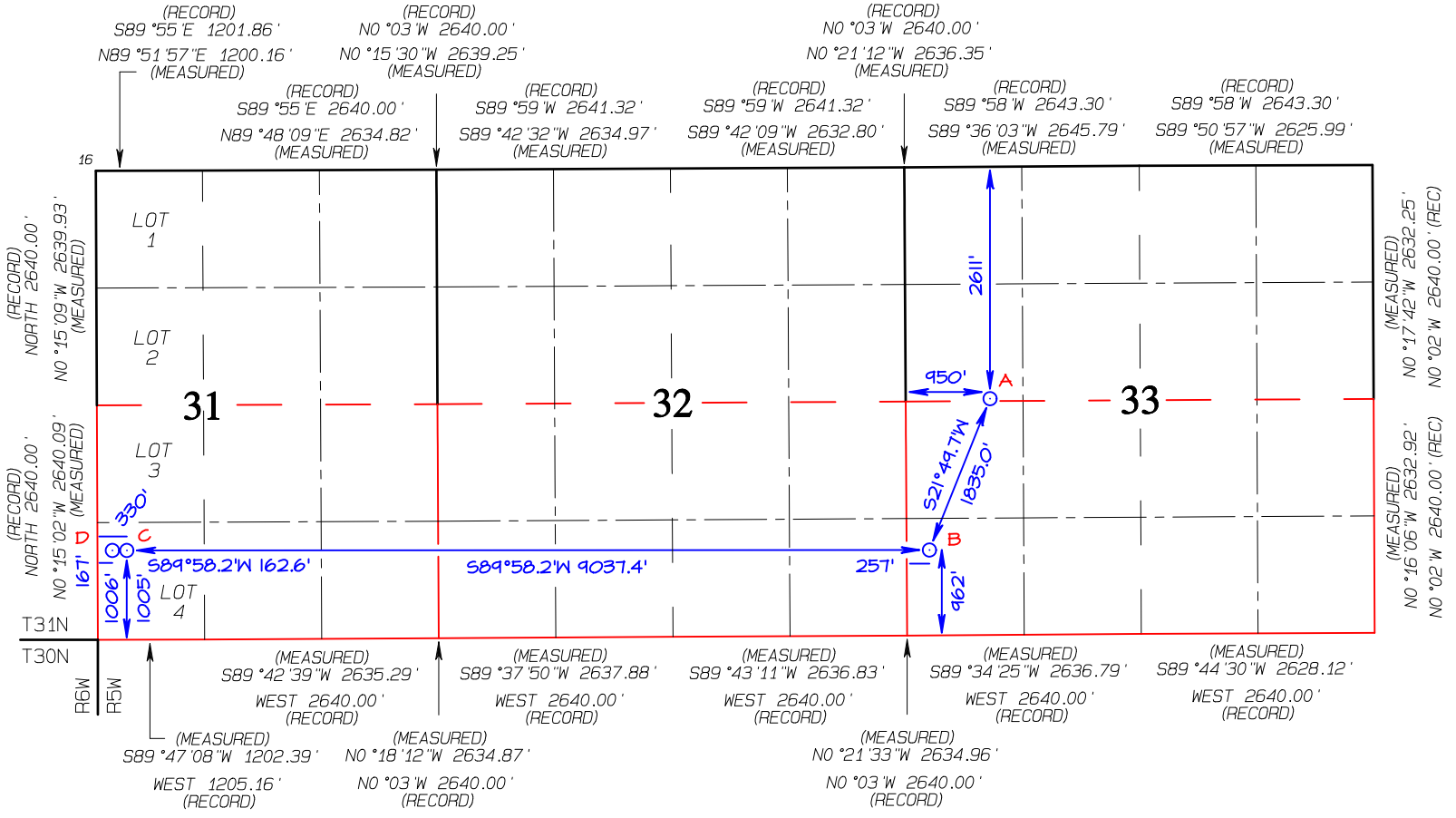
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

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



LAST TAKE POINT (D)
1006' FSL 167' FWL
SECTION 31, T31N, R5W
LAT 36.851610 °N
LONG -107.406614 °W
DATUM: NAD1927

LAT 36.851616 °N
LONG -107.407217 °W
DATUM: NAD1983

FIRST PERFORATION (C)
1005' FSL 330' FWL
SECTION 31, T31N, R5W
LAT 36.851608 °N
LONG -107.406058 °W
DATUM: NAD1927

LAT 36.851614 °N
LONG -107.406661 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
962' FSL 257' FWL
SECTION 33, T31N, R5W
LAT 36.851506 °N
LONG -107.375170 °W
DATUM: NAD1927

LAT 36.851512 °N
LONG -107.375773 °W
DATUM: NAD1983

SURFACE LOCATION (A)
2611' FNL 950' FWL
SECTION 33, T31N, R5W
LAT 36.856176 °N
LONG -107.372810 °W
DATUM: NAD1927

LAT 36.856182 °N
LONG -107.373413 °W
DATUM: NAD1983

Released to Imaging: 5/21/2024 2:49:58 PM

Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 32
Rosa Unit 752H

OH
Plan #5

Anticollision Report

23 April, 2024

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	16,874.30	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	12,218.96	5,952.00	1,085.23	1,021.70	17.082	CC, ES
(O) RU #024 - OH - OH	13,000.00	5,952.00	1,337.07	1,228.99	12.371	SF
(O) RU #024B - OH - OH-INC	11,213.95	7,030.75	140.74	-79.73	0.638	Level 3, CC, ES, SF
(O) RU #026A - OH - OH-SVY	9,424.00	7,010.72	148.69	95.18	2.779	CC, ES, SF
(O) RU #026C - OH - OH-INC	1,223.93	1,223.44	1,060.72	1,029.93	34.444	CC
(O) RU #026C - OH - OH-INC	1,500.00	1,489.86	1,063.24	1,027.02	29.356	ES
(O) RU #026C - OH - OH-INC	8,100.00	7,111.21	1,645.40	1,461.02	8.924	SF
(O) RU #055 - OH - OH-SVY	3,676.80	3,570.12	8,464.46	8,442.51	385.552	CC
(O) RU #055 - OH - OH-SVY	4,800.00	4,683.86	8,468.97	8,440.41	296.510	ES
(O) RU #055 - OH - OH-SVY	7,150.00	6,930.96	8,660.83	8,620.71	215.899	SF
(O) RU #077 - OH - OH-SVY	4,168.60	4,037.92	105.47	82.26	4.546	CC, ES
(O) RU #077 - OH - OH-SVY	4,200.00	4,068.29	105.76	82.40	4.528	SF
(O) RU #077A - OH - OH-INC	4,591.08	4,402.49	3,209.84	3,102.51	29.908	CC
(O) RU #077A - OH - OH-INC	5,700.00	5,471.81	3,223.26	3,090.64	24.303	ES
(O) RU #077A - OH - OH-INC	6,950.00	6,669.02	3,326.30	3,161.27	20.156	SF
(O) RU #077B - OH - OH	6,537.78	6,219.00	1,650.05	1,497.19	10.794	CC, ES, SF
(O) RU #077C - OH - OH-SVY	6,691.39	6,643.77	3,862.73	3,825.69	104.275	CC, ES
(O) RU #077C - OH - OH-SVY	7,000.00	6,935.03	3,936.19	3,897.50	101.743	SF
(O) RU #097 - OH - OH-INC	16,290.91	7,045.53	865.19	564.19	2.874	CC, ES, SF
(O) RU #137 - OH - OH	15,800.00	6,170.00	1,030.40	869.16	6.390	SF
(O) RU #137 - OH - OH	16,231.01	6,170.00	935.93	796.10	6.693	CC, ES
(O) RU #137A - OH - OH	14,200.00	6,210.00	1,166.95	975.04	6.081	SF
(O) RU #137A - OH - OH	14,215.04	6,210.00	1,166.86	974.96	6.081	CC, ES
(O) RU #137B - OH - OH	13,471.41	6,165.00	865.36	745.60	7.226	CC
(O) RU #137B - OH - OH	13,500.00	6,165.00	865.83	745.37	7.188	ES
(O) RU #137B - OH - OH	13,900.00	6,165.00	965.68	822.75	6.757	SF
(O) RU #137C - OH - OH	15,441.01	6,963.06	388.71	243.24	2.672	CC, ES, SF
(O) RU #184 - OH - OH	4,159.48	4,062.53	8,395.60	8,294.29	82.874	CC
(O) RU #184 - OH - OH	6,500.00	6,308.00	8,418.48	8,258.87	52.743	ES
(O) RU #184 - OH - OH	6,800.00	6,308.00	8,441.71	8,280.73	52.440	SF
(O) RU #184B - OH - OH	6,534.24	6,298.00	9,426.47	9,167.41	36.386	CC
(O) RU #184B - OH - OH	6,600.00	6,298.00	9,426.70	9,167.32	36.343	ES
(O) RU #184B - OH - OH	6,750.00	6,298.00	9,433.03	9,172.98	36.274	SF
(O) RU #188 - OH - OH	2,505.99	2,622.28	6,078.15	6,017.97	100.994	CC
(O) RU #188 - OH - OH	4,800.00	4,836.56	6,108.47	5,991.23	52.100	ES
(O) RU #188 - OH - OH	6,700.00	6,476.00	6,181.86	6,021.29	38.501	SF
(O) RU #188C - OH - OH-SVY	6,679.07	6,662.52	6,929.41	6,891.45	182.518	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 752H
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 752H	**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 #188C - OH - OH-SVY	7,150.00	7,064.41	7,097.38	7,057.19	176.604	SF
(O) RU #231 - OH - OH	16,329.16	3,337.00	3,715.56	3,628.25	42.559	CC, ES
(O) RU #231 - OH - OH	16,874.30	3,337.00	3,755.33	3,661.71	40.112	SF
(O) RU #231A - OH - OH	13,383.08	3,384.00	3,586.16	3,521.44	55.409	CC
(O) RU #231A - OH - OH	13,400.00	3,384.00	3,586.20	3,521.34	55.292	ES
(O) RU #231A - OH - OH	15,500.00	3,384.00	4,164.36	4,065.68	42.198	SF
(O) RU #259 - OH - OH-INC	3,600.00	3,392.00	643.30	524.79	5.428	SF
(O) RU #259 - OH - OH-INC	3,695.65	3,392.00	636.15	520.25	5.489	CC, ES
(O) RU #259A - OH - OH	3,621.04	3,414.00	3,256.12	3,173.32	39.326	CC, ES
(O) RU #259A - OH - OH	3,900.00	3,414.00	3,268.04	3,184.27	39.010	SF
(O) RU #269A - OH - OH	424.97	441.00	8,419.00	8,414.10	1,719.724	CC
(O) RU #269A - OH - OH	500.00	472.00	8,419.17	8,414.06	1,649.717	ES
(O) RU #269A - OH - OH	6,950.00	3,512.00	9,328.48	9,287.21	225.997	SF
(O) RU #270 - OH - OH	2,406.84	2,519.71	5,961.12	5,903.56	103.557	CC
(O) RU #270 - OH - OH	3,500.00	3,574.34	5,968.08	5,883.50	70.568	ES
(O) RU #270 - OH - OH	4,500.00	3,597.00	6,060.30	5,971.45	68.213	SF
(O) RU #271A - OH - OH	799.85	962.44	13,894.75	13,887.66	1,958.578	CC
(O) RU #271A - OH - OH	900.00	1,009.00	13,894.94	13,887.47	1,860.349	ES
(O) RU #271A - OH - OH	7,150.00	3,527.00	14,591.46	14,548.69	341.194	SF
(O) RU #272 - OH - OH	340.98	494.95	10,402.77	10,392.33	996.277	CC
(O) RU #272 - OH - OH	3,500.00	3,565.28	10,438.46	10,356.04	126.656	ES
(O) RU #272 - OH - OH	6,600.00	3,569.00	10,954.43	10,860.41	116.515	SF
(O) RU #334A - OH - OH	1,849.73	1,792.81	2,861.30	2,819.05	67.712	CC
(O) RU #334A - OH - OH	2,900.00	2,804.92	2,874.88	2,805.35	41.350	ES
(O) RU #334A - OH - OH	3,800.00	3,468.00	2,914.95	2,826.04	32.786	SF
(O) RU #337 - OH - OH	11,769.70	3,351.00	3,833.61	3,770.52	60.764	CC
(O) RU #337 - OH - OH	11,800.00	3,351.00	3,833.73	3,770.45	60.587	ES
(O) RU #337 - OH - OH	14,100.00	3,351.00	4,486.30	4,395.81	49.580	SF
Rosa Unit #746H - OH - OH	1,185.35	1,677.58	2,259.01	2,247.94	204.032	CC
Rosa Unit #746H - OH - OH	1,200.00	1,693.89	2,259.04	2,247.88	202.301	ES
Rosa Unit #746H - OH - OH	6,700.00	6,920.93	2,435.25	2,381.59	45.382	SF
Rosa Unit 750H - OH - Plan #5	500.00	500.00	25.14	17.77	3.409	CC
Rosa Unit 750H - OH - Plan #5	600.00	600.74	25.40	17.69	3.295	ES
Rosa Unit 750H - OH - Plan #5	700.00	701.41	26.35	18.27	3.262	SF
Rosa Unit 754H - OH - Plan #4-1300	1,190.06	1,186.06	14.82	4.25	1.403	Level 3, CC
Rosa Unit 754H - OH - Plan #4-1300	1,200.00	1,195.92	14.87	4.24	1.398	Level 3, ES, SF
Rosa Unit 756H - OH - Plan #6	1,076.28	1,066.41	49.51	39.83	5.115	CC
Rosa Unit 756H - OH - Plan #6	1,268.36	1,255.19	49.76	39.10	4.669	ES
Rosa Unit 756H - OH - Plan #6	1,300.00	1,286.29	50.03	39.20	4.618	SF

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

Offset Site Error: 0.00 usft

Survey Program: 5952-A027Ua_INC-ONLY

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
0.00	0.00	0.00	0.00	3.28	3.28	-107.79	-1,678.55	-5,232.36	5,495.12				
100.00	100.00	64.00	64.00	3.29	3.46	-107.79	-1,678.55	-5,232.36	5,495.00	5,488.25	6.75	813.597	
200.00	200.00	164.00	164.00	3.34	4.35	-107.79	-1,678.55	-5,232.36	5,495.00	5,487.32	7.69	714.910	
300.00	300.00	264.00	264.00	3.42	5.65	-107.79	-1,678.55	-5,232.36	5,495.00	5,485.93	9.07	605.884	
400.00	400.00	364.00	364.00	3.54	7.14	-107.79	-1,678.55	-5,232.36	5,495.00	5,484.33	10.68	514.596	
500.00	500.00	464.00	464.00	3.69	8.72	-107.79	-1,678.55	-5,232.36	5,495.00	5,482.59	12.41	442.711	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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
600.00	599.98	563.98	563.98	3.86	10.36	70.32	-1,678.55	-5,232.36	5,494.42	5,480.20	14.21	386.524	
700.00	699.84	663.84	663.84	4.04	12.02	70.40	-1,678.55	-5,232.36	5,492.65	5,476.59	16.06	341.950	
800.00	799.45	763.45	763.45	4.25	13.70	70.54	-1,678.55	-5,232.36	5,489.73	5,471.78	17.95	305.827	
900.00	898.70	862.70	862.70	4.48	15.39	70.74	-1,678.55	-5,232.36	5,485.66	5,465.79	19.87	276.088	
1,000.00	997.47	961.47	961.47	4.74	17.07	70.99	-1,678.55	-5,232.36	5,480.48	5,458.66	21.81	251.240	
1,100.00	1,095.62	1,059.62	1,059.62	5.03	18.75	71.29	-1,678.55	-5,232.36	5,474.21	5,450.43	23.78	230.200	
1,200.00	1,193.06	1,157.06	1,157.06	5.35	20.43	71.65	-1,678.55	-5,232.36	5,466.89	5,441.12	25.77	212.170	
1,268.36	1,259.18	1,223.18	1,223.18	5.58	21.56	71.93	-1,678.55	-5,232.36	5,461.31	5,434.18	27.13	201.266	
1,300.00	1,289.69	1,253.69	1,253.69	5.70	22.09	72.01	-1,678.55	-5,232.36	5,458.63	5,430.86	27.77	196.559	
1,400.00	1,386.11	1,350.11	1,350.11	6.07	23.75	72.26	-1,678.55	-5,232.36	5,450.23	5,420.43	29.80	182.913	
1,500.00	1,482.54	1,446.54	1,446.54	6.45	25.42	72.52	-1,678.55	-5,232.36	5,441.94	5,410.10	31.84	170.901	
1,600.00	1,578.96	1,542.96	1,542.96	6.86	27.08	72.78	-1,678.55	-5,232.36	5,433.77	5,399.87	33.91	160.264	
1,700.00	1,675.39	1,639.39	1,639.39	7.27	28.75	73.04	-1,678.55	-5,232.36	5,425.72	5,389.74	35.98	150.792	
1,800.00	1,771.81	1,735.81	1,735.81	7.70	30.42	73.30	-1,678.55	-5,232.36	5,417.79	5,379.72	38.07	142.313	
1,900.00	1,868.24	1,832.24	1,832.24	8.13	32.09	73.56	-1,678.55	-5,232.36	5,409.97	5,369.80	40.17	134.684	
2,000.00	1,964.66	1,928.66	1,928.66	8.57	33.76	73.82	-1,678.55	-5,232.36	5,402.27	5,360.00	42.27	127.790	
2,100.00	2,061.09	2,025.09	2,025.09	9.02	35.44	74.08	-1,678.55	-5,232.36	5,394.69	5,350.30	44.39	121.532	
2,200.00	2,157.51	2,121.51	2,121.51	9.47	37.11	74.34	-1,678.55	-5,232.36	5,387.24	5,340.73	46.51	115.830	
2,300.00	2,253.94	2,217.94	2,217.94	9.93	38.78	74.60	-1,678.55	-5,232.36	5,379.90	5,331.26	48.64	110.615	
2,400.00	2,350.36	2,314.36	2,314.36	10.39	40.46	74.87	-1,678.55	-5,232.36	5,372.68	5,321.91	50.77	105.828	
2,500.00	2,446.79	2,410.79	2,410.79	10.86	42.13	75.13	-1,678.55	-5,232.36	5,365.58	5,312.68	52.90	101.422	
2,600.00	2,543.21	2,507.21	2,507.21	11.33	43.81	75.39	-1,678.55	-5,232.36	5,358.61	5,303.57	55.04	97.352	
2,700.00	2,639.64	2,603.64	2,603.64	11.80	45.48	75.66	-1,678.55	-5,232.36	5,351.76	5,294.57	57.19	93.584	
2,800.00	2,736.06	2,700.06	2,700.06	12.27	47.16	75.93	-1,678.55	-5,232.36	5,345.03	5,285.69	59.33	90.085	
2,900.00	2,832.49	2,796.49	2,796.49	12.75	48.84	76.19	-1,678.55	-5,232.36	5,338.42	5,276.94	61.48	86.828	
3,000.00	2,928.91	2,892.91	2,892.91	13.23	50.51	76.46	-1,678.55	-5,232.36	5,331.94	5,268.30	63.63	83.790	
3,100.00	3,025.34	2,989.34	2,989.34	13.71	52.19	76.73	-1,678.55	-5,232.36	5,325.58	5,259.79	65.79	80.950	
3,200.00	3,121.76	3,085.76	3,085.76	14.19	53.87	77.00	-1,678.55	-5,232.36	5,319.34	5,251.40	67.95	78.289	
3,300.00	3,218.18	3,182.18	3,182.18	14.67	55.54	77.26	-1,678.55	-5,232.36	5,313.23	5,243.13	70.10	75.791	
3,400.00	3,314.61	3,278.61	3,278.61	15.15	57.22	77.53	-1,678.55	-5,232.36	5,307.25	5,234.98	72.26	73.443	
3,500.00	3,411.03	3,375.03	3,375.03	15.64	58.90	77.80	-1,678.55	-5,232.36	5,301.39	5,226.96	74.43	71.231	
3,600.00	3,507.46	3,471.46	3,471.46	16.12	60.58	78.07	-1,678.55	-5,232.36	5,295.66	5,219.07	76.59	69.144	
3,700.00	3,603.88	3,567.88	3,567.88	16.61	62.25	78.35	-1,678.55	-5,232.36	5,290.05	5,211.30	78.75	67.173	
3,800.00	3,700.31	3,664.31	3,664.31	17.10	63.93	78.62	-1,678.55	-5,232.36	5,284.57	5,203.65	80.92	65.307	
3,900.00	3,796.73	3,760.73	3,760.73	17.59	65.61	78.89	-1,678.55	-5,232.36	5,279.22	5,196.13	83.09	63.539	
4,000.00	3,893.16	3,857.16	3,857.16	18.07	67.29	79.16	-1,678.55	-5,232.36	5,273.99	5,188.74	85.25	61.862	
4,100.00	3,989.58	3,953.58	3,953.58	18.56	68.97	79.44	-1,678.55	-5,232.36	5,268.90	5,181.47	87.42	60.268	
4,200.00	4,086.01	4,050.01	4,050.01	19.05	70.64	79.71	-1,678.55	-5,232.36	5,263.93	5,174.33	89.59	58.753	
4,300.00	4,182.43	4,146.43	4,146.43	19.55	72.32	79.98	-1,678.55	-5,232.36	5,259.09	5,167.32	91.77	57.310	
4,400.00	4,278.86	4,242.86	4,242.86	20.04	74.00	80.26	-1,678.55	-5,232.36	5,254.38	5,160.44	93.94	55.935	
4,500.00	4,375.28	4,339.28	4,339.28	20.53	75.68	80.53	-1,678.55	-5,232.36	5,249.80	5,153.69	96.11	54.623	
4,600.00	4,471.71	4,435.71	4,435.71	21.02	77.36	80.81	-1,678.55	-5,232.36	5,245.35	5,147.07	98.28	53.369	
4,700.00	4,568.13	4,532.13	4,532.13	21.51	79.04	81.09	-1,678.55	-5,232.36	5,241.03	5,140.57	100.46	52.171	
4,800.00	4,664.56	4,628.56	4,628.56	22.01	80.71	81.36	-1,678.55	-5,232.36	5,236.84	5,134.21	102.63	51.025	
4,900.00	4,760.98	4,724.98	4,724.98	22.50	82.39	81.64	-1,678.55	-5,232.36	5,232.78	5,127.97	104.81	49.927	
5,000.00	4,857.41	4,821.41	4,821.41	22.99	84.07	81.92	-1,678.55	-5,232.36	5,228.85	5,121.87	106.98	48.875	
5,100.00	4,953.83	4,917.83	4,917.83	23.49	85.75	82.19	-1,678.55	-5,232.36	5,225.06	5,115.90	109.16	47.866	
5,200.00	5,050.25	5,014.25	5,014.25	23.98	87.43	82.47	-1,678.55	-5,232.36	5,221.39	5,110.06	111.34	46.897	
5,300.00	5,146.68	5,110.68	5,110.68	24.48	89.11	82.75	-1,678.55	-5,232.36	5,217.86	5,104.35	113.51	45.966	
5,400.00	5,243.10	5,207.10	5,207.10	24.97	90.79	83.03	-1,678.55	-5,232.36	5,214.46	5,098.77	115.69	45.072	
5,500.00	5,339.53	5,303.53	5,303.53	25.47	92.47	83.31	-1,678.55	-5,232.36	5,211.19	5,093.32	117.87	44.211	
5,600.00	5,435.95	5,399.95	5,399.95	25.96	94.15	83.59	-1,678.55	-5,232.36	5,208.06	5,088.01	120.05	43.383	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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
5,700.00	5,532.38	5,496.38	5,496.38	26.46	95.82	83.87	-1,678.55	-5,232.36	5,205.06	5,082.83	122.23	42.585	
5,800.00	5,628.80	5,592.80	5,592.80	26.96	97.50	84.15	-1,678.55	-5,232.36	5,202.19	5,077.78	124.41	41.816	
5,900.00	5,725.23	5,689.23	5,689.23	27.45	99.18	84.43	-1,678.55	-5,232.36	5,199.45	5,072.87	126.59	41.074	
6,000.00	5,821.65	5,785.65	5,785.65	27.95	100.86	84.71	-1,678.55	-5,232.36	5,196.85	5,068.09	128.77	40.359	
6,100.00	5,918.08	5,882.08	5,882.08	28.45	102.54	84.99	-1,678.55	-5,232.36	5,194.38	5,063.44	130.95	39.668	
6,200.00	6,014.50	5,952.00	5,952.00	28.94	103.76	85.19	-1,678.55	-5,232.36	5,192.12	5,059.46	132.66	39.138	
6,292.11	6,103.31	5,952.00	5,952.00	29.40	103.76	85.19	-1,678.55	-5,232.36	5,191.30	5,058.20	133.10	39.003	
6,300.00	6,110.93	5,952.00	5,952.00	29.44	103.76	85.19	-1,678.55	-5,232.36	5,191.31	5,058.17	133.14	38.993	
6,400.00	6,207.35	5,952.00	5,952.00	29.94	103.76	85.19	-1,678.55	-5,232.36	5,192.42	5,058.86	133.56	38.876	
6,500.00	6,303.78	5,952.00	5,952.00	30.43	103.76	85.19	-1,678.55	-5,232.36	5,195.46	5,061.52	133.95	38.787	
6,600.00	6,400.20	5,952.00	5,952.00	30.93	103.76	85.19	-1,678.55	-5,232.36	5,200.42	5,066.14	134.29	38.726	
6,677.76	6,475.18	5,952.00	5,952.00	31.32	103.76	85.19	-1,678.55	-5,232.36	5,205.61	5,071.09	134.52	38.698	
6,700.00	6,496.62	5,952.00	5,952.00	31.43	103.76	77.99	-1,678.55	-5,232.36	5,206.91	5,072.33	134.58	38.690	
6,750.00	6,544.66	5,952.00	5,952.00	31.68	103.76	63.06	-1,678.55	-5,232.36	5,207.37	5,072.66	134.71	38.657	
6,800.00	6,592.24	5,952.00	5,952.00	31.92	103.76	50.97	-1,678.55	-5,232.36	5,204.39	5,069.57	134.82	38.602	
6,850.00	6,639.07	5,952.00	5,952.00	32.16	103.76	41.79	-1,678.55	-5,232.36	5,197.98	5,063.06	134.92	38.527	
6,900.00	6,684.86	5,952.00	5,952.00	32.40	103.76	34.93	-1,678.55	-5,232.36	5,188.17	5,053.17	135.00	38.432	
6,950.00	6,729.32	5,952.00	5,952.00	32.62	103.76	29.76	-1,678.55	-5,232.36	5,175.00	5,039.94	135.06	38.316	
7,000.00	6,772.19	5,952.00	5,952.00	32.84	103.76	25.78	-1,678.55	-5,232.36	5,158.53	5,023.43	135.11	38.181	
7,050.00	6,813.20	5,952.00	5,952.00	33.05	103.76	22.67	-1,678.55	-5,232.36	5,138.83	5,003.69	135.14	38.026	
7,100.00	6,852.09	5,952.00	5,952.00	33.26	103.76	20.17	-1,678.55	-5,232.36	5,115.99	4,980.83	135.15	37.853	
7,150.00	6,888.63	5,952.00	5,952.00	33.45	103.76	18.11	-1,678.55	-5,232.36	5,090.09	4,954.93	135.16	37.661	
7,200.00	6,922.59	5,952.00	5,952.00	33.64	103.76	16.39	-1,678.55	-5,232.36	5,061.26	4,926.12	135.14	37.451	
7,250.00	6,953.76	5,952.00	5,952.00	33.82	103.76	14.90	-1,678.55	-5,232.36	5,029.63	4,894.51	135.12	37.224	
7,300.00	6,981.95	5,952.00	5,952.00	34.00	103.76	13.58	-1,678.55	-5,232.36	4,995.33	4,860.25	135.08	36.980	
7,350.00	7,006.99	5,952.00	5,952.00	34.17	103.76	12.36	-1,678.55	-5,232.36	4,958.54	4,823.50	135.04	36.720	
7,400.00	7,028.72	5,952.00	5,952.00	34.35	103.76	11.20	-1,678.55	-5,232.36	4,919.41	4,784.43	134.98	36.444	
7,450.00	7,047.00	5,952.00	5,952.00	34.52	103.76	10.01	-1,678.55	-5,232.36	4,878.15	4,743.22	134.92	36.155	
7,500.00	7,061.73	5,952.00	5,952.00	34.69	103.76	8.72	-1,678.55	-5,232.36	4,834.95	4,700.09	134.86	35.851	
7,550.00	7,072.82	5,952.00	5,952.00	34.86	103.76	7.18	-1,678.55	-5,232.36	4,790.02	4,655.23	134.80	35.536	
7,600.00	7,080.18	5,952.00	5,952.00	35.04	103.76	5.17	-1,678.55	-5,232.36	4,743.61	4,608.88	134.73	35.209	
7,650.00	7,083.79	5,952.00	5,952.00	35.22	103.76	2.20	-1,678.55	-5,232.36	4,695.96	4,561.30	134.66	34.872	
7,674.30	7,084.18	5,952.00	5,952.00	35.32	103.76	0.11	-1,678.55	-5,232.36	4,672.44	4,537.80	134.64	34.704	
7,700.00	7,084.12	5,952.00	5,952.00	35.42	103.76	0.11	-1,678.55	-5,232.36	4,647.44	4,512.83	134.60	34.527	
7,800.00	7,083.88	5,952.00	5,952.00	35.84	103.76	0.11	-1,678.55	-5,232.36	4,550.26	4,415.79	134.47	33.838	
7,900.00	7,083.64	5,952.00	5,952.00	36.34	103.76	0.11	-1,678.55	-5,232.36	4,453.21	4,318.88	134.33	33.150	
8,000.00	7,083.40	5,952.00	5,952.00	36.90	103.76	0.11	-1,678.55	-5,232.36	4,356.30	4,222.11	134.19	32.464	
8,100.00	7,083.16	5,952.00	5,952.00	37.52	103.76	0.11	-1,678.55	-5,232.36	4,259.52	4,125.49	134.03	31.780	
8,200.00	7,082.91	5,952.00	5,952.00	38.21	103.76	0.11	-1,678.55	-5,232.36	4,162.90	4,029.03	133.87	31.097	
8,300.00	7,082.67	5,952.00	5,952.00	38.95	103.76	0.11	-1,678.55	-5,232.36	4,066.44	3,932.75	133.69	30.416	
8,400.00	7,082.43	5,952.00	5,952.00	39.74	103.76	0.11	-1,678.55	-5,232.36	3,970.16	3,836.65	133.51	29.738	
8,500.00	7,082.19	5,952.00	5,952.00	40.59	103.76	0.11	-1,678.55	-5,232.36	3,874.06	3,740.75	133.31	29.061	
8,600.00	7,081.95	5,952.00	5,952.00	41.49	103.76	0.11	-1,678.55	-5,232.36	3,778.17	3,645.07	133.10	28.387	
8,700.00	7,081.71	5,952.00	5,952.00	42.43	103.76	0.11	-1,678.55	-5,232.36	3,682.50	3,549.63	132.87	27.715	
8,800.00	7,081.47	5,952.00	5,952.00	43.41	103.76	0.11	-1,678.55	-5,232.36	3,587.06	3,454.43	132.62	27.047	
8,900.00	7,081.23	5,952.00	5,952.00	44.44	103.76	0.11	-1,678.55	-5,232.36	3,491.87	3,359.51	132.36	26.381	
9,000.00	7,080.99	5,952.00	5,952.00	45.49	103.76	0.11	-1,678.55	-5,232.36	3,396.97	3,264.89	132.08	25.719	
9,100.00	7,080.74	5,952.00	5,952.00	46.58	103.76	0.11	-1,678.55	-5,232.36	3,302.36	3,170.59	131.77	25.061	
9,200.00	7,080.50	5,952.00	5,952.00	47.70	103.76	0.11	-1,678.55	-5,232.36	3,208.09	3,076.64	131.44	24.406	
9,300.00	7,080.26	5,952.00	5,952.00	48.85	103.76	0.11	-1,678.55	-5,232.36	3,114.16	2,983.08	131.09	23.757	
9,400.00	7,080.02	5,952.00	5,952.00	50.03	103.76	0.11	-1,678.55	-5,232.36	3,020.63	2,889.94	130.70	23.112	
9,500.00	7,079.78	5,952.00	5,952.00	51.23	103.76	0.11	-1,678.55	-5,232.36	2,927.53	2,797.26	130.27	22.472	

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 752H
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 752H	**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-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
9,600.00	7,079.54	5,952.00	5,952.00	52.45	103.76	0.11	-1,678.55	-5,232.36	2,834.90	2,705.09	129.81	21.839	
9,700.00	7,079.30	5,952.00	5,952.00	53.69	103.76	0.11	-1,678.55	-5,232.36	2,742.78	2,613.48	129.30	21.212	
9,800.00	7,079.06	5,952.00	5,952.00	54.95	103.76	0.11	-1,678.55	-5,232.36	2,651.24	2,522.49	128.75	20.592	
9,900.00	7,078.82	5,952.00	5,952.00	56.23	103.76	0.11	-1,678.55	-5,232.36	2,560.33	2,432.19	128.14	19.981	
10,000.00	7,078.57	5,952.00	5,952.00	57.53	103.76	0.11	-1,678.55	-5,232.36	2,470.12	2,342.66	127.46	19.380	
10,100.00	7,078.33	5,952.00	5,952.00	58.84	103.76	0.11	-1,678.55	-5,232.36	2,380.69	2,253.98	126.71	18.789	
10,200.00	7,078.09	5,952.00	5,952.00	60.17	103.76	0.11	-1,678.55	-5,232.36	2,292.14	2,166.26	125.88	18.209	
10,300.00	7,077.85	5,952.00	5,952.00	61.51	103.76	0.11	-1,678.55	-5,232.36	2,204.57	2,079.62	124.95	17.644	
10,400.00	7,077.61	5,952.00	5,952.00	62.86	103.76	0.11	-1,678.55	-5,232.36	2,118.09	1,994.18	123.91	17.093	
10,500.00	7,077.37	5,952.00	5,952.00	64.22	103.76	0.11	-1,678.55	-5,232.36	2,032.86	1,910.11	122.75	16.561	
10,600.00	7,077.13	5,952.00	5,952.00	65.60	103.76	0.11	-1,678.55	-5,232.36	1,949.04	1,827.59	121.44	16.049	
10,700.00	7,076.89	5,952.00	5,952.00	66.98	103.76	0.11	-1,678.55	-5,232.36	1,866.80	1,746.83	119.97	15.561	
10,800.00	7,076.65	5,952.00	5,952.00	68.38	103.76	0.11	-1,678.55	-5,232.36	1,786.38	1,668.08	118.30	15.101	
10,900.00	7,076.40	5,952.00	5,952.00	69.78	103.76	0.11	-1,678.55	-5,232.36	1,708.03	1,591.63	116.40	14.674	
11,000.00	7,076.16	5,952.00	5,952.00	71.20	103.76	0.11	-1,678.55	-5,232.36	1,632.05	1,517.81	114.24	14.286	
11,100.00	7,075.92	5,952.00	5,952.00	72.62	103.76	0.11	-1,678.55	-5,232.36	1,558.78	1,447.00	111.78	13.946	
11,200.00	7,075.68	5,952.00	5,952.00	74.04	103.76	0.11	-1,678.55	-5,232.36	1,488.62	1,379.66	108.96	13.662	
11,300.00	7,075.44	5,952.00	5,952.00	75.48	103.76	0.11	-1,678.55	-5,232.36	1,422.04	1,316.29	105.75	13.447	
11,400.00	7,075.20	5,952.00	5,952.00	76.92	103.76	0.11	-1,678.55	-5,232.36	1,359.56	1,257.47	102.09	13.318	
11,500.00	7,074.96	5,952.00	5,952.00	78.37	103.76	0.11	-1,678.55	-5,232.36	1,301.78	1,203.85	97.93	13.293	
11,600.00	7,074.72	5,952.00	5,952.00	79.82	103.76	0.11	-1,678.55	-5,232.36	1,249.33	1,156.09	93.24	13.399	
11,700.00	7,074.48	5,952.00	5,952.00	81.28	103.76	0.11	-1,678.55	-5,232.36	1,202.93	1,114.90	88.02	13.666	
11,800.00	7,074.23	5,952.00	5,952.00	82.75	103.76	0.11	-1,678.55	-5,232.36	1,163.29	1,080.96	82.33	14.129	
11,900.00	7,073.99	5,952.00	5,952.00	84.22	103.76	0.11	-1,678.55	-5,232.36	1,131.13	1,054.79	76.34	14.816	
12,000.00	7,073.75	5,952.00	5,952.00	85.69	103.76	0.11	-1,678.55	-5,232.36	1,107.10	1,036.63	70.47	15.711	
12,100.00	7,073.51	5,952.00	5,952.00	87.17	103.76	0.11	-1,678.55	-5,232.36	1,091.73	1,026.13	65.60	16.641	
12,200.00	7,073.27	5,952.00	5,952.00	88.65	103.76	0.11	-1,678.55	-5,232.36	1,085.39	1,021.92	63.47	17.101	
12,218.96	7,073.22	5,952.00	5,952.00	88.93	103.76	0.11	-1,678.55	-5,232.36	1,085.23	1,021.70	63.53	17.082	CC, ES
12,300.00	7,073.03	5,952.00	5,952.00	90.14	103.76	0.11	-1,678.55	-5,232.36	1,088.25	1,022.69	65.57	16.598	
12,400.00	7,072.79	5,952.00	5,952.00	91.63	103.76	0.11	-1,678.55	-5,232.36	1,100.23	1,029.23	70.99	15.497	
12,500.00	7,072.55	5,952.00	5,952.00	93.13	103.76	0.11	-1,678.55	-5,232.36	1,121.03	1,043.20	77.83	14.403	
12,600.00	7,072.31	5,952.00	5,952.00	94.62	103.76	0.11	-1,678.55	-5,232.36	1,150.18	1,065.29	84.90	13.548	
12,700.00	7,072.06	5,952.00	5,952.00	96.13	103.76	0.11	-1,678.55	-5,232.36	1,187.07	1,095.44	91.62	12.956	
12,800.00	7,071.82	5,952.00	5,952.00	97.63	103.76	0.11	-1,678.55	-5,232.36	1,230.99	1,133.22	97.77	12.590	
12,900.00	7,071.58	5,952.00	5,952.00	99.14	103.76	0.11	-1,678.55	-5,232.36	1,281.23	1,177.97	103.26	12.408	
13,000.00	7,071.34	5,952.00	5,952.00	100.65	103.76	0.11	-1,678.55	-5,232.36	1,337.07	1,228.99	108.08	12.371	SF
13,100.00	7,071.10	5,952.00	5,952.00	102.16	103.76	0.11	-1,678.55	-5,232.36	1,397.84	1,285.57	112.27	12.450	
13,200.00	7,070.86	5,952.00	5,952.00	103.68	103.76	0.11	-1,678.55	-5,232.36	1,462.93	1,347.03	115.90	12.623	
13,300.00	7,070.62	5,952.00	5,952.00	105.20	103.76	0.11	-1,678.55	-5,232.36	1,531.79	1,412.77	119.02	12.870	
13,400.00	7,070.38	5,952.00	5,952.00	106.72	103.76	0.11	-1,678.55	-5,232.36	1,603.93	1,482.22	121.71	13.178	
13,500.00	7,070.14	5,952.00	5,952.00	108.24	103.76	0.11	-1,678.55	-5,232.36	1,678.93	1,554.90	124.03	13.536	
13,600.00	7,069.89	5,952.00	5,952.00	109.77	103.76	0.11	-1,678.55	-5,232.36	1,756.42	1,630.39	126.03	13.936	
13,700.00	7,069.65	5,952.00	5,952.00	111.30	103.76	0.11	-1,678.55	-5,232.36	1,836.09	1,708.33	127.76	14.371	
13,800.00	7,069.41	5,952.00	5,952.00	112.83	103.76	0.11	-1,678.55	-5,232.36	1,917.66	1,788.40	129.26	14.836	
13,900.00	7,069.17	5,952.00	5,952.00	114.36	103.76	0.11	-1,678.55	-5,232.36	2,000.91	1,870.34	130.57	15.325	
14,000.00	7,068.93	5,952.00	5,952.00	115.89	103.76	0.11	-1,678.55	-5,232.36	2,085.63	1,953.92	131.71	15.835	
14,100.00	7,068.69	5,952.00	5,952.00	117.43	103.76	0.11	-1,678.55	-5,232.36	2,171.65	2,038.94	132.71	16.364	
14,200.00	7,068.45	5,952.00	5,952.00	118.97	103.76	0.11	-1,678.55	-5,232.36	2,258.82	2,125.23	133.59	16.909	
14,300.00	7,068.21	5,952.00	5,952.00	120.50	103.76	0.11	-1,678.55	-5,232.36	2,347.01	2,212.64	134.37	17.467	
14,400.00	7,067.97	5,952.00	5,952.00	122.05	103.76	0.11	-1,678.55	-5,232.36	2,436.12	2,301.06	135.06	18.037	
14,500.00	7,067.72	5,952.00	5,952.00	123.59	103.76	0.11	-1,678.55	-5,232.36	2,526.04	2,390.36	135.68	18.618	
14,600.00	7,067.48	5,952.00	5,952.00	125.13	103.76	0.11	-1,678.55	-5,232.36	2,616.70	2,480.46	136.23	19.208	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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
14,700.00	7,067.24	5,952.00	5,952.00	126.68	103.76	0.11	-1,678.55	-5,232.36	2,708.01	2,571.28	136.73	19.806	
14,800.00	7,067.00	5,952.00	5,952.00	128.22	103.76	0.11	-1,678.55	-5,232.36	2,799.91	2,662.74	137.18	20.411	
14,900.00	7,066.76	5,952.00	5,952.00	129.77	103.76	0.11	-1,678.55	-5,232.36	2,892.36	2,754.77	137.58	21.023	
15,000.00	7,066.52	5,952.00	5,952.00	131.32	103.76	0.11	-1,678.55	-5,232.36	2,985.29	2,847.33	137.95	21.640	
15,100.00	7,066.28	5,952.00	5,952.00	132.87	103.76	0.11	-1,678.55	-5,232.36	3,078.66	2,940.37	138.29	22.262	
15,200.00	7,066.04	5,952.00	5,952.00	134.42	103.76	0.11	-1,678.55	-5,232.36	3,172.44	3,033.84	138.60	22.889	
15,300.00	7,065.80	5,952.00	5,952.00	135.97	103.76	0.11	-1,678.55	-5,232.36	3,266.58	3,127.70	138.89	23.520	
15,400.00	7,065.55	5,952.00	5,952.00	137.53	103.76	0.11	-1,678.55	-5,232.36	3,361.07	3,221.92	139.15	24.154	
15,500.00	7,065.31	5,952.00	5,952.00	139.08	103.76	0.11	-1,678.55	-5,232.36	3,455.86	3,316.47	139.39	24.792	
15,600.00	7,065.07	5,952.00	5,952.00	140.64	103.76	0.11	-1,678.55	-5,232.36	3,550.94	3,411.32	139.62	25.433	
15,700.00	7,064.83	5,952.00	5,952.00	142.20	103.76	0.11	-1,678.55	-5,232.36	3,646.29	3,506.45	139.83	26.076	
15,800.00	7,064.59	5,952.00	5,952.00	143.75	103.76	0.11	-1,678.55	-5,232.36	3,741.87	3,601.84	140.03	26.722	
15,900.00	7,064.35	5,952.00	5,952.00	145.31	103.76	0.11	-1,678.55	-5,232.36	3,837.68	3,697.47	140.22	27.369	
16,000.00	7,064.11	5,952.00	5,952.00	146.87	103.76	0.11	-1,678.55	-5,232.36	3,933.70	3,793.31	140.39	28.019	
16,100.00	7,063.87	5,952.00	5,952.00	148.43	103.76	0.11	-1,678.55	-5,232.36	4,029.92	3,889.36	140.56	28.670	
16,200.00	7,063.63	5,952.00	5,952.00	149.99	103.76	0.11	-1,678.55	-5,232.36	4,126.31	3,985.59	140.72	29.323	
16,300.00	7,063.38	5,952.00	5,952.00	151.56	103.76	0.11	-1,678.55	-5,232.36	4,222.87	4,082.00	140.87	29.977	
16,400.00	7,063.14	5,952.00	5,952.00	153.12	103.76	0.11	-1,678.55	-5,232.36	4,319.59	4,178.58	141.01	30.633	
16,500.00	7,062.90	5,952.00	5,952.00	154.68	103.76	0.11	-1,678.55	-5,232.36	4,416.45	4,275.30	141.15	31.289	
16,600.00	7,062.66	5,952.00	5,952.00	156.25	103.76	0.11	-1,678.55	-5,232.36	4,513.45	4,372.17	141.28	31.947	
16,700.00	7,062.42	5,952.00	5,952.00	157.81	103.76	0.11	-1,678.55	-5,232.36	4,610.58	4,469.18	141.41	32.605	
16,800.00	7,062.18	5,952.00	5,952.00	159.38	103.76	0.11	-1,678.55	-5,232.36	4,707.83	4,566.30	141.53	33.264	
16,874.30	7,062.00	5,952.00	5,952.00	160.54	103.76	0.11	-1,678.55	-5,232.36	4,780.16	4,638.54	141.62	33.754	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	3.28	-113.35	-1,825.84	-4,230.16	4,607.61				
100.00	100.00	54.00	54.00	3.29	3.45	-113.35	-1,825.84	-4,230.16	4,607.38	4,600.64	6.74	683.809	
200.00	200.00	154.00	154.00	3.34	4.45	-113.35	-1,825.84	-4,230.16	4,607.38	4,599.59	7.79	591.602	
250.41	250.41	203.80	203.80	3.37	5.12	-113.34	-1,825.63	-4,230.16	4,607.29	4,598.80	8.49	542.726	
300.00	300.00	245.64	245.64	3.42	5.73	-113.34	-1,825.73	-4,230.16	4,607.34	4,598.19	9.15	503.723	
400.00	400.00	354.01	354.00	3.54	7.45	-113.35	-1,825.84	-4,230.16	4,607.38	4,596.38	10.99	419.149	
500.00	500.00	454.01	454.00	3.69	9.15	-113.35	-1,825.84	-4,230.16	4,607.38	4,594.54	12.84	358.943	
600.00	599.98	553.30	553.29	3.86	10.88	64.77	-1,825.58	-4,230.16	4,606.53	4,591.79	14.74	312.622	
700.00	699.84	651.57	651.56	4.04	12.62	64.86	-1,825.66	-4,230.16	4,604.33	4,587.67	16.66	276.336	
800.00	799.45	749.62	749.61	4.25	14.38	65.02	-1,825.82	-4,230.16	4,600.69	4,582.07	18.63	246.980	
900.00	898.70	852.73	852.70	4.48	16.35	65.26	-1,825.84	-4,230.16	4,595.54	4,574.71	20.83	220.616	
1,000.00	997.47	951.49	951.47	4.74	18.25	65.55	-1,825.84	-4,230.16	4,588.96	4,565.97	22.99	199.597	
1,100.00	1,095.62	1,047.57	1,047.54	5.03	20.11	65.92	-1,825.05	-4,230.16	4,580.70	4,555.57	25.13	182.267	
1,200.00	1,193.06	1,140.74	1,140.71	5.35	21.91	66.32	-1,825.28	-4,230.16	4,571.49	4,544.24	27.25	167.778	
1,268.36	1,259.18	1,204.05	1,204.01	5.58	23.14	66.64	-1,825.56	-4,230.16	4,564.50	4,535.79	28.70	159.020	
1,300.00	1,289.69	1,233.28	1,233.24	5.70	23.71	66.72	-1,825.73	-4,230.16	4,561.15	4,531.76	29.38	155.240	
1,400.00	1,386.11	1,340.19	1,340.11	6.07	25.85	67.05	-1,825.84	-4,230.16	4,550.45	4,518.57	31.88	142.732	
1,500.00	1,482.54	1,436.61	1,436.54	6.45	27.79	67.35	-1,825.84	-4,230.16	4,539.86	4,505.66	34.20	132.740	
1,600.00	1,578.96	1,531.32	1,531.25	6.86	29.70	67.65	-1,825.06	-4,230.16	4,529.13	4,492.62	36.50	124.073	
1,700.00	1,675.39	1,623.77	1,623.69	7.27	31.57	67.94	-1,825.27	-4,230.16	4,518.88	4,480.11	38.77	116.544	
1,800.00	1,771.81	1,716.35	1,716.26	7.70	33.44	68.23	-1,825.72	-4,230.16	4,508.85	4,467.79	41.06	109.814	
1,900.00	1,868.24	1,822.37	1,822.24	8.13	35.59	68.56	-1,825.84	-4,230.16	4,498.82	4,455.18	43.63	103.111	
2,000.00	1,964.66	1,918.79	1,918.66	8.57	37.55	68.86	-1,825.84	-4,230.16	4,488.89	4,442.87	46.02	97.545	
2,100.00	2,061.09	2,013.49	2,013.35	9.02	39.47	69.18	-1,824.78	-4,230.16	4,478.74	4,430.36	48.38	92.577	
2,200.00	2,157.51	2,105.16	2,105.01	9.47	41.33	69.47	-1,825.04	-4,230.16	4,469.17	4,418.49	50.68	88.177	
2,300.00	2,253.94	2,197.00	2,196.85	9.93	43.20	69.75	-1,825.59	-4,230.16	4,459.84	4,406.85	53.00	84.150	
2,400.00	2,350.36	2,304.55	2,304.36	10.39	45.33	70.10	-1,825.84	-4,230.16	4,450.53	4,394.94	55.58	80.068	
2,500.00	2,446.79	2,400.97	2,400.79	10.86	47.23	70.41	-1,825.84	-4,230.16	4,441.28	4,383.34	57.94	76.657	
2,600.00	2,543.21	2,496.46	2,496.27	11.33	49.10	70.73	-1,825.05	-4,230.16	4,431.93	4,371.65	60.28	73.528	
2,700.00	2,639.64	2,589.56	2,589.36	11.80	50.93	71.03	-1,825.23	-4,230.16	4,423.02	4,360.45	62.57	70.689	
2,800.00	2,736.06	2,682.79	2,682.59	12.27	52.77	71.33	-1,825.64	-4,230.16	4,414.32	4,349.45	64.87	68.048	
2,900.00	2,832.49	2,786.71	2,786.49	12.75	55.07	71.66	-1,825.84	-4,230.16	4,405.69	4,338.04	67.65	65.127	
3,000.00	2,928.91	2,883.14	2,882.91	13.23	57.32	71.98	-1,825.84	-4,230.16	4,397.15	4,326.78	70.37	62.485	
3,100.00	3,025.34	2,979.56	2,979.34	13.71	59.58	72.30	-1,825.84	-4,230.16	4,388.75	4,315.65	73.10	60.040	
3,200.00	3,121.76	3,073.64	3,073.40	14.19	61.77	72.62	-1,825.01	-4,230.16	4,380.27	4,304.50	75.77	57.809	
3,300.00	3,218.18	3,167.49	3,167.25	14.67	63.96	72.93	-1,825.30	-4,230.16	4,372.24	4,293.80	78.44	55.738	
3,400.00	3,314.61	3,269.01	3,268.61	15.15	66.33	73.26	-1,825.84	-4,230.16	4,364.42	4,283.13	81.29	53.686	
3,500.00	3,411.03	3,365.43	3,365.03	15.64	68.69	73.58	-1,825.84	-4,230.16	4,356.60	4,272.47	84.14	51.781	
3,600.00	3,507.46	3,461.86	3,461.46	16.12	71.05	73.91	-1,825.84	-4,230.16	4,348.93	4,261.96	86.98	50.001	
3,700.00	3,603.88	3,556.86	3,556.42	16.61	73.37	74.26	-1,823.51	-4,230.16	4,340.83	4,251.05	89.79	48.346	
3,800.00	3,700.31	3,647.21	3,646.75	17.10	75.58	74.56	-1,823.89	-4,230.16	4,333.57	4,241.09	92.48	46.858	
3,900.00	3,796.73	3,737.87	3,737.39	17.59	77.80	74.85	-1,824.81	-4,230.16	4,326.59	4,231.40	95.19	45.452	
4,000.00	3,893.16	3,847.75	3,847.16	18.07	80.35	75.21	-1,825.84	-4,230.16	4,319.74	4,221.52	98.23	43.977	
4,100.00	3,989.58	3,944.17	3,943.58	18.56	82.40	75.54	-1,825.84	-4,230.16	4,312.82	4,212.05	100.77	42.799	
4,200.00	4,086.01	4,040.60	4,040.01	19.05	84.45	75.87	-1,825.84	-4,230.16	4,306.05	4,202.74	103.31	41.680	
4,300.00	4,182.43	4,134.48	4,133.88	19.55	86.44	76.21	-1,824.86	-4,230.16	4,299.23	4,193.43	105.80	40.635	
4,400.00	4,278.86	4,228.08	4,227.47	20.04	88.43	76.52	-1,825.27	-4,230.16	4,292.86	4,184.57	108.29	39.644	
4,500.00	4,375.28	4,329.95	4,329.28	20.53	90.60	76.87	-1,825.84	-4,230.16	4,286.67	4,175.72	110.95	38.638	
4,600.00	4,471.71	4,426.37	4,425.71	21.02	92.65	77.20	-1,825.84	-4,230.16	4,280.51	4,167.02	113.49	37.717	
4,700.00	4,568.13	4,522.80	4,522.13	21.51	94.70	77.54	-1,825.84	-4,230.16	4,274.51	4,158.47	116.04	36.837	
4,800.00	4,664.56	4,617.51	4,616.83	22.01	96.71	77.88	-1,824.81	-4,230.16	4,268.48	4,149.93	118.55	36.006	
4,900.00	4,760.98	4,711.52	4,710.83	22.50	98.71	78.20	-1,825.17	-4,230.16	4,262.87	4,141.82	121.05	35.216	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	4,812.15	4,811.41	22.99	100.85	78.55	-1,825.84	-4,230.16	4,257.45	4,133.77	123.69	34.422	
5,100.00	4,953.83	4,908.57	4,907.83	23.49	102.90	78.88	-1,825.84	-4,230.16	4,252.08	4,125.85	126.24	33.684	
5,200.00	5,050.25	5,005.00	5,004.25	23.98	104.95	79.22	-1,825.84	-4,230.16	4,246.87	4,118.09	128.79	32.976	
5,300.00	5,146.68	5,100.39	5,099.64	24.48	106.98	79.57	-1,824.78	-4,230.16	4,241.66	4,110.34	131.32	32.301	
5,400.00	5,243.10	5,194.80	5,194.04	24.97	108.99	79.90	-1,825.09	-4,230.16	4,236.82	4,102.99	133.82	31.659	
5,500.00	5,339.53	5,289.39	5,288.63	25.47	111.00	80.23	-1,825.70	-4,230.16	4,232.18	4,095.84	136.34	31.042	
5,600.00	5,435.95	5,390.77	5,389.95	25.96	113.38	80.58	-1,825.84	-4,230.16	4,227.62	4,088.40	139.22	30.367	
5,700.00	5,532.38	5,487.20	5,486.38	26.46	115.68	80.93	-1,825.84	-4,230.16	4,223.21	4,081.19	142.02	29.738	
5,800.00	5,628.80	5,583.11	5,582.28	26.96	117.96	81.28	-1,824.76	-4,230.16	4,218.83	4,074.02	144.81	29.134	
5,900.00	5,725.23	5,677.94	5,677.10	27.45	120.22	81.62	-1,825.01	-4,230.16	4,214.78	4,067.21	147.57	28.561	
6,000.00	5,821.65	5,772.94	5,772.10	27.95	122.49	81.95	-1,825.57	-4,230.16	4,210.92	4,060.59	150.34	28.010	
6,100.00	5,918.08	5,873.04	5,872.08	28.45	124.88	82.30	-1,825.84	-4,230.16	4,207.19	4,053.96	153.23	27.457	
6,200.00	6,014.50	5,969.47	5,968.50	28.94	127.18	82.65	-1,825.84	-4,230.16	4,203.59	4,047.56	156.04	26.940	
6,300.00	6,110.93	6,065.64	6,064.65	29.44	129.48	83.02	-1,823.93	-4,230.16	4,199.98	4,041.14	158.84	26.442	
6,400.00	6,207.35	6,160.04	6,159.03	29.94	131.74	83.35	-1,824.26	-4,230.16	4,196.76	4,035.16	161.60	25.970	
6,500.00	6,303.78	6,254.76	6,253.73	30.43	134.00	83.68	-1,825.15	-4,230.16	4,193.73	4,029.37	164.37	25.514	
6,600.00	6,400.20	6,355.31	6,354.20	30.93	136.14	84.03	-1,825.84	-4,230.16	4,190.85	4,023.84	167.01	25.094	
6,677.76	6,475.18	6,430.29	6,429.18	31.32	137.54	84.30	-1,825.84	-4,230.16	4,188.68	4,019.88	168.80	24.815	
6,700.00	6,496.62	6,451.73	6,450.62	31.43	137.94	77.16	-1,825.84	-4,230.16	4,187.69	4,018.38	169.31	24.734	
6,750.00	6,544.66	6,499.77	6,498.66	31.68	138.84	62.38	-1,825.84	-4,230.16	4,182.67	4,012.22	170.46	24.538	
6,800.00	6,592.24	6,547.35	6,546.24	31.92	139.72	50.42	-1,825.84	-4,230.16	4,173.82	4,002.23	171.59	24.325	
6,850.00	6,639.07	6,593.85	6,592.73	32.16	140.59	41.37	-1,824.77	-4,230.16	4,161.11	3,988.42	172.69	24.096	
6,900.00	6,684.86	6,639.30	6,638.17	32.40	141.44	34.62	-1,824.87	-4,230.16	4,144.76	3,971.00	173.76	23.853	
6,950.00	6,729.32	6,683.47	6,682.34	32.62	142.26	29.56	-1,825.03	-4,230.16	4,124.79	3,949.99	174.80	23.597	
7,000.00	6,772.19	6,726.09	6,724.95	32.84	143.06	25.69	-1,825.26	-4,230.16	4,101.33	3,925.53	175.80	23.329	
7,050.00	6,813.20	6,766.89	6,765.75	33.05	143.82	22.67	-1,825.53	-4,230.16	4,074.51	3,897.75	176.75	23.052	
7,100.00	6,852.09	6,807.24	6,806.09	33.26	144.57	20.26	-1,825.84	-4,230.16	4,044.48	3,866.80	177.68	22.763	
7,150.00	6,888.63	6,843.78	6,842.63	33.45	145.19	18.29	-1,825.84	-4,230.16	4,011.43	3,832.97	178.47	22.477	
7,200.00	6,922.59	6,877.74	6,876.59	33.64	145.77	16.64	-1,825.84	-4,230.16	3,975.56	3,796.37	179.19	22.186	
7,250.00	6,953.76	6,908.91	6,907.76	33.82	146.30	15.20	-1,825.84	-4,230.16	3,937.08	3,757.23	179.85	21.890	
7,300.00	6,981.95	6,937.10	6,935.95	34.00	146.77	13.89	-1,825.84	-4,230.16	3,896.24	3,715.79	180.45	21.592	
7,350.00	7,006.99	6,962.14	6,960.99	34.17	147.20	12.64	-1,825.84	-4,230.16	3,853.27	3,672.30	180.97	21.292	
7,400.00	7,028.72	6,983.86	6,982.72	34.35	147.57	11.31	-1,825.84	-4,230.16	3,808.44	3,627.02	181.43	20.992	
7,450.00	7,047.00	7,002.15	7,001.00	34.52	147.88	9.76	-1,825.84	-4,230.16	3,762.03	3,580.23	181.80	20.693	
7,500.00	7,061.73	7,016.86	7,015.72	34.69	148.13	7.63	-1,825.62	-4,230.16	3,714.30	3,532.20	182.10	20.397	
7,550.00	7,072.82	7,027.93	7,026.78	34.86	148.32	4.04	-1,825.62	-4,230.16	3,665.57	3,483.25	182.32	20.105	
7,600.00	7,080.18	7,035.29	7,034.14	35.04	148.44	-4.27	-1,825.62	-4,230.16	3,616.13	3,433.67	182.46	19.819	
7,650.00	7,083.79	7,038.89	7,037.75	35.22	148.50	-40.53	-1,825.62	-4,230.16	3,566.29	3,383.77	182.52	19.539	
7,674.30	7,084.18	7,039.28	7,038.13	35.32	148.51	-93.45	-1,825.62	-4,230.16	3,542.01	3,359.49	182.52	19.406	
7,700.00	7,084.12	7,039.22	7,038.07	35.42	148.51	-93.43	-1,825.62	-4,230.16	3,516.33	3,333.81	182.51	19.266	
7,800.00	7,083.88	7,038.98	7,037.83	35.84	148.51	-93.33	-1,825.62	-4,230.16	3,416.41	3,233.94	182.47	18.723	
7,900.00	7,083.64	7,038.74	7,037.59	36.34	148.50	-93.23	-1,825.62	-4,230.16	3,316.50	3,134.06	182.43	18.179	
8,000.00	7,083.40	7,038.50	7,037.35	36.90	148.50	-93.13	-1,825.62	-4,230.16	3,216.59	3,034.20	182.39	17.636	
8,100.00	7,083.16	7,038.26	7,037.11	37.52	148.49	-93.03	-1,825.62	-4,230.16	3,116.69	2,934.34	182.35	17.092	
8,200.00	7,082.91	7,038.01	7,036.87	38.21	148.49	-92.94	-1,825.62	-4,230.16	3,016.79	2,834.49	182.30	16.548	
8,300.00	7,082.67	7,037.77	7,036.63	38.95	148.49	-92.84	-1,825.62	-4,230.16	2,916.91	2,734.65	182.26	16.004	
8,400.00	7,082.43	7,037.53	7,036.39	39.74	148.48	-92.74	-1,825.62	-4,230.16	2,817.03	2,634.82	182.21	15.461	
8,500.00	7,082.19	7,037.29	7,036.15	40.59	148.48	-92.64	-1,825.62	-4,230.16	2,717.16	2,535.01	182.15	14.917	
8,600.00	7,081.95	7,037.05	7,035.90	41.49	148.47	-92.54	-1,825.62	-4,230.16	2,617.30	2,435.20	182.09	14.373	
8,700.00	7,081.71	7,036.81	7,035.66	42.43	148.47	-92.45	-1,825.62	-4,230.16	2,517.45	2,335.41	182.03	13.830	
8,800.00	7,081.47	7,036.57	7,035.42	43.41	148.46	-92.35	-1,825.62	-4,230.16	2,417.61	2,235.64	181.97	13.286	
8,900.00	7,081.23	7,036.33	7,035.18	44.44	148.46	-92.25	-1,825.62	-4,230.16	2,317.79	2,135.89	181.90	12.742	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	7,036.09	7,034.94	45.49	148.46	-92.15	-1,825.62	-4,230.16	2,217.98	2,036.16	181.82	12.199	
9,100.00	7,080.74	7,035.85	7,034.70	46.58	148.45	-92.06	-1,825.62	-4,230.16	2,118.19	1,936.46	181.74	11.655	
9,200.00	7,080.50	7,035.61	7,034.46	47.70	148.45	-91.96	-1,825.62	-4,230.16	2,018.42	1,836.78	181.65	11.112	
9,300.00	7,080.26	7,035.36	7,034.22	48.85	148.44	-91.86	-1,825.62	-4,230.16	1,918.68	1,737.13	181.55	10.569	
9,400.00	7,080.02	7,035.12	7,033.98	50.03	148.44	-91.76	-1,825.62	-4,230.16	1,818.97	1,637.53	181.44	10.025	
9,500.00	7,079.78	7,034.88	7,033.74	51.23	148.44	-91.66	-1,825.62	-4,230.16	1,719.28	1,537.97	181.32	9.482	
9,600.00	7,079.54	7,034.64	7,033.50	52.45	148.43	-91.57	-1,825.62	-4,230.16	1,619.64	1,438.46	181.18	8.939	
9,700.00	7,079.30	7,034.40	7,033.25	53.69	148.43	-91.47	-1,825.62	-4,230.16	1,520.04	1,339.01	181.03	8.397	
9,800.00	7,079.06	7,034.16	7,033.01	54.95	148.42	-91.37	-1,825.62	-4,230.16	1,420.50	1,239.64	180.86	7.854	
9,900.00	7,078.82	7,033.92	7,032.77	56.23	148.42	-91.27	-1,825.62	-4,230.16	1,321.03	1,140.36	180.67	7.312	
10,000.00	7,078.57	7,033.68	7,032.53	57.53	148.42	-91.17	-1,825.62	-4,230.16	1,221.65	1,041.19	180.46	6.770	
10,100.00	7,078.33	7,033.44	7,032.29	58.84	148.41	-91.08	-1,825.62	-4,230.16	1,122.37	942.16	180.22	6.228	
10,200.00	7,078.09	7,033.20	7,032.05	60.17	148.41	-90.98	-1,825.62	-4,230.16	1,023.24	843.30	179.94	5.687	
10,300.00	7,077.85	7,032.96	7,031.81	61.51	148.40	-90.88	-1,825.62	-4,230.16	924.29	744.67	179.63	5.146	
10,400.00	7,077.61	7,032.71	7,031.57	62.86	148.40	-90.78	-1,825.62	-4,230.16	825.60	646.33	179.27	4.605	
10,500.00	7,077.37	7,032.47	7,031.33	64.22	148.40	-90.68	-1,825.62	-4,230.16	727.26	548.38	178.89	4.065	
10,600.00	7,077.13	7,032.23	7,031.09	65.60	148.39	-90.59	-1,825.62	-4,230.16	629.45	450.96	178.49	3.526	
10,700.00	7,076.89	7,031.99	7,030.85	66.98	148.39	-90.49	-1,825.62	-4,230.16	532.45	354.27	178.18	2.988	
10,800.00	7,076.65	7,031.75	7,030.60	68.38	148.38	-90.39	-1,825.62	-4,230.16	436.81	258.61	178.20	2.451	
10,900.00	7,076.40	7,031.51	7,030.36	69.78	148.38	-90.29	-1,825.62	-4,230.16	343.66	164.32	179.34	1.916	
11,000.00	7,076.16	7,031.27	7,030.12	71.20	148.37	-90.19	-1,825.62	-4,230.16	255.73	71.86	183.87	1.391	Level 3
11,100.00	7,075.92	7,031.03	7,029.88	72.62	148.37	-90.10	-1,825.62	-4,230.16	180.81	-16.18	196.99	0.918	Level 3
11,200.00	7,075.68	7,030.79	7,029.64	74.04	148.37	-90.00	-1,825.62	-4,230.16	141.39	-77.01	218.40	0.647	Level 3
11,213.95	7,075.65	7,030.75	7,029.61	74.24	148.37	-89.98	-1,825.62	-4,230.16	140.74	-79.73	220.47	0.638	Level 3, CC, ES, SF
11,300.00	7,075.44	7,030.55	7,029.40	75.48	148.36	-89.90	-1,825.62	-4,230.16	165.19	-56.01	221.20	0.747	Level 3
11,400.00	7,075.20	7,030.31	7,029.16	76.92	148.36	-89.80	-1,825.62	-4,230.16	233.63	22.14	211.49	1.105	Level 3
11,500.00	7,074.96	7,030.07	7,028.92	78.37	148.35	-89.70	-1,825.62	-4,230.16	319.19	115.08	204.10	1.564	
11,600.00	7,074.72	7,029.82	7,028.68	79.82	148.35	-89.60	-1,825.62	-4,230.16	411.31	211.84	199.47	2.062	
11,700.00	7,074.48	7,029.58	7,028.44	81.28	148.35	-89.51	-1,825.62	-4,230.16	506.43	309.96	196.47	2.578	
11,800.00	7,074.23	7,029.34	7,028.20	82.75	148.34	-89.41	-1,825.62	-4,230.16	603.13	408.70	194.43	3.102	
11,900.00	7,073.99	7,029.10	7,027.96	84.22	148.34	-89.31	-1,825.62	-4,230.16	700.76	507.79	192.97	3.632	
12,000.00	7,073.75	7,028.86	7,027.71	85.69	148.33	-89.21	-1,825.62	-4,230.16	798.97	607.09	191.88	4.164	
12,100.00	7,073.51	7,028.62	7,027.47	87.17	148.33	-89.11	-1,825.62	-4,230.16	897.58	706.54	191.05	4.698	
12,200.00	7,073.27	7,028.38	7,027.23	88.65	148.33	-89.02	-1,825.62	-4,230.16	996.47	806.08	190.39	5.234	
12,300.00	7,073.03	7,028.14	7,026.99	90.14	148.32	-88.92	-1,825.62	-4,230.16	1,095.56	905.69	189.86	5.770	
12,400.00	7,072.79	7,027.90	7,026.75	91.63	148.32	-88.82	-1,825.62	-4,230.16	1,194.80	1,005.36	189.43	6.307	
12,500.00	7,072.55	7,027.66	7,026.51	93.13	148.31	-88.72	-1,825.62	-4,230.16	1,294.15	1,105.07	189.08	6.844	
12,600.00	7,072.31	7,027.42	7,026.27	94.62	148.31	-88.62	-1,825.62	-4,230.16	1,393.60	1,204.82	188.78	7.382	
12,700.00	7,072.06	7,027.18	7,026.03	96.13	148.31	-88.53	-1,825.62	-4,230.16	1,493.13	1,304.59	188.53	7.920	
12,800.00	7,071.82	7,026.93	7,025.79	97.63	148.30	-88.43	-1,825.62	-4,230.16	1,592.71	1,404.39	188.32	8.457	
12,900.00	7,071.58	7,026.69	7,025.55	99.14	148.30	-88.33	-1,825.62	-4,230.16	1,692.34	1,504.20	188.14	8.995	
13,000.00	7,071.34	7,026.45	7,025.31	100.65	148.29	-88.23	-1,825.62	-4,230.16	1,792.01	1,604.03	187.98	9.533	
13,100.00	7,071.10	7,026.21	7,025.07	102.16	148.29	-88.13	-1,825.62	-4,230.16	1,891.72	1,703.87	187.85	10.070	
13,200.00	7,070.86	7,025.97	7,024.82	103.68	148.28	-88.04	-1,825.62	-4,230.16	1,991.46	1,803.72	187.73	10.608	
13,300.00	7,070.62	7,025.73	7,024.58	105.20	148.28	-87.94	-1,825.62	-4,230.16	2,091.22	1,903.59	187.63	11.145	
13,400.00	7,070.38	7,025.49	7,024.34	106.72	148.28	-87.84	-1,825.62	-4,230.16	2,191.00	2,003.46	187.55	11.683	
13,500.00	7,070.14	7,025.25	7,024.10	108.24	148.27	-87.74	-1,825.62	-4,230.16	2,290.80	2,103.33	187.47	12.220	
13,600.00	7,069.89	7,025.01	7,023.86	109.77	148.27	-87.65	-1,825.62	-4,230.16	2,390.62	2,203.22	187.41	12.756	
13,700.00	7,069.65	7,024.77	7,023.62	111.30	148.26	-87.55	-1,825.62	-4,230.16	2,490.46	2,303.10	187.35	13.293	
13,800.00	7,069.41	7,024.53	7,023.38	112.83	148.26	-87.45	-1,825.62	-4,230.16	2,590.30	2,403.00	187.30	13.829	
13,900.00	7,069.17	7,024.29	7,023.14	114.36	148.26	-87.35	-1,825.62	-4,230.16	2,690.16	2,502.89	187.26	14.366	
14,000.00	7,068.93	7,024.04	7,022.90	115.89	148.25	-87.25	-1,825.62	-4,230.16	2,790.03	2,602.80	187.23	14.902	

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 752H
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 752H	**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
14,100.00	7,068.69	7,023.80	7,022.66	117.43	148.25	-87.16	-1,825.62	-4,230.16	2,889.90	2,702.70	187.20	15.437	
14,200.00	7,068.45	7,023.56	7,022.42	118.97	148.24	-87.06	-1,825.62	-4,230.16	2,989.79	2,802.61	187.18	15.973	
14,300.00	7,068.21	7,023.32	7,022.18	120.50	148.24	-86.96	-1,825.62	-4,230.16	3,089.68	2,902.52	187.16	16.508	
14,400.00	7,067.97	7,023.08	7,021.94	122.05	148.24	-86.86	-1,825.62	-4,230.16	3,189.58	3,002.43	187.15	17.043	
14,500.00	7,067.72	7,022.84	7,021.69	123.59	148.23	-86.77	-1,825.62	-4,230.16	3,289.49	3,102.34	187.14	17.577	
14,600.00	7,067.48	7,022.60	7,021.45	125.13	148.23	-86.67	-1,825.62	-4,230.16	3,389.40	3,202.26	187.14	18.112	
14,700.00	7,067.24	7,022.36	7,021.21	126.68	148.22	-86.57	-1,825.62	-4,230.16	3,489.31	3,302.17	187.14	18.646	
14,800.00	7,067.00	7,022.12	7,020.97	128.22	148.22	-86.47	-1,825.62	-4,230.16	3,589.23	3,402.09	187.14	19.179	
14,900.00	7,066.76	7,021.88	7,020.73	129.77	148.22	-86.37	-1,825.62	-4,230.16	3,689.16	3,502.01	187.15	19.713	
15,000.00	7,066.52	7,021.64	7,020.49	131.32	148.21	-86.28	-1,825.62	-4,230.16	3,789.09	3,601.93	187.15	20.246	
15,100.00	7,066.28	7,021.40	7,020.25	132.87	148.21	-86.18	-1,825.62	-4,230.16	3,889.02	3,701.85	187.16	20.779	
15,200.00	7,066.04	7,021.16	7,020.01	134.42	148.20	-86.08	-1,825.62	-4,230.16	3,988.95	3,801.78	187.18	21.311	
15,300.00	7,065.80	7,020.91	7,019.77	135.97	148.20	-85.98	-1,825.62	-4,230.16	4,088.89	3,901.70	187.19	21.843	
15,400.00	7,065.55	7,020.67	7,019.53	137.53	148.19	-85.89	-1,825.62	-4,230.16	4,188.84	4,001.63	187.21	22.375	
15,500.00	7,065.31	7,020.43	7,019.29	139.08	148.19	-85.79	-1,825.62	-4,230.16	4,288.78	4,101.55	187.23	22.906	
15,600.00	7,065.07	7,020.19	7,019.05	140.64	148.19	-85.69	-1,825.62	-4,230.16	4,388.73	4,201.48	187.25	23.438	
15,700.00	7,064.83	7,019.95	7,018.81	142.20	148.18	-85.59	-1,825.62	-4,230.16	4,488.68	4,301.40	187.28	23.968	
15,800.00	7,064.59	7,019.71	7,018.56	143.75	148.18	-85.50	-1,825.62	-4,230.16	4,588.63	4,401.33	187.30	24.499	
15,900.00	7,064.35	7,019.47	7,018.32	145.31	148.17	-85.40	-1,825.62	-4,230.16	4,688.58	4,501.25	187.33	25.029	
16,000.00	7,064.11	7,019.23	7,018.08	146.87	148.17	-85.30	-1,825.62	-4,230.16	4,788.54	4,601.18	187.36	25.558	
16,100.00	7,063.87	7,018.99	7,017.84	148.43	148.17	-85.20	-1,825.62	-4,230.16	4,888.49	4,701.11	187.39	26.088	
16,200.00	7,063.63	7,018.75	7,017.60	149.99	148.16	-85.11	-1,825.62	-4,230.16	4,988.45	4,801.04	187.42	26.617	
16,300.00	7,063.38	7,018.51	7,017.36	151.56	148.16	-85.01	-1,825.62	-4,230.16	5,088.41	4,900.96	187.45	27.145	
16,400.00	7,063.14	7,018.27	7,017.12	153.12	148.15	-84.91	-1,825.62	-4,230.16	5,188.38	5,000.89	187.49	27.673	
16,500.00	7,062.90	7,018.03	7,016.88	154.68	148.15	-84.82	-1,825.62	-4,230.16	5,288.34	5,100.82	187.52	28.201	
16,600.00	7,062.66	7,017.79	7,016.64	156.25	148.15	-84.72	-1,825.62	-4,230.16	5,388.31	5,200.75	187.56	28.729	
16,700.00	7,062.42	7,017.54	7,016.40	157.81	148.14	-84.62	-1,825.62	-4,230.16	5,488.27	5,300.67	187.60	29.256	
16,800.00	7,062.18	7,017.30	7,016.16	159.38	148.14	-84.52	-1,825.62	-4,230.16	5,588.24	5,400.60	187.64	29.782	
16,874.30	7,062.00	7,017.12	7,015.98	160.54	148.13	-84.45	-1,825.62	-4,230.16	5,662.51	5,474.84	187.67	30.173	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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
0.00	0.00	0.00	0.00	3.28	3.28	-126.80	-1,800.57	-2,407.08	3,006.80				
100.00	100.00	27.99	27.99	3.29	3.28	-126.80	-1,800.57	-2,407.10	3,006.02	2,999.45	6.57	457.564	
200.00	200.00	122.98	122.98	3.34	3.28	-126.79	-1,800.54	-2,407.41	3,006.27	2,999.65	6.62	454.329	
300.00	300.00	231.58	231.58	3.42	3.29	-126.79	-1,800.31	-2,407.68	3,006.33	2,999.63	6.70	448.490	
329.72	329.72	260.72	260.72	3.45	3.29	-126.78	-1,800.22	-2,407.74	3,006.33	2,999.60	6.74	446.325	
400.00	400.00	326.44	326.43	3.54	3.30	-126.78	-1,800.07	-2,407.89	3,006.36	2,999.54	6.82	440.493	
500.00	500.00	415.97	415.97	3.69	3.31	-126.78	-1,800.22	-2,408.18	3,006.72	2,999.74	6.98	430.697	
600.00	599.98	516.37	516.36	3.86	3.32	51.33	-1,800.66	-2,408.47	3,006.12	2,998.96	7.16	419.722	
700.00	699.84	616.26	616.25	4.04	3.33	51.44	-1,801.24	-2,408.64	3,003.33	2,995.97	7.36	407.944	
800.00	799.45	713.63	713.62	4.25	3.34	51.64	-1,801.86	-2,408.80	2,998.41	2,990.82	7.59	395.024	
900.00	898.70	806.69	806.68	4.48	3.36	51.91	-1,802.58	-2,409.04	2,991.51	2,983.66	7.84	381.335	
1,000.00	997.47	904.77	904.76	4.74	3.39	52.27	-1,803.48	-2,409.33	2,982.61	2,974.48	8.13	367.005	
1,100.00	1,095.62	1,000.00	999.98	5.03	3.42	52.72	-1,804.36	-2,409.68	2,971.70	2,963.26	8.44	352.302	
1,200.00	1,193.06	1,095.41	1,095.38	5.35	3.45	53.25	-1,805.19	-2,410.17	2,958.86	2,950.09	8.77	337.297	
1,268.36	1,259.18	1,160.38	1,160.35	5.58	3.48	53.67	-1,805.71	-2,410.59	2,949.01	2,939.99	9.02	326.939	
1,300.00	1,289.69	1,190.37	1,190.34	5.70	3.49	53.79	-1,805.93	-2,410.81	2,944.26	2,935.12	9.14	322.173	
1,400.00	1,386.11	1,289.75	1,289.72	6.07	3.54	54.21	-1,806.46	-2,411.64	2,929.31	2,919.78	9.53	307.426	
1,500.00	1,482.54	1,388.13	1,388.09	6.45	3.58	54.64	-1,806.71	-2,412.55	2,914.44	2,904.50	9.94	293.278	
1,600.00	1,578.96	1,477.60	1,477.55	6.86	3.63	55.03	-1,806.97	-2,413.43	2,899.79	2,889.43	10.36	279.902	
1,700.00	1,675.39	1,570.44	1,570.39	7.27	3.68	55.44	-1,807.35	-2,414.51	2,885.53	2,874.73	10.80	267.176	
1,800.00	1,771.81	1,666.54	1,666.48	7.70	3.74	55.87	-1,807.71	-2,415.73	2,871.49	2,860.23	11.26	255.117	
1,900.00	1,868.24	1,763.42	1,763.35	8.13	3.80	56.31	-1,808.05	-2,416.97	2,857.61	2,845.89	11.72	243.744	
2,000.00	1,964.66	1,865.86	1,865.78	8.57	3.86	56.78	-1,808.33	-2,418.23	2,843.84	2,831.63	12.20	233.009	
2,100.00	2,061.09	1,965.50	1,965.41	9.02	3.93	57.24	-1,808.32	-2,419.37	2,830.01	2,817.32	12.69	222.995	
2,200.00	2,157.51	2,058.05	2,057.96	9.47	3.99	57.68	-1,808.26	-2,420.47	2,816.39	2,803.21	13.18	213.647	
2,300.00	2,253.94	2,151.74	2,151.64	9.93	4.05	58.12	-1,808.51	-2,421.60	2,803.12	2,789.44	13.69	204.811	
2,400.00	2,350.36	2,252.70	2,252.60	10.39	4.13	58.59	-1,809.09	-2,422.60	2,790.01	2,775.81	14.20	196.417	
2,500.00	2,446.79	2,356.55	2,356.44	10.86	4.21	59.07	-1,809.85	-2,423.22	2,776.84	2,762.11	14.73	188.531	
2,600.00	2,543.21	2,464.21	2,464.09	11.33	4.29	59.57	-1,810.54	-2,423.58	2,763.56	2,748.31	15.25	181.173	
2,700.00	2,639.64	2,576.09	2,575.98	11.80	4.33	60.10	-1,810.84	-2,423.52	2,749.98	2,734.23	15.75	174.642	
2,800.00	2,736.06	2,688.40	2,688.29	12.27	4.33	60.64	-1,810.86	-2,422.89	2,736.02	2,719.83	16.19	169.010	
2,900.00	2,832.49	2,793.60	2,793.48	12.75	4.31	61.15	-1,810.68	-2,421.85	2,721.80	2,705.18	16.63	163.713	
3,000.00	2,928.91	2,885.73	2,885.61	13.23	4.29	61.61	-1,810.40	-2,420.92	2,707.69	2,690.62	17.07	158.588	
3,100.00	3,025.34	2,987.06	2,986.93	13.71	4.28	62.11	-1,809.96	-2,419.99	2,693.80	2,676.28	17.52	153.723	
3,200.00	3,121.76	3,087.17	3,087.03	14.19	4.27	62.62	-1,809.25	-2,418.98	2,679.92	2,661.94	17.98	149.034	
3,300.00	3,218.18	3,177.81	3,177.66	14.67	4.26	63.09	-1,808.49	-2,418.15	2,666.26	2,647.81	18.45	144.496	
3,400.00	3,314.61	3,264.58	3,264.44	15.15	4.26	63.54	-1,807.88	-2,417.57	2,653.10	2,634.16	18.93	140.147	
3,500.00	3,411.03	3,356.67	3,356.52	15.64	4.26	64.03	-1,807.36	-2,417.23	2,640.45	2,621.03	19.42	135.987	
3,600.00	3,507.46	3,452.74	3,452.58	16.12	4.27	64.55	-1,806.56	-2,417.02	2,628.05	2,608.14	19.91	131.979	
3,700.00	3,603.88	3,550.94	3,550.78	16.61	4.28	65.08	-1,805.70	-2,416.81	2,615.87	2,595.45	20.41	128.144	
3,800.00	3,700.31	3,649.69	3,649.53	17.10	4.29	65.62	-1,805.02	-2,416.39	2,603.80	2,582.88	20.91	124.498	
3,900.00	3,796.73	3,741.70	3,741.53	17.59	4.31	66.11	-1,804.57	-2,415.91	2,591.95	2,570.53	21.42	121.012	
4,000.00	3,893.16	3,831.28	3,831.11	18.07	4.32	66.60	-1,804.30	-2,415.68	2,580.62	2,558.69	21.93	117.680	
4,100.00	3,989.58	3,927.74	3,927.58	18.56	4.35	67.13	-1,804.24	-2,415.43	2,569.61	2,547.17	22.44	114.493	
4,200.00	4,086.01	4,026.49	4,026.32	19.05	4.37	67.67	-1,804.39	-2,415.05	2,558.80	2,535.84	22.96	111.430	
4,300.00	4,182.43	4,126.99	4,126.82	19.55	4.41	68.21	-1,804.70	-2,414.43	2,548.05	2,524.57	23.49	108.479	
4,400.00	4,278.86	4,223.41	4,223.24	20.04	4.45	68.74	-1,805.08	-2,413.74	2,537.47	2,513.46	24.02	105.644	
4,500.00	4,375.28	4,317.59	4,317.41	20.53	4.49	69.25	-1,805.58	-2,413.06	2,527.16	2,502.61	24.55	102.923	
4,600.00	4,471.71	4,408.08	4,407.91	21.02	4.54	69.75	-1,806.22	-2,412.53	2,517.25	2,492.16	25.09	100.313	
4,700.00	4,568.13	4,500.00	4,499.82	21.51	4.59	70.25	-1,806.98	-2,412.14	2,507.76	2,482.12	25.64	97.812	
4,800.00	4,664.56	4,591.44	4,591.25	22.01	4.65	70.76	-1,807.82	-2,411.92	2,498.68	2,472.50	26.19	95.415	
4,900.00	4,760.98	4,684.78	4,684.59	22.50	4.72	71.28	-1,808.73	-2,411.86	2,490.02	2,463.28	26.74	93.119	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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
5,000.00	4,857.41	4,779.60	4,779.40	22.99	4.78	71.81	-1,809.69	-2,411.90	2,481.70	2,454.40	27.30	90.919	
5,100.00	4,953.83	4,874.56	4,874.35	23.49	4.85	72.34	-1,810.73	-2,411.98	2,473.68	2,445.82	27.85	88.812	
5,200.00	5,050.25	4,966.97	4,966.76	23.98	4.93	72.86	-1,811.80	-2,412.14	2,465.99	2,437.58	28.41	86.793	
5,300.00	5,146.68	5,057.24	5,057.03	24.48	5.00	73.38	-1,812.89	-2,412.50	2,458.76	2,429.79	28.97	84.861	
5,400.00	5,243.10	5,148.33	5,148.10	24.97	5.07	73.89	-1,814.12	-2,413.09	2,452.04	2,422.50	29.54	83.012	
5,500.00	5,339.53	5,243.13	5,242.89	25.47	5.15	74.43	-1,815.53	-2,413.82	2,445.72	2,415.61	30.11	81.238	
5,600.00	5,435.95	5,340.26	5,340.00	25.96	5.23	74.99	-1,817.03	-2,414.57	2,439.63	2,408.96	30.67	79.533	
5,700.00	5,532.38	5,436.77	5,436.51	26.46	5.31	75.54	-1,818.48	-2,415.33	2,433.80	2,402.56	31.24	77.895	
5,800.00	5,628.80	5,532.05	5,531.77	26.96	5.39	76.09	-1,819.86	-2,416.10	2,428.23	2,396.41	31.82	76.321	
5,900.00	5,725.23	5,624.23	5,623.94	27.45	5.48	76.63	-1,821.13	-2,417.00	2,423.05	2,390.66	32.39	74.813	
6,000.00	5,821.65	5,716.81	5,716.50	27.95	5.56	77.17	-1,822.47	-2,418.07	2,418.29	2,385.33	32.96	73.366	
6,100.00	5,918.08	5,808.98	5,808.65	28.45	5.64	77.71	-1,823.90	-2,419.28	2,413.96	2,380.43	33.54	71.980	
6,200.00	6,014.50	5,900.00	5,899.65	28.94	5.72	78.24	-1,825.37	-2,420.67	2,410.10	2,375.99	34.11	70.654	
6,300.00	6,110.93	5,989.71	5,989.33	29.44	5.80	78.77	-1,826.91	-2,422.27	2,406.75	2,372.07	34.69	69.386	
6,400.00	6,207.35	6,082.16	6,081.75	29.94	5.89	79.31	-1,828.62	-2,424.13	2,403.89	2,368.63	35.26	68.169	
6,500.00	6,303.78	6,176.16	6,175.71	30.43	5.98	79.86	-1,830.42	-2,426.15	2,401.43	2,365.58	35.84	67.000	
6,600.00	6,400.20	6,269.16	6,268.66	30.93	6.06	80.41	-1,832.23	-2,428.27	2,399.34	2,362.92	36.42	65.879	
6,677.76	6,475.18	6,343.95	6,343.42	31.32	6.13	80.85	-1,833.65	-2,430.08	2,397.98	2,361.11	36.87	65.035	
6,700.00	6,496.62	6,365.94	6,365.40	31.43	6.15	73.75	-1,834.04	-2,430.61	2,397.24	2,360.23	37.00	64.787	
6,750.00	6,544.66	6,415.93	6,415.37	31.68	6.20	59.07	-1,834.88	-2,431.80	2,392.77	2,355.48	37.29	64.167	
6,800.00	6,592.24	6,467.02	6,466.44	31.92	6.25	47.19	-1,835.67	-2,432.97	2,384.45	2,346.88	37.57	63.463	
6,850.00	6,639.07	6,517.64	6,517.04	32.16	6.30	38.18	-1,836.40	-2,434.06	2,372.30	2,334.46	37.85	62.683	
6,900.00	6,684.86	6,567.71	6,567.09	32.40	6.34	31.47	-1,837.08	-2,435.07	2,356.39	2,318.28	38.11	61.833	
6,950.00	6,729.32	6,616.24	6,615.61	32.62	6.39	26.42	-1,837.70	-2,435.98	2,336.80	2,298.44	38.36	60.918	
7,000.00	6,772.19	6,662.84	6,662.20	32.84	6.44	22.53	-1,838.26	-2,436.79	2,313.66	2,275.07	38.60	59.945	
7,050.00	6,813.20	6,707.54	6,706.90	33.05	6.48	19.45	-1,838.77	-2,437.50	2,287.12	2,248.30	38.82	58.918	
7,100.00	6,852.09	6,750.49	6,749.84	33.26	6.52	16.95	-1,839.23	-2,438.13	2,257.32	2,218.30	39.03	57.843	
7,150.00	6,888.63	6,790.81	6,790.16	33.45	6.56	14.84	-1,839.62	-2,438.66	2,224.46	2,185.24	39.21	56.726	
7,200.00	6,922.59	6,828.01	6,827.35	33.64	6.60	12.98	-1,839.95	-2,439.11	2,188.73	2,149.34	39.38	55.573	
7,250.00	6,953.76	6,862.04	6,861.38	33.82	6.63	11.26	-1,840.22	-2,439.47	2,150.36	2,110.83	39.54	54.390	
7,300.00	6,981.95	6,892.81	6,892.14	34.00	6.66	9.56	-1,840.46	-2,439.78	2,109.61	2,069.94	39.67	53.183	
7,350.00	7,006.99	6,918.80	6,918.13	34.17	6.69	7.73	-1,840.64	-2,440.01	2,066.71	2,026.94	39.78	51.958	
7,400.00	7,028.72	6,941.01	6,940.34	34.35	6.71	5.59	-1,840.79	-2,440.22	2,021.97	1,982.10	39.87	50.720	
7,450.00	7,047.00	6,959.78	6,959.11	34.52	6.73	2.80	-1,840.91	-2,440.39	1,975.64	1,935.71	39.93	49.474	
7,500.00	7,061.73	6,974.99	6,974.32	34.69	6.75	-1.31	-1,841.01	-2,440.52	1,928.02	1,888.04	39.98	48.227	
7,550.00	7,072.82	6,986.55	6,985.88	34.86	6.76	-8.36	-1,841.08	-2,440.63	1,879.39	1,839.39	40.00	46.983	
7,600.00	7,080.18	6,994.39	6,993.72	35.04	6.77	-23.10	-1,841.13	-2,440.70	1,830.06	1,790.06	40.00	45.749	
7,650.00	7,083.79	6,998.47	6,997.80	35.22	6.77	-59.18	-1,841.16	-2,440.74	1,780.34	1,740.35	39.98	44.528	
7,674.30	7,084.18	6,999.08	6,998.41	35.32	6.77	-85.17	-1,841.16	-2,440.74	1,756.13	1,716.16	39.96	43.942	
7,700.00	7,084.12	6,999.25	6,998.58	35.42	6.77	-85.24	-1,841.16	-2,440.74	1,730.52	1,690.57	39.94	43.325	
7,800.00	7,083.88	6,999.91	6,999.24	35.84	6.77	-85.49	-1,841.17	-2,440.75	1,630.91	1,591.06	39.85	40.925	
7,900.00	7,083.64	7,000.61	6,999.94	36.34	6.77	-85.76	-1,841.17	-2,440.76	1,531.36	1,491.61	39.75	38.525	
8,000.00	7,083.40	7,001.31	7,000.64	36.90	6.77	-86.03	-1,841.18	-2,440.76	1,431.86	1,392.23	39.63	36.127	
8,100.00	7,083.16	7,002.01	7,001.34	37.52	6.77	-86.29	-1,841.18	-2,440.77	1,332.45	1,292.95	39.50	33.731	
8,200.00	7,082.91	7,002.70	7,002.03	38.21	6.78	-86.56	-1,841.19	-2,440.78	1,233.12	1,193.77	39.35	31.337	
8,300.00	7,082.67	7,003.38	7,002.71	38.95	6.78	-86.82	-1,841.19	-2,440.78	1,133.92	1,094.75	39.17	28.946	
8,400.00	7,082.43	7,004.06	7,003.39	39.74	6.78	-87.08	-1,841.19	-2,440.79	1,034.87	995.90	38.97	26.558	
8,500.00	7,082.19	7,004.73	7,004.06	40.59	6.78	-87.34	-1,841.20	-2,440.79	936.02	897.30	38.72	24.174	
8,600.00	7,081.95	7,005.40	7,004.73	41.49	6.78	-87.60	-1,841.20	-2,440.80	837.44	799.02	38.43	21.794	
8,700.00	7,081.71	7,006.07	7,005.39	42.43	6.78	-87.85	-1,841.21	-2,440.81	739.25	701.18	38.07	19.420	
8,800.00	7,081.47	7,006.72	7,006.05	43.41	6.78	-88.11	-1,841.21	-2,440.81	641.61	603.98	37.63	17.051	
8,900.00	7,081.23	7,007.38	7,006.71	44.44	6.78	-88.36	-1,841.21	-2,440.82	544.82	507.73	37.10	14.687	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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	7,080.99	7,008.03	7,007.35	45.49	6.78	-88.61	-1,841.22	-2,440.82	449.45	412.98	36.48	12.322	
9,100.00	7,080.74	7,008.67	7,008.00	46.58	6.78	-88.86	-1,841.22	-2,440.83	356.62	320.73	35.89	9.935	
9,200.00	7,080.50	7,009.31	7,008.64	47.70	6.78	-89.10	-1,841.23	-2,440.83	268.98	232.95	36.03	7.466	
9,300.00	7,080.26	7,009.94	7,009.27	48.85	6.78	-89.35	-1,841.23	-2,440.84	193.70	154.03	39.67	4.883	
9,400.00	7,080.02	7,010.57	7,009.90	50.03	6.78	-89.59	-1,841.23	-2,440.85	150.64	99.88	50.76	2.968	
9,424.00	7,079.96	7,010.72	7,010.05	50.31	6.78	-89.65	-1,841.23	-2,440.85	148.69	95.18	53.51	2.779	CC, ES, SF
9,500.00	7,079.78	7,011.20	7,010.53	51.23	6.78	-89.83	-1,841.24	-2,440.85	166.91	109.56	57.36	2.910	
9,600.00	7,079.54	7,011.82	7,011.15	52.45	6.78	-90.07	-1,841.24	-2,440.86	230.28	175.33	54.95	4.191	
9,700.00	7,079.30	7,012.43	7,011.76	53.69	6.79	-90.31	-1,841.25	-2,440.86	313.36	261.49	51.87	6.041	
9,800.00	7,079.06	7,013.05	7,012.37	54.95	6.79	-90.54	-1,841.25	-2,440.87	404.18	354.46	49.72	8.129	
9,900.00	7,078.82	7,013.65	7,012.98	56.23	6.79	-90.78	-1,841.25	-2,440.87	498.53	450.26	48.26	10.329	
10,000.00	7,078.57	7,014.26	7,013.58	57.53	6.79	-91.01	-1,841.26	-2,440.88	594.72	547.48	47.25	12.588	
10,100.00	7,078.33	7,014.85	7,014.18	58.84	6.79	-91.24	-1,841.26	-2,440.88	692.00	645.49	46.51	14.879	
10,200.00	7,078.09	7,015.45	7,014.78	60.17	6.79	-91.47	-1,841.26	-2,440.89	789.95	744.00	45.95	17.190	
10,300.00	7,077.85	7,016.04	7,015.36	61.51	6.79	-91.70	-1,841.27	-2,440.89	888.36	842.83	45.53	19.513	
10,400.00	7,077.61	7,016.62	7,015.95	62.86	6.79	-91.92	-1,841.27	-2,440.90	987.09	941.90	45.19	21.843	
10,500.00	7,077.37	7,017.21	7,016.53	64.22	6.79	-92.14	-1,841.27	-2,440.90	1,086.05	1,041.13	44.92	24.178	
10,600.00	7,077.13	7,017.78	7,017.11	65.60	6.79	-92.37	-1,841.28	-2,440.91	1,185.19	1,140.49	44.70	26.515	
10,700.00	7,076.89	7,018.36	7,017.68	66.98	6.79	-92.59	-1,841.28	-2,440.91	1,284.46	1,239.94	44.52	28.853	
10,800.00	7,076.65	7,018.93	7,018.25	68.38	6.79	-92.81	-1,841.28	-2,440.92	1,383.83	1,339.47	44.37	31.191	
10,900.00	7,076.40	7,019.49	7,018.82	69.78	6.79	-93.02	-1,841.29	-2,440.92	1,483.29	1,439.05	44.24	33.529	
11,000.00	7,076.16	7,020.05	7,019.38	71.20	6.79	-93.24	-1,841.29	-2,440.93	1,582.82	1,538.68	44.13	35.865	
11,100.00	7,075.92	7,020.61	7,019.94	72.62	6.79	-93.45	-1,841.29	-2,440.93	1,682.40	1,638.36	44.04	38.199	
11,200.00	7,075.68	7,021.16	7,020.49	74.04	6.79	-93.66	-1,841.30	-2,440.94	1,782.03	1,738.06	43.97	40.530	
11,300.00	7,075.44	7,021.71	7,021.04	75.48	6.79	-93.88	-1,841.30	-2,440.94	1,881.70	1,837.79	43.90	42.859	
11,400.00	7,075.20	7,022.26	7,021.59	76.92	6.80	-94.08	-1,841.30	-2,440.94	1,981.40	1,937.55	43.85	45.186	
11,500.00	7,074.96	7,022.80	7,022.13	78.37	6.80	-94.29	-1,841.31	-2,440.95	2,081.13	2,037.32	43.81	47.509	
11,600.00	7,074.72	7,023.34	7,022.67	79.82	6.80	-94.50	-1,841.31	-2,440.95	2,180.88	2,137.11	43.77	49.828	
11,700.00	7,074.48	7,023.88	7,023.20	81.28	6.80	-94.70	-1,841.31	-2,440.96	2,280.66	2,236.92	43.74	52.144	
11,800.00	7,074.23	7,024.41	7,023.73	82.75	6.80	-94.91	-1,841.32	-2,440.96	2,380.45	2,336.74	43.71	54.457	
11,900.00	7,073.99	7,024.93	7,024.26	84.22	6.80	-95.11	-1,841.32	-2,440.97	2,480.26	2,436.57	43.69	56.765	
12,000.00	7,073.75	7,025.46	7,024.79	85.69	6.80	-95.31	-1,841.32	-2,440.97	2,580.09	2,536.41	43.68	59.069	
12,100.00	7,073.51	7,025.98	7,025.31	87.17	6.80	-95.51	-1,841.33	-2,440.97	2,679.93	2,636.26	43.67	61.369	
12,200.00	7,073.27	7,026.50	7,025.82	88.65	6.80	-95.70	-1,841.33	-2,440.98	2,779.78	2,736.12	43.66	63.665	
12,300.00	7,073.03	7,027.01	7,026.34	90.14	6.80	-95.90	-1,841.33	-2,440.98	2,879.64	2,835.98	43.66	65.957	
12,400.00	7,072.79	7,027.52	7,026.85	91.63	6.80	-96.09	-1,841.34	-2,440.99	2,979.51	2,935.85	43.66	68.243	
12,500.00	7,072.55	7,028.03	7,027.35	93.13	6.80	-96.29	-1,841.34	-2,440.99	3,079.38	3,035.72	43.66	70.526	
12,600.00	7,072.31	7,028.53	7,027.86	94.62	6.80	-96.48	-1,841.34	-2,441.00	3,179.27	3,135.60	43.67	72.803	
12,700.00	7,072.06	7,029.03	7,028.36	96.13	6.80	-96.67	-1,841.34	-2,441.00	3,279.16	3,235.48	43.68	75.076	
12,800.00	7,071.82	7,029.53	7,028.86	97.63	6.80	-96.86	-1,841.35	-2,441.00	3,379.06	3,335.37	43.69	77.343	
12,900.00	7,071.58	7,030.02	7,029.35	99.14	6.80	-97.04	-1,841.35	-2,441.01	3,478.97	3,435.26	43.70	79.606	
13,000.00	7,071.34	7,030.51	7,029.84	100.65	6.80	-97.23	-1,841.35	-2,441.01	3,578.88	3,535.16	43.72	81.863	
13,100.00	7,071.10	7,031.00	7,030.33	102.16	6.80	-97.41	-1,841.36	-2,441.02	3,678.79	3,635.05	43.74	84.115	
13,200.00	7,070.86	7,031.49	7,030.81	103.68	6.80	-97.60	-1,841.36	-2,441.02	3,778.71	3,734.95	43.75	86.361	
13,300.00	7,070.62	7,031.97	7,031.29	105.20	6.81	-97.78	-1,841.36	-2,441.02	3,878.63	3,834.86	43.78	88.603	
13,400.00	7,070.38	7,032.45	7,031.77	106.72	6.81	-97.96	-1,841.36	-2,441.03	3,978.56	3,934.76	43.80	90.838	
13,500.00	7,070.14	7,032.92	7,032.25	108.24	6.81	-98.14	-1,841.37	-2,441.03	4,078.49	4,034.67	43.82	93.069	
13,600.00	7,069.89	7,033.39	7,032.72	109.77	6.81	-98.32	-1,841.37	-2,441.03	4,178.42	4,134.57	43.85	95.293	
13,700.00	7,069.65	7,033.86	7,033.19	111.30	6.81	-98.49	-1,841.37	-2,441.04	4,278.36	4,234.48	43.88	97.512	
13,800.00	7,069.41	7,034.33	7,033.65	112.83	6.81	-98.67	-1,841.38	-2,441.04	4,378.30	4,334.40	43.90	99.725	
13,900.00	7,069.17	7,034.79	7,034.12	114.36	6.81	-98.84	-1,841.38	-2,441.05	4,478.24	4,434.31	43.93	101.931	
14,000.00	7,068.93	7,035.25	7,034.58	115.89	6.81	-99.02	-1,841.38	-2,441.05	4,578.19	4,534.22	43.97	104.132	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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-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	7,068.69	7,035.71	7,035.03	117.43	6.81	-99.19	-1,841.38	-2,441.05	4,678.13	4,634.14	44.00	106.327	
14,200.00	7,068.45	7,036.16	7,035.49	118.97	6.81	-99.36	-1,841.39	-2,441.06	4,778.08	4,734.05	44.03	108.516	
14,300.00	7,068.21	7,036.61	7,035.94	120.50	6.81	-99.53	-1,841.39	-2,441.06	4,878.03	4,833.97	44.07	110.699	
14,400.00	7,067.97	7,037.06	7,036.39	122.05	6.81	-99.69	-1,841.39	-2,441.06	4,977.99	4,933.88	44.10	112.875	
14,500.00	7,067.72	7,037.51	7,036.84	123.59	6.81	-99.86	-1,841.39	-2,441.07	5,077.94	5,033.80	44.14	115.045	
14,600.00	7,067.48	7,037.95	7,037.28	125.13	6.81	-100.03	-1,841.40	-2,441.07	5,177.90	5,133.72	44.18	117.209	
14,700.00	7,067.24	7,038.39	7,037.72	126.68	6.81	-100.19	-1,841.40	-2,441.07	5,277.86	5,233.64	44.22	119.366	
14,800.00	7,067.00	7,038.83	7,038.16	128.22	6.81	-100.35	-1,841.40	-2,441.08	5,377.82	5,333.56	44.26	121.517	
14,900.00	7,066.76	7,039.27	7,038.59	129.77	6.81	-100.52	-1,841.40	-2,441.08	5,477.78	5,433.48	44.30	123.662	
15,000.00	7,066.52	7,039.70	7,039.03	131.32	6.81	-100.68	-1,841.41	-2,441.08	5,577.74	5,533.40	44.34	125.799	
15,100.00	7,066.28	7,040.13	7,039.45	132.87	6.81	-100.84	-1,841.41	-2,441.09	5,677.70	5,633.32	44.38	127.930	
15,200.00	7,066.04	7,040.56	7,039.88	134.42	6.81	-100.99	-1,841.41	-2,441.09	5,777.67	5,733.24	44.42	130.055	
15,300.00	7,065.80	7,040.98	7,040.31	135.97	6.81	-101.15	-1,841.41	-2,441.09	5,877.63	5,833.16	44.47	132.172	
15,400.00	7,065.55	7,041.40	7,040.73	137.53	6.81	-101.31	-1,841.42	-2,441.10	5,977.60	5,933.09	44.51	134.283	
15,500.00	7,065.31	7,041.82	7,041.15	139.08	6.82	-101.46	-1,841.42	-2,441.10	6,077.57	6,033.01	44.56	136.387	
15,600.00	7,065.07	7,042.24	7,041.57	140.64	6.82	-101.62	-1,841.42	-2,441.10	6,177.54	6,132.93	44.61	138.484	
15,700.00	7,064.83	7,042.65	7,041.98	142.20	6.82	-101.77	-1,841.42	-2,441.11	6,277.51	6,232.85	44.66	140.574	
15,800.00	7,064.59	7,043.07	7,042.39	143.75	6.82	-101.92	-1,841.43	-2,441.11	6,377.48	6,332.77	44.70	142.657	
15,900.00	7,064.35	7,043.48	7,042.80	145.31	6.82	-102.07	-1,841.43	-2,441.11	6,477.45	6,432.70	44.75	144.733	
16,000.00	7,064.11	7,043.88	7,043.21	146.87	6.82	-102.22	-1,841.43	-2,441.11	6,577.42	6,532.62	44.80	146.802	
16,100.00	7,063.87	7,044.29	7,043.61	148.43	6.82	-102.37	-1,841.43	-2,441.12	6,677.40	6,632.54	44.86	148.864	
16,200.00	7,063.63	7,044.69	7,044.02	149.99	6.82	-102.52	-1,841.44	-2,441.12	6,777.37	6,732.46	44.91	150.918	
16,300.00	7,063.38	7,045.09	7,044.42	151.56	6.82	-102.66	-1,841.44	-2,441.12	6,877.35	6,832.39	44.96	152.966	
16,400.00	7,063.14	7,045.49	7,044.81	153.12	6.82	-102.81	-1,841.44	-2,441.13	6,977.32	6,932.31	45.01	155.006	
16,500.00	7,062.90	7,045.88	7,045.21	154.68	6.82	-102.95	-1,841.44	-2,441.13	7,077.30	7,032.23	45.07	157.039	
16,600.00	7,062.66	7,046.28	7,045.60	156.25	6.82	-103.10	-1,841.45	-2,441.13	7,177.28	7,132.15	45.12	159.064	
16,700.00	7,062.42	7,046.67	7,045.99	157.81	6.82	-103.24	-1,841.45	-2,441.14	7,277.25	7,232.08	45.18	161.083	
16,800.00	7,062.18	7,047.06	7,046.38	159.38	6.82	-103.38	-1,841.45	-2,441.14	7,377.23	7,332.00	45.23	163.094	
16,874.30	7,062.00	7,047.34	7,046.67	160.54	6.82	-103.49	-1,841.45	-2,441.14	7,451.51	7,406.24	45.28	164.583	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	7.00	7.00	3.28	3.28	-92.98	-55.32	-1,063.18	1,064.62				
100.00	100.00	107.00	107.00	3.29	3.79	-92.98	-55.32	-1,063.18	1,064.62	1,057.54	7.08	150.412	
175.53	175.53	182.53	182.53	3.32	4.61	-92.97	-55.23	-1,063.18	1,064.61	1,056.69	7.93	134.297	
200.00	200.00	206.96	206.96	3.34	4.92	-92.97	-55.23	-1,063.18	1,064.61	1,056.36	8.26	128.953	
300.00	300.00	307.00	307.00	3.42	6.42	-92.98	-55.32	-1,063.18	1,064.62	1,054.78	9.84	108.205	
338.58	338.58	345.58	345.58	3.46	7.08	-92.97	-55.23	-1,063.18	1,064.61	1,054.07	10.54	100.999	
400.00	400.00	406.90	406.90	3.54	8.16	-92.98	-55.29	-1,063.18	1,064.62	1,052.92	11.70	90.986	
500.00	500.00	507.02	507.00	3.69	10.35	-92.98	-55.32	-1,063.18	1,064.62	1,050.58	14.04	75.849	
600.00	599.98	607.00	606.98	3.86	12.64	85.19	-55.32	-1,063.18	1,064.47	1,047.97	16.50	64.525	
700.00	699.84	706.58	706.53	4.04	14.96	85.53	-54.42	-1,063.18	1,064.00	1,045.01	19.00	56.010	
800.00	799.45	806.60	806.45	4.25	17.27	85.96	-55.32	-1,063.18	1,063.39	1,041.87	21.52	49.419	
900.00	898.70	905.85	905.70	4.48	19.26	86.63	-55.32	-1,063.18	1,062.60	1,038.85	23.75	44.745	
1,000.00	997.47	1,004.60	1,004.43	4.74	21.25	87.53	-54.25	-1,063.18	1,061.77	1,035.77	26.00	40.838	
1,100.00	1,095.62	1,102.92	1,102.74	5.03	23.24	88.52	-54.89	-1,063.18	1,061.11	1,032.83	28.27	37.529	
1,200.00	1,193.06	1,200.25	1,200.06	5.35	24.98	89.69	-55.32	-1,063.18	1,060.74	1,030.41	30.33	34.972	
1,223.93	1,216.25	1,223.44	1,223.25	5.43	25.37	90.00	-55.32	-1,063.18	1,060.72	1,029.93	30.80	34.444 CC	
1,268.36	1,259.18	1,266.38	1,266.18	5.58	26.07	90.60	-55.32	-1,063.18	1,060.78	1,029.13	31.66	33.509	
1,300.00	1,289.69	1,296.89	1,296.69	5.70	26.58	91.03	-55.32	-1,063.18	1,060.91	1,028.64	32.27	32.873	
1,400.00	1,386.11	1,393.33	1,393.13	6.07	28.17	92.42	-55.06	-1,063.18	1,061.75	1,027.52	34.24	31.013	
1,500.00	1,482.54	1,489.86	1,489.66	6.45	29.77	93.80	-55.12	-1,063.18	1,063.24	1,027.02	36.22	29.356 ES	
1,600.00	1,578.96	1,586.43	1,586.23	6.86	31.36	95.17	-55.27	-1,063.18	1,065.37	1,027.15	38.22	27.876	
1,700.00	1,675.39	1,682.59	1,682.39	7.27	33.03	96.52	-55.32	-1,063.18	1,068.16	1,027.86	40.30	26.506	
1,800.00	1,771.81	1,779.02	1,778.81	7.70	34.73	97.88	-55.32	-1,063.18	1,071.60	1,029.18	42.42	25.262	
1,900.00	1,868.24	1,875.47	1,875.27	8.13	36.43	99.25	-55.04	-1,063.18	1,075.74	1,031.20	44.55	24.148	
2,000.00	1,964.66	1,972.10	1,971.90	8.57	38.14	100.59	-55.10	-1,063.18	1,080.46	1,033.78	46.69	23.143	
2,100.00	2,061.09	2,068.78	2,068.58	9.02	39.84	101.91	-55.23	-1,063.18	1,085.78	1,036.95	48.83	22.237	
2,200.00	2,157.51	2,164.73	2,164.51	9.47	41.65	103.22	-55.32	-1,063.18	1,091.73	1,040.66	51.07	21.377	
2,300.00	2,253.94	2,261.15	2,260.94	9.93	43.54	104.52	-55.32	-1,063.18	1,098.30	1,044.89	53.40	20.566	
2,400.00	2,350.36	2,357.59	2,357.37	10.39	45.43	105.83	-54.78	-1,063.18	1,105.64	1,049.90	55.74	19.837	
2,500.00	2,446.79	2,454.66	2,454.44	10.86	47.34	107.10	-54.86	-1,063.18	1,113.37	1,055.29	58.09	19.168	
2,600.00	2,543.21	2,551.83	2,551.61	11.33	49.24	108.35	-55.12	-1,063.18	1,121.62	1,061.18	60.43	18.559	
2,700.00	2,639.64	2,646.89	2,646.64	11.80	51.20	109.56	-55.32	-1,063.18	1,130.43	1,067.60	62.83	17.991	
2,800.00	2,736.06	2,743.32	2,743.06	12.27	53.29	110.78	-55.32	-1,063.18	1,139.87	1,074.50	65.36	17.439	
2,900.00	2,832.49	2,839.88	2,839.61	12.75	55.38	112.02	-54.31	-1,063.18	1,150.25	1,082.36	67.89	16.942	
3,000.00	2,928.91	2,938.22	2,937.94	13.23	57.51	113.21	-54.52	-1,063.18	1,160.67	1,090.20	70.46	16.472	
3,100.00	3,025.34	3,036.76	3,036.48	13.71	59.65	114.36	-55.10	-1,063.18	1,171.42	1,098.38	73.03	16.039	
3,200.00	3,121.76	3,129.11	3,128.76	14.19	61.52	115.44	-55.32	-1,063.18	1,182.80	1,107.46	75.33	15.701	
3,300.00	3,218.18	3,225.53	3,225.18	14.67	63.41	116.56	-55.32	-1,063.18	1,194.76	1,117.09	77.66	15.384	
3,400.00	3,314.61	3,322.21	3,321.84	15.15	65.32	117.71	-53.95	-1,063.18	1,207.87	1,127.88	79.99	15.100	
3,500.00	3,411.03	3,421.44	3,421.07	15.64	67.27	118.80	-54.21	-1,063.18	1,220.64	1,138.27	82.37	14.819	
3,600.00	3,507.46	3,520.91	3,520.53	16.12	69.23	119.85	-54.90	-1,063.18	1,233.61	1,148.85	84.75	14.555	
3,700.00	3,603.88	3,611.28	3,610.88	16.61	71.04	120.80	-55.32	-1,063.18	1,247.09	1,160.11	86.98	14.337	
3,800.00	3,700.31	3,707.70	3,707.31	17.10	73.00	121.81	-55.32	-1,063.18	1,261.23	1,171.86	89.37	14.113	
3,900.00	3,796.73	3,804.22	3,803.83	17.59	74.97	122.81	-55.07	-1,063.18	1,275.91	1,184.16	91.75	13.906	
4,000.00	3,893.16	3,901.37	3,900.97	18.07	76.95	123.78	-55.13	-1,063.18	1,290.79	1,196.64	94.15	13.711	
4,100.00	3,989.58	3,998.57	3,998.17	18.56	78.93	124.72	-55.27	-1,063.18	1,305.98	1,209.44	96.54	13.528	
4,200.00	4,086.01	4,093.47	4,093.01	19.05	81.03	125.63	-55.32	-1,063.18	1,321.59	1,222.54	99.05	13.343	
4,300.00	4,182.43	4,189.89	4,189.43	19.55	83.21	126.53	-55.32	-1,063.18	1,337.57	1,235.93	101.63	13.161	
4,400.00	4,278.86	4,287.76	4,287.28	20.04	85.42	127.47	-53.78	-1,063.18	1,354.87	1,250.62	104.25	12.997	
4,500.00	4,375.28	4,389.30	4,388.81	20.53	87.72	128.36	-54.22	-1,063.18	1,371.23	1,264.28	106.95	12.821	
4,600.00	4,471.71	4,491.17	4,490.65	21.02	90.02	129.22	-55.24	-1,063.18	1,387.53	1,277.87	109.66	12.653	
4,700.00	4,568.13	4,575.71	4,575.13	21.51	92.01	129.93	-55.32	-1,063.18	1,404.66	1,292.62	112.04	12.537	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	4,664.56	4,672.13	4,671.56	22.01	94.29	130.73	-55.32	-1,063.18	1,422.17	1,307.45	114.72	12.397	
4,900.00	4,760.98	4,768.55	4,767.98	22.50	96.57	131.52	-55.32	-1,063.18	1,439.96	1,322.56	117.40	12.266	
5,000.00	4,857.41	4,864.98	4,864.41	22.99	98.85	132.28	-55.32	-1,063.18	1,458.01	1,337.94	120.07	12.143	
5,100.00	4,953.83	4,961.40	4,960.83	23.49	101.13	133.03	-55.32	-1,063.18	1,476.32	1,353.57	122.75	12.027	
5,200.00	5,050.25	5,057.83	5,057.25	23.98	103.41	133.76	-55.32	-1,063.18	1,494.87	1,369.45	125.42	11.919	
5,300.00	5,146.68	5,154.25	5,153.68	24.48	105.69	134.47	-55.32	-1,063.18	1,513.66	1,385.57	128.09	11.817	
5,400.00	5,243.10	5,250.68	5,250.10	24.97	107.97	135.16	-55.32	-1,063.18	1,532.68	1,401.92	130.76	11.721	
5,500.00	5,339.53	5,347.18	5,346.58	25.47	110.25	135.93	-51.63	-1,063.18	1,554.69	1,421.26	133.43	11.652	
5,600.00	5,435.95	5,444.83	5,444.22	25.96	112.56	136.60	-51.69	-1,063.18	1,574.12	1,438.00	136.13	11.564	
5,700.00	5,532.38	5,542.54	5,541.92	26.46	114.88	137.25	-51.84	-1,063.18	1,593.69	1,454.86	138.83	11.480	
5,800.00	5,628.80	5,640.30	5,639.68	26.96	117.19	137.88	-52.10	-1,063.18	1,613.36	1,471.84	141.53	11.400	
5,900.00	5,725.23	5,738.12	5,737.49	27.45	119.50	138.49	-52.45	-1,063.18	1,633.15	1,488.92	144.23	11.323	
6,000.00	5,821.65	5,835.99	5,835.36	27.95	121.82	139.09	-52.90	-1,063.18	1,653.04	1,506.11	146.93	11.250	
6,100.00	5,918.08	5,933.93	5,933.29	28.45	124.13	139.67	-53.45	-1,063.18	1,673.02	1,523.38	149.64	11.181	
6,200.00	6,014.50	6,031.91	6,031.27	28.94	126.45	140.24	-54.10	-1,063.18	1,693.08	1,540.74	152.34	11.114	
6,300.00	6,110.93	6,129.96	6,129.30	29.44	128.77	140.79	-54.85	-1,063.18	1,713.22	1,558.17	155.05	11.050	
6,400.00	6,207.35	6,215.42	6,214.35	29.94	130.80	141.26	-55.32	-1,063.18	1,733.70	1,576.26	157.44	11.012	
6,500.00	6,303.78	6,311.85	6,310.78	30.43	133.10	141.80	-55.32	-1,063.18	1,754.73	1,594.61	160.12	10.959	
6,600.00	6,400.20	6,408.27	6,407.20	30.93	135.40	142.32	-55.32	-1,063.18	1,775.92	1,613.11	162.81	10.908	
6,677.76	6,475.18	6,483.25	6,482.18	31.32	137.19	142.72	-55.32	-1,063.18	1,792.48	1,627.59	164.89	10.871	
6,700.00	6,496.62	6,504.69	6,503.62	31.43	137.70	135.29	-55.32	-1,063.18	1,797.02	1,631.53	165.49	10.859	
6,750.00	6,544.66	6,552.73	6,551.66	31.68	138.85	120.07	-55.32	-1,063.18	1,805.61	1,638.78	166.83	10.823	
6,800.00	6,592.24	6,600.31	6,599.24	31.92	139.99	107.95	-55.32	-1,063.18	1,812.01	1,643.85	168.16	10.776	
6,850.00	6,639.07	6,647.14	6,646.07	32.16	141.11	99.00	-55.32	-1,063.18	1,816.23	1,646.77	169.46	10.718	
6,900.00	6,684.86	6,692.93	6,691.86	32.40	142.20	92.61	-55.32	-1,063.18	1,818.34	1,647.60	170.74	10.650	
6,950.00	6,729.32	6,739.01	6,737.88	32.62	143.30	88.22	-51.37	-1,063.18	1,821.78	1,649.76	172.02	10.591	
7,000.00	6,772.19	6,783.98	6,782.84	32.84	144.37	85.21	-51.45	-1,063.18	1,819.90	1,646.63	173.27	10.503	
7,050.00	6,813.20	6,827.04	6,825.89	33.05	145.40	83.26	-51.58	-1,063.18	1,816.19	1,641.72	174.47	10.410	
7,100.00	6,852.09	6,867.90	6,866.74	33.26	146.38	82.12	-51.75	-1,063.18	1,810.79	1,635.17	175.62	10.311	
7,150.00	6,888.63	6,906.31	6,905.15	33.45	147.29	81.61	-51.96	-1,063.18	1,803.88	1,627.18	176.70	10.209	
7,200.00	6,922.59	6,942.04	6,940.87	33.64	148.15	81.59	-52.19	-1,063.18	1,795.64	1,617.92	177.72	10.104	
7,250.00	6,953.76	6,974.85	6,973.68	33.82	148.93	81.96	-52.43	-1,063.18	1,786.25	1,607.59	178.66	9.998	
7,300.00	6,981.95	7,004.54	7,003.36	34.00	149.64	82.62	-52.68	-1,063.18	1,775.93	1,596.40	179.52	9.892	
7,350.00	7,006.99	7,030.92	7,029.73	34.17	150.27	83.49	-52.93	-1,063.18	1,764.86	1,584.55	180.31	9.788	
7,400.00	7,028.72	7,053.82	7,052.63	34.35	150.82	84.53	-53.16	-1,063.18	1,753.26	1,572.25	181.01	9.686	
7,450.00	7,047.00	7,073.10	7,071.91	34.52	151.28	85.66	-53.36	-1,063.18	1,741.32	1,559.70	181.62	9.588	
7,500.00	7,061.73	7,088.63	7,087.44	34.69	151.65	86.83	-53.53	-1,063.18	1,729.22	1,547.08	182.14	9.494	
7,550.00	7,072.82	7,100.33	7,099.13	34.86	151.93	88.00	-53.67	-1,063.18	1,717.13	1,534.56	182.57	9.405	
7,600.00	7,080.18	7,108.10	7,106.90	35.04	152.11	89.15	-53.76	-1,063.18	1,705.20	1,522.30	182.90	9.323	
7,650.00	7,083.79	7,111.90	7,110.70	35.22	152.20	90.23	-53.80	-1,063.18	1,693.56	1,510.43	183.14	9.248	
7,674.30	7,084.18	7,112.31	7,111.11	35.32	152.21	90.73	-53.81	-1,063.18	1,688.05	1,504.83	183.21	9.214	
7,700.00	7,084.12	7,112.25	7,111.04	35.42	152.21	90.72	-53.81	-1,063.18	1,682.45	1,499.17	183.28	9.179	
7,800.00	7,083.88	7,111.99	7,110.79	35.84	152.21	90.71	-53.80	-1,063.18	1,664.28	1,480.71	183.56	9.067	
7,900.00	7,083.64	7,111.73	7,110.53	36.34	152.20	90.71	-53.80	-1,063.18	1,651.97	1,468.13	183.84	8.986	
8,000.00	7,083.40	7,111.47	7,110.27	36.90	152.19	90.70	-53.80	-1,063.18	1,645.65	1,461.54	184.11	8.938	
8,054.11	7,083.27	7,111.33	7,110.13	37.23	152.19	90.69	-53.80	-1,063.18	1,644.76	1,460.50	184.27	8.926	
8,100.00	7,083.16	7,111.21	7,110.01	37.52	152.19	90.69	-53.79	-1,063.18	1,645.40	1,461.02	184.38	8.924	SF
8,200.00	7,082.91	7,110.95	7,109.75	38.21	152.18	90.68	-53.79	-1,063.18	1,651.22	1,466.59	184.63	8.943	
8,300.00	7,082.67	7,110.69	7,109.49	38.95	152.17	90.67	-53.79	-1,063.18	1,663.04	1,478.18	184.86	8.996	
8,400.00	7,082.43	7,110.43	7,109.23	39.74	152.17	90.66	-53.79	-1,063.18	1,680.74	1,495.68	185.06	9.082	
8,500.00	7,082.19	7,110.18	7,108.97	40.59	152.16	90.65	-53.78	-1,063.18	1,704.13	1,518.89	185.24	9.199	
8,600.00	7,081.95	7,109.92	7,108.71	41.49	152.16	90.64	-53.78	-1,063.18	1,732.99	1,547.59	185.40	9.347	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,700.00	7,081.71	7,109.66	7,108.46	42.43	152.15	90.63	-53.78	-1,063.18	1,767.04	1,581.51	185.52	9.525	
8,800.00	7,081.47	7,109.40	7,108.20	43.41	152.14	90.62	-53.77	-1,063.18	1,805.99	1,620.37	185.62	9.729	
8,900.00	7,081.23	7,109.14	7,107.94	44.44	152.14	90.62	-53.77	-1,063.18	1,849.53	1,663.83	185.70	9.960	
9,000.00	7,080.99	7,108.88	7,107.68	45.49	152.13	90.61	-53.77	-1,063.18	1,897.35	1,711.60	185.75	10.214	
9,100.00	7,080.74	7,108.62	7,107.42	46.58	152.13	90.60	-53.76	-1,063.18	1,949.14	1,763.35	185.79	10.491	
9,200.00	7,080.50	7,108.36	7,107.16	47.70	152.12	90.59	-53.76	-1,063.18	2,004.57	1,818.76	185.81	10.788	
9,300.00	7,080.26	7,108.10	7,106.90	48.85	152.11	90.58	-53.76	-1,063.18	2,063.37	1,877.55	185.81	11.104	
9,400.00	7,080.02	7,107.85	7,106.64	50.03	152.11	90.57	-53.75	-1,063.18	2,125.24	1,939.44	185.81	11.438	
9,500.00	7,079.78	7,107.59	7,106.38	51.23	152.10	90.56	-53.75	-1,063.18	2,189.94	2,004.15	185.79	11.787	
9,600.00	7,079.54	7,107.33	7,106.13	52.45	152.09	90.55	-53.75	-1,063.18	2,257.21	2,071.45	185.77	12.151	
9,700.00	7,079.30	7,107.07	7,105.87	53.69	152.09	90.54	-53.75	-1,063.18	2,326.84	2,141.10	185.74	12.527	
9,800.00	7,079.06	7,106.81	7,105.61	54.95	152.08	90.53	-53.74	-1,063.18	2,398.62	2,212.91	185.71	12.916	
9,900.00	7,078.82	7,106.55	7,105.35	56.23	152.08	90.53	-53.74	-1,063.18	2,472.36	2,286.69	185.67	13.316	
10,000.00	7,078.57	7,106.29	7,105.09	57.53	152.07	90.52	-53.74	-1,063.18	2,547.89	2,362.25	185.63	13.725	
10,100.00	7,078.33	7,106.03	7,104.83	58.84	152.06	90.51	-53.73	-1,063.18	2,625.05	2,439.46	185.59	14.144	
10,200.00	7,078.09	7,105.77	7,104.57	60.17	152.06	90.50	-53.73	-1,063.18	2,703.71	2,518.16	185.56	14.571	
10,300.00	7,077.85	7,105.52	7,104.31	61.51	152.05	90.49	-53.73	-1,063.18	2,783.75	2,598.23	185.52	15.005	
10,400.00	7,077.61	7,105.26	7,104.06	62.86	152.04	90.48	-53.72	-1,063.18	2,865.03	2,679.56	185.48	15.447	
10,500.00	7,077.37	7,105.00	7,103.80	64.22	152.04	90.47	-53.72	-1,063.18	2,947.47	2,762.03	185.44	15.894	
10,600.00	7,077.13	7,104.74	7,103.54	65.60	152.03	90.46	-53.72	-1,063.18	3,030.97	2,845.56	185.41	16.348	
10,700.00	7,076.89	7,104.48	7,103.28	66.98	152.03	90.45	-53.71	-1,063.18	3,115.44	2,930.06	185.37	16.806	
10,800.00	7,076.65	7,104.22	7,103.02	68.38	152.02	90.44	-53.71	-1,063.18	3,200.80	3,015.46	185.34	17.270	
10,900.00	7,076.40	7,103.96	7,102.76	69.78	152.01	90.44	-53.71	-1,063.18	3,286.99	3,101.68	185.31	17.737	
11,000.00	7,076.16	7,103.70	7,102.50	71.20	152.01	90.43	-53.71	-1,063.18	3,373.94	3,188.65	185.29	18.209	
11,100.00	7,075.92	7,103.45	7,102.24	72.62	152.00	90.42	-53.70	-1,063.18	3,461.60	3,276.34	185.26	18.685	
11,200.00	7,075.68	7,103.19	7,101.99	74.04	152.00	90.41	-53.70	-1,063.18	3,549.91	3,364.67	185.24	19.164	
11,300.00	7,075.44	7,102.93	7,101.73	75.48	151.99	90.40	-53.70	-1,063.18	3,638.82	3,453.60	185.22	19.646	
11,400.00	7,075.20	7,102.67	7,101.47	76.92	151.98	90.39	-53.69	-1,063.18	3,728.29	3,543.10	185.20	20.131	
11,500.00	7,074.96	7,102.41	7,101.21	78.37	151.98	90.38	-53.69	-1,063.18	3,818.29	3,633.11	185.18	20.619	
11,600.00	7,074.72	7,102.15	7,100.95	79.82	151.97	90.37	-53.69	-1,063.18	3,908.78	3,723.61	185.17	21.109	
11,700.00	7,074.48	7,101.89	7,100.69	81.28	151.96	90.36	-53.68	-1,063.18	3,999.71	3,814.56	185.16	21.602	
11,800.00	7,074.23	7,101.63	7,100.43	82.75	151.96	90.35	-53.68	-1,063.18	4,091.07	3,905.93	185.15	22.097	
11,900.00	7,073.99	7,101.38	7,100.18	84.22	151.95	90.35	-53.68	-1,063.18	4,182.83	3,997.69	185.14	22.593	
12,000.00	7,073.75	7,101.12	7,099.92	85.69	151.95	90.34	-53.68	-1,063.18	4,274.95	4,089.82	185.13	23.091	
12,100.00	7,073.51	7,100.86	7,099.66	87.17	151.94	90.33	-53.67	-1,063.18	4,367.42	4,182.30	185.13	23.591	
12,200.00	7,073.27	7,100.60	7,099.40	88.65	151.93	90.32	-53.67	-1,063.18	4,460.22	4,275.09	185.13	24.093	
12,300.00	7,073.03	7,100.34	7,099.14	90.14	151.93	90.31	-53.67	-1,063.18	4,553.32	4,368.20	185.13	24.596	
12,400.00	7,072.79	7,100.08	7,098.88	91.63	151.92	90.30	-53.66	-1,063.18	4,646.71	4,461.58	185.13	25.100	
12,500.00	7,072.55	7,099.82	7,098.62	93.13	151.91	90.29	-53.66	-1,063.18	4,740.37	4,555.24	185.13	25.606	
12,600.00	7,072.31	7,099.57	7,098.37	94.62	151.91	90.28	-53.66	-1,063.18	4,834.28	4,649.14	185.14	26.112	
12,700.00	7,072.06	7,099.31	7,098.11	96.13	151.90	90.27	-53.65	-1,063.18	4,928.43	4,743.29	185.14	26.620	
12,800.00	7,071.82	7,099.05	7,097.85	97.63	151.90	90.26	-53.65	-1,063.18	5,022.81	4,837.66	185.15	27.128	
12,900.00	7,071.58	7,098.79	7,097.59	99.14	151.89	90.26	-53.65	-1,063.18	5,117.40	4,932.24	185.16	27.637	
13,000.00	7,071.34	7,098.53	7,097.33	100.65	151.88	90.25	-53.64	-1,063.18	5,212.19	5,027.02	185.17	28.148	
13,100.00	7,071.10	7,098.27	7,097.07	102.16	151.88	90.24	-53.64	-1,063.18	5,307.18	5,121.99	185.19	28.658	
13,200.00	7,070.86	7,098.01	7,096.81	103.68	151.87	90.23	-53.64	-1,063.18	5,402.34	5,217.14	185.20	29.170	
13,300.00	7,070.62	7,097.75	7,096.56	105.20	151.87	90.22	-53.64	-1,063.18	5,497.68	5,312.46	185.22	29.682	
13,400.00	7,070.38	7,097.50	7,096.30	106.72	151.86	90.21	-53.63	-1,063.18	5,593.18	5,407.94	185.24	30.195	
13,500.00	7,070.14	7,097.24	7,096.04	108.24	151.85	90.20	-53.63	-1,063.18	5,688.83	5,503.58	185.26	30.708	
13,600.00	7,069.89	7,096.98	7,095.78	109.77	151.85	90.19	-53.63	-1,063.18	5,784.63	5,599.36	185.28	31.222	
13,700.00	7,069.65	7,096.72	7,095.52	111.30	151.84	90.18	-53.62	-1,063.18	5,880.57	5,695.28	185.30	31.736	
13,800.00	7,069.41	7,096.46	7,095.26	112.83	151.83	90.17	-53.62	-1,063.18	5,976.65	5,791.33	185.32	32.250	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
13,900.00	7,069.17	7,096.20	7,095.00	114.36	151.83	90.17	-53.62	-1,063.18	6,072.85	5,887.50	185.35	32.765	
14,000.00	7,068.93	7,095.94	7,094.75	115.89	151.82	90.16	-53.62	-1,063.18	6,169.17	5,983.80	185.37	33.280	
14,100.00	7,068.69	7,095.69	7,094.49	117.43	151.82	90.15	-53.61	-1,063.18	6,265.61	6,080.21	185.40	33.795	
14,200.00	7,068.45	7,095.43	7,094.23	118.97	151.81	90.14	-53.61	-1,063.18	6,362.15	6,176.73	185.43	34.311	
14,300.00	7,068.21	7,095.17	7,093.97	120.50	151.80	90.13	-53.61	-1,063.18	6,458.81	6,273.35	185.46	34.827	
14,400.00	7,067.97	7,094.91	7,093.71	122.05	151.80	90.12	-53.60	-1,063.18	6,555.56	6,370.07	185.49	35.342	
14,500.00	7,067.72	7,094.65	7,093.45	123.59	151.79	90.11	-53.60	-1,063.18	6,652.41	6,466.89	185.52	35.858	
14,600.00	7,067.48	7,094.39	7,093.20	125.13	151.79	90.10	-53.60	-1,063.18	6,749.35	6,563.80	185.55	36.375	
14,700.00	7,067.24	7,094.14	7,092.94	126.68	151.78	90.09	-53.59	-1,063.18	6,846.38	6,660.79	185.59	36.891	
14,800.00	7,067.00	7,093.88	7,092.68	128.22	151.77	90.08	-53.59	-1,063.18	6,943.49	6,757.87	185.62	37.407	
14,900.00	7,066.76	7,093.62	7,092.42	129.77	151.77	90.08	-53.59	-1,063.18	7,040.68	6,855.03	185.66	37.923	
15,000.00	7,066.52	7,093.36	7,092.16	131.32	151.76	90.07	-53.59	-1,063.18	7,137.95	6,952.26	185.69	38.439	
15,100.00	7,066.28	7,093.10	7,091.90	132.87	151.75	90.06	-53.58	-1,063.18	7,235.30	7,049.57	185.73	38.956	
15,200.00	7,066.04	7,092.84	7,091.64	134.42	151.75	90.05	-53.58	-1,063.18	7,332.72	7,146.94	185.77	39.472	
15,300.00	7,065.80	7,092.58	7,091.39	135.97	151.74	90.04	-53.58	-1,063.18	7,430.20	7,244.39	185.81	39.988	
15,400.00	7,065.55	7,092.33	7,091.13	137.53	151.74	90.03	-53.57	-1,063.18	7,527.75	7,341.90	185.85	40.504	
15,500.00	7,065.31	7,092.07	7,090.87	139.08	151.73	90.02	-53.57	-1,063.18	7,625.37	7,439.47	185.89	41.020	
15,600.00	7,065.07	7,091.81	7,090.61	140.64	151.72	90.01	-53.57	-1,063.18	7,723.04	7,537.11	185.94	41.536	
15,700.00	7,064.83	7,091.55	7,090.35	142.20	151.72	90.00	-53.56	-1,063.18	7,820.78	7,634.80	185.98	42.052	
15,800.00	7,064.59	7,091.29	7,090.09	143.75	151.71	89.99	-53.56	-1,063.18	7,918.57	7,732.54	186.03	42.567	
15,900.00	7,064.35	7,091.03	7,089.84	145.31	151.71	89.99	-53.56	-1,063.18	8,016.41	7,830.34	186.07	43.083	
16,000.00	7,064.11	7,090.78	7,089.58	146.87	151.70	89.98	-53.56	-1,063.18	8,114.31	7,928.19	186.12	43.598	
16,100.00	7,063.87	7,090.52	7,089.32	148.43	151.69	89.97	-53.55	-1,063.18	8,212.26	8,026.10	186.17	44.113	
16,200.00	7,063.63	7,090.26	7,089.06	149.99	151.69	89.96	-53.55	-1,063.18	8,310.26	8,124.05	186.21	44.628	
16,300.00	7,063.38	7,090.00	7,088.80	151.56	151.68	89.95	-53.55	-1,063.18	8,408.30	8,222.04	186.26	45.142	
16,400.00	7,063.14	7,089.74	7,088.54	153.12	151.67	89.94	-53.54	-1,063.18	8,506.39	8,320.08	186.31	45.657	
16,500.00	7,062.90	7,089.48	7,088.29	154.68	151.67	89.93	-53.54	-1,063.18	8,604.53	8,418.17	186.36	46.171	
16,600.00	7,062.66	7,089.22	7,088.03	156.25	151.66	89.92	-53.54	-1,063.18	8,702.70	8,516.29	186.41	46.685	
16,700.00	7,062.42	7,088.97	7,087.77	157.81	151.66	89.91	-53.54	-1,063.18	8,800.92	8,614.46	186.47	47.198	
16,800.00	7,062.18	7,088.71	7,087.51	159.38	151.65	89.90	-53.53	-1,063.18	8,899.18	8,712.66	186.52	47.712	
16,874.30	7,062.00	7,088.52	7,087.32	160.54	151.64	89.90	-53.53	-1,063.18	8,972.21	8,785.65	186.56	48.093	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 — **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	24.68	24.68	3.28	3.28	97.84	-1,159.75	8,421.50	8,500.98				
100.00	100.00	123.69	123.69	3.29	3.28	97.84	-1,159.74	8,421.51	8,500.99	8,494.42	6.57	1,293.794	
200.00	200.00	222.51	222.51	3.34	3.29	97.84	-1,159.73	8,421.53	8,501.01	8,494.38	6.62	1,283.702	
300.00	300.00	322.38	322.38	3.42	3.30	97.84	-1,159.72	8,421.56	8,501.04	8,494.32	6.72	1,265.881	
400.00	400.00	421.08	421.08	3.54	3.32	97.84	-1,159.71	8,421.61	8,501.08	8,494.23	6.85	1,241.496	
500.00	500.00	519.77	519.77	3.69	3.34	97.84	-1,159.68	8,421.66	8,501.14	8,494.12	7.01	1,211.886	
600.00	599.98	618.77	618.77	3.86	3.36	-84.10	-1,159.66	8,421.73	8,501.02	8,493.81	7.20	1,179.919	
700.00	699.84	718.30	718.30	4.04	3.39	-84.14	-1,159.63	8,421.81	8,500.56	8,493.14	7.42	1,146.282	
800.00	799.45	816.60	816.60	4.25	3.43	-84.22	-1,159.59	8,421.90	8,499.76	8,492.10	7.66	1,110.273	
900.00	898.70	914.53	914.53	4.48	3.47	-84.32	-1,159.56	8,422.01	8,498.64	8,490.71	7.92	1,072.495	
1,000.00	997.47	1,012.63	1,012.63	4.74	3.51	-84.45	-1,159.51	8,422.12	8,497.20	8,488.97	8.22	1,033.409	
1,100.00	1,095.62	1,110.13	1,110.13	5.03	3.56	-84.61	-1,159.47	8,422.25	8,495.47	8,486.92	8.55	993.454	
1,200.00	1,193.06	1,206.23	1,206.23	5.35	3.61	-84.80	-1,159.42	8,422.39	8,493.48	8,484.56	8.91	953.017	
1,268.36	1,259.18	1,272.35	1,272.35	5.58	3.65	-84.94	-1,159.38	8,422.48	8,491.97	8,482.79	9.18	925.241	
1,300.00	1,289.69	1,301.54	1,301.54	5.70	3.67	-84.99	-1,159.36	8,422.53	8,491.26	8,481.95	9.31	912.518	
1,400.00	1,386.11	1,397.94	1,397.94	6.07	3.73	-85.16	-1,159.30	8,422.69	8,489.06	8,479.33	9.73	872.786	
1,500.00	1,482.54	1,493.03	1,493.03	6.45	3.79	-85.33	-1,159.24	8,422.85	8,486.96	8,476.79	10.17	834.694	
1,600.00	1,578.96	1,588.12	1,588.12	6.86	3.85	-85.50	-1,159.18	8,423.03	8,484.95	8,474.32	10.63	798.441	
1,700.00	1,675.39	1,684.04	1,684.04	7.27	3.92	-85.68	-1,159.11	8,423.22	8,483.03	8,471.93	11.10	764.112	
1,800.00	1,771.81	1,779.60	1,779.60	7.70	3.99	-85.85	-1,159.03	8,423.43	8,481.21	8,469.62	11.59	731.790	
1,900.00	1,868.24	1,874.68	1,874.67	8.13	4.06	-86.02	-1,158.95	8,423.64	8,479.48	8,467.39	12.09	701.441	
2,000.00	1,964.66	1,970.01	1,970.01	8.57	4.14	-86.19	-1,158.87	8,423.86	8,477.84	8,465.24	12.60	672.962	
2,100.00	2,061.09	2,066.15	2,066.14	9.02	4.22	-86.36	-1,158.78	8,424.09	8,476.30	8,463.18	13.12	646.240	
2,200.00	2,157.51	2,161.21	2,161.21	9.47	4.30	-86.53	-1,158.69	8,424.34	8,474.85	8,461.21	13.64	621.237	
2,300.00	2,253.94	2,256.28	2,256.27	9.93	4.38	-86.70	-1,158.60	8,424.59	8,473.50	8,459.33	14.17	597.803	
2,400.00	2,350.36	2,352.54	2,352.53	10.39	4.46	-86.88	-1,158.50	8,424.86	8,472.24	8,457.52	14.71	575.791	
2,500.00	2,446.79	2,447.73	2,447.72	10.86	4.55	-87.05	-1,158.39	8,425.14	8,471.07	8,455.82	15.26	555.170	
2,600.00	2,543.21	2,542.78	2,542.78	11.33	4.64	-87.22	-1,158.29	8,425.43	8,470.00	8,454.20	15.81	535.807	
2,700.00	2,639.64	2,637.83	2,637.83	11.80	4.72	-87.39	-1,158.18	8,425.73	8,469.03	8,452.66	16.36	517.604	
2,800.00	2,736.06	2,734.22	2,734.22	12.27	4.82	-87.56	-1,158.06	8,426.05	8,468.14	8,451.22	16.92	500.441	
2,900.00	2,832.49	2,829.27	2,829.26	12.75	4.91	-87.73	-1,157.94	8,426.37	8,467.36	8,449.87	17.48	484.307	
3,000.00	2,928.91	2,924.31	2,924.30	13.23	5.00	-87.90	-1,157.82	8,426.70	8,466.66	8,448.61	18.05	469.091	
3,100.00	3,025.34	3,020.69	3,020.69	13.71	5.10	-88.08	-1,157.69	8,427.05	8,466.06	8,447.44	18.62	454.696	
3,200.00	3,121.76	3,115.73	3,115.72	14.19	5.20	-88.25	-1,157.56	8,427.40	8,465.56	8,446.37	19.19	441.120	
3,300.00	3,218.18	3,210.76	3,210.75	14.67	5.29	-88.42	-1,157.42	8,427.77	8,465.15	8,445.38	19.77	428.274	
3,400.00	3,314.61	3,305.79	3,305.78	15.15	5.39	-88.59	-1,157.28	8,428.14	8,464.84	8,444.49	20.34	416.106	
3,500.00	3,411.03	3,402.17	3,402.16	15.64	5.49	-88.77	-1,157.13	8,428.54	8,464.62	8,443.69	20.92	404.542	
3,600.00	3,507.46	3,497.19	3,497.18	16.12	5.59	-88.94	-1,156.99	8,428.94	8,464.49	8,442.99	21.51	393.591	
3,676.80	3,581.51	3,570.12	3,570.11	16.50	5.67	-89.07	-1,156.87	8,429.25	8,464.46	8,442.51	21.95	385.552 CC	
3,700.00	3,603.88	3,592.21	3,592.20	16.61	5.70	-89.11	-1,156.83	8,429.35	8,464.46	8,442.37	22.09	383.184	
3,800.00	3,700.31	3,687.89	3,687.88	17.10	5.80	-89.28	-1,156.68	8,429.77	8,464.53	8,441.85	22.68	373.275	
3,900.00	3,796.73	3,783.60	3,783.59	17.59	5.90	-89.46	-1,156.52	8,430.21	8,464.69	8,441.43	23.26	363.841	
4,000.00	3,893.16	3,878.62	3,878.60	18.07	6.01	-89.63	-1,156.35	8,430.65	8,464.95	8,441.09	23.85	354.861	
4,100.00	3,989.58	3,973.69	3,973.68	18.56	6.11	-89.80	-1,156.18	8,431.10	8,465.30	8,440.85	24.45	346.295	
4,200.00	4,086.01	4,060.88	4,060.86	19.05	6.21	-89.96	-1,156.04	8,431.56	8,465.78	8,440.75	25.03	338.217	
4,300.00	4,182.43	4,161.31	4,161.29	19.55	6.32	-90.14	-1,155.78	8,432.11	8,466.36	8,440.73	25.63	330.368	
4,400.00	4,278.86	4,266.91	4,266.89	20.04	6.44	-90.33	-1,155.61	8,432.52	8,466.87	8,440.64	26.23	322.795	
4,500.00	4,375.28	4,384.73	4,384.71	20.53	6.57	-90.54	-1,155.54	8,432.86	8,467.37	8,440.52	26.85	315.362	
4,600.00	4,471.71	4,481.26	4,481.24	21.02	6.66	-90.71	-1,155.60	8,433.14	8,467.97	8,440.51	27.45	308.460	
4,700.00	4,568.13	4,575.00	4,574.98	21.51	6.71	-90.88	-1,155.75	8,433.21	8,468.44	8,440.43	28.01	302.301	
4,800.00	4,664.56	4,683.86	4,683.84	22.01	6.73	-91.07	-1,156.02	8,433.27	8,468.97	8,440.41	28.56	296.510 ES	
4,900.00	4,760.98	4,780.74	4,780.72	22.50	6.75	-91.25	-1,156.33	8,433.27	8,469.53	8,440.44	29.09	291.116	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	4,857.41	4,883.36	4,883.34	22.99	6.76	-91.43	-1,156.68	8,433.27	8,470.18	8,440.55	29.63	285.885	
5,100.00	4,953.83	4,986.31	4,986.28	23.49	6.76	-91.61	-1,157.05	8,433.18	8,470.82	8,440.67	30.14	281.009	
5,200.00	5,050.25	5,090.07	5,090.05	23.98	6.75	-91.79	-1,157.49	8,433.00	8,471.46	8,440.81	30.65	276.395	
5,300.00	5,146.68	5,184.73	5,184.71	24.48	6.75	-91.96	-1,157.92	8,432.90	8,472.24	8,441.08	31.16	271.867	
5,400.00	5,243.10	5,297.31	5,297.28	24.97	6.74	-92.16	-1,158.52	8,432.56	8,472.90	8,441.24	31.66	267.623	
5,500.00	5,339.53	5,392.62	5,392.59	25.47	6.73	-92.32	-1,159.05	8,432.22	8,473.60	8,441.45	32.15	263.540	
5,600.00	5,435.95	5,500.00	5,499.97	25.96	6.72	-92.51	-1,159.66	8,431.79	8,474.35	8,441.70	32.64	259.593	
5,700.00	5,532.38	5,600.00	5,599.96	26.46	6.70	-92.69	-1,160.15	8,431.31	8,475.09	8,441.96	33.13	255.815	
5,800.00	5,628.80	5,693.77	5,693.73	26.96	6.69	-92.85	-1,160.61	8,430.90	8,475.96	8,442.34	33.62	252.131	
5,900.00	5,725.23	5,800.00	5,799.96	27.45	6.68	-93.04	-1,161.31	8,430.33	8,476.79	8,442.69	34.11	248.527	
6,000.00	5,821.65	5,917.52	5,917.47	27.95	6.66	-93.24	-1,162.10	8,429.53	8,477.59	8,442.99	34.59	245.055	
6,100.00	5,918.08	6,007.05	6,007.00	28.45	6.66	-93.40	-1,162.72	8,428.94	8,478.45	8,443.37	35.09	241.652	
6,200.00	6,014.50	6,100.00	6,099.94	28.94	6.65	-93.56	-1,163.39	8,428.26	8,479.35	8,443.77	35.58	238.340	
6,300.00	6,110.93	6,200.00	6,199.94	29.44	6.66	-93.74	-1,164.13	8,427.54	8,480.33	8,444.25	36.07	235.075	
6,400.00	6,207.35	6,290.04	6,289.97	29.94	6.67	-93.89	-1,164.93	8,427.02	8,481.51	8,444.93	36.58	231.865	
6,500.00	6,303.78	6,363.42	6,363.34	30.43	6.68	-94.02	-1,165.69	8,426.67	8,482.86	8,445.78	37.09	228.739	
6,600.00	6,400.20	6,462.00	6,461.92	30.93	6.71	-94.19	-1,166.80	8,426.17	8,484.27	8,446.67	37.60	225.655	
6,677.76	6,475.18	6,540.83	6,540.74	31.32	6.73	-94.32	-1,167.95	8,425.81	8,485.44	8,447.43	38.00	223.287	
6,700.00	6,496.62	6,554.10	6,554.00	31.43	6.73	-101.56	-1,168.17	8,425.77	8,486.19	8,448.07	38.12	222.643	
6,750.00	6,544.66	6,608.55	6,608.46	31.68	6.75	-116.59	-1,168.86	8,425.56	8,490.71	8,452.34	38.38	221.255	
6,800.00	6,592.24	6,642.25	6,642.14	31.92	6.77	-128.76	-1,169.35	8,425.47	8,499.19	8,460.56	38.62	220.044	
6,850.00	6,639.07	6,689.34	6,689.23	32.16	6.79	-138.05	-1,170.08	8,425.38	8,511.54	8,472.67	38.87	218.956	
6,900.00	6,684.86	6,734.46	6,734.35	32.40	6.81	-145.02	-1,170.68	8,425.30	8,527.69	8,488.58	39.11	218.033	
6,950.00	6,729.32	6,775.00	6,774.88	32.62	6.83	-150.30	-1,171.21	8,425.19	8,547.47	8,508.14	39.34	217.291	
7,000.00	6,772.19	6,793.31	6,793.19	32.84	6.84	-154.36	-1,171.41	8,425.19	8,570.90	8,531.36	39.54	216.754	
7,050.00	6,813.20	6,850.00	6,849.88	33.05	6.87	-157.64	-1,172.22	8,425.19	8,597.73	8,557.98	39.75	216.276	
7,100.00	6,852.09	6,888.74	6,888.61	33.26	6.89	-160.30	-1,172.81	8,425.18	8,627.77	8,587.83	39.94	216.011	
7,150.00	6,888.63	6,930.96	6,930.83	33.45	6.91	-162.55	-1,173.43	8,425.13	8,660.83	8,620.71	40.12	215.899 SF	
7,200.00	6,922.59	6,950.00	6,949.87	33.64	6.92	-164.48	-1,173.69	8,425.11	8,696.74	8,656.48	40.26	216.006	
7,250.00	6,953.76	7,016.47	7,016.33	33.82	6.96	-166.32	-1,174.66	8,425.06	8,735.29	8,694.87	40.42	216.129	
7,300.00	6,981.95	7,025.00	7,024.86	34.00	6.97	-167.97	-1,174.80	8,425.03	8,776.13	8,735.60	40.52	216.565	
7,350.00	7,006.99	7,041.48	7,041.33	34.17	6.98	-169.69	-1,175.04	8,425.00	8,819.12	8,778.50	40.62	217.117	
7,400.00	7,028.72	7,093.87	7,093.72	34.35	7.01	-171.67	-1,175.69	8,424.93	8,864.00	8,823.29	40.71	217.711	
7,450.00	7,047.00	7,100.00	7,099.85	34.52	7.01	-174.02	-1,175.77	8,424.91	8,910.40	8,869.63	40.77	218.557	
7,500.00	7,061.73	7,110.62	7,110.47	34.69	7.01	-177.37	-1,175.89	8,424.87	8,958.10	8,917.29	40.81	219.505	
7,550.00	7,072.82	7,114.43	7,114.28	34.86	7.02	176.96	-1,175.93	8,424.87	9,006.82	8,965.98	40.83	220.580	
7,600.00	7,080.18	7,125.00	7,124.85	35.04	7.02	164.51	-1,176.05	8,424.87	9,056.25	9,015.40	40.84	221.731	
7,650.00	7,083.79	7,125.00	7,124.85	35.22	7.02	124.91	-1,176.05	8,424.87	9,106.05	9,065.22	40.84	222.993	
7,674.30	7,084.18	7,125.00	7,124.85	35.32	7.02	89.36	-1,176.05	8,424.87	9,130.30	9,089.48	40.83	223.631	
7,700.00	7,084.12	7,125.00	7,124.85	35.42	7.02	89.36	-1,176.05	8,424.87	9,155.96	9,115.14	40.82	224.315	
7,800.00	7,083.88	7,125.00	7,124.85	35.84	7.02	89.36	-1,176.05	8,424.87	9,255.77	9,214.99	40.78	226.974	
7,900.00	7,083.64	7,125.00	7,124.85	36.34	7.02	89.36	-1,176.05	8,424.87	9,355.59	9,314.85	40.74	229.627	
8,000.00	7,083.40	7,125.00	7,124.85	36.90	7.02	89.36	-1,176.05	8,424.87	9,455.41	9,414.70	40.71	232.275	
8,100.00	7,083.16	7,125.00	7,124.85	37.52	7.02	89.36	-1,176.05	8,424.87	9,555.23	9,514.56	40.67	234.917	
8,200.00	7,082.91	7,125.00	7,124.85	38.21	7.02	89.36	-1,176.05	8,424.87	9,655.06	9,614.42	40.64	237.553	
8,300.00	7,082.67	7,125.00	7,124.85	38.95	7.02	89.36	-1,176.05	8,424.87	9,754.89	9,714.28	40.61	240.183	
8,400.00	7,082.43	7,125.00	7,124.85	39.74	7.02	89.36	-1,176.05	8,424.87	9,854.73	9,814.14	40.59	242.807	
8,500.00	7,082.19	7,125.00	7,124.85	40.59	7.02	89.36	-1,176.05	8,424.87	9,954.57	9,914.01	40.56	245.425	
8,600.00	7,081.95	7,125.00	7,124.85	41.49	7.02	89.36	-1,176.05	8,424.87	10,054.41	10,013.87	40.54	248.037	
8,700.00	7,081.71	7,125.00	7,124.85	42.43	7.02	89.36	-1,176.05	8,424.87	10,154.25	10,113.74	40.51	250.642	
8,800.00	7,081.47	7,125.00	7,124.85	43.41	7.02	89.36	-1,176.05	8,424.87	10,254.10	10,213.61	40.49	253.240	
8,900.00	7,081.23	7,125.00	7,124.85	44.44	7.02	89.36	-1,176.05	8,424.87	10,353.95	10,313.48	40.47	255.831	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,080.99	7,125.00	7,124.85	45.49	7.02	89.36	-1,176.05	8,424.87	10,453.81	10,413.35	40.45	258.416	
9,100.00	7,080.74	7,125.00	7,124.85	46.58	7.02	89.36	-1,176.05	8,424.87	10,553.66	10,513.22	40.44	260.993	
9,200.00	7,080.50	7,125.00	7,124.85	47.70	7.02	89.36	-1,176.05	8,424.87	10,653.52	10,613.10	40.42	263.563	
9,300.00	7,080.26	7,125.00	7,124.85	48.85	7.02	89.36	-1,176.05	8,424.87	10,753.38	10,712.97	40.41	266.125	
9,400.00	7,080.02	7,125.00	7,124.85	50.03	7.02	89.36	-1,176.05	8,424.87	10,853.25	10,812.85	40.39	268.680	
9,500.00	7,079.78	7,125.00	7,124.85	51.23	7.02	89.36	-1,176.05	8,424.87	10,953.11	10,912.73	40.38	271.228	
9,600.00	7,079.54	7,125.00	7,124.85	52.45	7.02	89.36	-1,176.05	8,424.87	11,052.98	11,012.61	40.37	273.767	
9,700.00	7,079.30	7,125.00	7,124.85	53.69	7.02	89.36	-1,176.05	8,424.87	11,152.85	11,112.49	40.37	276.298	
9,800.00	7,079.06	7,125.00	7,124.85	54.95	7.02	89.36	-1,176.05	8,424.87	11,252.73	11,212.37	40.36	278.822	
9,900.00	7,078.82	7,125.00	7,124.85	56.23	7.02	89.36	-1,176.05	8,424.87	11,352.60	11,312.25	40.35	281.337	
10,000.00	7,078.57	7,125.00	7,124.85	57.53	7.02	89.36	-1,176.05	8,424.87	11,452.48	11,412.13	40.35	283.844	
10,100.00	7,078.33	7,125.00	7,124.85	58.84	7.02	89.36	-1,176.05	8,424.87	11,552.36	11,512.02	40.34	286.342	
10,200.00	7,078.09	7,125.00	7,124.85	60.17	7.02	89.36	-1,176.05	8,424.87	11,652.24	11,611.90	40.34	288.832	
10,300.00	7,077.85	7,125.00	7,124.85	61.51	7.02	89.36	-1,176.05	8,424.87	11,752.13	11,711.78	40.34	291.313	
10,400.00	7,077.61	7,125.00	7,124.85	62.86	7.02	89.36	-1,176.05	8,424.87	11,852.01	11,811.67	40.34	293.785	
10,500.00	7,077.37	7,125.00	7,124.85	64.22	7.02	89.36	-1,176.05	8,424.87	11,951.90	11,911.56	40.34	296.248	
10,600.00	7,077.13	7,125.00	7,124.85	65.60	7.02	89.36	-1,176.05	8,424.87	12,051.79	12,011.44	40.35	298.702	
10,700.00	7,076.89	7,125.00	7,124.85	66.98	7.02	89.36	-1,176.05	8,424.87	12,151.68	12,111.33	40.35	301.147	
10,800.00	7,076.65	7,125.00	7,124.85	68.38	7.02	89.36	-1,176.05	8,424.87	12,251.58	12,211.22	40.36	303.583	
10,900.00	7,076.40	7,125.00	7,124.85	69.78	7.02	89.36	-1,176.05	8,424.87	12,351.47	12,311.11	40.36	306.009	
11,000.00	7,076.16	7,125.00	7,124.85	71.20	7.02	89.36	-1,176.05	8,424.87	12,451.37	12,411.00	40.37	308.426	
11,100.00	7,075.92	7,125.00	7,124.85	72.62	7.02	89.36	-1,176.05	8,424.87	12,551.27	12,510.89	40.38	310.833	
11,200.00	7,075.68	7,125.00	7,124.85	74.04	7.02	89.36	-1,176.05	8,424.87	12,651.17	12,610.78	40.39	313.230	
11,300.00	7,075.44	7,125.00	7,124.85	75.48	7.02	89.36	-1,176.05	8,424.87	12,751.07	12,710.67	40.40	315.618	
11,400.00	7,075.20	7,125.00	7,124.85	76.92	7.02	89.36	-1,176.05	8,424.87	12,850.97	12,810.56	40.41	317.995	
11,500.00	7,074.96	7,125.00	7,124.85	78.37	7.02	89.36	-1,176.05	8,424.87	12,950.88	12,910.45	40.43	320.363	
11,600.00	7,074.72	7,125.00	7,124.85	79.82	7.02	89.36	-1,176.05	8,424.87	13,050.78	13,010.34	40.44	322.720	
11,700.00	7,074.48	7,125.00	7,124.85	81.28	7.02	89.36	-1,176.05	8,424.87	13,150.69	13,110.23	40.46	325.068	
11,800.00	7,074.23	7,125.00	7,124.85	82.75	7.02	89.36	-1,176.05	8,424.87	13,250.60	13,210.13	40.47	327.405	
11,900.00	7,073.99	7,125.00	7,124.85	84.22	7.02	89.36	-1,176.05	8,424.87	13,350.51	13,310.02	40.49	329.732	
12,000.00	7,073.75	7,125.00	7,124.85	85.69	7.02	89.36	-1,176.05	8,424.87	13,450.42	13,409.91	40.51	332.048	
12,100.00	7,073.51	7,125.00	7,124.85	87.17	7.02	89.36	-1,176.05	8,424.87	13,550.33	13,509.81	40.53	334.354	
12,200.00	7,073.27	7,125.00	7,124.85	88.65	7.02	89.36	-1,176.05	8,424.87	13,650.25	13,609.70	40.55	336.649	
12,300.00	7,073.03	7,125.00	7,124.85	90.14	7.02	89.36	-1,176.05	8,424.87	13,750.16	13,709.59	40.57	338.934	
12,400.00	7,072.79	7,125.00	7,124.85	91.63	7.02	89.36	-1,176.05	8,424.87	13,850.08	13,809.49	40.59	341.207	
12,500.00	7,072.55	7,125.00	7,124.85	93.13	7.02	89.36	-1,176.05	8,424.87	13,950.00	13,909.38	40.61	343.470	
12,600.00	7,072.31	7,125.00	7,124.85	94.62	7.02	89.36	-1,176.05	8,424.87	14,049.92	14,009.28	40.64	345.722	
12,700.00	7,072.06	7,125.00	7,124.85	96.13	7.02	89.36	-1,176.05	8,424.87	14,149.84	14,109.17	40.66	347.963	
12,800.00	7,071.82	7,125.00	7,124.85	97.63	7.02	89.36	-1,176.05	8,424.87	14,249.76	14,209.07	40.69	350.194	
12,900.00	7,071.58	7,125.00	7,124.85	99.14	7.02	89.36	-1,176.05	8,424.87	14,349.68	14,308.96	40.72	352.413	
13,000.00	7,071.34	7,125.00	7,124.85	100.65	7.02	89.36	-1,176.05	8,424.87	14,449.60	14,408.86	40.75	354.621	
13,100.00	7,071.10	7,125.00	7,124.85	102.16	7.02	89.36	-1,176.05	8,424.87	14,549.53	14,508.75	40.78	356.817	
13,200.00	7,070.86	7,115.50	7,115.35	103.68	7.02	88.39	-1,175.95	8,424.87	14,649.44	14,608.64	40.80	359.054	
13,300.00	7,070.62	7,115.46	7,115.31	105.20	7.02	88.39	-1,175.95	8,424.87	14,749.37	14,708.54	40.83	361.228	
13,400.00	7,070.38	7,115.43	7,115.28	106.72	7.02	88.39	-1,175.95	8,424.87	14,849.30	14,808.43	40.86	363.392	
13,500.00	7,070.14	7,115.39	7,115.24	108.24	7.02	88.38	-1,175.94	8,424.87	14,949.22	14,908.33	40.90	365.544	
13,600.00	7,069.89	7,115.36	7,115.21	109.77	7.02	88.38	-1,175.94	8,424.87	15,049.15	15,008.22	40.93	367.684	
13,700.00	7,069.65	7,115.32	7,115.17	111.30	7.02	88.37	-1,175.94	8,424.87	15,149.08	15,108.12	40.96	369.813	
13,800.00	7,069.41	7,115.29	7,115.14	112.83	7.02	88.37	-1,175.94	8,424.87	15,249.02	15,208.02	41.00	371.930	
13,900.00	7,069.17	7,115.25	7,115.10	114.36	7.02	88.37	-1,175.94	8,424.87	15,348.95	15,307.91	41.04	374.036	
14,000.00	7,068.93	7,115.22	7,115.07	115.89	7.02	88.36	-1,175.94	8,424.87	15,448.88	15,407.81	41.07	376.131	
14,100.00	7,068.69	7,115.18	7,115.04	117.43	7.02	88.36	-1,175.94	8,424.87	15,548.81	15,507.70	41.11	378.213	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	7,115.15	7,115.00	118.97	7.02	88.36	-1,175.94	8,424.87	15,648.75	15,607.60	41.15	380.284	
14,300.00	7,068.21	7,115.12	7,114.97	120.50	7.02	88.35	-1,175.94	8,424.87	15,748.69	15,707.50	41.19	382.343	
14,400.00	7,067.97	7,115.09	7,114.94	122.05	7.02	88.35	-1,175.94	8,424.87	15,848.62	15,807.39	41.23	384.391	
14,500.00	7,067.72	7,115.05	7,114.90	123.59	7.02	88.35	-1,175.94	8,424.87	15,948.56	15,907.29	41.27	386.427	
14,600.00	7,067.48	7,115.02	7,114.87	125.13	7.02	88.34	-1,175.94	8,424.87	16,048.50	16,007.18	41.31	388.451	
14,700.00	7,067.24	7,114.99	7,114.84	126.68	7.02	88.34	-1,175.94	8,424.87	16,148.44	16,107.08	41.36	390.463	
14,800.00	7,067.00	7,114.96	7,114.81	128.22	7.02	88.34	-1,175.94	8,424.87	16,248.37	16,206.97	41.40	392.464	
14,900.00	7,066.76	7,114.93	7,114.78	129.77	7.02	88.33	-1,175.94	8,424.87	16,348.32	16,306.87	41.45	394.452	
15,000.00	7,066.52	7,114.90	7,114.75	131.32	7.02	88.33	-1,175.94	8,424.87	16,448.26	16,406.76	41.49	396.429	
15,100.00	7,066.28	7,114.87	7,114.72	132.87	7.02	88.33	-1,175.94	8,424.87	16,548.20	16,506.66	41.54	398.394	
15,200.00	7,066.04	7,114.84	7,114.69	134.42	7.02	88.33	-1,175.94	8,424.87	16,648.14	16,606.56	41.58	400.347	
15,300.00	7,065.80	7,114.81	7,114.66	135.97	7.02	88.32	-1,175.94	8,424.87	16,748.08	16,706.45	41.63	402.288	
15,400.00	7,065.55	7,114.78	7,114.63	137.53	7.02	88.32	-1,175.94	8,424.87	16,848.03	16,806.35	41.68	404.217	
15,500.00	7,065.31	7,114.75	7,114.60	139.08	7.02	88.32	-1,175.94	8,424.87	16,947.97	16,906.24	41.73	406.135	
15,600.00	7,065.07	7,114.72	7,114.57	140.64	7.02	88.31	-1,175.94	8,424.87	17,047.92	17,006.14	41.78	408.040	
15,700.00	7,064.83	7,114.69	7,114.54	142.20	7.02	88.31	-1,175.94	8,424.87	17,147.86	17,106.03	41.83	409.934	
15,800.00	7,064.59	7,114.66	7,114.51	143.75	7.02	88.31	-1,175.94	8,424.87	17,247.81	17,205.93	41.88	411.816	
15,900.00	7,064.35	7,114.63	7,114.48	145.31	7.02	88.30	-1,175.94	8,424.87	17,347.76	17,305.82	41.93	413.685	
16,000.00	7,064.11	7,114.61	7,114.46	146.87	7.02	88.30	-1,175.94	8,424.87	17,447.70	17,405.72	41.99	415.543	
16,100.00	7,063.87	7,114.58	7,114.43	148.43	7.02	88.30	-1,175.94	8,424.87	17,547.65	17,505.61	42.04	417.389	
16,200.00	7,063.63	7,114.55	7,114.40	149.99	7.02	88.30	-1,175.94	8,424.87	17,647.60	17,605.50	42.10	419.223	
16,300.00	7,063.38	7,114.52	7,114.37	151.56	7.02	88.29	-1,175.93	8,424.87	17,747.55	17,705.40	42.15	421.046	
16,400.00	7,063.14	7,114.50	7,114.35	153.12	7.02	88.29	-1,175.93	8,424.87	17,847.50	17,805.29	42.21	422.856	
16,500.00	7,062.90	7,114.47	7,114.32	154.68	7.02	88.29	-1,175.93	8,424.87	17,947.45	17,905.19	42.26	424.655	
16,600.00	7,062.66	7,114.44	7,114.29	156.25	7.02	88.29	-1,175.93	8,424.87	18,047.40	18,005.08	42.32	426.442	
16,700.00	7,062.42	7,114.42	7,114.27	157.81	7.02	88.28	-1,175.93	8,424.87	18,147.35	18,104.97	42.38	428.217	
16,800.00	7,062.18	7,114.39	7,114.24	159.38	7.02	88.28	-1,175.93	8,424.87	18,247.30	18,204.87	42.44	429.980	
16,874.30	7,062.00	7,114.37	7,114.22	160.54	7.02	88.28	-1,175.93	8,424.87	18,321.56	18,279.08	42.48	431.282	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	3.28	-170.61	-838.44	-138.68	850.03				
100.00	100.00	80.86	80.86	3.29	3.28	-170.61	-838.50	-138.67	849.89	843.32	6.57	129.362	
200.00	200.00	179.53	179.53	3.34	3.28	-170.61	-838.72	-138.64	850.10	843.48	6.62	128.419	
300.00	300.00	278.16	278.15	3.42	3.29	-170.62	-839.10	-138.58	850.48	843.77	6.71	126.716	
400.00	400.00	376.76	376.75	3.54	3.31	-170.63	-839.65	-138.50	851.01	844.17	6.84	124.364	
500.00	500.00	475.36	475.35	3.69	3.33	-170.65	-840.36	-138.39	851.71	844.70	7.01	121.501	
600.00	599.98	573.19	573.18	3.86	3.35	7.42	-841.33	-138.14	850.91	843.71	7.20	118.195	
700.00	699.84	671.86	671.84	4.04	3.38	7.43	-842.52	-137.64	846.83	839.42	7.41	114.289	
800.00	799.45	772.15	772.12	4.25	3.41	7.46	-843.86	-136.96	839.39	831.74	7.65	109.769	
900.00	898.70	871.25	871.21	4.48	3.45	7.53	-845.15	-136.08	828.44	820.53	7.91	104.788	
1,000.00	997.47	970.77	970.72	4.74	3.49	7.63	-846.42	-135.18	814.03	805.84	8.19	99.443	
1,100.00	1,095.62	1,071.94	1,071.87	5.03	3.53	7.79	-847.56	-134.26	796.06	787.58	8.48	93.828	
1,200.00	1,193.06	1,169.13	1,169.05	5.35	3.58	7.98	-848.44	-133.14	774.46	765.66	8.79	88.084	
1,268.36	1,259.18	1,234.19	1,234.10	5.58	3.61	8.13	-849.17	-132.23	757.86	748.85	9.01	84.091	
1,300.00	1,289.69	1,263.91	1,263.82	5.70	3.62	8.18	-849.54	-131.84	749.86	740.75	9.12	82.251	
1,400.00	1,386.11	1,363.04	1,362.94	6.07	3.68	8.39	-850.64	-130.89	724.52	715.07	9.45	76.659	
1,500.00	1,482.54	1,457.03	1,456.92	6.45	3.74	8.62	-851.57	-130.10	699.09	689.29	9.80	71.354	
1,600.00	1,578.96	1,553.45	1,553.33	6.86	3.80	8.90	-852.75	-129.69	673.96	663.80	10.16	66.307	
1,700.00	1,675.39	1,650.00	1,649.87	7.27	3.86	9.23	-853.88	-129.45	648.84	638.29	10.54	61.535	
1,800.00	1,771.81	1,749.80	1,749.67	7.70	3.92	9.63	-854.82	-129.60	623.60	612.67	10.94	57.020	
1,900.00	1,868.24	1,846.79	1,846.66	8.13	3.99	10.04	-855.38	-129.61	598.01	586.67	11.34	52.747	
2,000.00	1,964.66	1,943.59	1,943.45	8.57	4.06	10.49	-855.88	-129.53	572.38	560.63	11.74	48.736	
2,100.00	2,061.09	2,038.72	2,038.59	9.02	4.13	10.96	-856.36	-129.38	546.76	534.60	12.16	44.977	
2,200.00	2,157.51	2,137.52	2,137.38	9.47	4.20	11.49	-857.10	-129.24	521.41	508.83	12.58	41.460	
2,300.00	2,253.94	2,234.93	2,234.79	9.93	4.26	12.12	-857.38	-129.42	495.73	482.73	13.00	38.136	
2,400.00	2,350.36	2,331.51	2,331.37	10.39	4.27	12.86	-857.46	-129.97	470.03	456.62	13.41	35.063	
2,500.00	2,446.79	2,427.00	2,426.85	10.86	4.29	13.71	-857.53	-130.74	444.46	430.65	13.82	32.168	
2,600.00	2,543.21	2,524.17	2,524.02	11.33	4.31	14.70	-857.64	-131.71	419.07	404.84	14.23	29.445	
2,700.00	2,639.64	2,621.59	2,621.43	11.80	4.33	15.83	-857.50	-132.66	393.59	378.95	14.64	26.880	
2,800.00	2,736.06	2,718.04	2,717.88	12.27	4.33	17.06	-857.28	-133.36	368.11	353.05	15.06	24.449	
2,900.00	2,832.49	2,813.99	2,813.83	12.75	4.36	18.41	-857.29	-133.70	342.90	327.40	15.50	22.128	
3,000.00	2,928.91	2,910.80	2,910.64	13.23	4.39	19.97	-857.31	-134.02	317.91	301.96	15.95	19.935	
3,100.00	3,025.34	3,006.54	3,006.38	13.71	4.44	21.76	-857.38	-134.30	293.20	276.78	16.42	17.852	
3,200.00	3,121.76	3,102.57	3,102.41	14.19	4.52	23.85	-857.75	-134.55	269.09	252.15	16.94	15.889	
3,300.00	3,218.18	3,198.60	3,198.44	14.67	4.60	26.32	-858.19	-134.76	245.42	227.95	17.47	14.048	
3,400.00	3,314.61	3,295.35	3,295.19	15.15	4.69	29.21	-859.09	-134.70	222.56	204.55	18.01	12.355	
3,500.00	3,411.03	3,391.41	3,391.24	15.64	4.77	32.70	-860.00	-134.63	200.36	181.77	18.59	10.778	
3,600.00	3,507.46	3,487.95	3,487.78	16.12	4.86	37.03	-861.00	-134.60	179.16	159.96	19.20	9.330	
3,700.00	3,603.88	3,584.85	3,584.67	16.61	4.96	42.46	-862.06	-134.56	159.27	139.41	19.86	8.020	
3,800.00	3,700.31	3,681.69	3,681.50	17.10	5.05	49.29	-863.19	-134.54	141.22	120.65	20.57	6.866	
3,900.00	3,796.73	3,778.07	3,777.87	17.59	5.15	57.89	-864.23	-134.61	125.76	104.43	21.34	5.895	
4,000.00	3,893.16	3,874.83	3,874.63	18.07	5.24	68.46	-865.30	-134.54	113.84	91.74	22.10	5.151	
4,100.00	3,989.58	3,971.69	3,971.48	18.56	5.34	80.84	-866.38	-134.59	106.88	84.07	22.80	4.687	
4,168.60	4,055.73	4,037.92	4,037.71	18.90	5.41	89.95	-867.05	-134.66	105.47	82.26	23.20	4.546	CC, ES
4,200.00	4,086.01	4,068.29	4,068.08	19.05	5.44	94.15	-867.38	-134.67	105.76	82.40	23.35	4.528	SF
4,300.00	4,182.43	4,165.04	4,164.82	19.55	5.54	106.97	-868.50	-134.77	110.65	86.92	23.73	4.662	
4,400.00	4,278.86	4,262.04	4,261.81	20.04	5.64	118.10	-870.05	-134.94	120.64	96.63	24.00	5.026	
4,500.00	4,375.28	4,358.90	4,358.65	20.53	5.75	127.14	-871.96	-135.25	134.43	110.18	24.24	5.545	
4,600.00	4,471.71	4,456.20	4,455.92	21.02	5.85	134.27	-874.33	-135.81	150.84	126.33	24.51	6.155	
4,700.00	4,568.13	4,553.47	4,553.15	21.51	5.95	139.91	-876.96	-136.35	168.89	144.08	24.81	6.807	
4,800.00	4,664.56	4,650.69	4,650.33	22.01	6.06	144.44	-879.67	-136.89	188.17	163.02	25.15	7.483	
4,900.00	4,760.98	4,747.84	4,747.44	22.50	6.16	148.12	-882.37	-137.41	208.38	182.86	25.52	8.167	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
5,000.00	4,857.41	4,845.32	4,844.88	22.99	6.27	151.13	-885.09	-138.03	229.31	203.40	25.91	8.850	
5,100.00	4,953.83	4,942.40	4,941.92	23.49	6.38	153.63	-887.83	-138.65	250.74	224.41	26.32	9.525	
5,200.00	5,050.25	5,039.58	5,039.06	23.98	6.48	155.72	-890.64	-139.31	272.49	245.73	26.75	10.185	
5,300.00	5,146.68	5,136.64	5,136.08	24.48	6.59	157.50	-893.48	-139.99	294.52	267.32	27.20	10.830	
5,400.00	5,243.10	5,233.70	5,233.10	24.97	6.70	159.03	-896.37	-140.67	316.74	289.10	27.65	11.457	
5,500.00	5,339.53	5,331.39	5,330.73	25.47	6.81	160.35	-899.35	-141.42	339.09	310.98	28.11	12.062	
5,600.00	5,435.95	5,428.40	5,427.69	25.96	6.92	161.49	-902.38	-142.16	361.53	332.95	28.58	12.650	
5,700.00	5,532.38	5,526.49	5,525.73	26.46	7.03	162.52	-905.49	-142.90	384.05	354.99	29.06	13.215	
5,800.00	5,628.80	5,623.98	5,623.17	26.96	7.14	163.42	-908.64	-143.65	406.61	377.07	29.54	13.764	
5,900.00	5,725.23	5,721.44	5,720.57	27.45	7.26	164.22	-911.89	-144.44	429.16	399.14	30.02	14.294	
6,000.00	5,821.65	5,819.00	5,818.07	27.95	7.37	164.93	-915.27	-145.23	451.66	421.15	30.51	14.803	
6,100.00	5,918.08	5,915.42	5,914.43	28.45	7.48	165.57	-918.45	-146.06	474.39	443.40	30.99	15.308	
6,200.00	6,014.50	6,012.67	6,011.63	28.94	7.59	166.15	-921.62	-146.91	497.22	465.75	31.48	15.795	
6,300.00	6,110.93	6,110.28	6,109.18	29.44	7.71	166.68	-924.82	-147.79	520.08	488.11	31.97	16.266	
6,400.00	6,207.35	6,207.78	6,206.62	29.94	7.82	167.16	-928.07	-148.76	542.93	510.47	32.47	16.723	
6,500.00	6,303.78	6,304.98	6,303.76	30.43	7.93	167.59	-931.37	-149.78	565.78	532.82	32.96	17.166	
6,600.00	6,400.20	6,401.70	6,400.42	30.93	8.05	167.98	-934.59	-150.85	588.72	555.27	33.45	17.600	
6,677.76	6,475.18	6,475.79	6,474.47	31.32	8.13	168.27	-936.89	-151.57	606.72	572.90	33.82	17.939	
6,700.00	6,496.62	6,496.08	6,494.76	31.43	8.16	160.70	-937.48	-151.73	611.84	577.92	33.92	18.037	
6,750.00	6,544.66	6,544.05	6,542.70	31.68	8.21	145.30	-938.81	-152.05	622.94	588.78	34.16	18.234	
6,800.00	6,592.24	6,591.36	6,589.99	31.92	8.27	133.13	-940.03	-152.28	633.48	599.08	34.40	18.415	
6,850.00	6,639.07	6,637.08	6,635.70	32.16	8.32	124.19	-941.16	-152.45	643.53	608.91	34.62	18.586	
6,900.00	6,684.86	6,682.53	6,681.14	32.40	8.38	117.88	-942.20	-152.62	653.31	618.46	34.85	18.748	
6,950.00	6,729.32	6,725.00	6,723.60	32.62	8.43	113.44	-943.08	-152.77	663.00	627.95	35.05	18.916	
7,000.00	6,772.19	6,767.40	6,765.99	32.84	8.48	110.42	-943.86	-152.93	672.87	637.61	35.26	19.086	
7,050.00	6,813.20	6,807.80	6,806.38	33.05	8.53	108.36	-944.55	-153.07	683.11	647.66	35.45	19.269	
7,100.00	6,852.09	6,846.05	6,844.64	33.26	8.58	106.95	-945.14	-153.19	694.02	658.39	35.64	19.473	
7,150.00	6,888.63	6,884.15	6,882.73	33.45	8.62	106.08	-945.75	-153.34	705.79	669.96	35.84	19.694	
7,200.00	6,922.59	6,917.80	6,916.37	33.64	8.66	105.36	-946.31	-153.45	718.68	682.67	36.01	19.959	
7,250.00	6,953.76	6,948.96	6,947.53	33.82	8.70	104.74	-946.81	-153.55	732.98	696.81	36.17	20.265	
7,300.00	6,981.95	6,978.22	6,976.78	34.00	8.73	104.15	-947.27	-153.69	748.85	712.52	36.33	20.613	
7,350.00	7,006.99	7,003.85	7,002.41	34.17	8.77	103.41	-947.71	-153.79	766.42	729.95	36.47	21.016	
7,400.00	7,028.72	7,025.00	7,023.56	34.35	8.79	102.37	-948.07	-153.84	785.82	749.24	36.58	21.482	
7,450.00	7,047.00	7,042.87	7,041.42	34.52	8.81	101.05	-948.37	-153.87	807.10	770.42	36.67	22.007	
7,500.00	7,061.73	7,057.30	7,055.85	34.69	8.83	99.41	-948.59	-153.89	830.20	793.45	36.75	22.592	
7,550.00	7,072.82	7,068.36	7,066.91	34.86	8.84	97.41	-948.76	-153.92	855.02	818.22	36.80	23.234	
7,600.00	7,080.18	7,075.80	7,074.35	35.04	8.85	95.04	-948.87	-153.94	881.42	844.59	36.83	23.931	
7,650.00	7,083.79	7,079.61	7,078.16	35.22	8.86	92.31	-948.93	-153.95	909.18	872.33	36.84	24.678	
7,674.30	7,084.18	7,080.07	7,078.62	35.32	8.86	90.85	-948.93	-153.95	923.09	886.25	36.84	25.059	
7,700.00	7,084.12	7,080.08	7,078.63	35.42	8.86	90.85	-948.93	-153.95	938.17	901.34	36.83	25.473	
7,800.00	7,083.88	7,080.11	7,078.65	35.84	8.86	90.85	-948.93	-153.95	1,000.97	964.17	36.80	27.200	
7,900.00	7,083.64	7,080.13	7,078.68	36.34	8.86	90.85	-948.93	-153.95	1,069.46	1,032.69	36.76	29.090	
8,000.00	7,083.40	7,080.16	7,078.71	36.90	8.86	90.85	-948.93	-153.95	1,142.60	1,105.87	36.72	31.113	
8,100.00	7,083.16	7,080.18	7,078.73	37.52	8.86	90.86	-948.93	-153.95	1,219.55	1,182.87	36.68	33.245	
8,200.00	7,082.91	7,080.21	7,078.76	38.21	8.86	90.86	-948.93	-153.95	1,299.65	1,263.01	36.64	35.467	
8,300.00	7,082.67	7,080.24	7,078.78	38.95	8.86	90.86	-948.94	-153.95	1,382.35	1,345.74	36.61	37.760	
8,400.00	7,082.43	7,080.26	7,078.81	39.74	8.86	90.86	-948.94	-153.95	1,467.20	1,430.62	36.58	40.114	
8,500.00	7,082.19	7,080.29	7,078.84	40.59	8.86	90.86	-948.94	-153.95	1,553.85	1,517.31	36.55	42.517	
8,600.00	7,081.95	7,080.32	7,078.86	41.49	8.86	90.87	-948.94	-153.95	1,642.03	1,605.50	36.52	44.960	
8,700.00	7,081.71	7,080.34	7,078.89	42.43	8.86	90.87	-948.94	-153.95	1,731.48	1,694.98	36.50	47.438	
8,800.00	7,081.47	7,080.37	7,078.92	43.41	8.86	90.87	-948.94	-153.95	1,822.04	1,785.56	36.48	49.943	
8,900.00	7,081.23	7,080.40	7,078.95	44.44	8.86	90.87	-948.94	-153.95	1,913.53	1,877.07	36.47	52.471	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	7,080.43	7,078.97	45.49	8.86	90.88	-948.94	-153.95	2,005.84	1,969.38	36.46	55.019	
9,100.00	7,080.74	7,080.45	7,079.00	46.58	8.86	90.88	-948.94	-153.95	2,098.85	2,062.40	36.45	57.583	
9,200.00	7,080.50	7,080.48	7,079.03	47.70	8.86	90.88	-948.94	-153.95	2,192.48	2,156.04	36.44	60.160	
9,300.00	7,080.26	7,080.51	7,079.06	48.85	8.86	90.88	-948.94	-153.95	2,286.65	2,250.21	36.44	62.748	
9,400.00	7,080.02	7,080.54	7,079.09	50.03	8.86	90.88	-948.94	-153.95	2,381.29	2,344.85	36.44	65.345	
9,500.00	7,079.78	7,080.57	7,079.12	51.23	8.86	90.89	-948.94	-153.95	2,476.36	2,439.91	36.44	67.950	
9,600.00	7,079.54	7,080.60	7,079.14	52.45	8.86	90.89	-948.94	-153.95	2,571.79	2,535.35	36.45	70.560	
9,700.00	7,079.30	7,080.62	7,079.17	53.69	8.86	90.89	-948.94	-153.95	2,667.57	2,631.11	36.45	73.174	
9,800.00	7,079.06	7,080.65	7,079.20	54.95	8.86	90.89	-948.94	-153.95	2,763.64	2,727.18	36.46	75.792	
9,900.00	7,078.82	7,080.68	7,079.23	56.23	8.86	90.89	-948.94	-153.95	2,859.98	2,823.51	36.47	78.412	
10,000.00	7,078.57	7,080.71	7,079.26	57.53	8.86	90.90	-948.94	-153.95	2,956.56	2,920.08	36.49	81.034	
10,100.00	7,078.33	7,080.74	7,079.29	58.84	8.86	90.90	-948.94	-153.95	3,053.37	3,016.87	36.50	83.656	
10,200.00	7,078.09	7,080.77	7,079.32	60.17	8.86	90.90	-948.94	-153.95	3,150.37	3,113.86	36.51	86.278	
10,300.00	7,077.85	7,080.80	7,079.35	61.51	8.86	90.90	-948.94	-153.95	3,247.56	3,211.03	36.53	88.899	
10,400.00	7,077.61	7,080.83	7,079.38	62.86	8.86	90.91	-948.94	-153.95	3,344.91	3,308.36	36.55	91.519	
10,500.00	7,077.37	7,080.86	7,079.41	64.22	8.86	90.91	-948.94	-153.95	3,442.41	3,405.85	36.57	94.137	
10,600.00	7,077.13	7,080.90	7,079.44	65.60	8.86	90.91	-948.94	-153.95	3,540.06	3,503.47	36.59	96.753	
10,700.00	7,076.89	7,080.93	7,079.48	66.98	8.86	90.91	-948.95	-153.95	3,637.83	3,601.22	36.61	99.365	
10,800.00	7,076.65	7,080.96	7,079.51	68.38	8.86	90.92	-948.95	-153.95	3,735.72	3,699.08	36.63	101.974	
10,900.00	7,076.40	7,080.99	7,079.54	69.78	8.86	90.92	-948.95	-153.95	3,833.71	3,797.06	36.66	104.580	
11,000.00	7,076.16	7,081.02	7,079.57	71.20	8.86	90.92	-948.95	-153.95	3,931.81	3,895.13	36.68	107.181	
11,100.00	7,075.92	7,081.05	7,079.60	72.62	8.86	90.92	-948.95	-153.95	4,030.00	3,993.29	36.71	109.779	
11,200.00	7,075.68	7,081.09	7,079.63	74.04	8.86	90.93	-948.95	-153.95	4,128.28	4,091.55	36.74	112.371	
11,300.00	7,075.44	7,081.12	7,079.67	75.48	8.86	90.93	-948.95	-153.95	4,226.64	4,189.88	36.77	114.958	
11,400.00	7,075.20	7,081.15	7,079.70	76.92	8.86	90.93	-948.95	-153.95	4,325.08	4,288.28	36.80	117.540	
11,500.00	7,074.96	7,081.18	7,079.73	78.37	8.86	90.93	-948.95	-153.95	4,423.58	4,386.76	36.83	120.117	
11,600.00	7,074.72	7,081.22	7,079.77	79.82	8.86	90.94	-948.95	-153.95	4,522.15	4,485.29	36.86	122.687	
11,700.00	7,074.48	7,081.25	7,079.80	81.28	8.86	90.94	-948.95	-153.95	4,620.79	4,583.89	36.89	125.252	
11,800.00	7,074.23	7,081.28	7,079.83	82.75	8.86	90.94	-948.95	-153.95	4,719.48	4,682.55	36.93	127.810	
11,900.00	7,073.99	7,081.32	7,079.87	84.22	8.86	90.94	-948.95	-153.95	4,818.22	4,781.26	36.96	130.361	
12,000.00	7,073.75	7,081.35	7,079.90	85.69	8.86	90.95	-948.95	-153.95	4,917.01	4,880.02	37.00	132.906	
12,100.00	7,073.51	7,081.39	7,079.94	87.17	8.86	90.95	-948.95	-153.95	5,015.86	4,978.82	37.03	135.444	
12,200.00	7,073.27	7,081.42	7,079.97	88.65	8.86	90.95	-948.95	-153.95	5,114.74	5,077.67	37.07	137.975	
12,300.00	7,073.03	7,081.46	7,080.01	90.14	8.86	90.95	-948.95	-153.95	5,213.67	5,176.56	37.11	140.499	
12,400.00	7,072.79	7,081.49	7,080.04	91.63	8.86	90.96	-948.95	-153.95	5,312.64	5,275.50	37.15	143.015	
12,500.00	7,072.55	7,081.53	7,080.08	93.13	8.86	90.96	-948.95	-153.95	5,411.65	5,374.46	37.19	145.523	
12,600.00	7,072.31	7,081.56	7,080.11	94.62	8.86	90.96	-948.95	-153.95	5,510.69	5,473.47	37.23	148.024	
12,700.00	7,072.06	7,081.60	7,080.15	96.13	8.86	90.96	-948.96	-153.95	5,609.77	5,572.50	37.27	150.517	
12,800.00	7,071.82	7,081.64	7,080.19	97.63	8.86	90.97	-948.96	-153.95	5,708.88	5,671.57	37.31	153.001	
12,900.00	7,071.58	7,081.67	7,080.22	99.14	8.86	90.97	-948.96	-153.95	5,808.02	5,770.67	37.36	155.478	
13,000.00	7,071.34	7,081.71	7,080.26	100.65	8.86	90.97	-948.96	-153.95	5,907.19	5,869.79	37.40	157.946	
13,100.00	7,071.10	7,081.75	7,080.30	102.16	8.86	90.98	-948.96	-153.95	6,006.39	5,968.94	37.45	160.406	
13,200.00	7,070.86	7,081.79	7,080.33	103.68	8.86	90.98	-948.96	-153.95	6,105.61	6,068.12	37.49	162.856	
13,300.00	7,070.62	7,081.82	7,080.37	105.20	8.86	90.98	-948.96	-153.95	6,204.86	6,167.32	37.54	165.299	
13,400.00	7,070.38	7,081.86	7,080.41	106.72	8.86	90.98	-948.96	-153.95	6,304.13	6,266.54	37.58	167.732	
13,500.00	7,070.14	7,081.90	7,080.45	108.24	8.86	90.99	-948.96	-153.95	6,403.42	6,365.79	37.63	170.156	
13,600.00	7,069.89	7,081.94	7,080.49	109.77	8.86	90.99	-948.96	-153.95	6,502.74	6,465.06	37.68	172.572	
13,700.00	7,069.65	7,081.98	7,080.53	111.30	8.86	90.99	-948.96	-153.95	6,602.08	6,564.34	37.73	174.978	
13,800.00	7,069.41	7,082.02	7,080.57	112.83	8.86	91.00	-948.96	-153.95	6,701.43	6,663.65	37.78	177.374	
13,900.00	7,069.17	7,082.06	7,080.61	114.36	8.86	91.00	-948.96	-153.95	6,800.81	6,762.98	37.83	179.762	
14,000.00	7,068.93	7,082.10	7,080.65	115.89	8.86	91.00	-948.96	-153.95	6,900.20	6,862.32	37.88	182.140	
14,100.00	7,068.69	7,082.14	7,080.69	117.43	8.86	91.01	-948.96	-153.95	6,999.61	6,961.67	37.94	184.508	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	7,082.18	7,080.73	118.97	8.86	91.01	-948.96	-153.95	7,099.04	7,061.05	37.99	186.867	
14,300.00	7,068.21	7,082.22	7,080.77	120.50	8.86	91.01	-948.96	-153.95	7,198.48	7,160.44	38.04	189.216	
14,400.00	7,067.97	7,082.26	7,080.81	122.05	8.86	91.01	-948.96	-153.95	7,297.94	7,259.84	38.10	191.555	
14,500.00	7,067.72	7,082.30	7,080.85	123.59	8.86	91.02	-948.97	-153.95	7,397.41	7,359.26	38.15	193.885	
14,600.00	7,067.48	7,082.35	7,080.90	125.13	8.86	91.02	-948.97	-153.95	7,496.90	7,458.69	38.21	196.204	
14,700.00	7,067.24	7,082.39	7,080.94	126.68	8.86	91.02	-948.97	-153.95	7,596.40	7,558.13	38.27	198.513	
14,800.00	7,067.00	7,082.43	7,080.98	128.22	8.86	91.03	-948.97	-153.95	7,695.91	7,657.59	38.32	200.813	
14,900.00	7,066.76	7,082.48	7,081.02	129.77	8.86	91.03	-948.97	-153.95	7,795.44	7,757.06	38.38	203.102	
15,000.00	7,066.52	7,082.52	7,081.07	131.32	8.86	91.03	-948.97	-153.95	7,894.98	7,856.54	38.44	205.381	
15,100.00	7,066.28	7,082.56	7,081.11	132.87	8.86	91.04	-948.97	-153.95	7,994.52	7,956.02	38.50	207.649	
15,200.00	7,066.04	7,082.61	7,081.16	134.42	8.86	91.04	-948.97	-153.95	8,094.09	8,055.53	38.56	209.908	
15,300.00	7,065.80	7,082.65	7,081.20	135.97	8.86	91.04	-948.97	-153.95	8,193.66	8,155.04	38.62	212.156	
15,400.00	7,065.55	7,082.70	7,081.25	137.53	8.86	91.05	-948.97	-153.95	8,293.24	8,254.56	38.68	214.394	
15,500.00	7,065.31	7,082.74	7,081.29	139.08	8.86	91.05	-948.97	-153.95	8,392.83	8,354.08	38.74	216.621	
15,600.00	7,065.07	7,082.79	7,081.34	140.64	8.86	91.05	-948.97	-153.95	8,492.43	8,453.62	38.81	218.837	
15,700.00	7,064.83	7,082.84	7,081.38	142.20	8.86	91.06	-948.97	-153.95	8,592.04	8,553.17	38.87	221.044	
15,800.00	7,064.59	7,082.88	7,081.43	143.75	8.86	91.06	-948.97	-153.95	8,691.66	8,652.72	38.93	223.239	
15,900.00	7,064.35	7,082.93	7,081.48	145.31	8.86	91.07	-948.97	-153.95	8,791.29	8,752.29	39.00	225.424	
16,000.00	7,064.11	7,082.98	7,081.53	146.87	8.86	91.07	-948.98	-153.96	8,890.92	8,851.86	39.06	227.598	
16,100.00	7,063.87	7,083.03	7,081.57	148.43	8.86	91.07	-948.98	-153.96	8,990.57	8,951.44	39.13	229.762	
16,200.00	7,063.63	7,083.07	7,081.62	149.99	8.86	91.08	-948.98	-153.96	9,090.22	9,051.02	39.20	231.915	
16,300.00	7,063.38	7,083.12	7,081.67	151.56	8.86	91.08	-948.98	-153.96	9,189.88	9,150.62	39.26	234.057	
16,400.00	7,063.14	7,083.17	7,081.72	153.12	8.86	91.08	-948.98	-153.96	9,289.55	9,250.21	39.33	236.189	
16,500.00	7,062.90	7,083.22	7,081.77	154.68	8.86	91.09	-948.98	-153.96	9,389.22	9,349.82	39.40	238.309	
16,600.00	7,062.66	7,083.27	7,081.82	156.25	8.86	91.09	-948.98	-153.96	9,488.90	9,449.43	39.47	240.419	
16,700.00	7,062.42	7,083.32	7,081.87	157.81	8.86	91.10	-948.98	-153.96	9,588.59	9,549.05	39.54	242.518	
16,800.00	7,062.18	7,083.38	7,081.92	159.38	8.86	91.10	-948.98	-153.96	9,688.28	9,648.67	39.61	244.607	
16,874.30	7,062.00	7,083.41	7,081.96	160.54	8.86	91.10	-948.98	-153.96	9,762.35	9,722.69	39.66	246.151	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	3.28	108.95	-1,090.20	3,175.02	3,357.53				
100.00	100.00	39.00	39.00	3.29	3.37	108.95	-1,090.20	3,175.02	3,356.97	3,350.32	6.66	504.172	
200.00	200.00	139.00	139.00	3.34	4.27	108.95	-1,090.20	3,175.02	3,356.97	3,349.36	7.61	441.189	
277.12	277.12	215.98	215.97	3.40	5.37	108.95	-1,089.89	3,175.02	3,356.87	3,348.10	8.77	382.781	
300.00	300.00	237.24	237.23	3.42	5.71	108.95	-1,089.91	3,175.02	3,356.88	3,347.75	9.13	367.696	
400.00	400.00	339.02	339.00	3.54	7.42	108.95	-1,090.20	3,175.02	3,356.97	3,346.01	10.96	306.308	
492.18	492.18	431.02	431.00	3.67	9.02	108.94	-1,089.81	3,175.02	3,356.85	3,344.15	12.70	264.351	
500.00	500.00	438.40	438.38	3.69	9.15	108.94	-1,089.81	3,175.02	3,356.85	3,344.01	12.84	261.394	
600.00	599.98	532.79	532.76	3.86	10.85	-73.01	-1,090.11	3,175.02	3,356.44	3,341.73	14.70	228.259	
700.00	699.84	638.87	638.84	4.04	12.79	-73.13	-1,090.20	3,175.02	3,354.94	3,338.11	16.83	199.365	
800.00	799.45	738.49	738.45	4.25	14.63	-73.32	-1,090.20	3,175.02	3,352.41	3,333.53	18.88	177.580	
900.00	898.70	836.92	836.88	4.48	16.46	-73.59	-1,089.68	3,175.02	3,348.75	3,327.81	20.94	159.892	
1,000.00	997.47	933.89	933.86	4.74	18.27	-73.92	-1,089.84	3,175.02	3,344.38	3,321.36	23.02	145.307	
1,100.00	1,095.62	1,030.34	1,030.30	5.03	20.08	-74.32	-1,090.16	3,175.02	3,339.17	3,314.06	25.11	132.978	
1,200.00	1,193.06	1,132.12	1,132.06	5.35	22.12	-74.81	-1,090.20	3,175.02	3,333.05	3,305.59	27.46	121.377	
1,268.36	1,259.18	1,198.24	1,198.18	5.58	23.45	-75.18	-1,090.20	3,175.02	3,328.42	3,299.40	29.02	114.678	
1,300.00	1,289.69	1,228.75	1,228.69	5.70	24.06	-75.32	-1,090.20	3,175.02	3,326.22	3,296.47	29.75	111.803	
1,400.00	1,386.11	1,324.23	1,324.16	6.07	25.99	-75.75	-1,089.41	3,175.02	3,319.14	3,287.09	32.04	103.581	
1,500.00	1,482.54	1,418.39	1,418.31	6.45	27.89	-76.17	-1,089.62	3,175.02	3,312.55	3,278.22	34.33	96.489	
1,600.00	1,578.96	1,512.67	1,512.60	6.86	29.80	-76.58	-1,090.07	3,175.02	3,306.23	3,269.59	36.64	90.242	
1,700.00	1,675.39	1,614.51	1,614.39	7.27	31.87	-77.04	-1,090.20	3,175.02	3,300.01	3,260.89	39.11	84.369	
1,800.00	1,771.81	1,710.94	1,710.81	7.70	33.82	-77.47	-1,090.20	3,175.02	3,293.96	3,252.46	41.49	79.383	
1,900.00	1,868.24	1,806.86	1,806.73	8.13	35.77	-77.92	-1,089.09	3,175.02	3,287.83	3,243.96	43.88	74.936	
2,000.00	1,964.66	1,900.77	1,900.63	8.57	37.68	-78.35	-1,089.30	3,175.02	3,282.25	3,236.02	46.22	71.008	
2,100.00	2,061.09	1,994.85	1,994.71	9.02	39.59	-78.77	-1,089.81	3,175.02	3,276.93	3,228.35	48.58	67.451	
2,200.00	2,157.51	2,096.69	2,096.51	9.47	41.59	-79.22	-1,090.20	3,175.02	3,271.78	3,220.75	51.03	64.113	
2,300.00	2,253.94	2,193.12	2,192.94	9.93	43.42	-79.66	-1,090.20	3,175.02	3,266.76	3,213.44	53.31	61.273	
2,400.00	2,350.36	2,289.49	2,289.30	10.39	45.24	-80.12	-1,089.41	3,175.02	3,261.77	3,206.16	55.60	58.663	
2,500.00	2,446.79	2,384.23	2,384.04	10.86	47.04	-80.55	-1,089.54	3,175.02	3,257.19	3,199.32	57.86	56.292	
2,600.00	2,543.21	2,479.11	2,478.92	11.33	48.83	-80.98	-1,089.91	3,175.02	3,252.86	3,192.73	60.13	54.097	
2,700.00	2,639.64	2,578.85	2,578.64	11.80	50.73	-81.44	-1,090.20	3,175.02	3,248.72	3,186.23	62.49	51.986	
2,800.00	2,736.06	2,675.27	2,675.06	12.27	52.55	-81.89	-1,090.20	3,175.02	3,244.74	3,179.95	64.80	50.076	
2,900.00	2,832.49	2,771.70	2,771.49	12.75	54.38	-82.33	-1,090.20	3,175.02	3,240.97	3,173.87	67.10	48.298	
3,000.00	2,928.91	2,867.35	2,867.14	13.23	56.20	-82.79	-1,089.71	3,175.02	3,237.33	3,167.94	69.40	46.649	
3,100.00	3,025.34	2,962.99	2,962.78	13.71	58.01	-83.23	-1,089.93	3,175.02	3,234.03	3,162.33	71.69	45.109	
3,200.00	3,121.76	3,061.00	3,060.76	14.19	59.91	-83.68	-1,090.20	3,175.02	3,230.94	3,156.87	74.07	43.619	
3,300.00	3,218.18	3,157.43	3,157.18	14.67	61.87	-84.13	-1,090.20	3,175.02	3,228.02	3,151.50	76.52	42.186	
3,400.00	3,314.61	3,253.58	3,253.33	15.15	63.83	-84.59	-1,089.56	3,175.02	3,225.24	3,146.27	78.96	40.845	
3,500.00	3,411.03	3,348.78	3,348.53	15.64	65.77	-85.04	-1,089.77	3,175.02	3,222.78	3,141.39	81.39	39.597	
3,600.00	3,507.46	3,446.75	3,446.46	16.12	67.78	-85.49	-1,090.20	3,175.02	3,220.57	3,136.67	83.89	38.389	
3,700.00	3,603.88	3,543.17	3,542.88	16.61	69.89	-85.94	-1,090.20	3,175.02	3,218.51	3,132.03	86.48	37.215	
3,800.00	3,700.31	3,639.05	3,638.75	17.10	71.98	-86.41	-1,089.48	3,175.02	3,216.61	3,127.54	89.07	36.115	
3,900.00	3,796.73	3,734.14	3,733.84	17.59	74.05	-86.85	-1,089.87	3,175.02	3,215.03	3,123.40	91.63	35.087	
4,000.00	3,893.16	3,832.51	3,832.16	18.07	76.16	-87.31	-1,090.20	3,175.02	3,213.66	3,119.43	94.23	34.105	
4,100.00	3,989.58	3,928.96	3,928.58	18.56	78.13	-87.76	-1,090.20	3,175.02	3,212.48	3,115.78	96.69	33.223	
4,200.00	4,086.01	4,025.03	4,024.65	19.05	79.89	-88.22	-1,089.91	3,175.02	3,211.49	3,112.56	98.94	32.460	
4,300.00	4,182.43	4,121.81	4,121.43	19.55	81.61	-88.67	-1,090.20	3,175.02	3,210.77	3,109.61	101.16	31.740	
4,400.00	4,278.86	4,218.24	4,217.86	20.04	83.24	-89.13	-1,090.20	3,175.02	3,210.24	3,106.96	103.27	31.084	
4,500.00	4,375.28	4,314.50	4,314.12	20.53	84.86	-89.59	-1,090.10	3,175.02	3,209.93	3,104.54	105.39	30.458	
4,591.08	4,463.11	4,402.49	4,402.11	20.98	86.35	-90.00	-1,090.20	3,175.02	3,209.84	3,102.51	107.32	29.908	CC
4,600.00	4,471.71	4,411.09	4,410.71	21.02	86.49	-90.04	-1,090.20	3,175.02	3,209.84	3,102.33	107.51	29.855	
4,700.00	4,568.13	4,507.51	4,507.12	21.51	88.13	-90.50	-1,090.07	3,175.02	3,209.97	3,100.33	109.64	29.277	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
4,800.00	4,664.56	4,603.85	4,603.46	22.01	89.76	-90.95	-1,090.16	3,175.02	3,210.32	3,098.55	111.76	28.724	
4,900.00	4,760.98	4,700.37	4,699.98	22.50	91.45	-91.41	-1,090.20	3,175.02	3,210.88	3,096.94	113.95	28.179	
5,000.00	4,857.41	4,796.79	4,796.41	22.99	93.15	-91.87	-1,090.07	3,175.02	3,211.67	3,095.52	116.14	27.653	
5,100.00	4,953.83	4,893.22	4,892.83	23.49	94.86	-92.32	-1,090.20	3,175.02	3,212.67	3,094.32	118.35	27.146	
5,200.00	5,050.25	4,989.65	4,989.25	23.98	96.70	-92.78	-1,090.20	3,175.02	3,213.89	3,093.22	120.67	26.634	
5,300.00	5,146.68	5,086.28	5,085.88	24.48	98.54	-93.23	-1,090.02	3,175.02	3,215.34	3,092.34	123.00	26.141	
5,400.00	5,243.10	5,182.51	5,182.10	24.97	100.40	-93.68	-1,090.20	3,175.02	3,216.99	3,091.64	125.35	25.664	
5,500.00	5,339.53	5,279.06	5,278.65	25.47	102.30	-94.15	-1,089.81	3,175.02	3,218.88	3,091.14	127.74	25.199	
5,600.00	5,435.95	5,376.35	5,375.93	25.96	104.21	-94.60	-1,090.15	3,175.02	3,220.96	3,090.82	130.14	24.749	
5,700.00	5,532.38	5,471.81	5,471.38	26.46	106.20	-95.04	-1,090.20	3,175.02	3,223.26	3,090.64	132.63	24.303 ES	
5,800.00	5,628.80	5,568.89	5,568.45	26.96	108.24	-95.51	-1,089.88	3,175.02	3,225.81	3,090.65	135.15	23.868	
5,900.00	5,725.23	5,664.70	5,664.23	27.45	110.30	-95.95	-1,090.20	3,175.02	3,228.53	3,090.83	137.69	23.447	
6,000.00	5,821.65	5,761.21	5,760.74	27.95	112.46	-96.41	-1,089.54	3,175.02	3,231.54	3,091.19	140.34	23.026	
6,100.00	5,918.08	5,860.28	5,859.79	28.45	114.68	-96.87	-1,090.01	3,175.02	3,234.67	3,091.62	143.05	22.612	
6,200.00	6,014.50	5,954.03	5,953.50	28.94	116.84	-97.30	-1,090.20	3,175.02	3,238.03	3,092.34	145.69	22.225	
6,300.00	6,110.93	6,051.87	6,051.33	29.44	119.11	-97.76	-1,089.61	3,175.02	3,241.69	3,093.25	148.44	21.838	
6,400.00	6,207.35	6,146.95	6,146.35	29.94	121.30	-98.19	-1,090.20	3,175.02	3,245.44	3,094.31	151.12	21.476	
6,500.00	6,303.78	6,243.38	6,242.78	30.43	123.48	-98.64	-1,090.20	3,175.02	3,249.46	3,095.68	153.78	21.131	
6,600.00	6,400.20	6,343.43	6,342.81	30.93	125.73	-99.11	-1,089.71	3,175.02	3,253.75	3,097.24	156.52	20.788	
6,677.76	6,475.18	6,414.84	6,414.18	31.32	127.31	-99.43	-1,090.20	3,175.02	3,257.12	3,098.66	158.47	20.554	
6,700.00	6,496.62	6,436.28	6,435.62	31.43	127.76	-106.76	-1,090.20	3,175.02	3,258.51	3,099.49	159.02	20.491	
6,750.00	6,544.66	6,484.32	6,483.66	31.68	128.78	-121.97	-1,090.20	3,175.02	3,264.47	3,104.19	160.28	20.368	
6,800.00	6,592.24	6,532.46	6,531.79	31.92	129.79	-134.40	-1,089.66	3,175.02	3,274.39	3,112.86	161.52	20.272	
6,850.00	6,639.07	6,580.95	6,580.28	32.16	130.82	-143.94	-1,089.80	3,175.02	3,288.02	3,125.25	162.77	20.201	
6,900.00	6,684.86	6,628.46	6,627.78	32.40	131.82	-151.20	-1,090.09	3,175.02	3,305.35	3,141.37	163.98	20.157	
6,950.00	6,729.32	6,669.02	6,668.32	32.62	132.68	-156.80	-1,090.20	3,175.02	3,326.30	3,161.27	165.03	20.156 SF	
7,000.00	6,772.19	6,711.89	6,711.19	32.84	133.59	-161.28	-1,090.20	3,175.02	3,350.74	3,184.63	166.11	20.171	
7,050.00	6,813.20	6,752.90	6,752.20	33.05	134.46	-164.98	-1,090.20	3,175.02	3,378.49	3,211.34	167.14	20.213	
7,100.00	6,852.09	6,792.73	6,792.03	33.26	135.30	-168.18	-1,089.67	3,175.02	3,409.45	3,241.31	168.13	20.278	
7,150.00	6,888.63	6,830.77	6,830.06	33.45	136.10	-171.06	-1,089.79	3,175.02	3,443.24	3,274.17	169.07	20.366	
7,200.00	6,922.59	6,866.17	6,865.46	33.64	136.85	-173.77	-1,089.99	3,175.02	3,479.74	3,309.81	169.93	20.477	
7,250.00	6,953.76	6,898.70	6,897.99	33.82	137.54	-176.49	-1,090.24	3,175.02	3,518.72	3,348.00	170.72	20.611	
7,300.00	6,981.95	6,921.69	6,920.95	34.00	138.05	-179.39	-1,090.20	3,175.02	3,560.00	3,388.70	171.30	20.782	
7,350.00	7,006.99	6,946.73	6,945.99	34.17	138.60	177.31	-1,090.20	3,175.02	3,603.26	3,431.35	171.91	20.960	
7,400.00	7,028.72	6,968.46	6,967.72	34.35	139.07	173.27	-1,090.20	3,175.02	3,648.25	3,475.82	172.43	21.158	
7,450.00	7,047.00	6,986.74	6,986.00	34.52	139.47	167.94	-1,090.20	3,175.02	3,694.69	3,521.84	172.85	21.375	
7,500.00	7,061.73	7,001.47	7,000.73	34.69	139.79	160.30	-1,090.20	3,175.02	3,742.30	3,569.12	173.18	21.609	
7,550.00	7,072.82	7,012.55	7,011.82	34.86	140.04	148.47	-1,090.20	3,175.02	3,790.79	3,617.37	173.42	21.860	
7,600.00	7,080.18	7,020.01	7,019.27	35.04	140.20	129.47	-1,089.66	3,175.02	3,839.94	3,666.39	173.56	22.125	
7,650.00	7,083.79	7,023.78	7,023.04	35.22	140.28	102.69	-1,089.66	3,175.02	3,889.29	3,715.69	173.60	22.403	
7,674.30	7,084.18	7,024.19	7,023.44	35.32	140.29	89.17	-1,089.66	3,175.02	3,913.29	3,739.70	173.59	22.543	
7,700.00	7,084.12	7,024.12	7,023.38	35.42	140.29	89.17	-1,089.66	3,175.02	3,938.66	3,765.10	173.57	22.692	
7,800.00	7,083.88	7,023.87	7,023.13	35.84	140.29	89.14	-1,089.66	3,175.02	4,037.42	3,863.94	173.48	23.274	
7,900.00	7,083.64	7,023.62	7,022.88	36.34	140.28	89.12	-1,089.66	3,175.02	4,136.24	3,962.85	173.39	23.855	
8,000.00	7,083.40	7,023.37	7,022.62	36.90	140.27	89.10	-1,089.66	3,175.02	4,235.11	4,061.80	173.31	24.437	
8,100.00	7,083.16	7,023.11	7,022.37	37.52	140.27	89.07	-1,089.66	3,175.02	4,334.03	4,160.80	173.23	25.018	
8,200.00	7,082.91	7,022.86	7,022.12	38.21	140.26	89.05	-1,089.66	3,175.02	4,433.00	4,259.84	173.16	25.600	
8,300.00	7,082.67	7,022.61	7,021.87	38.95	140.26	89.03	-1,089.66	3,175.02	4,532.02	4,358.92	173.10	26.182	
8,400.00	7,082.43	7,022.36	7,021.61	39.74	140.25	89.01	-1,089.66	3,175.02	4,631.08	4,458.04	173.04	26.763	
8,500.00	7,082.19	7,022.11	7,021.36	40.59	140.25	88.98	-1,089.66	3,175.02	4,730.18	4,557.20	172.98	27.345	
8,600.00	7,081.95	7,021.85	7,021.11	41.49	140.24	88.96	-1,089.66	3,175.02	4,829.31	4,656.39	172.93	27.927	
8,700.00	7,081.71	7,021.60	7,020.86	42.43	140.24	88.94	-1,089.66	3,175.02	4,928.48	4,755.61	172.88	28.509	

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 752H
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 752H	**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	7,081.47	7,021.35	7,020.61	43.41	140.23	88.91	-1,089.66	3,175.02	5,027.69	4,854.86	172.83	29.090	
8,900.00	7,081.23	7,021.10	7,020.35	44.44	140.22	88.89	-1,089.66	3,175.02	5,126.92	4,954.13	172.79	29.672	
9,000.00	7,080.99	7,020.85	7,020.10	45.49	140.22	88.87	-1,089.66	3,175.02	5,226.18	5,053.44	172.75	30.254	
9,100.00	7,080.74	7,020.59	7,019.85	46.58	140.21	88.84	-1,089.66	3,175.02	5,325.47	5,152.77	172.71	30.835	
9,200.00	7,080.50	7,020.34	7,019.60	47.70	140.21	88.82	-1,089.66	3,175.02	5,424.79	5,252.12	172.67	31.416	
9,300.00	7,080.26	7,020.09	7,019.35	48.85	140.20	88.80	-1,089.66	3,175.02	5,524.13	5,351.49	172.64	31.998	
9,400.00	7,080.02	7,019.84	7,019.10	50.03	140.20	88.78	-1,089.66	3,175.02	5,623.50	5,450.89	172.61	32.579	
9,500.00	7,079.78	7,019.59	7,018.84	51.23	140.19	88.75	-1,089.66	3,175.02	5,722.89	5,550.30	172.59	33.160	
9,600.00	7,079.54	7,019.33	7,018.59	52.45	140.19	88.73	-1,089.66	3,175.02	5,822.29	5,649.73	172.56	33.740	
9,700.00	7,079.30	7,019.08	7,018.34	53.69	140.18	88.71	-1,089.66	3,175.02	5,921.72	5,749.18	172.54	34.321	
9,800.00	7,079.06	7,018.83	7,018.09	54.95	140.18	88.68	-1,089.66	3,175.02	6,021.17	5,848.65	172.52	34.901	
9,900.00	7,078.82	7,018.58	7,017.84	56.23	140.17	88.66	-1,089.66	3,175.02	6,120.63	5,948.13	172.50	35.482	
10,000.00	7,078.57	7,018.33	7,017.58	57.53	140.16	88.64	-1,089.66	3,175.02	6,220.12	6,047.63	172.49	36.062	
10,100.00	7,078.33	7,018.08	7,017.33	58.84	140.16	88.61	-1,089.66	3,175.02	6,319.61	6,147.14	172.47	36.642	
10,200.00	7,078.09	7,017.83	7,017.09	60.17	140.15	88.59	-1,090.20	3,175.02	6,419.08	6,246.62	172.46	37.220	
10,300.00	7,077.85	7,017.59	7,016.85	61.51	140.15	88.57	-1,090.20	3,175.02	6,518.61	6,346.16	172.45	37.800	
10,400.00	7,077.61	7,017.35	7,016.61	62.86	140.14	88.55	-1,090.20	3,175.02	6,618.15	6,445.71	172.44	38.379	
10,500.00	7,077.37	7,017.11	7,016.37	64.22	140.14	88.53	-1,090.20	3,175.02	6,717.71	6,545.27	172.44	38.957	
10,600.00	7,077.13	7,016.87	7,016.13	65.60	140.13	88.50	-1,090.20	3,175.02	6,817.28	6,644.85	172.43	39.536	
10,700.00	7,076.89	7,016.63	7,015.89	66.98	140.13	88.48	-1,090.20	3,175.02	6,916.86	6,744.43	172.43	40.114	
10,800.00	7,076.65	7,016.38	7,015.65	68.38	140.12	88.46	-1,090.20	3,175.02	7,016.46	6,844.03	172.43	40.692	
10,900.00	7,076.40	7,016.14	7,015.40	69.78	140.12	88.44	-1,090.20	3,175.02	7,116.06	6,943.63	172.43	41.270	
11,000.00	7,076.16	7,015.90	7,015.16	71.20	140.11	88.42	-1,090.20	3,175.02	7,215.68	7,043.25	172.43	41.847	
11,100.00	7,075.92	7,015.66	7,014.92	72.62	140.11	88.39	-1,090.20	3,175.02	7,315.31	7,142.87	172.43	42.424	
11,200.00	7,075.68	7,015.42	7,014.68	74.04	140.10	88.37	-1,090.20	3,175.02	7,414.94	7,242.51	172.44	43.001	
11,300.00	7,075.44	7,015.18	7,014.44	75.48	140.10	88.35	-1,090.20	3,175.02	7,514.59	7,342.15	172.44	43.577	
11,400.00	7,075.20	7,014.94	7,014.20	76.92	140.09	88.33	-1,090.20	3,175.02	7,614.25	7,441.80	172.45	44.153	
11,500.00	7,074.96	7,014.70	7,013.96	78.37	140.08	88.30	-1,090.20	3,175.02	7,713.91	7,541.45	172.46	44.729	
11,600.00	7,074.72	7,014.46	7,013.72	79.82	140.08	88.28	-1,090.20	3,175.02	7,813.59	7,641.12	172.47	45.304	
11,700.00	7,074.48	7,014.21	7,013.48	81.28	140.07	88.26	-1,090.20	3,175.02	7,913.27	7,740.79	172.48	45.879	
11,800.00	7,074.23	7,013.97	7,013.23	82.75	140.07	88.24	-1,090.20	3,175.02	8,012.96	7,840.46	172.49	46.453	
11,900.00	7,073.99	7,013.73	7,012.99	84.22	140.06	88.22	-1,090.20	3,175.02	8,112.66	7,940.15	172.51	47.028	
12,000.00	7,073.75	7,013.49	7,012.75	85.69	140.06	88.19	-1,090.20	3,175.02	8,212.36	8,039.84	172.52	47.601	
12,100.00	7,073.51	7,013.25	7,012.51	87.17	140.05	88.17	-1,090.20	3,175.02	8,312.07	8,139.53	172.54	48.175	
12,200.00	7,073.27	7,013.01	7,012.27	88.65	140.05	88.15	-1,090.20	3,175.02	8,411.79	8,239.23	172.56	48.748	
12,300.00	7,073.03	7,012.77	7,012.03	90.14	140.04	88.13	-1,090.20	3,175.02	8,511.52	8,338.94	172.58	49.320	
12,400.00	7,072.79	7,012.53	7,011.79	91.63	140.04	88.11	-1,090.20	3,175.02	8,611.25	8,438.65	172.60	49.892	
12,500.00	7,072.55	7,012.29	7,011.55	93.13	140.03	88.08	-1,090.20	3,175.02	8,710.99	8,538.37	172.62	50.464	
12,600.00	7,072.31	7,012.04	7,011.31	94.62	140.03	88.06	-1,090.20	3,175.02	8,810.73	8,638.09	172.64	51.035	
12,700.00	7,072.06	7,011.80	7,011.06	96.13	140.02	88.04	-1,090.20	3,175.02	8,910.48	8,737.82	172.66	51.606	
12,800.00	7,071.82	7,011.56	7,010.82	97.63	140.02	88.02	-1,090.20	3,175.02	9,010.23	8,837.55	172.69	52.177	
12,900.00	7,071.58	7,011.32	7,010.58	99.14	140.01	88.00	-1,090.20	3,175.02	9,109.99	8,937.28	172.71	52.747	
13,000.00	7,071.34	7,011.08	7,010.34	100.65	140.01	87.97	-1,090.20	3,175.02	9,209.76	9,037.02	172.74	53.316	
13,100.00	7,071.10	7,010.84	7,010.10	102.16	140.00	87.95	-1,090.20	3,175.02	9,309.53	9,136.76	172.77	53.885	
13,200.00	7,070.86	7,010.60	7,009.86	103.68	139.99	87.93	-1,090.20	3,175.02	9,409.31	9,236.51	172.79	54.454	
13,300.00	7,070.62	7,010.36	7,009.62	105.20	139.99	87.91	-1,090.20	3,175.02	9,509.09	9,336.26	172.82	55.022	
13,400.00	7,070.38	7,010.12	7,009.38	106.72	139.98	87.89	-1,090.20	3,175.02	9,608.87	9,436.02	172.85	55.589	
13,500.00	7,070.14	7,009.87	7,009.14	108.24	139.98	87.86	-1,090.20	3,175.02	9,708.66	9,535.77	172.89	56.157	
13,600.00	7,069.89	7,009.63	7,008.89	109.77	139.97	87.84	-1,090.20	3,175.02	9,808.45	9,635.54	172.92	56.723	
13,700.00	7,069.65	7,009.39	7,008.65	111.30	139.97	87.82	-1,090.20	3,175.02	9,908.25	9,735.30	172.95	57.289	
13,800.00	7,069.41	7,009.15	7,008.41	112.83	139.96	87.80	-1,090.20	3,175.02	10,008.05	9,835.07	172.99	57.855	
13,900.00	7,069.17	7,008.91	7,008.17	114.36	139.96	87.78	-1,090.20	3,175.02	10,107.86	9,934.84	173.02	58.420	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,000.00	7,068.93	7,008.67	7,007.93	115.89	139.95	87.75	-1,090.20	3,175.02	10,207.67	10,034.61	173.06	58.985	
14,100.00	7,068.69	7,008.43	7,007.69	117.43	139.95	87.73	-1,090.20	3,175.02	10,307.48	10,134.39	173.09	59.549	
14,200.00	7,068.45	7,008.19	7,007.45	118.97	139.94	87.71	-1,090.20	3,175.02	10,407.30	10,234.17	173.13	60.112	
14,300.00	7,068.21	7,007.95	7,007.21	120.50	139.94	87.69	-1,090.20	3,175.02	10,507.12	10,333.95	173.17	60.675	
14,400.00	7,067.97	7,007.70	7,006.97	122.05	139.93	87.67	-1,090.20	3,175.02	10,606.94	10,433.73	173.21	61.238	
14,500.00	7,067.72	7,007.46	7,006.72	123.59	139.93	87.64	-1,090.20	3,175.02	10,706.77	10,533.52	173.25	61.800	
14,600.00	7,067.48	7,007.22	7,006.48	125.13	139.92	87.62	-1,090.20	3,175.02	10,806.60	10,633.31	173.29	62.361	
14,700.00	7,067.24	7,006.98	7,006.24	126.68	139.92	87.60	-1,090.20	3,175.02	10,906.43	10,733.10	173.33	62.922	
14,800.00	7,067.00	7,006.74	7,006.00	128.22	139.91	87.58	-1,090.20	3,175.02	11,006.27	10,832.89	173.38	63.482	
14,900.00	7,066.76	7,006.50	7,005.76	129.77	139.91	87.56	-1,090.20	3,175.02	11,106.11	10,932.69	173.42	64.042	
15,000.00	7,066.52	7,006.26	7,005.52	131.32	139.90	87.53	-1,090.20	3,175.02	11,205.95	11,032.48	173.46	64.601	
15,100.00	7,066.28	7,006.02	7,005.28	132.87	139.89	87.51	-1,090.20	3,175.02	11,305.79	11,132.28	173.51	65.160	
15,200.00	7,066.04	7,005.78	7,005.04	134.42	139.89	87.49	-1,090.20	3,175.02	11,405.64	11,232.09	173.56	65.718	
15,300.00	7,065.80	7,005.53	7,004.80	135.97	139.88	87.47	-1,090.20	3,175.02	11,505.49	11,331.89	173.60	66.275	
15,400.00	7,065.55	7,005.29	7,004.55	137.53	139.88	87.45	-1,090.20	3,175.02	11,605.34	11,431.69	173.65	66.832	
15,500.00	7,065.31	7,005.05	7,004.31	139.08	139.87	87.42	-1,090.20	3,175.02	11,705.20	11,531.50	173.70	67.388	
15,600.00	7,065.07	7,004.81	7,004.07	140.64	139.87	87.40	-1,090.20	3,175.02	11,805.06	11,631.31	173.75	67.944	
15,700.00	7,064.83	7,004.57	7,003.83	142.20	139.86	87.38	-1,090.20	3,175.02	11,904.92	11,731.12	173.80	68.499	
15,800.00	7,064.59	7,004.33	7,003.59	143.75	139.86	87.36	-1,090.20	3,175.02	12,004.78	11,830.93	173.85	69.053	
15,900.00	7,064.35	7,004.09	7,003.35	145.31	139.85	87.34	-1,090.20	3,175.02	12,104.64	11,930.74	173.90	69.607	
16,000.00	7,064.11	7,003.85	7,003.11	146.87	139.85	87.31	-1,090.20	3,175.02	12,204.51	12,030.56	173.95	70.160	
16,100.00	7,063.87	7,003.61	7,002.87	148.43	139.84	87.29	-1,090.20	3,175.02	12,304.38	12,130.37	174.00	70.713	
16,200.00	7,063.63	7,003.36	7,002.63	149.99	139.84	87.27	-1,090.20	3,175.02	12,404.25	12,230.19	174.06	71.265	
16,300.00	7,063.38	7,003.12	7,002.38	151.56	139.83	87.25	-1,090.20	3,175.02	12,504.12	12,330.01	174.11	71.816	
16,400.00	7,063.14	7,002.88	7,002.14	153.12	139.83	87.23	-1,090.20	3,175.02	12,604.00	12,429.83	174.17	72.367	
16,500.00	7,062.90	7,002.64	7,001.90	154.68	139.82	87.20	-1,090.20	3,175.02	12,703.88	12,529.65	174.22	72.917	
16,600.00	7,062.66	7,002.40	7,001.66	156.25	139.82	87.18	-1,090.20	3,175.02	12,803.75	12,629.47	174.28	73.467	
16,700.00	7,062.42	7,002.16	7,001.42	157.81	139.81	87.16	-1,090.20	3,175.02	12,903.64	12,729.30	174.34	74.016	
16,800.00	7,062.18	7,001.92	7,001.18	159.38	139.80	87.14	-1,090.20	3,175.02	13,003.52	12,829.12	174.39	74.564	
16,874.30	7,062.00	7,001.74	7,001.00	160.54	139.80	87.12	-1,090.20	3,175.02	13,077.73	12,903.29	174.44	74.971	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Warning
0.00	0.00	0.00	0.00	3.28	0.00	138.33	-1,770.63	1,575.93	2,371.19				
100.00	100.00	38.00	38.00	3.29	0.34	138.33	-1,770.63	1,575.93	2,370.38	2,366.75	3.63	653.648	
200.00	200.00	138.00	138.00	3.34	1.22	138.33	-1,770.63	1,575.93	2,370.38	2,365.82	4.56	519.967	
300.00	300.00	238.00	238.00	3.42	2.11	138.33	-1,770.63	1,575.93	2,370.38	2,364.85	5.53	428.781	
400.00	400.00	338.00	338.00	3.54	3.41	138.33	-1,770.63	1,575.93	2,370.38	2,363.43	6.94	341.364	
500.00	500.00	438.00	438.00	3.69	5.25	138.33	-1,770.63	1,575.93	2,370.38	2,361.44	8.94	265.252	
600.00	599.98	537.98	537.98	3.86	7.09	-43.64	-1,770.63	1,575.93	2,369.11	2,358.17	10.95	216.414	
700.00	699.84	636.43	636.43	4.04	8.91	-43.78	-1,770.40	1,575.93	2,365.15	2,352.21	12.95	182.677	
800.00	799.45	734.55	734.55	4.25	10.71	-44.01	-1,770.52	1,575.93	2,358.95	2,343.99	14.97	157.627	
900.00	898.70	836.72	836.70	4.48	12.62	-44.34	-1,770.63	1,575.93	2,350.26	2,333.16	17.10	137.412	
1,000.00	997.47	935.49	935.47	4.74	14.49	-44.77	-1,770.63	1,575.93	2,339.05	2,319.82	19.23	121.621	
1,100.00	1,095.62	1,033.64	1,033.62	5.03	16.36	-45.29	-1,770.63	1,575.93	2,325.44	2,304.07	21.37	108.813	
1,200.00	1,193.06	1,127.07	1,127.04	5.35	18.13	-45.91	-1,769.94	1,575.93	2,308.99	2,285.55	23.44	98.498	
1,268.36	1,259.18	1,190.41	1,190.38	5.58	19.33	-46.37	-1,770.15	1,575.93	2,296.94	2,272.08	24.86	92.391	
1,300.00	1,289.69	1,219.65	1,219.62	5.70	19.89	-46.51	-1,770.28	1,575.93	2,291.16	2,265.64	25.52	89.780	
1,400.00	1,386.11	1,324.17	1,324.11	6.07	21.87	-47.02	-1,770.63	1,575.93	2,272.91	2,245.07	27.84	81.641	
1,500.00	1,482.54	1,420.59	1,420.54	6.45	23.71	-47.51	-1,770.63	1,575.93	2,254.57	2,224.55	30.03	75.088	
1,600.00	1,578.96	1,517.01	1,516.96	6.86	25.54	-48.00	-1,770.63	1,575.93	2,236.40	2,204.18	32.22	69.400	
1,700.00	1,675.39	1,611.27	1,611.22	7.27	27.33	-48.49	-1,770.14	1,575.93	2,218.06	2,183.66	34.40	64.487	
1,800.00	1,771.81	1,705.23	1,705.18	7.70	29.12	-48.98	-1,770.35	1,575.93	2,200.38	2,163.81	36.57	60.167	
1,900.00	1,868.24	1,806.32	1,806.24	8.13	31.05	-49.52	-1,770.63	1,575.93	2,182.91	2,144.01	38.91	56.108	
2,000.00	1,964.66	1,902.74	1,902.66	8.57	32.95	-50.04	-1,770.63	1,575.93	2,165.44	2,124.24	41.20	52.557	
2,100.00	2,061.09	1,999.17	1,999.09	9.02	34.84	-50.57	-1,770.63	1,575.93	2,148.15	2,104.64	43.51	49.376	
2,200.00	2,157.51	2,093.28	2,093.19	9.47	36.68	-51.11	-1,769.87	1,575.93	2,130.54	2,084.77	45.77	46.546	
2,300.00	2,253.94	2,186.36	2,186.27	9.93	38.50	-51.63	-1,770.13	1,575.93	2,113.82	2,065.79	48.03	44.014	
2,400.00	2,350.36	2,288.49	2,288.36	10.39	40.51	-52.21	-1,770.63	1,575.93	2,097.44	2,046.98	50.46	41.567	
2,500.00	2,446.79	2,384.91	2,384.79	10.86	42.40	-52.77	-1,770.63	1,575.93	2,080.93	2,028.14	52.79	39.417	
2,600.00	2,543.21	2,481.34	2,481.21	11.33	44.29	-53.35	-1,770.63	1,575.93	2,064.64	2,009.51	55.13	37.450	
2,700.00	2,639.64	2,576.22	2,576.09	11.80	46.16	-53.93	-1,769.84	1,575.93	2,048.06	1,990.61	57.44	35.654	
2,800.00	2,736.06	2,669.59	2,669.46	12.27	47.99	-54.50	-1,770.07	1,575.93	2,032.34	1,972.61	59.73	34.025	
2,900.00	2,832.49	2,763.10	2,762.96	12.75	49.83	-55.07	-1,770.53	1,575.93	2,016.99	1,954.97	62.03	32.519	
3,000.00	2,928.91	2,867.08	2,866.91	13.23	51.93	-55.72	-1,770.63	1,575.93	2,001.63	1,937.05	64.58	30.993	
3,100.00	3,025.34	2,963.50	2,963.34	13.71	53.88	-56.34	-1,770.63	1,575.93	1,986.45	1,919.45	67.01	29.646	
3,200.00	3,121.76	3,059.05	3,058.88	14.19	55.82	-56.98	-1,769.83	1,575.93	1,971.04	1,901.63	69.41	28.395	
3,300.00	3,218.18	3,152.73	3,152.56	14.67	57.73	-57.59	-1,770.01	1,575.93	1,956.47	1,884.68	71.79	27.253	
3,400.00	3,314.61	3,246.55	3,246.37	15.15	59.63	-58.20	-1,770.43	1,575.93	1,942.27	1,868.10	74.17	26.187	
3,500.00	3,411.03	3,349.26	3,349.03	15.64	61.77	-58.89	-1,770.63	1,575.93	1,928.19	1,851.40	76.79	25.111	
3,600.00	3,507.46	3,445.68	3,445.46	16.12	63.80	-59.55	-1,770.63	1,575.93	1,914.26	1,834.96	79.30	24.139	
3,700.00	3,603.88	3,542.11	3,541.88	16.61	65.83	-60.22	-1,770.63	1,575.93	1,900.60	1,818.78	81.82	23.229	
3,800.00	3,700.31	3,638.53	3,638.31	17.10	67.87	-60.90	-1,770.63	1,575.93	1,887.22	1,802.87	84.34	22.376	
3,900.00	3,796.73	3,734.96	3,734.73	17.59	69.90	-61.59	-1,770.63	1,575.93	1,874.11	1,787.24	86.87	21.574	
4,000.00	3,893.16	3,831.38	3,831.16	18.07	71.93	-62.29	-1,770.63	1,575.93	1,861.29	1,771.89	89.39	20.821	
4,100.00	3,989.58	3,927.81	3,927.58	18.56	73.97	-62.99	-1,770.63	1,575.93	1,848.76	1,756.83	91.93	20.112	
4,200.00	4,086.01	4,024.23	4,024.01	19.05	76.00	-63.71	-1,770.63	1,575.93	1,836.52	1,742.07	94.46	19.443	
4,300.00	4,182.43	4,120.66	4,120.43	19.55	78.03	-64.43	-1,770.63	1,575.93	1,824.59	1,727.60	96.99	18.812	
4,400.00	4,278.86	4,216.54	4,216.28	20.04	80.05	-65.27	-1,766.86	1,575.93	1,811.23	1,711.70	99.52	18.199	
4,500.00	4,375.28	4,312.22	4,311.95	20.53	82.07	-66.00	-1,766.97	1,575.93	1,800.02	1,697.97	102.05	17.639	
4,600.00	4,471.71	4,407.95	4,407.68	21.02	84.09	-66.74	-1,767.17	1,575.93	1,789.16	1,684.58	104.58	17.109	
4,700.00	4,568.13	4,503.74	4,503.46	21.51	86.11	-67.49	-1,767.46	1,575.93	1,778.67	1,671.56	107.11	16.606	
4,800.00	4,664.56	4,599.57	4,599.29	22.01	88.13	-68.24	-1,767.85	1,575.93	1,768.54	1,658.90	109.64	16.130	
4,900.00	4,760.98	4,695.47	4,695.18	22.50	90.15	-69.00	-1,768.32	1,575.93	1,758.78	1,646.61	112.18	15.679	
5,000.00	4,857.41	4,791.41	4,791.12	22.99	92.18	-69.77	-1,768.89	1,575.93	1,749.39	1,634.68	114.71	15.250	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,100.00	4,953.83	4,887.40	4,887.10	23.49	94.20	-70.53	-1,769.56	1,575.93	1,740.37	1,623.11	117.26	14.843	
5,200.00	5,050.25	4,983.45	4,983.14	23.98	96.22	-71.31	-1,770.31	1,575.93	1,731.72	1,611.92	119.80	14.455	
5,300.00	5,146.68	5,085.17	5,084.68	24.48	98.38	-72.15	-1,770.63	1,575.93	1,723.25	1,600.78	122.47	14.071	
5,400.00	5,243.10	5,181.59	5,181.10	24.97	100.42	-72.96	-1,770.63	1,575.93	1,715.04	1,590.01	125.03	13.717	
5,500.00	5,339.53	5,278.02	5,277.53	25.47	102.46	-73.79	-1,770.63	1,575.93	1,707.20	1,579.61	127.59	13.380	
5,600.00	5,435.95	5,374.44	5,373.95	25.96	104.50	-74.62	-1,770.63	1,575.93	1,699.74	1,569.58	130.16	13.059	
5,700.00	5,532.38	5,470.87	5,470.38	26.46	106.55	-75.45	-1,770.63	1,575.93	1,692.66	1,559.94	132.72	12.753	
5,800.00	5,628.80	5,567.29	5,566.80	26.96	108.59	-76.29	-1,770.63	1,575.93	1,685.97	1,550.68	135.29	12.462	
5,900.00	5,725.23	5,663.72	5,663.23	27.45	110.63	-77.14	-1,770.63	1,575.93	1,679.67	1,541.81	137.85	12.184	
6,000.00	5,821.65	5,760.14	5,759.65	27.95	112.68	-78.00	-1,770.63	1,575.93	1,673.76	1,533.34	140.42	11.920	
6,100.00	5,918.08	5,856.57	5,856.08	28.45	114.72	-78.86	-1,770.63	1,575.93	1,668.26	1,525.27	142.98	11.667	
6,200.00	6,014.50	5,952.99	5,952.50	28.94	116.76	-79.72	-1,770.63	1,575.93	1,663.16	1,517.61	145.55	11.427	
6,300.00	6,110.93	6,049.42	6,048.93	29.44	118.80	-80.59	-1,770.63	1,575.93	1,658.46	1,510.35	148.11	11.197	
6,400.00	6,207.35	6,145.84	6,145.35	29.94	120.85	-81.47	-1,770.63	1,575.93	1,654.18	1,503.51	150.67	10.979	
6,500.00	6,303.78	6,219.00	6,218.33	30.43	122.40	-82.13	-1,770.63	1,575.93	1,650.48	1,497.75	152.73	10.806	
6,537.78	6,340.21	6,219.00	6,218.33	30.62	122.40	-82.13	-1,770.63	1,575.93	1,650.05	1,497.19	152.86	10.794	CC, ES, SF
6,600.00	6,400.20	6,219.00	6,218.33	30.93	122.40	-82.13	-1,770.63	1,575.93	1,651.22	1,498.31	152.91	10.799	
6,677.76	6,475.18	6,219.00	6,218.33	31.32	122.40	-82.13	-1,770.63	1,575.93	1,655.97	1,503.28	152.70	10.845	
6,700.00	6,496.62	6,219.00	6,218.33	31.43	122.40	-89.31	-1,770.63	1,575.93	1,658.38	1,505.80	152.58	10.869	
6,750.00	6,544.66	6,219.00	6,218.33	31.68	122.40	-104.09	-1,770.63	1,575.93	1,667.62	1,515.38	152.25	10.953	
6,800.00	6,592.24	6,219.00	6,218.33	31.92	122.40	-115.93	-1,770.63	1,575.93	1,682.03	1,530.22	151.82	11.079	
6,850.00	6,639.07	6,219.00	6,218.33	32.16	122.40	-124.75	-1,770.63	1,575.93	1,701.39	1,550.08	151.31	11.244	
6,900.00	6,684.86	6,219.00	6,218.33	32.40	122.40	-131.12	-1,770.63	1,575.93	1,725.42	1,574.67	150.75	11.445	
6,950.00	6,729.32	6,219.00	6,218.33	32.62	122.40	-135.62	-1,770.63	1,575.93	1,753.78	1,603.61	150.17	11.679	
7,000.00	6,772.19	6,219.00	6,218.33	32.84	122.40	-138.73	-1,770.63	1,575.93	1,786.09	1,636.51	149.58	11.940	
7,050.00	6,813.20	6,219.00	6,218.33	33.05	122.40	-140.72	-1,770.63	1,575.93	1,821.95	1,672.93	149.02	12.226	
7,100.00	6,852.09	6,219.00	6,218.33	33.26	122.40	-141.74	-1,770.63	1,575.93	1,860.94	1,712.44	148.50	12.531	
7,150.00	6,888.63	6,219.00	6,218.33	33.45	122.40	-141.81	-1,770.63	1,575.93	1,902.63	1,754.59	148.04	12.852	
7,200.00	6,922.59	6,219.00	6,218.33	33.64	122.40	-140.81	-1,770.63	1,575.93	1,946.61	1,798.96	147.65	13.184	
7,250.00	6,953.76	6,219.00	6,218.33	33.82	122.40	-138.39	-1,770.63	1,575.93	1,992.46	1,845.12	147.34	13.523	
7,300.00	6,981.95	6,219.00	6,218.33	34.00	122.40	-133.74	-1,770.63	1,575.93	2,039.78	1,892.66	147.12	13.865	
7,350.00	7,006.99	6,219.00	6,218.33	34.17	122.40	-125.09	-1,770.63	1,575.93	2,088.19	1,941.21	146.98	14.207	
7,400.00	7,028.72	6,219.00	6,218.33	34.35	122.40	-108.48	-1,770.63	1,575.93	2,137.33	1,990.40	146.93	14.547	
7,450.00	7,047.00	6,219.00	6,218.33	34.52	122.40	-78.94	-1,770.63	1,575.93	2,186.85	2,039.89	146.96	14.881	
7,500.00	7,061.73	6,219.00	6,218.33	34.69	122.40	-45.75	-1,770.63	1,575.93	2,236.43	2,089.36	147.07	15.207	
7,550.00	7,072.82	6,219.00	6,218.33	34.86	122.40	-24.62	-1,770.63	1,575.93	2,285.78	2,138.53	147.25	15.523	
7,600.00	7,080.18	6,219.00	6,218.33	35.04	122.40	-13.20	-1,770.63	1,575.93	2,334.62	2,187.12	147.50	15.827	
7,650.00	7,083.79	6,219.00	6,218.33	35.22	122.40	-6.57	-1,770.63	1,575.93	2,382.68	2,234.86	147.82	16.119	
7,674.30	7,084.18	6,219.00	6,218.33	35.32	122.40	-4.30	-1,770.63	1,575.93	2,405.68	2,257.69	147.99	16.256	
7,700.00	7,084.12	6,219.00	6,218.33	35.42	122.40	-4.30	-1,770.63	1,575.93	2,429.89	2,281.72	148.17	16.399	
7,800.00	7,083.88	6,219.00	6,218.33	35.84	122.40	-4.30	-1,770.63	1,575.93	2,524.37	2,375.52	148.85	16.960	
7,900.00	7,083.64	6,219.00	6,218.33	36.34	122.40	-4.30	-1,770.63	1,575.93	2,619.26	2,469.81	149.45	17.526	
8,000.00	7,083.40	6,219.00	6,218.33	36.90	122.40	-4.30	-1,770.63	1,575.93	2,714.51	2,564.51	150.00	18.097	
8,100.00	7,083.16	6,219.00	6,218.33	37.52	122.40	-4.30	-1,770.63	1,575.93	2,810.10	2,659.60	150.50	18.672	
8,200.00	7,082.91	6,219.00	6,218.33	38.21	122.40	-4.30	-1,770.63	1,575.93	2,905.98	2,755.04	150.95	19.252	
8,300.00	7,082.67	6,219.00	6,218.33	38.95	122.40	-4.30	-1,770.63	1,575.93	3,002.13	2,850.78	151.36	19.835	
8,400.00	7,082.43	6,219.00	6,218.33	39.74	122.40	-4.30	-1,770.63	1,575.93	3,098.53	2,946.80	151.73	20.421	
8,500.00	7,082.19	6,219.00	6,218.33	40.59	122.40	-4.30	-1,770.63	1,575.93	3,195.14	3,043.07	152.07	21.010	
8,600.00	7,081.95	6,219.00	6,218.33	41.49	122.40	-4.30	-1,770.63	1,575.93	3,291.96	3,139.57	152.39	21.602	
8,700.00	7,081.71	6,219.00	6,218.33	42.43	122.40	-4.30	-1,770.63	1,575.93	3,388.96	3,236.28	152.68	22.196	
8,800.00	7,081.47	6,219.00	6,218.33	43.41	122.40	-4.30	-1,770.63	1,575.93	3,486.14	3,333.18	152.95	22.792	
8,900.00	7,081.23	6,219.00	6,218.33	44.44	122.40	-4.30	-1,770.63	1,575.93	3,583.46	3,430.26	153.20	23.390	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	6,219.00	6,218.33	45.49	122.40	-4.30	-1,770.63	1,575.93	3,680.93	3,527.50	153.44	23.990	
9,100.00	7,080.74	6,219.00	6,218.33	46.58	122.40	-4.30	-1,770.63	1,575.93	3,778.54	3,624.88	153.66	24.591	
9,200.00	7,080.50	6,219.00	6,218.33	47.70	122.40	-4.30	-1,770.63	1,575.93	3,876.26	3,722.40	153.86	25.194	
9,300.00	7,080.26	6,219.00	6,218.33	48.85	122.40	-4.30	-1,770.63	1,575.93	3,974.10	3,820.05	154.05	25.797	
9,400.00	7,080.02	6,219.00	6,218.33	50.03	122.40	-4.30	-1,770.63	1,575.93	4,072.05	3,917.81	154.23	26.402	
9,500.00	7,079.78	6,219.00	6,218.33	51.23	122.40	-4.30	-1,770.63	1,575.93	4,170.09	4,015.69	154.40	27.008	
9,600.00	7,079.54	6,219.00	6,218.33	52.45	122.40	-4.30	-1,770.63	1,575.93	4,268.22	4,113.66	154.56	27.615	
9,700.00	7,079.30	6,219.00	6,218.33	53.69	122.40	-4.30	-1,770.63	1,575.93	4,366.44	4,211.72	154.71	28.223	
9,800.00	7,079.06	6,219.00	6,218.33	54.95	122.40	-4.30	-1,770.63	1,575.93	4,464.73	4,309.88	154.86	28.831	
9,900.00	7,078.82	6,219.00	6,218.33	56.23	122.40	-4.30	-1,770.63	1,575.93	4,563.10	4,408.11	154.99	29.440	
10,000.00	7,078.57	6,219.00	6,218.33	57.53	122.40	-4.30	-1,770.63	1,575.93	4,661.54	4,506.42	155.13	30.050	
10,100.00	7,078.33	6,219.00	6,218.33	58.84	122.40	-4.30	-1,770.63	1,575.93	4,760.05	4,604.80	155.25	30.660	
10,200.00	7,078.09	6,219.00	6,218.33	60.17	122.40	-4.30	-1,770.63	1,575.93	4,858.61	4,703.24	155.37	31.271	
10,300.00	7,077.85	6,219.00	6,218.33	61.51	122.40	-4.30	-1,770.63	1,575.93	4,957.24	4,801.75	155.48	31.882	
10,400.00	7,077.61	6,219.00	6,218.33	62.86	122.40	-4.30	-1,770.63	1,575.93	5,055.91	4,900.32	155.60	32.494	
10,500.00	7,077.37	6,219.00	6,218.33	64.22	122.40	-4.30	-1,770.63	1,575.93	5,154.64	4,998.94	155.70	33.106	
10,600.00	7,077.13	6,219.00	6,218.33	65.60	122.40	-4.30	-1,770.63	1,575.93	5,253.42	5,097.61	155.80	33.718	
10,700.00	7,076.89	6,219.00	6,218.33	66.98	122.40	-4.30	-1,770.63	1,575.93	5,352.24	5,196.34	155.90	34.331	
10,800.00	7,076.65	6,219.00	6,218.33	68.38	122.40	-4.30	-1,770.63	1,575.93	5,451.10	5,295.10	156.00	34.943	
10,900.00	7,076.40	6,219.00	6,218.33	69.78	122.40	-4.30	-1,770.63	1,575.93	5,550.01	5,393.92	156.09	35.556	
11,000.00	7,076.16	6,219.00	6,218.33	71.20	122.40	-4.30	-1,770.63	1,575.93	5,648.95	5,492.77	156.18	36.169	
11,100.00	7,075.92	6,219.00	6,218.33	72.62	122.40	-4.30	-1,770.63	1,575.93	5,747.93	5,591.66	156.27	36.782	
11,200.00	7,075.68	6,219.00	6,218.33	74.04	122.40	-4.30	-1,770.63	1,575.93	5,846.95	5,690.59	156.36	37.395	
11,300.00	7,075.44	6,219.00	6,218.33	75.48	122.40	-4.30	-1,770.63	1,575.93	5,946.00	5,789.56	156.44	38.008	
11,400.00	7,075.20	6,219.00	6,218.33	76.92	122.40	-4.30	-1,770.63	1,575.93	6,045.08	5,888.55	156.52	38.621	
11,500.00	7,074.96	6,219.00	6,218.33	78.37	122.40	-4.30	-1,770.63	1,575.93	6,144.18	5,987.58	156.60	39.234	
11,600.00	7,074.72	6,219.00	6,218.33	79.82	122.40	-4.30	-1,770.63	1,575.93	6,243.32	6,086.64	156.68	39.847	
11,700.00	7,074.48	6,219.00	6,218.33	81.28	122.40	-4.30	-1,770.63	1,575.93	6,342.49	6,185.73	156.76	40.460	
11,800.00	7,074.23	6,219.00	6,218.33	82.75	122.40	-4.30	-1,770.63	1,575.93	6,441.68	6,284.84	156.83	41.073	
11,900.00	7,073.99	6,219.00	6,218.33	84.22	122.40	-4.30	-1,770.63	1,575.93	6,540.89	6,383.98	156.91	41.686	
12,000.00	7,073.75	6,219.00	6,218.33	85.69	122.40	-4.30	-1,770.63	1,575.93	6,640.13	6,483.15	156.98	42.298	
12,100.00	7,073.51	6,219.00	6,218.33	87.17	122.40	-4.30	-1,770.63	1,575.93	6,739.39	6,582.34	157.06	42.911	
12,200.00	7,073.27	6,219.00	6,218.33	88.65	122.40	-4.30	-1,770.63	1,575.93	6,838.68	6,681.55	157.13	43.523	
12,300.00	7,073.03	6,219.00	6,218.33	90.14	122.40	-4.30	-1,770.63	1,575.93	6,937.98	6,780.78	157.20	44.135	
12,400.00	7,072.79	6,219.00	6,218.33	91.63	122.40	-4.30	-1,770.63	1,575.93	7,037.30	6,880.04	157.27	44.747	
12,500.00	7,072.55	6,219.00	6,218.33	93.13	122.40	-4.30	-1,770.63	1,575.93	7,136.64	6,979.31	157.34	45.359	
12,600.00	7,072.31	6,219.00	6,218.33	94.62	122.40	-4.30	-1,770.63	1,575.93	7,236.01	7,078.60	157.41	45.970	
12,700.00	7,072.06	6,219.00	6,218.33	96.13	122.40	-4.30	-1,770.63	1,575.93	7,335.38	7,177.91	157.47	46.582	
12,800.00	7,071.82	6,219.00	6,218.33	97.63	122.40	-4.30	-1,770.63	1,575.93	7,434.78	7,277.24	157.54	47.192	
12,900.00	7,071.58	6,219.00	6,218.33	99.14	122.40	-4.30	-1,770.63	1,575.93	7,534.19	7,376.58	157.61	47.803	
13,000.00	7,071.34	6,219.00	6,218.33	100.65	122.40	-4.30	-1,770.63	1,575.93	7,633.61	7,475.94	157.68	48.413	
13,100.00	7,071.10	6,219.00	6,218.33	102.16	122.40	-4.30	-1,770.63	1,575.93	7,733.05	7,575.31	157.74	49.023	
13,200.00	7,070.86	6,219.00	6,218.33	103.68	122.40	-4.30	-1,770.63	1,575.93	7,832.51	7,674.70	157.81	49.633	
13,300.00	7,070.62	6,219.00	6,218.33	105.20	122.40	-4.30	-1,770.63	1,575.93	7,931.98	7,774.10	157.87	50.242	
13,400.00	7,070.38	6,219.00	6,218.33	106.72	122.40	-4.30	-1,770.63	1,575.93	8,031.46	7,873.52	157.94	50.851	
13,500.00	7,070.14	6,219.00	6,218.33	108.24	122.40	-4.30	-1,770.63	1,575.93	8,130.95	7,972.95	158.01	51.460	
13,600.00	7,069.89	6,219.00	6,218.33	109.77	122.40	-4.30	-1,770.63	1,575.93	8,230.46	8,072.39	158.07	52.068	
13,700.00	7,069.65	6,219.00	6,218.33	111.30	122.40	-4.30	-1,770.63	1,575.93	8,329.98	8,171.84	158.14	52.676	
13,800.00	7,069.41	6,219.00	6,218.33	112.83	122.40	-4.30	-1,770.63	1,575.93	8,429.51	8,271.31	158.20	53.283	
13,900.00	7,069.17	6,219.00	6,218.33	114.36	122.40	-4.30	-1,770.63	1,575.93	8,529.05	8,370.78	158.27	53.890	
14,000.00	7,068.93	6,219.00	6,218.33	115.89	122.40	-4.30	-1,770.63	1,575.93	8,628.60	8,470.27	158.33	54.497	
14,100.00	7,068.69	6,219.00	6,218.33	117.43	122.40	-4.30	-1,770.63	1,575.93	8,728.16	8,569.76	158.40	55.103	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	6,219.00	6,218.33	118.97	122.40	-4.30	-1,770.63	1,575.93	8,827.73	8,669.27	158.46	55.709	
14,300.00	7,068.21	6,219.00	6,218.33	120.50	122.40	-4.30	-1,770.63	1,575.93	8,927.31	8,768.79	158.53	56.314	
14,400.00	7,067.97	6,219.00	6,218.33	122.05	122.40	-4.30	-1,770.63	1,575.93	9,026.91	8,868.31	158.59	56.919	
14,500.00	7,067.72	6,219.00	6,218.33	123.59	122.40	-4.30	-1,770.63	1,575.93	9,126.50	8,967.85	158.66	57.523	
14,600.00	7,067.48	6,219.00	6,218.33	125.13	122.40	-4.30	-1,770.63	1,575.93	9,226.11	9,067.39	158.72	58.127	
14,700.00	7,067.24	6,219.00	6,218.33	126.68	122.40	-4.30	-1,770.63	1,575.93	9,325.73	9,166.94	158.79	58.730	
14,800.00	7,067.00	6,219.00	6,218.33	128.22	122.40	-4.30	-1,770.63	1,575.93	9,425.35	9,266.50	158.85	59.333	
14,900.00	7,066.76	6,219.00	6,218.33	129.77	122.40	-4.30	-1,770.63	1,575.93	9,524.99	9,366.07	158.92	59.935	
15,000.00	7,066.52	6,219.00	6,218.33	131.32	122.40	-4.30	-1,770.63	1,575.93	9,624.63	9,465.64	158.99	60.537	
15,100.00	7,066.28	6,219.00	6,218.33	132.87	122.40	-4.30	-1,770.63	1,575.93	9,724.27	9,565.22	159.05	61.139	
15,200.00	7,066.04	6,219.00	6,218.33	134.42	122.40	-4.30	-1,770.63	1,575.93	9,823.93	9,664.81	159.12	61.739	
15,300.00	7,065.80	6,219.00	6,218.33	135.97	122.40	-4.30	-1,770.63	1,575.93	9,923.59	9,764.40	159.19	62.340	
15,400.00	7,065.55	6,219.00	6,218.33	137.53	122.40	-4.30	-1,770.63	1,575.93	10,023.26	9,864.01	159.25	62.939	
15,500.00	7,065.31	6,219.00	6,218.33	139.08	122.40	-4.30	-1,770.63	1,575.93	10,122.93	9,963.61	159.32	63.539	
15,600.00	7,065.07	6,219.00	6,218.33	140.64	122.40	-4.30	-1,770.63	1,575.93	10,222.61	10,063.23	159.39	64.137	
15,700.00	7,064.83	6,219.00	6,218.33	142.20	122.40	-4.30	-1,770.63	1,575.93	10,322.30	10,162.85	159.45	64.735	
15,800.00	7,064.59	6,219.00	6,218.33	143.75	122.40	-4.30	-1,770.63	1,575.93	10,422.00	10,262.47	159.52	65.333	
15,900.00	7,064.35	6,219.00	6,218.33	145.31	122.40	-4.30	-1,770.63	1,575.93	10,521.69	10,362.10	159.59	65.930	
16,000.00	7,064.11	6,219.00	6,218.33	146.87	122.40	-4.30	-1,770.63	1,575.93	10,621.40	10,461.74	159.66	66.526	
16,100.00	7,063.87	6,219.00	6,218.33	148.43	122.40	-4.30	-1,770.63	1,575.93	10,721.11	10,561.38	159.73	67.122	
16,200.00	7,063.63	6,219.00	6,218.33	149.99	122.40	-4.30	-1,770.63	1,575.93	10,820.83	10,661.03	159.80	67.717	
16,300.00	7,063.38	6,219.00	6,218.33	151.56	122.40	-4.30	-1,770.63	1,575.93	10,920.55	10,760.68	159.86	68.311	
16,400.00	7,063.14	6,219.00	6,218.33	153.12	122.40	-4.30	-1,770.63	1,575.93	11,020.27	10,860.34	159.93	68.905	
16,500.00	7,062.90	6,219.00	6,218.33	154.68	122.40	-4.30	-1,770.63	1,575.93	11,120.00	10,960.00	160.00	69.498	
16,600.00	7,062.66	6,219.00	6,218.33	156.25	122.40	-4.30	-1,770.63	1,575.93	11,219.74	11,059.67	160.07	70.091	
16,700.00	7,062.42	6,219.00	6,218.33	157.81	122.40	-4.30	-1,770.63	1,575.93	11,319.48	11,159.34	160.14	70.683	
16,800.00	7,062.18	6,219.00	6,218.33	159.38	122.40	-4.30	-1,770.63	1,575.93	11,419.22	11,259.01	160.21	71.275	
16,874.30	7,062.00	6,219.00	6,218.33	160.54	122.40	-4.30	-1,770.63	1,575.93	11,493.33	11,333.07	160.27	71.714	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	148.37	148.37	3.28	3.28	117.87	-1,997.25	3,777.54	4,273.04				
100.00	100.00	245.01	245.01	3.29	3.29	117.87	-1,997.64	3,777.52	4,273.21	4,266.64	6.57	650.075	
200.00	200.00	341.35	341.35	3.34	3.30	117.88	-1,998.22	3,777.49	4,273.46	4,266.84	6.62	645.064	
300.00	300.00	437.69	437.68	3.42	3.32	117.89	-1,998.98	3,777.46	4,273.80	4,267.09	6.72	636.412	
400.00	400.00	540.38	540.37	3.54	3.34	117.90	-1,999.68	3,777.53	4,274.18	4,267.33	6.84	624.496	
500.00	500.00	645.05	645.04	3.69	3.34	117.89	-1,999.34	3,778.02	4,274.45	4,267.44	7.01	610.048	
600.00	599.98	787.78	787.76	3.86	3.34	-64.11	-1,997.59	3,778.35	4,273.27	4,266.09	7.19	594.744	
700.00	699.84	897.21	897.16	4.04	3.34	-64.26	-1,995.39	3,778.31	4,270.02	4,262.64	7.38	578.713	
800.00	799.45	986.99	986.92	4.25	3.35	-64.46	-1,993.63	3,778.32	4,265.34	4,257.74	7.60	561.422	
900.00	898.70	1,087.59	1,087.51	4.48	3.36	-64.75	-1,991.61	3,778.53	4,259.33	4,251.49	7.84	543.004	
1,000.00	997.47	1,190.20	1,190.09	4.74	3.38	-65.11	-1,989.37	3,778.61	4,251.69	4,243.58	8.12	523.796	
1,100.00	1,095.62	1,284.68	1,284.55	5.03	3.40	-65.51	-1,987.48	3,778.76	4,242.81	4,234.39	8.42	504.121	
1,200.00	1,193.06	1,383.17	1,383.02	5.35	3.43	-66.00	-1,985.46	3,778.76	4,232.43	4,223.69	8.74	484.017	
1,268.36	1,259.18	1,452.31	1,452.15	5.58	3.45	-66.38	-1,984.16	3,778.79	4,224.68	4,215.70	8.99	470.137	
1,300.00	1,289.69	1,488.23	1,488.07	5.70	3.46	-66.51	-1,983.43	3,778.75	4,220.90	4,211.80	9.10	463.686	
1,400.00	1,386.11	1,575.02	1,574.84	6.07	3.50	-66.81	-1,981.89	3,778.59	4,209.10	4,199.62	9.48	443.949	
1,500.00	1,482.54	1,681.65	1,681.45	6.45	3.54	-67.19	-1,979.81	3,778.38	4,197.38	4,187.50	9.88	424.723	
1,600.00	1,578.96	1,778.50	1,778.28	6.86	3.58	-67.54	-1,977.94	3,778.24	4,185.87	4,175.57	10.30	406.448	
1,700.00	1,675.39	1,868.25	1,868.01	7.27	3.63	-67.87	-1,976.08	3,778.03	4,174.39	4,163.66	10.73	389.129	
1,800.00	1,771.81	1,977.83	1,977.56	7.70	3.68	-68.27	-1,973.71	3,777.81	4,163.06	4,151.89	11.17	372.589	
1,900.00	1,868.24	2,087.78	2,087.48	8.13	3.75	-68.67	-1,971.41	3,777.28	4,151.70	4,140.07	11.63	356.933	
2,000.00	1,964.66	2,179.73	2,179.42	8.57	3.80	-69.00	-1,969.55	3,776.62	4,140.30	4,128.21	12.10	342.285	
2,100.00	2,061.09	2,250.00	2,249.67	9.02	3.84	-69.26	-1,968.10	3,776.34	4,129.35	4,116.79	12.56	328.733	
2,200.00	2,157.51	2,338.41	2,338.07	9.47	3.90	-69.59	-1,966.31	3,776.50	4,119.07	4,106.04	13.04	315.981	
2,300.00	2,253.94	2,435.34	2,434.98	9.93	3.97	-69.95	-1,964.55	3,776.65	4,109.02	4,095.50	13.52	303.949	
2,400.00	2,350.36	2,535.85	2,535.48	10.39	4.04	-70.32	-1,962.90	3,776.62	4,099.05	4,085.04	14.01	292.585	
2,500.00	2,446.79	2,632.35	2,631.96	10.86	4.12	-70.68	-1,961.30	3,776.45	4,089.10	4,074.60	14.51	281.885	
2,600.00	2,543.21	2,720.36	2,719.95	11.33	4.18	-71.01	-1,959.75	3,776.33	4,079.34	4,064.33	15.00	271.872	
2,700.00	2,639.64	2,805.69	2,805.27	11.80	4.25	-71.34	-1,958.01	3,776.63	4,070.07	4,054.57	15.50	262.539	
2,800.00	2,736.06	2,898.47	2,898.02	12.27	4.33	-71.69	-1,956.17	3,777.03	4,061.08	4,045.07	16.01	253.727	
2,900.00	2,832.49	2,992.43	2,991.97	12.75	4.40	-72.05	-1,954.47	3,777.48	4,052.37	4,035.86	16.51	245.426	
3,000.00	2,928.91	3,087.94	3,087.47	13.23	4.49	-72.42	-1,952.83	3,777.92	4,043.84	4,026.82	17.02	237.578	
3,100.00	3,025.34	3,181.56	3,181.08	13.71	4.57	-72.78	-1,951.39	3,778.27	4,035.48	4,017.95	17.53	230.161	
3,200.00	3,121.76	3,279.58	3,279.08	14.19	4.66	-73.15	-1,950.02	3,778.69	4,027.39	4,009.34	18.05	223.142	
3,300.00	3,218.18	3,372.13	3,371.63	14.67	4.74	-73.50	-1,948.78	3,779.11	4,019.52	4,000.96	18.56	216.518	
3,400.00	3,314.61	3,467.04	3,466.53	15.15	4.83	-73.86	-1,947.72	3,779.48	4,011.83	3,992.74	19.08	210.224	
3,500.00	3,411.03	3,566.33	3,565.81	15.64	4.92	-74.25	-1,946.47	3,779.86	4,004.27	3,984.66	19.61	204.231	
3,600.00	3,507.46	3,656.19	3,655.66	16.12	5.01	-74.59	-1,945.52	3,780.20	3,996.94	3,976.82	20.13	198.573	
3,700.00	3,603.88	3,747.24	3,746.71	16.61	5.09	-74.94	-1,944.67	3,780.67	3,989.95	3,969.30	20.65	193.214	
3,800.00	3,700.31	3,845.50	3,844.97	17.10	5.18	-75.31	-1,943.80	3,781.13	3,983.11	3,961.93	21.18	188.088	
3,900.00	3,796.73	3,925.00	3,924.46	17.59	5.23	-75.61	-1,943.63	3,781.58	3,976.72	3,955.02	21.70	183.299	
4,000.00	3,893.16	4,000.00	3,999.46	18.07	5.23	-75.88	-1,944.19	3,782.12	3,970.90	3,948.69	22.21	178.753	
4,100.00	3,989.58	4,078.61	4,078.05	18.56	5.23	-76.16	-1,945.49	3,782.99	3,965.83	3,943.09	22.74	174.412	
4,200.00	4,086.01	4,169.56	4,168.98	19.05	5.22	-76.48	-1,947.24	3,784.10	3,961.10	3,937.83	23.27	170.229	
4,300.00	4,182.43	4,264.26	4,263.66	19.55	5.22	-76.82	-1,949.08	3,785.30	3,956.58	3,932.77	23.80	166.208	
4,400.00	4,278.86	4,396.16	4,395.52	20.04	5.22	-77.28	-1,951.37	3,786.73	3,952.00	3,927.65	24.36	162.244	
4,500.00	4,375.28	4,513.34	4,512.70	20.53	5.22	-77.71	-1,952.67	3,787.18	3,946.74	3,921.83	24.91	158.442	
4,600.00	4,471.71	4,621.22	4,620.58	21.02	5.21	-78.10	-1,953.75	3,787.17	3,941.24	3,915.78	25.46	154.811	
4,700.00	4,568.13	4,719.30	4,718.65	21.51	5.20	-78.46	-1,954.50	3,787.06	3,935.75	3,909.74	26.00	151.348	
4,800.00	4,664.56	4,818.82	4,818.17	22.01	5.19	-78.83	-1,955.29	3,786.94	3,930.41	3,903.86	26.55	148.025	
4,900.00	4,760.98	4,910.70	4,910.04	22.50	5.19	-79.16	-1,956.10	3,786.82	3,925.25	3,898.15	27.10	144.850	
5,000.00	4,857.41	5,008.72	5,008.05	22.99	5.19	-79.52	-1,957.02	3,786.70	3,920.27	3,892.62	27.65	141.790	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,100.00	4,953.83	5,104.74	5,104.07	23.49	5.20	-79.88	-1,958.04	3,786.57	3,915.46	3,887.27	28.20	138.855	
5,200.00	5,050.25	5,199.37	5,198.70	23.98	5.21	-80.22	-1,959.06	3,786.49	3,910.87	3,882.13	28.75	136.036	
5,300.00	5,146.68	5,292.36	5,291.68	24.48	5.22	-80.57	-1,960.04	3,786.47	3,906.49	3,877.19	29.30	133.328	
5,400.00	5,243.10	5,376.09	5,375.41	24.97	5.23	-80.88	-1,960.96	3,786.59	3,902.44	3,872.59	29.85	130.738	
5,500.00	5,339.53	5,469.33	5,468.64	25.47	5.26	-81.22	-1,961.98	3,786.93	3,898.75	3,868.35	30.41	128.227	
5,600.00	5,435.95	5,565.95	5,565.25	25.96	5.29	-81.58	-1,963.04	3,787.35	3,895.31	3,864.35	30.96	125.800	
5,700.00	5,532.38	5,660.45	5,659.74	26.46	5.32	-81.93	-1,964.19	3,787.75	3,892.03	3,860.51	31.52	123.466	
5,800.00	5,628.80	5,781.59	5,780.87	26.96	5.35	-82.37	-1,966.13	3,787.99	3,888.79	3,856.69	32.09	121.175	
5,900.00	5,725.23	5,884.28	5,883.55	27.45	5.38	-82.75	-1,967.66	3,787.70	3,885.20	3,852.55	32.65	118.998	
6,000.00	5,821.65	5,983.99	5,983.25	27.95	5.41	-83.12	-1,968.83	3,787.37	3,881.68	3,848.48	33.20	116.902	
6,100.00	5,918.08	6,080.02	6,079.28	28.45	5.44	-83.48	-1,969.69	3,787.07	3,878.29	3,844.53	33.76	114.887	
6,200.00	6,014.50	6,179.60	6,178.85	28.94	5.48	-83.85	-1,970.67	3,786.65	3,874.98	3,840.67	34.31	112.935	
6,300.00	6,110.93	6,269.42	6,268.66	29.44	5.51	-84.19	-1,971.62	3,786.37	3,871.95	3,837.09	34.86	111.061	
6,400.00	6,207.35	6,363.31	6,362.55	29.94	5.55	-84.54	-1,972.73	3,786.16	3,869.19	3,833.77	35.42	109.243	
6,500.00	6,303.78	6,453.06	6,452.29	30.43	5.59	-84.87	-1,973.76	3,786.10	3,866.74	3,830.77	35.97	107.491	
6,600.00	6,400.20	6,546.91	6,546.14	30.93	5.64	-85.23	-1,974.80	3,786.11	3,864.52	3,827.99	36.53	105.791	
6,677.76	6,475.18	6,627.38	6,626.60	31.32	5.68	-85.53	-1,975.62	3,786.09	3,862.87	3,825.91	36.97	104.498	
6,691.39	6,488.32	6,643.77	6,642.99	31.39	5.69	-90.04	-1,975.78	3,786.07	3,862.73	3,825.69	37.04	104.275 CC, ES	
6,700.00	6,496.62	6,653.53	6,652.75	31.43	5.70	-92.84	-1,975.87	3,786.06	3,862.79	3,825.70	37.09	104.140	
6,750.00	6,544.66	6,703.02	6,702.24	31.68	5.72	-107.94	-1,976.27	3,785.98	3,865.41	3,828.04	37.37	103.432	
6,800.00	6,592.24	6,752.48	6,751.70	31.92	5.75	-120.15	-1,976.70	3,785.84	3,871.93	3,834.28	37.65	102.844	
6,850.00	6,639.07	6,802.96	6,802.17	32.16	5.77	-129.42	-1,977.10	3,785.74	3,882.36	3,844.44	37.92	102.377	
6,900.00	6,684.86	6,847.26	6,846.47	32.40	5.80	-136.30	-1,977.47	3,785.62	3,896.61	3,858.42	38.19	102.043	
6,950.00	6,729.32	6,892.63	6,891.84	32.62	5.82	-141.44	-1,977.89	3,785.49	3,914.58	3,876.14	38.44	101.830	
7,000.00	6,772.19	6,935.03	6,934.24	32.84	5.85	-145.32	-1,978.27	3,785.35	3,936.19	3,897.50	38.69	101.743 SF	
7,050.00	6,813.20	6,974.38	6,973.59	33.05	5.87	-148.27	-1,978.64	3,785.26	3,961.32	3,922.40	38.92	101.779	
7,100.00	6,852.09	7,010.68	7,009.88	33.26	5.89	-150.52	-1,978.97	3,785.18	3,989.80	3,950.66	39.14	101.935	
7,150.00	6,888.63	7,044.81	7,044.02	33.45	5.91	-152.22	-1,979.26	3,785.13	4,021.47	3,982.12	39.35	102.207	
7,200.00	6,922.59	7,077.79	7,076.99	33.64	5.93	-153.49	-1,979.55	3,785.10	4,056.11	4,016.57	39.54	102.589	
7,250.00	6,953.76	7,107.97	7,107.17	33.82	5.95	-154.38	-1,979.79	3,785.09	4,093.49	4,053.78	39.71	103.078	
7,300.00	6,981.95	7,135.48	7,134.68	34.00	5.97	-154.90	-1,980.02	3,785.08	4,133.38	4,093.51	39.87	103.669	
7,350.00	7,006.99	7,158.52	7,157.72	34.17	5.98	-155.02	-1,980.22	3,785.07	4,175.53	4,135.52	40.01	104.360	
7,400.00	7,028.72	7,176.32	7,175.52	34.35	6.00	-154.67	-1,980.37	3,785.08	4,219.67	4,179.54	40.13	105.145	
7,450.00	7,047.00	7,198.19	7,197.39	34.52	6.01	-153.81	-1,980.57	3,785.10	4,265.52	4,225.28	40.24	106.002	
7,500.00	7,061.73	7,210.17	7,209.37	34.69	6.02	-151.90	-1,980.69	3,785.10	4,312.78	4,272.45	40.33	106.948	
7,550.00	7,072.82	7,218.64	7,217.84	34.86	6.02	-148.14	-1,980.76	3,785.11	4,361.17	4,320.77	40.40	107.963	
7,600.00	7,080.18	7,225.00	7,224.20	35.04	6.03	-139.82	-1,980.82	3,785.12	4,410.37	4,369.92	40.45	109.036	
7,650.00	7,083.79	7,227.36	7,226.55	35.22	6.03	-114.80	-1,980.84	3,785.13	4,460.07	4,419.59	40.49	110.161	
7,674.30	7,084.18	7,227.68	7,226.87	35.32	6.03	-85.17	-1,980.84	3,785.13	4,484.32	4,443.82	40.50	110.721	
7,700.00	7,084.12	7,227.57	7,226.77	35.42	6.03	-85.15	-1,980.84	3,785.13	4,509.98	4,469.46	40.51	111.320	
7,800.00	7,083.88	7,227.15	7,226.35	35.84	6.03	-85.06	-1,980.84	3,785.13	4,609.81	4,569.25	40.56	113.649	
7,900.00	7,083.64	7,226.74	7,225.93	36.34	6.03	-84.97	-1,980.83	3,785.13	4,709.65	4,669.04	40.61	115.976	
8,000.00	7,083.40	7,226.32	7,225.52	36.90	6.03	-84.88	-1,980.83	3,785.12	4,809.50	4,768.85	40.66	118.300	
8,100.00	7,083.16	7,225.90	7,225.10	37.52	6.03	-84.79	-1,980.82	3,785.12	4,909.35	4,868.65	40.70	120.622	
8,200.00	7,082.91	7,225.00	7,224.20	38.21	6.03	-84.59	-1,980.82	3,785.12	5,009.21	4,968.47	40.74	122.942	
8,300.00	7,082.67	7,225.00	7,224.20	38.95	6.03	-84.59	-1,980.82	3,785.12	5,109.08	5,068.29	40.79	125.256	
8,400.00	7,082.43	7,225.00	7,224.20	39.74	6.03	-84.59	-1,980.82	3,785.12	5,208.95	5,168.12	40.83	127.568	
8,500.00	7,082.19	7,225.00	7,224.20	40.59	6.03	-84.59	-1,980.82	3,785.12	5,308.82	5,267.95	40.88	129.877	
8,600.00	7,081.95	7,225.00	7,224.20	41.49	6.03	-84.59	-1,980.82	3,785.12	5,408.70	5,367.79	40.92	132.182	
8,700.00	7,081.71	7,225.00	7,224.20	42.43	6.03	-84.59	-1,980.82	3,785.12	5,508.59	5,467.63	40.96	134.484	
8,800.00	7,081.47	7,225.00	7,224.20	43.41	6.03	-84.59	-1,980.82	3,785.12	5,608.48	5,567.47	41.00	136.783	
8,900.00	7,081.23	7,225.00	7,224.20	44.44	6.03	-84.59	-1,980.82	3,785.12	5,708.37	5,667.32	41.04	139.078	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	7,225.00	7,224.20	45.49	6.03	-84.59	-1,980.82	3,785.12	5,808.26	5,767.18	41.09	141.369	
9,100.00	7,080.74	7,225.00	7,224.20	46.58	6.03	-84.59	-1,980.82	3,785.12	5,908.16	5,867.04	41.13	143.656	
9,200.00	7,080.50	7,225.00	7,224.20	47.70	6.03	-84.59	-1,980.82	3,785.12	6,008.07	5,966.90	41.17	145.940	
9,300.00	7,080.26	7,225.00	7,224.20	48.85	6.03	-84.59	-1,980.82	3,785.12	6,107.97	6,066.76	41.21	148.220	
9,400.00	7,080.02	7,225.00	7,224.20	50.03	6.03	-84.59	-1,980.82	3,785.12	6,207.88	6,166.63	41.25	150.496	
9,500.00	7,079.78	7,225.00	7,224.20	51.23	6.03	-84.59	-1,980.82	3,785.12	6,307.79	6,266.50	41.29	152.767	
9,600.00	7,079.54	7,225.00	7,224.20	52.45	6.03	-84.59	-1,980.82	3,785.12	6,407.71	6,366.38	41.33	155.034	
9,700.00	7,079.30	7,220.85	7,220.04	53.69	6.03	-83.69	-1,980.78	3,785.11	6,507.62	6,466.25	41.37	157.309	
9,800.00	7,079.06	7,220.57	7,219.77	54.95	6.02	-83.63	-1,980.78	3,785.11	6,607.54	6,566.13	41.41	159.568	
9,900.00	7,078.82	7,220.29	7,219.49	56.23	6.02	-83.57	-1,980.78	3,785.11	6,707.46	6,666.01	41.45	161.823	
10,000.00	7,078.57	7,220.02	7,219.22	57.53	6.02	-83.51	-1,980.77	3,785.11	6,807.39	6,765.90	41.49	164.073	
10,100.00	7,078.33	7,219.75	7,218.95	58.84	6.02	-83.45	-1,980.77	3,785.11	6,907.31	6,865.78	41.53	166.319	
10,200.00	7,078.09	7,219.48	7,218.68	60.17	6.02	-83.39	-1,980.77	3,785.11	7,007.24	6,965.67	41.57	168.560	
10,300.00	7,077.85	7,219.22	7,218.41	61.51	6.02	-83.33	-1,980.77	3,785.11	7,107.17	7,065.56	41.61	170.796	
10,400.00	7,077.61	7,218.95	7,218.15	62.86	6.02	-83.28	-1,980.76	3,785.11	7,207.11	7,165.45	41.65	173.026	
10,500.00	7,077.37	7,218.69	7,217.89	64.22	6.02	-83.22	-1,980.76	3,785.11	7,307.04	7,265.34	41.69	175.252	
10,600.00	7,077.13	7,218.44	7,217.63	65.60	6.02	-83.17	-1,980.76	3,785.11	7,406.98	7,365.24	41.74	177.473	
10,700.00	7,076.89	7,218.18	7,217.38	66.98	6.02	-83.11	-1,980.76	3,785.11	7,506.91	7,465.14	41.78	179.688	
10,800.00	7,076.65	7,217.93	7,217.13	68.38	6.02	-83.06	-1,980.76	3,785.11	7,606.85	7,565.03	41.82	181.898	
10,900.00	7,076.40	7,217.68	7,216.88	69.78	6.02	-83.00	-1,980.75	3,785.11	7,706.79	7,664.93	41.86	184.103	
11,000.00	7,076.16	7,217.43	7,216.63	71.20	6.02	-82.95	-1,980.75	3,785.11	7,806.74	7,764.83	41.90	186.302	
11,100.00	7,075.92	7,217.19	7,216.38	72.62	6.02	-82.90	-1,980.75	3,785.11	7,906.68	7,864.73	41.95	188.496	
11,200.00	7,075.68	7,216.94	7,216.14	74.04	6.02	-82.84	-1,980.75	3,785.11	8,006.62	7,964.63	41.99	190.684	
11,300.00	7,075.44	7,216.70	7,215.90	75.48	6.02	-82.79	-1,980.74	3,785.11	8,106.57	8,064.54	42.03	192.866	
11,400.00	7,075.20	7,216.46	7,215.66	76.92	6.02	-82.74	-1,980.74	3,785.11	8,206.52	8,164.44	42.08	195.043	
11,500.00	7,074.96	7,216.23	7,215.42	78.37	6.02	-82.69	-1,980.74	3,785.11	8,306.47	8,264.35	42.12	197.213	
11,600.00	7,074.72	7,215.99	7,215.19	79.82	6.02	-82.64	-1,980.74	3,785.11	8,406.42	8,364.25	42.16	199.378	
11,700.00	7,074.48	7,215.76	7,214.96	81.28	6.02	-82.59	-1,980.74	3,785.11	8,506.37	8,464.16	42.21	201.537	
11,800.00	7,074.23	7,215.53	7,214.73	82.75	6.02	-82.54	-1,980.73	3,785.11	8,606.32	8,564.07	42.25	203.689	
11,900.00	7,073.99	7,215.30	7,214.50	84.22	6.02	-82.49	-1,980.73	3,785.11	8,706.27	8,663.98	42.30	205.835	
12,000.00	7,073.75	7,215.08	7,214.27	85.69	6.02	-82.44	-1,980.73	3,785.11	8,806.23	8,763.89	42.34	207.976	
12,100.00	7,073.51	7,214.85	7,214.05	87.17	6.02	-82.39	-1,980.73	3,785.11	8,906.19	8,863.80	42.39	210.110	
12,200.00	7,073.27	7,214.63	7,213.83	88.65	6.02	-82.34	-1,980.73	3,785.11	9,006.14	8,963.71	42.43	212.237	
12,300.00	7,073.03	7,214.41	7,213.61	90.14	6.02	-82.30	-1,980.72	3,785.11	9,106.10	9,063.62	42.48	214.358	
12,400.00	7,072.79	7,214.19	7,213.39	91.63	6.02	-82.25	-1,980.72	3,785.11	9,206.06	9,163.53	42.53	216.473	
12,500.00	7,072.55	7,213.98	7,213.17	93.13	6.02	-82.20	-1,980.72	3,785.11	9,306.02	9,263.44	42.57	218.581	
12,600.00	7,072.31	7,213.76	7,212.96	94.62	6.02	-82.16	-1,980.72	3,785.10	9,405.98	9,363.35	42.62	220.682	
12,700.00	7,072.06	7,213.55	7,212.75	96.13	6.02	-82.11	-1,980.72	3,785.10	9,505.94	9,463.27	42.67	222.777	
12,800.00	7,071.82	7,213.34	7,212.54	97.63	6.02	-82.07	-1,980.71	3,785.10	9,605.90	9,563.18	42.72	224.865	
12,900.00	7,071.58	7,213.13	7,212.33	99.14	6.02	-82.02	-1,980.71	3,785.10	9,705.86	9,663.10	42.77	226.946	
13,000.00	7,071.34	7,212.92	7,212.12	100.65	6.02	-81.98	-1,980.71	3,785.10	9,805.83	9,763.01	42.82	229.020	
13,100.00	7,071.10	7,212.72	7,211.92	102.16	6.02	-81.93	-1,980.71	3,785.10	9,905.79	9,862.92	42.87	231.088	
13,200.00	7,070.86	7,212.51	7,211.71	103.68	6.02	-81.89	-1,980.71	3,785.10	10,005.76	9,962.84	42.92	233.148	
13,300.00	7,070.62	7,212.31	7,211.51	105.20	6.02	-81.85	-1,980.71	3,785.10	10,105.72	10,062.75	42.97	235.202	
13,400.00	7,070.38	7,212.11	7,211.31	106.72	6.02	-81.80	-1,980.70	3,785.10	10,205.69	10,162.67	43.02	237.248	
13,500.00	7,070.14	7,211.91	7,211.11	108.24	6.02	-81.76	-1,980.70	3,785.10	10,305.65	10,262.59	43.07	239.287	
13,600.00	7,069.89	7,211.72	7,210.92	109.77	6.02	-81.72	-1,980.70	3,785.10	10,405.62	10,362.50	43.12	241.319	
13,700.00	7,069.65	7,211.52	7,210.72	111.30	6.02	-81.68	-1,980.70	3,785.10	10,505.59	10,462.42	43.17	243.344	
13,800.00	7,069.41	7,211.33	7,210.53	112.83	6.02	-81.63	-1,980.70	3,785.10	10,605.56	10,562.33	43.22	245.362	
13,900.00	7,069.17	7,211.14	7,210.34	114.36	6.02	-81.59	-1,980.69	3,785.10	10,705.53	10,662.25	43.28	247.372	
14,000.00	7,068.93	7,210.95	7,210.15	115.89	6.02	-81.55	-1,980.69	3,785.10	10,805.50	10,762.17	43.33	249.375	
14,100.00	7,068.69	7,210.76	7,209.96	117.43	6.02	-81.51	-1,980.69	3,785.10	10,905.47	10,862.08	43.38	251.370	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	7,210.57	7,209.77	118.97	6.02	-81.47	-1,980.69	3,785.10	11,005.44	10,962.00	43.44	253.358	
14,300.00	7,068.21	7,210.39	7,209.58	120.50	6.02	-81.43	-1,980.69	3,785.10	11,105.41	11,061.92	43.49	255.339	
14,400.00	7,067.97	7,210.20	7,209.40	122.05	6.02	-81.39	-1,980.69	3,785.10	11,205.38	11,161.83	43.55	257.312	
14,500.00	7,067.72	7,210.02	7,209.22	123.59	6.02	-81.35	-1,980.68	3,785.10	11,305.35	11,261.75	43.60	259.278	
14,600.00	7,067.48	7,209.84	7,209.04	125.13	6.02	-81.31	-1,980.68	3,785.10	11,405.33	11,361.67	43.66	261.236	
14,700.00	7,067.24	7,209.66	7,208.86	126.68	6.02	-81.28	-1,980.68	3,785.10	11,505.30	11,461.58	43.72	263.186	
14,800.00	7,067.00	7,209.48	7,208.68	128.22	6.02	-81.24	-1,980.68	3,785.10	11,605.27	11,561.50	43.77	265.128	
14,900.00	7,066.76	7,209.31	7,208.50	129.77	6.02	-81.20	-1,980.68	3,785.10	11,705.25	11,661.42	43.83	267.063	
15,000.00	7,066.52	7,209.13	7,208.33	131.32	6.02	-81.16	-1,980.68	3,785.10	11,805.22	11,761.34	43.89	268.991	
15,100.00	7,066.28	7,208.96	7,208.15	132.87	6.02	-81.13	-1,980.67	3,785.10	11,905.20	11,861.25	43.95	270.910	
15,200.00	7,066.04	7,208.78	7,207.98	134.42	6.02	-81.09	-1,980.67	3,785.10	12,005.17	11,961.17	44.00	272.822	
15,300.00	7,065.80	7,208.61	7,207.81	135.97	6.02	-81.05	-1,980.67	3,785.10	12,105.15	12,061.09	44.06	274.726	
15,400.00	7,065.55	7,208.44	7,207.64	137.53	6.02	-81.02	-1,980.67	3,785.10	12,205.13	12,161.00	44.12	276.621	
15,500.00	7,065.31	7,208.27	7,207.47	139.08	6.02	-80.98	-1,980.67	3,785.10	12,305.10	12,260.92	44.18	278.510	
15,600.00	7,065.07	7,208.11	7,207.30	140.64	6.02	-80.94	-1,980.67	3,785.10	12,405.08	12,360.84	44.24	280.390	
15,700.00	7,064.83	7,207.94	7,207.14	142.20	6.02	-80.91	-1,980.66	3,785.10	12,505.06	12,460.75	44.30	282.262	
15,800.00	7,064.59	7,207.78	7,206.97	143.75	6.02	-80.87	-1,980.66	3,785.10	12,605.03	12,560.67	44.36	284.126	
15,900.00	7,064.35	7,207.61	7,206.81	145.31	6.02	-80.84	-1,980.66	3,785.10	12,705.01	12,660.59	44.43	285.983	
16,000.00	7,064.11	7,207.45	7,206.65	146.87	6.02	-80.80	-1,980.66	3,785.10	12,804.99	12,760.50	44.49	287.831	
16,100.00	7,063.87	7,207.29	7,206.49	148.43	6.02	-80.77	-1,980.66	3,785.10	12,904.97	12,860.42	44.55	289.672	
16,200.00	7,063.63	7,207.13	7,206.33	149.99	6.02	-80.73	-1,980.66	3,785.10	13,004.95	12,960.34	44.61	291.504	
16,300.00	7,063.38	7,206.97	7,206.17	151.56	6.02	-80.70	-1,980.66	3,785.10	13,104.93	13,060.25	44.68	293.328	
16,400.00	7,063.14	7,206.81	7,206.01	153.12	6.02	-80.67	-1,980.65	3,785.10	13,204.91	13,160.17	44.74	295.144	
16,500.00	7,062.90	7,206.66	7,205.86	154.68	6.02	-80.63	-1,980.65	3,785.10	13,304.89	13,260.08	44.80	296.953	
16,600.00	7,062.66	7,206.50	7,205.70	156.25	6.02	-80.60	-1,980.65	3,785.10	13,404.87	13,360.00	44.87	298.753	
16,700.00	7,062.42	7,206.35	7,205.55	157.81	6.02	-80.57	-1,980.65	3,785.10	13,504.85	13,459.91	44.93	300.545	
16,800.00	7,062.18	7,200.00	7,199.20	159.38	6.01	-79.22	-1,980.59	3,785.10	13,604.83	13,559.84	45.00	302.359	
16,874.30	7,062.00	7,200.00	7,199.20	160.54	6.01	-79.22	-1,980.59	3,785.10	13,679.11	13,634.07	45.04	303.679	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	3.28	-94.90	-797.94	-9,303.18	9,337.36				
100.00	100.00	81.00	81.00	3.29	3.58	-94.90	-797.94	-9,303.18	9,337.34	9,330.47	6.87	1,359.187	
200.00	200.00	181.00	181.00	3.34	4.60	-94.90	-797.94	-9,303.18	9,337.34	9,329.40	7.94	1,175.826	
212.33	212.33	193.26	193.26	3.34	4.76	-94.90	-797.84	-9,303.18	9,337.33	9,329.22	8.11	1,151.752	
300.00	300.00	279.30	279.30	3.42	5.98	-94.90	-797.93	-9,303.18	9,337.34	9,327.94	9.40	993.048	
400.00	400.00	381.01	381.00	3.54	7.66	-94.90	-797.94	-9,303.18	9,337.34	9,326.14	11.20	833.937	
500.00	500.00	481.01	481.00	3.69	9.52	-94.90	-797.94	-9,303.18	9,337.34	9,324.13	13.21	707.075	
600.00	599.98	580.99	580.98	3.86	11.43	83.19	-797.94	-9,303.18	9,337.13	9,321.85	15.29	610.865	
700.00	699.84	679.66	679.64	4.04	13.35	83.24	-797.17	-9,303.18	9,336.45	9,319.06	17.39	537.013	
800.00	799.45	777.27	777.25	4.25	15.26	83.31	-797.44	-9,303.18	9,335.45	9,315.94	19.51	478.517	
900.00	898.70	879.77	879.70	4.48	17.31	83.41	-797.94	-9,303.18	9,334.07	9,312.28	21.79	428.376	
1,000.00	997.47	978.53	978.47	4.74	19.50	83.54	-797.94	-9,303.18	9,332.27	9,308.02	24.25	384.914	
1,100.00	1,095.62	1,076.69	1,076.62	5.03	21.69	83.69	-797.94	-9,303.18	9,330.11	9,303.38	26.72	349.161	
1,200.00	1,193.06	1,171.36	1,171.28	5.35	23.81	83.88	-797.21	-9,303.18	9,327.55	9,298.40	29.15	319.943	
1,268.36	1,259.18	1,235.69	1,235.60	5.58	25.25	84.01	-797.54	-9,303.18	9,325.69	9,294.86	30.83	302.515	
1,300.00	1,289.69	1,265.40	1,265.31	5.70	25.91	84.06	-797.76	-9,303.18	9,324.81	9,293.20	31.61	295.041	
1,400.00	1,386.11	1,367.28	1,367.11	6.07	28.15	84.22	-797.94	-9,303.18	9,322.02	9,287.80	34.22	272.439	
1,500.00	1,482.54	1,463.71	1,463.54	6.45	30.27	84.38	-797.94	-9,303.18	9,319.29	9,282.57	36.72	253.807	
1,600.00	1,578.96	1,558.00	1,557.81	6.86	32.34	84.54	-796.64	-9,303.18	9,316.55	9,277.36	39.19	237.735	
1,700.00	1,675.39	1,651.23	1,651.03	7.27	34.38	84.69	-797.24	-9,303.18	9,314.01	9,272.36	41.65	223.625	
1,800.00	1,771.81	1,753.07	1,752.81	7.70	36.53	84.85	-797.94	-9,303.18	9,311.55	9,267.33	44.22	210.583	
1,900.00	1,868.24	1,849.49	1,849.24	8.13	38.41	85.01	-797.94	-9,303.18	9,309.12	9,262.58	46.54	200.029	
2,000.00	1,964.66	1,945.92	1,945.66	8.57	40.30	85.16	-797.94	-9,303.18	9,306.77	9,257.90	48.87	190.448	
2,100.00	2,061.09	2,042.34	2,042.09	9.02	42.19	85.32	-797.94	-9,303.18	9,304.49	9,253.29	51.20	181.715	
2,200.00	2,157.51	2,138.77	2,138.51	9.47	44.08	85.48	-797.94	-9,303.18	9,302.29	9,248.74	53.55	173.727	
2,300.00	2,253.94	2,235.17	2,234.90	9.93	45.97	85.64	-796.24	-9,303.18	9,300.08	9,244.19	55.89	166.393	
2,400.00	2,350.36	2,331.12	2,330.85	10.39	47.85	85.80	-796.31	-9,303.18	9,298.03	9,239.80	58.23	159.665	
2,500.00	2,446.79	2,427.14	2,426.87	10.86	49.73	85.96	-796.49	-9,303.18	9,296.06	9,235.48	60.58	153.446	
2,600.00	2,543.21	2,523.22	2,522.95	11.33	51.61	86.11	-796.79	-9,303.18	9,294.18	9,231.24	62.93	147.680	
2,700.00	2,639.64	2,619.37	2,619.09	11.80	53.50	86.26	-797.20	-9,303.18	9,292.36	9,227.07	65.29	142.322	
2,800.00	2,736.06	2,715.59	2,715.30	12.27	55.39	86.42	-797.73	-9,303.18	9,290.63	9,222.98	67.65	137.330	
2,900.00	2,832.49	2,813.83	2,813.49	12.75	57.37	86.58	-797.94	-9,303.18	9,288.96	9,218.85	70.11	132.496	
3,000.00	2,928.91	2,910.25	2,909.91	13.23	59.34	86.73	-797.94	-9,303.18	9,287.35	9,214.80	72.55	128.006	
3,100.00	3,025.34	3,006.68	3,006.34	13.71	61.30	86.89	-797.94	-9,303.18	9,285.83	9,210.82	75.00	123.807	
3,200.00	3,121.76	3,103.10	3,102.76	14.19	63.27	87.05	-797.94	-9,303.18	9,284.37	9,206.92	77.45	119.871	
3,300.00	3,218.18	3,199.53	3,199.18	14.67	65.24	87.21	-797.94	-9,303.18	9,283.00	9,203.09	79.90	116.176	
3,400.00	3,314.61	3,295.95	3,295.61	15.15	67.21	87.36	-797.94	-9,303.18	9,281.70	9,199.34	82.36	112.699	
3,500.00	3,411.03	3,392.38	3,392.03	15.64	69.18	87.52	-797.94	-9,303.18	9,280.47	9,195.66	84.81	109.423	
3,600.00	3,507.46	3,488.80	3,488.46	16.12	71.15	87.68	-797.94	-9,303.18	9,279.32	9,192.05	87.27	106.330	
3,700.00	3,603.88	3,585.19	3,584.83	16.61	73.12	87.85	-795.53	-9,303.18	9,278.23	9,188.51	89.72	103.407	
3,800.00	3,700.31	3,681.62	3,681.26	17.10	75.09	88.01	-795.64	-9,303.18	9,277.24	9,185.06	92.18	100.639	
3,900.00	3,796.73	3,778.10	3,777.74	17.59	77.06	88.17	-795.84	-9,303.18	9,276.32	9,181.68	94.64	98.014	
4,000.00	3,893.16	3,874.63	3,874.26	18.07	79.03	88.32	-796.12	-9,303.18	9,275.48	9,178.37	97.10	95.521	
4,100.00	3,989.58	3,971.20	3,970.83	18.56	81.01	88.48	-796.49	-9,303.18	9,274.71	9,175.14	99.57	93.150	
4,200.00	4,086.01	4,067.82	4,067.44	19.05	82.98	88.63	-796.93	-9,303.18	9,274.01	9,171.98	102.03	90.892	
4,300.00	4,182.43	4,164.48	4,164.10	19.55	84.96	88.79	-797.46	-9,303.18	9,273.39	9,168.89	104.50	88.741	
4,400.00	4,278.86	4,260.37	4,259.86	20.04	86.92	88.94	-797.94	-9,303.18	9,272.84	9,165.89	106.95	86.702	
4,500.00	4,375.28	4,356.80	4,356.28	20.53	88.89	89.10	-797.94	-9,303.18	9,272.37	9,162.96	109.41	84.746	
4,600.00	4,471.71	4,453.91	4,453.38	21.02	90.87	89.26	-797.40	-9,303.18	9,271.99	9,160.09	111.89	82.866	
4,700.00	4,568.13	4,549.68	4,549.13	21.51	92.85	89.42	-797.94	-9,303.18	9,271.66	9,157.29	114.36	81.073	
4,800.00	4,664.56	4,646.11	4,645.56	22.01	95.05	89.57	-797.94	-9,303.18	9,271.41	9,154.36	117.06	79.204	
4,900.00	4,760.98	4,742.53	4,741.98	22.50	97.25	89.73	-797.94	-9,303.18	9,271.25	9,151.49	119.75	77.420	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	4,839.60	4,839.04	22.99	99.47	89.89	-797.29	-9,303.18	9,271.18	9,148.71	122.46	75.706	
5,089.32	4,943.53	4,926.59	4,926.03	23.44	101.45	90.03	-797.59	-9,303.18	9,271.15	9,146.26	124.89	74.234	
5,100.00	4,953.83	4,937.00	4,936.44	23.49	101.69	90.05	-797.64	-9,303.18	9,271.15	9,145.97	125.18	74.062	
5,200.00	5,050.25	5,031.92	5,031.25	23.98	103.90	90.21	-797.94	-9,303.18	9,271.20	9,143.32	127.88	72.498	
5,300.00	5,146.68	5,130.34	5,129.65	24.48	106.23	90.37	-797.23	-9,303.18	9,271.37	9,140.66	130.71	70.932	
5,400.00	5,243.10	5,224.83	5,224.10	24.97	108.43	90.52	-797.94	-9,303.18	9,271.55	9,138.15	133.40	69.501	
5,500.00	5,339.53	5,321.26	5,320.53	25.47	110.56	90.68	-797.94	-9,303.18	9,271.84	9,135.81	136.03	68.161	
5,600.00	5,435.95	5,417.68	5,416.95	25.96	112.69	90.84	-797.94	-9,303.18	9,272.20	9,133.55	138.65	66.873	
5,700.00	5,532.38	5,514.11	5,513.38	26.46	114.82	90.99	-797.94	-9,303.18	9,272.64	9,131.36	141.28	65.633	
5,800.00	5,628.80	5,610.53	5,609.80	26.96	116.95	91.15	-797.94	-9,303.18	9,273.15	9,129.25	143.91	64.438	
5,900.00	5,725.23	5,706.96	5,706.23	27.45	119.08	91.31	-797.94	-9,303.18	9,273.75	9,127.21	146.53	63.287	
6,000.00	5,821.65	5,803.59	5,802.84	27.95	121.22	91.48	-795.41	-9,303.18	9,274.56	9,125.40	149.17	62.176	
6,100.00	5,918.08	5,900.90	5,900.14	28.45	123.37	91.64	-795.52	-9,303.18	9,275.31	9,123.49	151.81	61.097	
6,200.00	6,014.50	5,998.28	5,997.53	28.94	125.52	91.80	-795.77	-9,303.18	9,276.11	9,121.65	154.46	60.055	
6,300.00	6,110.93	6,095.75	6,094.99	29.44	127.68	91.96	-796.17	-9,303.18	9,276.99	9,119.88	157.11	59.047	
6,400.00	6,207.35	6,193.30	6,192.53	29.94	129.83	92.11	-796.70	-9,303.18	9,277.92	9,118.16	159.76	58.073	
6,500.00	6,303.78	6,290.93	6,290.15	30.43	131.99	92.27	-797.39	-9,303.18	9,278.92	9,116.50	162.42	57.130	
6,600.00	6,400.20	6,382.15	6,381.20	30.93	134.07	92.41	-797.94	-9,303.18	9,280.00	9,115.01	164.99	56.245	
6,677.76	6,475.18	6,457.13	6,456.18	31.32	135.92	92.54	-797.94	-9,303.18	9,280.92	9,113.69	167.23	55.498	
6,700.00	6,496.62	6,478.57	6,477.62	31.43	136.45	85.36	-797.94	-9,303.18	9,280.81	9,112.94	167.87	55.286	
6,750.00	6,544.66	6,526.61	6,525.66	31.68	137.64	70.54	-797.94	-9,303.18	9,277.73	9,108.43	169.30	54.799	
6,800.00	6,592.24	6,574.19	6,573.24	31.92	138.81	58.59	-797.94	-9,303.18	9,270.79	9,100.06	170.73	54.302	
6,850.00	6,639.07	6,621.45	6,620.48	32.16	139.98	49.61	-796.57	-9,303.18	9,260.13	9,087.99	172.14	53.795	
6,900.00	6,684.86	6,668.89	6,667.92	32.40	141.15	43.00	-796.65	-9,303.18	9,245.58	9,072.04	173.54	53.275	
6,950.00	6,729.32	6,715.01	6,714.04	32.62	142.29	38.14	-796.81	-9,303.18	9,227.36	9,052.45	174.91	52.754	
7,000.00	6,772.19	6,759.53	6,758.55	32.84	143.39	34.55	-797.06	-9,303.18	9,205.56	9,029.33	176.23	52.235	
7,050.00	6,813.20	6,802.16	6,801.18	33.05	144.44	31.90	-797.38	-9,303.18	9,180.33	9,002.83	177.50	51.721	
7,100.00	6,852.09	6,842.64	6,841.65	33.26	145.44	29.96	-797.75	-9,303.18	9,151.82	8,973.12	178.70	51.214	
7,150.00	6,888.63	6,870.76	6,869.63	33.45	146.15	28.57	-797.94	-9,303.18	9,120.22	8,940.63	179.59	50.783	
7,200.00	6,922.59	6,904.72	6,903.59	33.64	147.02	27.68	-797.94	-9,303.18	9,085.73	8,905.09	180.64	50.296	
7,250.00	6,953.76	6,935.89	6,934.76	33.82	147.82	27.23	-797.94	-9,303.18	9,048.55	8,866.94	181.61	49.824	
7,300.00	6,981.95	6,964.08	6,962.95	34.00	148.55	27.22	-797.94	-9,303.18	9,008.90	8,826.41	182.49	49.367	
7,350.00	7,006.99	6,989.12	6,987.99	34.17	149.19	27.70	-797.94	-9,303.18	8,967.02	8,783.75	183.27	48.928	
7,400.00	7,028.72	7,010.84	7,009.72	34.35	149.75	28.76	-797.94	-9,303.18	8,923.17	8,739.22	183.95	48.507	
7,450.00	7,047.00	7,029.13	7,028.00	34.52	150.22	30.66	-797.94	-9,303.18	8,877.62	8,693.08	184.54	48.108	
7,500.00	7,061.73	7,043.86	7,042.73	34.69	150.60	33.85	-797.94	-9,303.18	8,830.65	8,645.63	185.01	47.730	
7,550.00	7,072.82	7,054.94	7,053.82	34.86	150.88	39.41	-797.94	-9,303.18	8,782.53	8,597.15	185.38	47.375	
7,600.00	7,080.18	7,062.31	7,061.18	35.04	151.07	49.98	-797.94	-9,303.18	8,733.58	8,547.93	185.65	47.044	
7,650.00	7,083.79	7,065.92	7,064.79	35.22	151.16	72.69	-797.94	-9,303.18	8,684.08	8,498.28	185.80	46.739	
7,674.30	7,084.18	7,066.31	7,065.18	35.32	151.17	91.38	-797.94	-9,303.18	8,659.92	8,474.09	185.83	46.600	
7,700.00	7,084.12	7,066.25	7,065.12	35.42	151.17	91.37	-797.94	-9,303.18	8,634.35	8,448.49	185.86	46.457	
7,800.00	7,083.88	7,066.00	7,064.88	35.84	151.16	91.36	-797.94	-9,303.18	8,534.86	8,348.91	185.95	45.899	
7,900.00	7,083.64	7,065.76	7,064.64	36.34	151.16	91.34	-797.94	-9,303.18	8,435.38	8,249.33	186.05	45.340	
8,000.00	7,083.40	7,065.52	7,064.40	36.90	151.15	91.32	-797.94	-9,303.18	8,335.91	8,149.77	186.14	44.782	
8,100.00	7,083.16	7,065.28	7,064.16	37.52	151.15	91.31	-797.94	-9,303.18	8,236.46	8,050.21	186.25	44.223	
8,200.00	7,082.91	7,065.04	7,063.91	38.21	151.14	91.29	-797.94	-9,303.18	8,137.02	7,950.67	186.35	43.664	
8,300.00	7,082.67	7,064.80	7,063.67	38.95	151.13	91.28	-797.94	-9,303.18	8,037.59	7,851.13	186.46	43.105	
8,400.00	7,082.43	7,064.56	7,063.43	39.74	151.13	91.26	-797.94	-9,303.18	7,938.18	7,751.60	186.58	42.546	
8,500.00	7,082.19	7,064.32	7,063.19	40.59	151.12	91.24	-797.94	-9,303.18	7,838.79	7,652.09	186.70	41.987	
8,600.00	7,081.95	7,064.08	7,062.95	41.49	151.11	91.23	-797.94	-9,303.18	7,739.41	7,552.58	186.82	41.427	
8,700.00	7,081.71	7,063.83	7,062.71	42.43	151.11	91.21	-797.94	-9,303.18	7,640.04	7,453.09	186.95	40.867	
8,800.00	7,081.47	7,063.59	7,062.47	43.41	151.10	91.20	-797.94	-9,303.18	7,540.69	7,353.61	187.08	40.307	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,081.23	7,063.35	7,062.23	44.44	151.10	91.18	-797.94	-9,303.18	7,441.36	7,254.14	187.22	39.747	
9,000.00	7,080.99	7,063.11	7,061.99	45.49	151.09	91.16	-797.94	-9,303.18	7,342.05	7,154.69	187.36	39.187	
9,100.00	7,080.74	7,062.87	7,061.74	46.58	151.08	91.15	-797.94	-9,303.18	7,242.76	7,055.25	187.51	38.627	
9,200.00	7,080.50	7,062.63	7,061.50	47.70	151.08	91.13	-797.94	-9,303.18	7,143.48	6,955.82	187.66	38.066	
9,300.00	7,080.26	7,062.39	7,061.26	48.85	151.07	91.12	-797.94	-9,303.18	7,044.23	6,856.41	187.82	37.506	
9,400.00	7,080.02	7,062.15	7,061.02	50.03	151.06	91.10	-797.94	-9,303.18	6,945.00	6,757.02	187.98	36.945	
9,500.00	7,079.78	7,061.91	7,060.78	51.23	151.06	91.08	-797.94	-9,303.18	6,845.79	6,657.64	188.15	36.384	
9,600.00	7,079.54	7,061.66	7,060.54	52.45	151.05	91.07	-797.94	-9,303.18	6,746.60	6,558.27	188.33	35.824	
9,700.00	7,079.30	7,061.42	7,060.30	53.69	151.05	91.05	-797.94	-9,303.18	6,647.44	6,458.93	188.51	35.263	
9,800.00	7,079.06	7,061.18	7,060.06	54.95	151.04	91.04	-797.94	-9,303.18	6,548.30	6,359.60	188.70	34.702	
9,900.00	7,078.82	7,060.94	7,059.82	56.23	151.03	91.02	-797.94	-9,303.18	6,449.20	6,260.30	188.90	34.141	
10,000.00	7,078.57	7,060.70	7,059.57	57.53	151.03	91.00	-797.94	-9,303.18	6,350.11	6,161.01	189.10	33.580	
10,100.00	7,078.33	7,060.46	7,059.33	58.84	151.02	90.99	-797.94	-9,303.18	6,251.06	6,061.74	189.32	33.019	
10,200.00	7,078.09	7,060.22	7,059.09	60.17	151.02	90.97	-797.94	-9,303.18	6,152.04	5,962.50	189.54	32.458	
10,300.00	7,077.85	7,059.98	7,058.85	61.51	151.01	90.96	-797.94	-9,303.18	6,053.05	5,863.28	189.77	31.897	
10,400.00	7,077.61	7,059.74	7,058.61	62.86	151.00	90.94	-797.94	-9,303.18	5,954.09	5,764.09	190.01	31.336	
10,500.00	7,077.37	7,059.49	7,058.37	64.22	151.00	90.92	-797.94	-9,303.18	5,855.17	5,664.92	190.26	30.775	
10,600.00	7,077.13	7,059.25	7,058.13	65.60	150.99	90.91	-797.94	-9,303.18	5,756.29	5,565.77	190.52	30.214	
10,700.00	7,076.89	7,059.01	7,057.89	66.98	150.98	90.89	-797.94	-9,303.18	5,657.45	5,466.66	190.79	29.653	
10,800.00	7,076.65	7,058.77	7,057.65	68.38	150.98	90.88	-797.94	-9,303.18	5,558.64	5,367.58	191.07	29.092	
10,900.00	7,076.40	7,058.53	7,057.40	69.78	150.97	90.86	-797.94	-9,303.18	5,459.89	5,268.52	191.36	28.532	
11,000.00	7,076.16	7,058.29	7,057.16	71.20	150.97	90.84	-797.94	-9,303.18	5,361.17	5,169.51	191.67	27.971	
11,100.00	7,075.92	7,058.05	7,056.92	72.62	150.96	90.83	-797.94	-9,303.18	5,262.51	5,070.52	191.99	27.411	
11,200.00	7,075.68	7,057.81	7,056.68	74.04	150.95	90.81	-797.94	-9,303.18	5,163.90	4,971.58	192.32	26.850	
11,300.00	7,075.44	7,057.57	7,056.44	75.48	150.95	90.80	-797.94	-9,303.18	5,065.34	4,872.67	192.67	26.290	
11,400.00	7,075.20	7,057.32	7,056.20	76.92	150.94	90.78	-797.94	-9,303.18	4,966.84	4,773.80	193.03	25.730	
11,500.00	7,074.96	7,057.08	7,055.96	78.37	150.93	90.76	-797.94	-9,303.18	4,868.40	4,674.98	193.42	25.171	
11,600.00	7,074.72	7,056.84	7,055.72	79.82	150.93	90.75	-797.94	-9,303.18	4,770.02	4,576.21	193.82	24.611	
11,700.00	7,074.48	7,056.60	7,055.48	81.28	150.92	90.73	-797.94	-9,303.18	4,671.72	4,477.48	194.23	24.052	
11,800.00	7,074.23	7,056.36	7,055.23	82.75	150.92	90.72	-797.94	-9,303.18	4,573.48	4,378.81	194.67	23.493	
11,900.00	7,073.99	7,056.12	7,054.99	84.22	150.91	90.70	-797.94	-9,303.18	4,475.33	4,280.20	195.14	22.935	
12,000.00	7,073.75	7,055.88	7,054.75	85.69	150.90	90.69	-797.94	-9,303.18	4,377.26	4,181.64	195.62	22.376	
12,100.00	7,073.51	7,055.64	7,054.51	87.17	150.90	90.67	-797.94	-9,303.18	4,279.28	4,083.15	196.13	21.819	
12,200.00	7,073.27	7,055.40	7,054.27	88.65	150.89	90.65	-797.94	-9,303.18	4,181.39	3,984.73	196.67	21.261	
12,300.00	7,073.03	7,055.15	7,054.03	90.14	150.89	90.64	-797.94	-9,303.18	4,083.61	3,886.38	197.23	20.705	
12,400.00	7,072.79	7,054.91	7,053.79	91.63	150.88	90.62	-797.94	-9,303.18	3,985.94	3,788.11	197.83	20.149	
12,500.00	7,072.55	7,054.67	7,053.55	93.13	150.87	90.61	-797.94	-9,303.18	3,888.38	3,689.92	198.46	19.593	
12,600.00	7,072.31	7,054.43	7,053.31	94.62	150.87	90.59	-797.94	-9,303.18	3,790.95	3,591.83	199.12	19.038	
12,700.00	7,072.06	7,054.19	7,053.06	96.13	150.86	90.57	-797.94	-9,303.18	3,693.66	3,493.84	199.83	18.484	
12,800.00	7,071.82	7,053.95	7,052.82	97.63	150.85	90.56	-797.94	-9,303.18	3,596.52	3,395.95	200.57	17.931	
12,900.00	7,071.58	7,053.71	7,052.58	99.14	150.85	90.54	-797.94	-9,303.18	3,499.54	3,298.18	201.36	17.379	
13,000.00	7,071.34	7,053.47	7,052.34	100.65	150.84	90.53	-797.94	-9,303.18	3,402.74	3,200.53	202.20	16.828	
13,100.00	7,071.10	7,053.23	7,052.10	102.16	150.84	90.51	-797.94	-9,303.18	3,306.12	3,103.02	203.10	16.278	
13,200.00	7,070.86	7,052.98	7,051.86	103.68	150.83	90.49	-797.94	-9,303.18	3,209.71	3,005.66	204.05	15.730	
13,300.00	7,070.62	7,052.74	7,051.62	105.20	150.82	90.48	-797.94	-9,303.18	3,113.53	2,908.47	205.07	15.183	
13,400.00	7,070.38	7,052.50	7,051.38	106.72	150.82	90.46	-797.94	-9,303.18	3,017.60	2,811.45	206.15	14.638	
13,500.00	7,070.14	7,052.26	7,051.14	108.24	150.81	90.45	-797.94	-9,303.18	2,921.94	2,714.63	207.31	14.095	
13,600.00	7,069.89	7,052.02	7,050.89	109.77	150.80	90.43	-797.94	-9,303.18	2,826.58	2,618.02	208.55	13.553	
13,700.00	7,069.65	7,051.78	7,050.65	111.30	150.80	90.41	-797.94	-9,303.18	2,731.55	2,521.66	209.89	13.014	
13,800.00	7,069.41	7,051.54	7,050.41	112.83	150.79	90.40	-797.94	-9,303.18	2,636.89	2,425.57	211.32	12.478	
13,900.00	7,069.17	7,051.30	7,050.17	114.36	150.79	90.38	-797.94	-9,303.18	2,542.64	2,329.77	212.86	11.945	
14,000.00	7,068.93	7,051.06	7,049.93	115.89	150.78	90.37	-797.94	-9,303.18	2,448.84	2,234.31	214.53	11.415	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,068.69	7,050.81	7,049.69	117.43	150.77	90.35	-797.94	-9,303.18	2,355.56	2,139.23	216.33	10.889	
14,200.00	7,068.45	7,050.57	7,049.45	118.97	150.77	90.33	-797.94	-9,303.18	2,262.84	2,044.57	218.28	10.367	
14,300.00	7,068.21	7,050.33	7,049.21	120.50	150.76	90.32	-797.94	-9,303.18	2,170.78	1,950.39	220.39	9.850	
14,400.00	7,067.97	7,050.09	7,048.97	122.05	150.76	90.30	-797.94	-9,303.18	2,079.45	1,856.77	222.68	9.338	
14,500.00	7,067.72	7,049.85	7,048.72	123.59	150.75	90.29	-797.94	-9,303.18	1,988.95	1,763.77	225.18	8.833	
14,600.00	7,067.48	7,049.61	7,048.48	125.13	150.74	90.27	-797.94	-9,303.18	1,899.40	1,671.51	227.89	8.335	
14,700.00	7,067.24	7,049.37	7,048.24	126.68	150.74	90.25	-797.94	-9,303.18	1,810.95	1,580.10	230.86	7.844	
14,800.00	7,067.00	7,049.13	7,048.00	128.22	150.73	90.24	-797.94	-9,303.18	1,723.77	1,489.67	234.10	7.364	
14,900.00	7,066.76	7,048.89	7,047.76	129.77	150.72	90.22	-797.94	-9,303.18	1,638.05	1,400.41	237.63	6.893	
15,000.00	7,066.52	7,048.64	7,047.52	131.32	150.72	90.21	-797.94	-9,303.18	1,554.03	1,312.54	241.49	6.435	
15,100.00	7,066.28	7,048.40	7,047.28	132.87	150.71	90.19	-797.94	-9,303.18	1,472.02	1,226.31	245.70	5.991	
15,200.00	7,066.04	7,048.16	7,047.04	134.42	150.71	90.17	-797.94	-9,303.18	1,392.35	1,142.07	250.28	5.563	
15,300.00	7,065.80	7,047.92	7,046.80	135.97	150.70	90.16	-797.94	-9,303.18	1,315.47	1,060.23	255.24	5.154	
15,400.00	7,065.55	7,047.68	7,046.55	137.53	150.69	90.14	-797.94	-9,303.18	1,241.89	981.31	260.58	4.766	
15,500.00	7,065.31	7,047.44	7,046.31	139.08	150.69	90.13	-797.94	-9,303.18	1,172.22	905.97	266.25	4.403	
15,600.00	7,065.07	7,047.20	7,046.07	140.64	150.68	90.11	-797.94	-9,303.18	1,107.21	835.02	272.19	4.068	
15,700.00	7,064.83	7,046.96	7,045.83	142.20	150.67	90.09	-797.94	-9,303.18	1,047.73	769.46	278.26	3.765	
15,800.00	7,064.59	7,046.72	7,045.59	143.75	150.67	90.08	-797.94	-9,303.18	994.76	710.51	284.26	3.500	
15,900.00	7,064.35	7,046.47	7,045.35	145.31	150.66	90.06	-797.94	-9,303.18	949.41	659.53	289.88	3.275	
16,000.00	7,064.11	7,046.23	7,045.11	146.87	150.66	90.05	-797.94	-9,303.18	912.79	618.04	294.75	3.097	
16,100.00	7,063.87	7,045.99	7,044.87	148.43	150.65	90.03	-797.94	-9,303.18	886.01	587.55	298.46	2.969	
16,200.00	7,063.63	7,045.75	7,044.63	149.99	150.64	90.01	-797.94	-9,303.18	869.96	569.34	300.62	2.894	
16,290.91	7,063.41	7,045.53	7,044.41	151.41	150.64	90.00	-797.94	-9,303.18	865.19	564.19	301.00	2.874	CC, ES, SF
16,300.00	7,063.38	7,045.51	7,044.38	151.56	150.64	90.00	-797.94	-9,303.18	865.24	564.28	300.96	2.875	
16,400.00	7,063.14	7,045.27	7,044.14	153.12	150.63	89.98	-797.94	-9,303.18	872.04	572.64	299.41	2.913	
16,500.00	7,062.90	7,045.03	7,043.90	154.68	150.63	89.97	-797.94	-9,303.18	890.10	593.99	296.11	3.006	
16,600.00	7,062.66	7,044.79	7,043.66	156.25	150.62	89.95	-797.94	-9,303.18	918.74	627.35	291.40	3.153	
16,700.00	7,062.42	7,044.55	7,043.42	157.81	150.61	89.93	-797.94	-9,303.18	957.03	671.34	285.69	3.350	
16,800.00	7,062.18	7,044.30	7,043.18	159.38	150.61	89.92	-797.94	-9,303.18	1,003.85	724.45	279.40	3.593	
16,874.30	7,062.00	7,044.13	7,043.00	160.54	150.60	89.91	-797.94	-9,303.18	1,043.50	768.92	274.57	3.800	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	0.00	-98.28	-1,345.58	-9,243.50	9,340.94				
100.00	100.00	84.00	84.00	3.29	0.89	-98.28	-1,345.58	-9,243.50	9,340.93	9,336.75	4.18	2,232.778	
197.57	197.57	181.57	181.56	3.33	2.47	-98.28	-1,345.32	-9,243.50	9,340.89	9,335.09	5.80	1,609.700	
200.00	200.00	183.59	183.58	3.34	2.51	-98.28	-1,345.33	-9,243.50	9,340.89	9,335.05	5.84	1,598.308	
300.00	300.00	284.02	284.00	3.42	4.55	-98.28	-1,345.58	-9,243.50	9,340.93	9,332.96	7.97	1,172.036	
381.46	381.46	365.48	365.46	3.51	6.28	-98.28	-1,345.31	-9,243.50	9,340.89	9,331.10	9.80	953.634	
400.00	400.00	383.18	383.16	3.54	6.66	-98.28	-1,345.32	-9,243.50	9,340.89	9,330.70	10.20	916.168	
500.00	500.00	478.67	478.65	3.69	8.69	-98.28	-1,345.54	-9,243.50	9,340.92	9,328.55	12.37	754.851	
600.00	599.98	584.04	583.98	3.86	11.01	79.81	-1,345.58	-9,243.50	9,340.62	9,325.76	14.86	628.379	
700.00	699.84	677.05	676.98	4.04	13.07	79.86	-1,344.84	-9,243.50	9,339.59	9,322.48	17.11	545.913	
800.00	799.45	783.56	783.45	4.25	15.43	79.94	-1,345.58	-9,243.50	9,338.16	9,318.49	19.68	474.587	
900.00	898.70	882.81	882.70	4.48	17.63	80.06	-1,345.58	-9,243.50	9,336.03	9,313.92	22.11	422.227	
1,000.00	997.47	981.58	981.47	4.74	19.82	80.20	-1,345.58	-9,243.50	9,333.32	9,308.75	24.56	380.002	
1,100.00	1,095.62	1,077.41	1,077.30	5.03	21.94	80.38	-1,344.83	-9,243.50	9,329.94	9,302.96	26.97	345.897	
1,200.00	1,193.06	1,171.77	1,171.65	5.35	24.03	80.59	-1,345.12	-9,243.50	9,326.16	9,296.78	29.38	317.425	
1,268.36	1,259.18	1,235.89	1,235.76	5.58	25.46	80.74	-1,345.45	-9,243.50	9,323.31	9,292.27	31.03	300.414	
1,300.00	1,289.69	1,273.90	1,273.69	5.70	26.34	80.80	-1,345.58	-9,243.50	9,321.93	9,289.90	32.03	290.997	
1,400.00	1,386.11	1,370.33	1,370.11	6.07	28.75	80.95	-1,345.58	-9,243.50	9,317.58	9,282.77	34.81	267.646	
1,500.00	1,482.54	1,466.75	1,466.54	6.45	31.16	81.11	-1,345.58	-9,243.50	9,313.30	9,275.69	37.61	247.632	
1,600.00	1,578.96	1,556.70	1,556.46	6.86	33.41	81.26	-1,344.47	-9,243.50	9,308.95	9,268.70	40.26	231.228	
1,700.00	1,675.39	1,646.94	1,646.68	7.27	35.67	81.40	-1,345.23	-9,243.50	9,304.92	9,262.00	42.93	216.758	
1,800.00	1,771.81	1,756.17	1,755.81	7.70	38.41	81.58	-1,345.58	-9,243.50	9,300.90	9,254.81	46.09	201.797	
1,900.00	1,868.24	1,850.00	1,849.63	8.13	40.76	81.73	-1,344.66	-9,243.50	9,296.80	9,247.93	48.88	190.201	
2,000.00	1,964.66	1,938.27	1,937.89	8.57	42.98	81.87	-1,345.21	-9,243.50	9,292.96	9,241.43	51.53	180.324	
2,100.00	2,061.09	2,045.54	2,045.09	9.02	45.45	82.04	-1,345.58	-9,243.50	9,289.16	9,234.71	54.45	170.591	
2,200.00	2,157.51	2,141.97	2,141.51	9.47	47.59	82.20	-1,345.58	-9,243.50	9,285.40	9,228.35	57.04	162.779	
2,300.00	2,253.94	2,238.39	2,237.94	9.93	49.73	82.36	-1,345.58	-9,243.50	9,281.71	9,222.07	59.64	155.635	
2,400.00	2,350.36	2,330.60	2,330.12	10.39	51.77	82.52	-1,344.03	-9,243.50	9,277.93	9,215.79	62.14	149.298	
2,500.00	2,446.79	2,423.06	2,422.56	10.86	53.82	82.66	-1,344.66	-9,243.50	9,274.46	9,209.80	64.66	143.438	
2,600.00	2,543.21	2,527.77	2,527.21	11.33	56.08	82.83	-1,345.58	-9,243.50	9,271.08	9,203.69	67.39	137.577	
2,700.00	2,639.64	2,624.20	2,623.64	11.80	57.95	82.98	-1,345.58	-9,243.50	9,267.69	9,197.97	69.72	132.925	
2,800.00	2,736.06	2,720.62	2,720.06	12.27	59.81	83.14	-1,345.58	-9,243.50	9,264.37	9,192.32	72.06	128.571	
2,900.00	2,832.49	2,815.67	2,815.10	12.75	61.64	83.30	-1,344.84	-9,243.50	9,261.06	9,186.70	74.37	124.532	
3,000.00	2,928.91	2,910.16	2,909.59	13.23	63.47	83.45	-1,345.12	-9,243.50	9,257.92	9,181.25	76.67	120.751	
3,100.00	3,025.34	3,009.94	3,009.34	13.71	65.41	83.61	-1,345.58	-9,243.50	9,254.87	9,175.78	79.09	117.019	
3,200.00	3,121.76	3,106.36	3,105.76	14.19	67.37	83.77	-1,345.58	-9,243.50	9,251.85	9,170.32	81.53	113.478	
3,300.00	3,218.18	3,202.79	3,202.18	14.67	69.33	83.93	-1,345.58	-9,243.50	9,248.90	9,164.93	83.97	110.143	
3,400.00	3,314.61	3,298.43	3,297.82	15.15	71.27	84.09	-1,344.77	-9,243.50	9,245.97	9,159.57	86.40	107.014	
3,500.00	3,411.03	3,393.30	3,392.69	15.64	73.20	84.24	-1,345.00	-9,243.50	9,243.20	9,154.38	88.81	104.074	
3,600.00	3,507.46	3,488.31	3,487.70	16.12	75.13	84.39	-1,345.45	-9,243.50	9,240.51	9,149.28	91.23	101.287	
3,700.00	3,603.88	3,588.55	3,587.88	16.61	77.10	84.56	-1,345.58	-9,243.50	9,237.88	9,144.19	93.69	98.606	
3,800.00	3,700.31	3,683.56	3,682.88	17.10	78.95	84.72	-1,345.04	-9,243.50	9,235.27	9,139.25	96.02	96.180	
3,900.00	3,796.73	3,781.42	3,780.73	17.59	80.85	84.87	-1,345.58	-9,243.50	9,232.82	9,134.40	98.41	93.818	
4,000.00	3,893.16	3,877.85	3,877.16	18.07	82.64	85.03	-1,345.58	-9,243.50	9,230.40	9,129.70	100.69	91.669	
4,100.00	3,989.58	3,973.43	3,972.74	18.56	84.42	85.19	-1,345.33	-9,243.50	9,228.04	9,125.08	102.96	89.628	
4,200.00	4,086.01	4,070.71	4,070.01	19.05	86.34	85.35	-1,345.58	-9,243.50	9,225.79	9,120.42	105.37	87.553	
4,300.00	4,182.43	4,167.14	4,166.43	19.55	89.01	85.51	-1,345.58	-9,243.50	9,223.60	9,115.06	108.53	84.983	
4,400.00	4,278.86	4,263.56	4,262.86	20.04	91.68	85.66	-1,345.58	-9,243.50	9,221.48	9,109.79	111.70	82.559	
4,500.00	4,375.28	4,359.48	4,358.76	20.53	94.33	85.83	-1,344.80	-9,243.50	9,219.41	9,104.57	114.84	80.278	
4,600.00	4,471.71	4,455.04	4,454.33	21.02	96.98	85.98	-1,345.04	-9,243.50	9,217.46	9,099.48	117.98	78.126	
4,700.00	4,568.13	4,550.74	4,550.02	21.51	99.63	86.14	-1,345.53	-9,243.50	9,215.59	9,094.47	121.12	76.084	
4,800.00	4,664.56	4,649.65	4,648.56	22.01	103.10	86.30	-1,345.58	-9,243.50	9,213.78	9,088.69	125.09	73.658	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
4,900.00	4,760.98	4,746.14	4,744.98	22.50	106.45	86.46	-1,345.58	-9,243.50	9,212.04	9,083.10	128.94	71.446	
5,000.00	4,857.41	4,842.71	4,841.41	22.99	109.83	86.61	-1,345.58	-9,243.50	9,210.38	9,077.58	132.80	69.353	
5,100.00	4,953.83	4,939.24	4,937.83	23.49	113.18	86.77	-1,345.58	-9,243.50	9,208.80	9,072.15	136.65	67.389	
5,200.00	5,050.25	5,035.80	5,034.25	23.98	116.49	86.93	-1,345.58	-9,243.50	9,207.29	9,066.83	140.46	65.549	
5,300.00	5,146.68	5,128.97	5,127.39	24.48	119.79	87.09	-1,345.31	-9,243.50	9,205.85	9,061.59	144.26	63.815	
5,400.00	5,243.10	5,228.67	5,226.96	24.97	123.25	87.26	-1,344.58	-9,243.50	9,204.48	9,056.27	148.21	62.105	
5,500.00	5,339.53	5,325.38	5,323.53	25.47	126.58	87.41	-1,345.58	-9,243.50	9,203.22	9,051.19	152.03	60.534	
5,600.00	5,435.95	5,420.63	5,418.75	25.96	129.78	87.57	-1,345.07	-9,243.50	9,202.01	9,046.27	155.73	59.088	
5,700.00	5,532.38	5,518.37	5,516.38	26.46	133.15	87.73	-1,345.58	-9,243.50	9,200.89	9,041.29	159.60	57.650	
5,800.00	5,628.80	5,614.03	5,611.99	26.96	136.48	87.89	-1,345.36	-9,243.50	9,199.83	9,036.40	163.43	56.292	
5,900.00	5,725.23	5,711.36	5,709.17	27.45	139.98	88.05	-1,344.65	-9,243.50	9,198.86	9,031.44	167.42	54.944	
6,000.00	5,821.65	5,808.01	5,805.65	27.95	143.44	88.20	-1,345.58	-9,243.50	9,197.96	9,026.58	171.38	53.670	
6,100.00	5,918.08	5,904.72	5,902.33	28.45	146.83	88.37	-1,344.56	-9,243.50	9,197.14	9,021.87	175.27	52.474	
6,200.00	6,014.50	6,001.05	5,998.50	28.94	150.21	88.52	-1,345.58	-9,243.50	9,196.39	9,017.24	179.15	51.333	
6,300.00	6,110.93	6,098.58	6,095.99	29.44	153.65	88.69	-1,344.95	-9,243.50	9,195.73	9,012.64	183.08	50.227	
6,400.00	6,207.35	6,170.00	6,167.24	29.94	156.20	88.80	-1,345.58	-9,243.50	9,195.16	9,009.02	186.13	49.401	
6,427.87	6,234.23	6,170.00	6,167.24	30.08	156.20	88.80	-1,345.58	-9,243.50	9,195.11	9,008.84	186.27	49.364	
6,500.00	6,303.78	6,170.00	6,167.24	30.43	156.20	88.80	-1,345.58	-9,243.50	9,195.40	9,008.78	186.62	49.274	
6,600.00	6,400.20	6,170.00	6,167.24	30.93	156.20	88.80	-1,345.58	-9,243.50	9,196.73	9,009.64	187.08	49.159	
6,677.76	6,475.18	6,170.00	6,167.24	31.32	156.20	88.80	-1,345.58	-9,243.50	9,198.51	9,011.08	187.43	49.077	
6,700.00	6,496.62	6,170.00	6,167.24	31.43	156.20	81.59	-1,345.58	-9,243.50	9,198.75	9,011.23	187.53	49.053	
6,750.00	6,544.66	6,170.00	6,167.24	31.68	156.20	66.67	-1,345.58	-9,243.50	9,196.66	9,008.92	187.74	48.987	
6,800.00	6,592.24	6,170.00	6,167.24	31.92	156.20	54.59	-1,345.58	-9,243.50	9,190.92	9,002.98	187.94	48.903	
6,850.00	6,639.07	6,170.00	6,167.24	32.16	156.20	45.45	-1,345.58	-9,243.50	9,181.57	8,993.43	188.14	48.802	
6,900.00	6,684.86	6,170.00	6,167.24	32.40	156.20	38.65	-1,345.58	-9,243.50	9,168.65	8,980.33	188.32	48.686	
6,950.00	6,729.32	6,170.00	6,167.24	32.62	156.20	33.56	-1,345.58	-9,243.50	9,152.23	8,963.73	188.50	48.554	
7,000.00	6,772.19	6,170.00	6,167.24	32.84	156.20	29.70	-1,345.58	-9,243.50	9,132.38	8,943.73	188.66	48.407	
7,050.00	6,813.20	6,170.00	6,167.24	33.05	156.20	26.72	-1,345.58	-9,243.50	9,109.22	8,920.42	188.81	48.246	
7,100.00	6,852.09	6,170.00	6,167.24	33.26	156.20	24.39	-1,345.58	-9,243.50	9,082.86	8,893.91	188.94	48.072	
7,150.00	6,888.63	6,170.00	6,167.24	33.45	156.20	22.55	-1,345.58	-9,243.50	9,053.43	8,864.36	189.07	47.885	
7,200.00	6,922.59	6,170.00	6,167.24	33.64	156.20	21.08	-1,345.58	-9,243.50	9,021.08	8,831.90	189.18	47.686	
7,250.00	6,953.76	6,170.00	6,167.24	33.82	156.20	19.91	-1,345.58	-9,243.50	8,985.99	8,796.71	189.28	47.475	
7,300.00	6,981.95	6,170.00	6,167.24	34.00	156.20	18.99	-1,345.58	-9,243.50	8,948.34	8,758.97	189.36	47.255	
7,350.00	7,006.99	6,170.00	6,167.24	34.17	156.20	18.27	-1,345.58	-9,243.50	8,908.33	8,718.89	189.44	47.025	
7,400.00	7,028.72	6,170.00	6,167.24	34.35	156.20	17.74	-1,345.58	-9,243.50	8,866.18	8,676.68	189.50	46.787	
7,450.00	7,047.00	6,170.00	6,167.24	34.52	156.20	17.38	-1,345.58	-9,243.50	8,822.12	8,632.56	189.55	46.541	
7,500.00	7,061.73	6,170.00	6,167.24	34.69	156.20	17.21	-1,345.58	-9,243.50	8,776.39	8,586.79	189.60	46.290	
7,550.00	7,072.82	6,170.00	6,167.24	34.86	156.20	17.26	-1,345.58	-9,243.50	8,729.25	8,539.62	189.63	46.033	
7,600.00	7,080.18	6,170.00	6,167.24	35.04	156.20	17.63	-1,345.58	-9,243.50	8,680.98	8,491.32	189.66	45.772	
7,650.00	7,083.79	6,170.00	6,167.24	35.22	156.20	18.70	-1,345.58	-9,243.50	8,631.85	8,442.17	189.67	45.509	
7,674.30	7,084.18	6,170.00	6,167.24	35.32	156.20	19.85	-1,345.58	-9,243.50	8,607.75	8,418.07	189.68	45.381	
7,700.00	7,084.12	6,170.00	6,167.24	35.42	156.20	19.85	-1,345.58	-9,243.50	8,582.20	8,392.51	189.68	45.245	
7,800.00	7,083.88	6,170.00	6,167.24	35.84	156.20	19.85	-1,345.58	-9,243.50	8,482.80	8,293.10	189.70	44.716	
7,900.00	7,083.64	6,170.00	6,167.24	36.34	156.20	19.85	-1,345.58	-9,243.50	8,383.42	8,193.70	189.72	44.187	
8,000.00	7,083.40	6,170.00	6,167.24	36.90	156.20	19.85	-1,345.58	-9,243.50	8,284.05	8,094.31	189.75	43.659	
8,100.00	7,083.16	6,170.00	6,167.24	37.52	156.20	19.85	-1,345.58	-9,243.50	8,184.70	7,994.93	189.77	43.130	
8,200.00	7,082.91	6,170.00	6,167.24	38.21	156.20	19.85	-1,345.58	-9,243.50	8,085.36	7,895.57	189.79	42.601	
8,300.00	7,082.67	6,170.00	6,167.24	38.95	156.20	19.85	-1,345.58	-9,243.50	7,986.05	7,796.23	189.82	42.072	
8,400.00	7,082.43	6,170.00	6,167.24	39.74	156.20	19.85	-1,345.58	-9,243.50	7,886.74	7,696.90	189.84	41.544	
8,500.00	7,082.19	6,170.00	6,167.24	40.59	156.20	19.85	-1,345.58	-9,243.50	7,787.46	7,597.59	189.87	41.015	
8,600.00	7,081.95	6,170.00	6,167.24	41.49	156.20	19.85	-1,345.58	-9,243.50	7,688.19	7,498.30	189.90	40.486	
8,700.00	7,081.71	6,170.00	6,167.24	42.43	156.20	19.85	-1,345.58	-9,243.50	7,588.95	7,399.02	189.93	39.957	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,081.47	6,170.00	6,167.24	43.41	156.20	19.85	-1,345.58	-9,243.50	7,489.72	7,299.76	189.96	39.429	
8,900.00	7,081.23	6,170.00	6,167.24	44.44	156.20	19.85	-1,345.58	-9,243.50	7,390.51	7,200.53	189.99	38.900	
9,000.00	7,080.99	6,170.00	6,167.24	45.49	156.20	19.85	-1,345.58	-9,243.50	7,291.33	7,101.31	190.02	38.372	
9,100.00	7,080.74	6,170.00	6,167.24	46.58	156.20	19.85	-1,345.58	-9,243.50	7,192.17	7,002.12	190.05	37.843	
9,200.00	7,080.50	6,170.00	6,167.24	47.70	156.20	19.85	-1,345.58	-9,243.50	7,093.03	6,902.94	190.09	37.315	
9,300.00	7,080.26	6,170.00	6,167.24	48.85	156.20	19.85	-1,345.58	-9,243.50	6,993.92	6,803.80	190.12	36.786	
9,400.00	7,080.02	6,170.00	6,167.24	50.03	156.20	19.85	-1,345.58	-9,243.50	6,894.83	6,704.67	190.16	36.258	
9,500.00	7,079.78	6,170.00	6,167.24	51.23	156.20	19.85	-1,345.58	-9,243.50	6,795.77	6,605.57	190.20	35.730	
9,600.00	7,079.54	6,170.00	6,167.24	52.45	156.20	19.85	-1,345.58	-9,243.50	6,696.74	6,506.50	190.24	35.202	
9,700.00	7,079.30	6,170.00	6,167.24	53.69	156.20	19.85	-1,345.58	-9,243.50	6,597.73	6,407.46	190.28	34.674	
9,800.00	7,079.06	6,170.00	6,167.24	54.95	156.20	19.85	-1,345.58	-9,243.50	6,498.76	6,308.44	190.32	34.147	
9,900.00	7,078.82	6,170.00	6,167.24	56.23	156.20	19.85	-1,345.58	-9,243.50	6,399.82	6,209.46	190.36	33.619	
10,000.00	7,078.57	6,170.00	6,167.24	57.53	156.20	19.85	-1,345.58	-9,243.50	6,300.91	6,110.51	190.41	33.092	
10,100.00	7,078.33	6,170.00	6,167.24	58.84	156.20	19.85	-1,345.58	-9,243.50	6,202.04	6,011.59	190.45	32.565	
10,200.00	7,078.09	6,170.00	6,167.24	60.17	156.20	19.85	-1,345.58	-9,243.50	6,103.20	5,912.70	190.50	32.038	
10,300.00	7,077.85	6,170.00	6,167.24	61.51	156.20	19.85	-1,345.58	-9,243.50	6,004.40	5,813.86	190.54	31.512	
10,400.00	7,077.61	6,170.00	6,167.24	62.86	156.20	19.85	-1,345.58	-9,243.50	5,905.65	5,715.05	190.59	30.986	
10,500.00	7,077.37	6,170.00	6,167.24	64.22	156.20	19.85	-1,345.58	-9,243.50	5,806.93	5,616.29	190.64	30.460	
10,600.00	7,077.13	6,170.00	6,167.24	65.60	156.20	19.85	-1,345.58	-9,243.50	5,708.26	5,517.57	190.70	29.934	
10,700.00	7,076.89	6,170.00	6,167.24	66.98	156.20	19.85	-1,345.58	-9,243.50	5,609.64	5,418.89	190.75	29.408	
10,800.00	7,076.65	6,170.00	6,167.24	68.38	156.20	19.85	-1,345.58	-9,243.50	5,511.07	5,320.26	190.80	28.883	
10,900.00	7,076.40	6,170.00	6,167.24	69.78	156.20	19.85	-1,345.58	-9,243.50	5,412.55	5,221.69	190.86	28.359	
11,000.00	7,076.16	6,170.00	6,167.24	71.20	156.20	19.85	-1,345.58	-9,243.50	5,314.08	5,123.16	190.92	27.835	
11,100.00	7,075.92	6,170.00	6,167.24	72.62	156.20	19.85	-1,345.58	-9,243.50	5,215.67	5,024.70	190.98	27.311	
11,200.00	7,075.68	6,170.00	6,167.24	74.04	156.20	19.85	-1,345.58	-9,243.50	5,117.33	4,926.29	191.04	26.787	
11,300.00	7,075.44	6,170.00	6,167.24	75.48	156.20	19.85	-1,345.58	-9,243.50	5,019.05	4,827.95	191.10	26.264	
11,400.00	7,075.20	6,170.00	6,167.24	76.92	156.20	19.85	-1,345.58	-9,243.50	4,920.84	4,729.68	191.16	25.742	
11,500.00	7,074.96	6,170.00	6,167.24	78.37	156.20	19.85	-1,345.58	-9,243.50	4,822.70	4,631.48	191.22	25.220	
11,600.00	7,074.72	6,170.00	6,167.24	79.82	156.20	19.85	-1,345.58	-9,243.50	4,724.64	4,533.35	191.29	24.699	
11,700.00	7,074.48	6,170.00	6,167.24	81.28	156.20	19.85	-1,345.58	-9,243.50	4,626.67	4,435.31	191.35	24.178	
11,800.00	7,074.23	6,170.00	6,167.24	82.75	156.20	19.85	-1,345.58	-9,243.50	4,528.78	4,337.36	191.42	23.658	
11,900.00	7,073.99	6,170.00	6,167.24	84.22	156.20	19.85	-1,345.58	-9,243.50	4,430.98	4,239.49	191.49	23.139	
12,000.00	7,073.75	6,170.00	6,167.24	85.69	156.20	19.85	-1,345.58	-9,243.50	4,333.29	4,141.73	191.56	22.621	
12,100.00	7,073.51	6,170.00	6,167.24	87.17	156.20	19.85	-1,345.58	-9,243.50	4,235.71	4,044.07	191.63	22.103	
12,200.00	7,073.27	6,170.00	6,167.24	88.65	156.20	19.85	-1,345.58	-9,243.50	4,138.24	3,946.53	191.71	21.586	
12,300.00	7,073.03	6,170.00	6,167.24	90.14	156.20	19.85	-1,345.58	-9,243.50	4,040.89	3,849.11	191.78	21.071	
12,400.00	7,072.79	6,170.00	6,167.24	91.63	156.20	19.85	-1,345.58	-9,243.50	3,943.68	3,751.83	191.85	20.556	
12,500.00	7,072.55	6,170.00	6,167.24	93.13	156.20	19.85	-1,345.58	-9,243.50	3,846.61	3,654.68	191.93	20.042	
12,600.00	7,072.31	6,170.00	6,167.24	94.62	156.20	19.85	-1,345.58	-9,243.50	3,749.69	3,557.69	192.00	19.529	
12,700.00	7,072.06	6,170.00	6,167.24	96.13	156.20	19.85	-1,345.58	-9,243.50	3,652.95	3,460.87	192.08	19.018	
12,800.00	7,071.82	6,170.00	6,167.24	97.63	156.20	19.85	-1,345.58	-9,243.50	3,556.38	3,364.22	192.15	18.508	
12,900.00	7,071.58	6,170.00	6,167.24	99.14	156.20	19.85	-1,345.58	-9,243.50	3,460.00	3,267.78	192.22	18.000	
13,000.00	7,071.34	6,170.00	6,167.24	100.65	156.20	19.85	-1,345.58	-9,243.50	3,363.84	3,171.54	192.30	17.493	
13,100.00	7,071.10	6,170.00	6,167.24	102.16	156.20	19.85	-1,345.58	-9,243.50	3,267.90	3,075.54	192.36	16.988	
13,200.00	7,070.86	6,170.00	6,167.24	103.68	156.20	19.85	-1,345.58	-9,243.50	3,172.22	2,979.79	192.43	16.485	
13,300.00	7,070.62	6,170.00	6,167.24	105.20	156.20	19.85	-1,345.58	-9,243.50	3,076.82	2,884.32	192.49	15.984	
13,400.00	7,070.38	6,170.00	6,167.24	106.72	156.20	19.85	-1,345.58	-9,243.50	2,981.71	2,789.16	192.55	15.485	
13,500.00	7,070.14	6,170.00	6,167.24	108.24	156.20	19.85	-1,345.58	-9,243.50	2,886.93	2,694.33	192.60	14.989	
13,600.00	7,069.89	6,170.00	6,167.24	109.77	156.20	19.85	-1,345.58	-9,243.50	2,792.52	2,599.88	192.64	14.496	
13,700.00	7,069.65	6,170.00	6,167.24	111.30	156.20	19.85	-1,345.58	-9,243.50	2,698.51	2,505.85	192.67	14.006	
13,800.00	7,069.41	6,170.00	6,167.24	112.83	156.20	19.85	-1,345.58	-9,243.50	2,604.95	2,412.27	192.68	13.520	
13,900.00	7,069.17	6,170.00	6,167.24	114.36	156.20	19.85	-1,345.58	-9,243.50	2,511.89	2,319.21	192.68	13.037	

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 752H
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 752H	**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
14,000.00	7,068.93	6,170.00	6,167.24	115.89	156.20	19.85	-1,345.58	-9,243.50	2,419.37	2,226.73	192.65	12.559	
14,100.00	7,068.69	6,170.00	6,167.24	117.43	156.20	19.85	-1,345.58	-9,243.50	2,327.48	2,134.90	192.59	12.085	
14,200.00	7,068.45	6,170.00	6,167.24	118.97	156.20	19.85	-1,345.58	-9,243.50	2,236.28	2,043.80	192.49	11.618	
14,300.00	7,068.21	6,170.00	6,167.24	120.50	156.20	19.85	-1,345.58	-9,243.50	2,145.87	1,953.53	192.34	11.156	
14,400.00	7,067.97	6,170.00	6,167.24	122.05	156.20	19.85	-1,345.58	-9,243.50	2,056.35	1,864.21	192.14	10.702	
14,500.00	7,067.72	6,170.00	6,167.24	123.59	156.20	19.85	-1,345.58	-9,243.50	1,967.83	1,775.97	191.86	10.257	
14,600.00	7,067.48	6,170.00	6,167.24	125.13	156.20	19.85	-1,345.58	-9,243.50	1,880.47	1,688.99	191.48	9.821	
14,700.00	7,067.24	6,170.00	6,167.24	126.68	156.20	19.85	-1,345.58	-9,243.50	1,794.42	1,603.44	190.99	9.396	
14,800.00	7,067.00	6,170.00	6,167.24	128.22	156.20	19.85	-1,345.58	-9,243.50	1,709.90	1,519.56	190.34	8.984	
14,900.00	7,066.76	6,170.00	6,167.24	129.77	156.20	19.85	-1,345.58	-9,243.50	1,627.13	1,437.63	189.50	8.587	
15,000.00	7,066.52	6,170.00	6,167.24	131.32	156.20	19.85	-1,345.58	-9,243.50	1,546.40	1,357.99	188.41	8.208	
15,100.00	7,066.28	6,170.00	6,167.24	132.87	156.20	19.85	-1,345.58	-9,243.50	1,468.04	1,281.02	187.02	7.850	
15,200.00	7,066.04	6,170.00	6,167.24	134.42	156.20	19.85	-1,345.58	-9,243.50	1,392.46	1,207.21	185.25	7.517	
15,300.00	7,065.80	6,170.00	6,167.24	135.97	156.20	19.85	-1,345.58	-9,243.50	1,320.13	1,137.13	183.00	7.214	
15,400.00	7,065.55	6,170.00	6,167.24	137.53	156.20	19.85	-1,345.58	-9,243.50	1,251.61	1,071.44	180.18	6.947	
15,500.00	7,065.31	6,170.00	6,167.24	139.08	156.20	19.85	-1,345.58	-9,243.50	1,187.58	1,010.91	176.66	6.722	
15,600.00	7,065.07	6,170.00	6,167.24	140.64	156.20	19.85	-1,345.58	-9,243.50	1,128.78	956.42	172.35	6.549	
15,700.00	7,064.83	6,170.00	6,167.24	142.20	156.20	19.85	-1,345.58	-9,243.50	1,076.07	908.88	167.20	6.436	
15,800.00	7,064.59	6,170.00	6,167.24	143.75	156.20	19.85	-1,345.58	-9,243.50	1,030.40	869.16	161.24	6.390	SF
15,900.00	7,064.35	6,170.00	6,167.24	145.31	156.20	19.85	-1,345.58	-9,243.50	992.74	837.99	154.74	6.415	
16,000.00	7,064.11	6,170.00	6,167.24	146.87	156.20	19.85	-1,345.58	-9,243.50	964.02	815.71	148.30	6.500	
16,100.00	7,063.87	6,170.00	6,167.24	148.43	156.20	19.85	-1,345.58	-9,243.50	945.05	802.09	142.96	6.611	
16,200.00	7,063.63	6,170.00	6,167.24	149.99	156.20	19.85	-1,345.58	-9,243.50	936.44	796.38	140.06	6.686	
16,231.01	7,063.55	6,170.00	6,167.24	150.48	156.20	19.85	-1,345.58	-9,243.50	935.93	796.10	139.83	6.693	CC, ES
16,300.00	7,063.38	6,170.00	6,167.24	151.56	156.20	19.85	-1,345.58	-9,243.50	938.47	797.94	140.52	6.678	
16,400.00	7,063.14	6,170.00	6,167.24	153.12	156.20	19.85	-1,345.58	-9,243.50	951.06	806.97	144.09	6.601	
16,500.00	7,062.90	6,170.00	6,167.24	154.68	156.20	19.85	-1,345.58	-9,243.50	973.81	824.24	149.57	6.511	
16,600.00	7,062.66	6,170.00	6,167.24	156.25	156.20	19.85	-1,345.58	-9,243.50	1,006.04	850.32	155.71	6.461	
16,700.00	7,062.42	6,170.00	6,167.24	157.81	156.20	19.85	-1,345.58	-9,243.50	1,046.86	885.18	161.68	6.475	
16,800.00	7,062.18	6,170.00	6,167.24	159.38	156.20	19.85	-1,345.58	-9,243.50	1,095.31	928.29	167.02	6.558	
16,874.30	7,062.00	6,170.00	6,167.24	160.54	156.20	19.85	-1,345.58	-9,243.50	1,135.68	965.18	170.50	6.661	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-96.49	-822.58	-7,225.47	7,272.39				
100.00	100.00	40.00	40.00	3.29	0.37	-96.49	-822.58	-7,225.47	7,272.14	7,268.48	3.66	1,987.214	
200.00	200.00	140.00	140.00	3.34	1.29	-96.49	-822.58	-7,225.47	7,272.14	7,267.51	4.63	1,570.584	
300.00	300.00	240.00	240.00	3.42	2.22	-96.49	-822.58	-7,225.47	7,272.14	7,266.50	5.64	1,289.820	
400.00	400.00	340.00	340.00	3.54	3.60	-96.49	-822.58	-7,225.47	7,272.14	7,265.00	7.14	1,018.425	
500.00	500.00	440.00	440.00	3.69	5.51	-96.49	-822.58	-7,225.47	7,272.14	7,262.95	9.19	791.062	
600.00	599.98	539.98	539.98	3.86	7.41	81.60	-822.58	-7,225.47	7,271.88	7,260.62	11.26	645.633	
700.00	699.84	638.43	638.43	4.04	9.28	81.66	-822.12	-7,225.47	7,271.07	7,257.75	13.32	545.826	
800.00	799.45	736.67	736.66	4.25	11.15	81.75	-822.38	-7,225.47	7,269.84	7,254.44	15.40	472.062	
900.00	898.70	838.74	838.70	4.48	13.16	81.88	-822.58	-7,225.47	7,268.11	7,250.47	17.64	411.968	
1,000.00	997.47	937.50	937.47	4.74	15.17	82.04	-822.58	-7,225.47	7,265.90	7,245.99	19.91	364.948	
1,100.00	1,095.62	1,035.63	1,035.59	5.03	17.16	82.25	-821.77	-7,225.47	7,263.15	7,240.96	22.19	327.308	
1,200.00	1,193.06	1,131.20	1,131.16	5.35	19.10	82.47	-821.90	-7,225.47	7,260.10	7,235.65	24.45	296.957	
1,268.36	1,259.18	1,196.13	1,196.09	5.58	20.42	82.65	-822.12	-7,225.47	7,257.81	7,231.81	26.00	279.139	
1,300.00	1,289.69	1,226.12	1,226.07	5.70	21.03	82.71	-822.26	-7,225.47	7,256.71	7,229.99	26.72	271.563	
1,400.00	1,386.11	1,326.21	1,326.11	6.07	23.10	82.91	-822.58	-7,225.47	7,253.31	7,224.15	29.16	248.728	
1,500.00	1,482.54	1,422.63	1,422.54	6.45	25.14	83.11	-822.58	-7,225.47	7,249.97	7,218.38	31.59	229.530	
1,600.00	1,578.96	1,519.06	1,518.96	6.86	27.18	83.31	-822.58	-7,225.47	7,246.72	7,212.70	34.03	212.979	
1,700.00	1,675.39	1,613.74	1,613.64	7.27	29.18	83.52	-821.61	-7,225.47	7,243.49	7,207.05	36.44	198.775	
1,800.00	1,771.81	1,708.35	1,708.24	7.70	31.18	83.71	-822.04	-7,225.47	7,240.47	7,201.61	38.86	186.301	
1,900.00	1,868.24	1,808.41	1,808.24	8.13	33.29	83.92	-822.58	-7,225.47	7,237.56	7,196.14	41.41	174.760	
2,000.00	1,964.66	1,904.83	1,904.66	8.57	35.34	84.12	-822.58	-7,225.47	7,234.70	7,190.80	43.90	164.799	
2,100.00	2,061.09	2,001.26	2,001.09	9.02	37.38	84.32	-822.58	-7,225.47	7,231.93	7,185.54	46.39	155.887	
2,200.00	2,157.51	2,096.77	2,096.59	9.47	39.41	84.53	-821.51	-7,225.47	7,229.19	7,180.32	48.87	147.925	
2,300.00	2,253.94	2,191.83	2,191.64	9.93	41.42	84.72	-821.84	-7,225.47	7,226.64	7,175.29	51.34	140.749	
2,400.00	2,350.36	2,287.06	2,286.87	10.39	43.44	84.92	-822.49	-7,225.47	7,224.20	7,170.38	53.83	134.216	
2,500.00	2,446.79	2,387.03	2,386.79	10.86	45.57	85.13	-822.58	-7,225.47	7,221.82	7,165.41	56.41	128.016	
2,600.00	2,543.21	2,483.46	2,483.21	11.33	47.61	85.33	-822.58	-7,225.47	7,219.54	7,160.61	58.93	122.511	
2,700.00	2,639.64	2,579.52	2,579.27	11.80	49.65	85.54	-821.50	-7,225.47	7,217.30	7,155.86	61.44	117.467	
2,800.00	2,736.06	2,674.95	2,674.69	12.27	51.68	85.74	-821.76	-7,225.47	7,215.22	7,151.28	63.94	112.841	
2,900.00	2,832.49	2,770.55	2,770.28	12.75	53.71	85.93	-822.34	-7,225.47	7,213.25	7,146.80	66.45	108.555	
3,000.00	2,928.91	2,869.23	2,868.91	13.23	55.86	86.14	-822.58	-7,225.47	7,211.36	7,142.28	69.08	104.393	
3,100.00	3,025.34	2,965.66	2,965.34	13.71	57.99	86.34	-822.58	-7,225.47	7,209.56	7,137.87	71.69	100.570	
3,200.00	3,121.76	3,061.97	3,061.63	14.19	60.12	86.55	-821.51	-7,225.47	7,207.83	7,133.53	74.29	97.018	
3,300.00	3,218.18	3,157.80	3,157.46	14.67	62.23	86.75	-821.73	-7,225.47	7,206.23	7,129.34	76.89	93.720	
3,400.00	3,314.61	3,253.82	3,253.48	15.15	64.35	86.95	-822.27	-7,225.47	7,204.73	7,125.24	79.49	90.632	
3,500.00	3,411.03	3,351.45	3,351.03	15.64	66.51	87.15	-822.58	-7,225.47	7,203.33	7,121.19	82.14	87.700	
3,600.00	3,507.46	3,447.88	3,447.46	16.12	68.64	87.36	-822.58	-7,225.47	7,202.01	7,117.26	84.75	84.976	
3,700.00	3,603.88	3,544.30	3,543.87	16.61	70.77	87.57	-821.21	-7,225.47	7,200.78	7,113.40	87.37	82.415	
3,800.00	3,700.31	3,640.54	3,640.10	17.10	72.90	87.77	-821.41	-7,225.47	7,199.66	7,109.67	89.99	80.007	
3,900.00	3,796.73	3,737.01	3,736.56	17.59	75.03	87.97	-822.02	-7,225.47	7,198.64	7,106.03	92.61	77.732	
4,000.00	3,893.16	3,833.67	3,833.16	18.07	77.07	88.17	-822.58	-7,225.47	7,197.72	7,102.58	95.14	75.655	
4,100.00	3,989.58	3,930.10	3,929.58	18.56	78.96	88.37	-822.58	-7,225.47	7,196.89	7,099.37	97.52	73.799	
4,200.00	4,086.01	4,026.52	4,026.01	19.05	80.85	88.58	-822.58	-7,225.47	7,196.16	7,096.26	99.90	72.033	
4,300.00	4,182.43	4,123.19	4,122.66	19.55	82.75	88.79	-821.62	-7,225.47	7,195.53	7,093.25	102.29	70.345	
4,400.00	4,278.86	4,220.09	4,219.55	20.04	84.65	88.99	-822.06	-7,225.47	7,194.99	7,090.31	104.68	68.733	
4,500.00	4,375.28	4,315.84	4,315.28	20.53	86.57	89.19	-822.58	-7,225.47	7,194.55	7,087.45	107.09	67.180	
4,600.00	4,471.71	4,412.27	4,411.71	21.02	88.62	89.39	-822.58	-7,225.47	7,194.21	7,084.57	109.64	65.618	
4,700.00	4,568.13	4,508.69	4,508.13	21.51	90.67	89.59	-822.58	-7,225.47	7,193.96	7,081.78	112.18	64.128	
4,800.00	4,664.56	4,605.27	4,604.71	22.01	92.72	89.80	-822.01	-7,225.47	7,193.83	7,079.10	114.73	62.703	
4,900.00	4,760.98	4,702.10	4,701.53	22.50	94.78	90.00	-822.15	-7,225.47	7,193.78	7,076.50	117.28	61.337	
4,906.21	4,766.97	4,708.11	4,707.55	22.53	94.91	90.02	-822.17	-7,225.47	7,193.78	7,076.34	117.44	61.254	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	4,857.41	4,799.01	4,798.44	22.99	96.84	90.21	-822.45	-7,225.47	7,193.82	7,073.98	119.84	60.030	
5,100.00	4,953.83	4,894.48	4,893.83	23.49	99.15	90.41	-822.58	-7,225.47	7,193.96	7,071.33	122.64	58.661	
5,200.00	5,050.25	4,990.90	4,990.25	23.98	101.61	90.61	-822.58	-7,225.47	7,194.21	7,068.61	125.59	57.282	
5,300.00	5,146.68	5,087.69	5,087.02	24.48	104.08	90.83	-821.03	-7,225.47	7,194.62	7,066.07	128.56	55.964	
5,400.00	5,243.10	5,186.20	5,185.52	24.97	106.60	91.03	-821.39	-7,225.47	7,195.05	7,063.48	131.57	54.687	
5,500.00	5,339.53	5,285.02	5,284.32	25.47	109.12	91.23	-822.30	-7,225.47	7,195.54	7,060.96	134.59	53.464	
5,600.00	5,435.95	5,376.79	5,375.95	25.96	111.72	91.42	-822.58	-7,225.47	7,196.16	7,058.47	137.69	52.265	
5,700.00	5,532.38	5,473.22	5,472.38	26.46	114.55	91.63	-822.58	-7,225.47	7,196.89	7,055.88	141.01	51.037	
5,800.00	5,628.80	5,570.15	5,569.28	26.96	117.40	91.85	-820.72	-7,225.47	7,197.85	7,053.49	144.35	49.863	
5,900.00	5,725.23	5,669.80	5,668.91	27.45	120.32	92.05	-821.13	-7,225.47	7,198.75	7,050.98	147.77	48.715	
6,000.00	5,821.65	5,769.81	5,768.90	27.95	123.26	92.26	-822.16	-7,225.47	7,199.71	7,048.50	151.20	47.616	
6,100.00	5,918.08	5,859.26	5,858.08	28.45	126.08	92.44	-822.58	-7,225.47	7,200.79	7,046.27	154.52	46.601	
6,200.00	6,014.50	5,955.68	5,954.50	28.94	129.23	92.64	-822.58	-7,225.47	7,202.01	7,043.85	158.16	45.536	
6,300.00	6,110.93	6,052.11	6,050.93	29.44	132.37	92.85	-822.58	-7,225.47	7,203.33	7,041.53	161.80	44.520	
6,400.00	6,207.35	6,148.53	6,147.35	29.94	135.52	93.05	-822.58	-7,225.47	7,204.74	7,039.30	165.44	43.549	
6,500.00	6,303.78	6,210.00	6,208.43	30.43	137.52	93.18	-822.58	-7,225.47	7,206.34	7,038.40	167.94	42.911	
6,600.00	6,400.20	6,210.00	6,208.43	30.93	137.52	93.18	-822.58	-7,225.47	7,209.07	7,040.66	168.40	42.808	
6,677.76	6,475.18	6,210.00	6,208.43	31.32	137.52	93.18	-822.58	-7,225.47	7,212.14	7,043.40	168.75	42.740	
6,700.00	6,496.62	6,210.00	6,208.43	31.43	137.52	85.96	-822.58	-7,225.47	7,212.79	7,043.95	168.84	42.719	
6,750.00	6,544.66	6,210.00	6,208.43	31.68	137.52	71.05	-822.58	-7,225.47	7,211.67	7,042.62	169.05	42.660	
6,800.00	6,592.24	6,210.00	6,208.43	31.92	137.52	59.00	-822.58	-7,225.47	7,206.99	7,037.74	169.25	42.582	
6,850.00	6,639.07	6,210.00	6,208.43	32.16	137.52	49.92	-822.58	-7,225.47	7,198.77	7,029.33	169.44	42.486	
6,900.00	6,684.86	6,210.00	6,208.43	32.40	137.52	43.20	-822.58	-7,225.47	7,187.06	7,017.44	169.62	42.373	
6,950.00	6,729.32	6,210.00	6,208.43	32.62	137.52	38.23	-822.58	-7,225.47	7,171.89	7,002.11	169.78	42.242	
7,000.00	6,772.19	6,210.00	6,208.43	32.84	137.52	34.51	-822.58	-7,225.47	7,153.36	6,983.42	169.94	42.094	
7,050.00	6,813.20	6,210.00	6,208.43	33.05	137.52	31.72	-822.58	-7,225.47	7,131.55	6,961.47	170.08	41.930	
7,100.00	6,852.09	6,210.00	6,208.43	33.26	137.52	29.62	-822.58	-7,225.47	7,106.55	6,936.34	170.21	41.751	
7,150.00	6,888.63	6,210.00	6,208.43	33.45	137.52	28.06	-822.58	-7,225.47	7,078.50	6,908.17	170.34	41.556	
7,200.00	6,922.59	6,210.00	6,208.43	33.64	137.52	26.94	-822.58	-7,225.47	7,047.53	6,877.09	170.45	41.348	
7,250.00	6,953.76	6,210.00	6,208.43	33.82	137.52	26.20	-822.58	-7,225.47	7,013.80	6,843.25	170.55	41.126	
7,300.00	6,981.95	6,210.00	6,208.43	34.00	137.52	25.82	-822.58	-7,225.47	6,977.46	6,806.83	170.64	40.891	
7,350.00	7,006.99	6,210.00	6,208.43	34.17	137.52	25.79	-822.58	-7,225.47	6,938.72	6,768.00	170.72	40.645	
7,400.00	7,028.72	6,210.00	6,208.43	34.35	137.52	26.14	-822.58	-7,225.47	6,897.77	6,726.98	170.79	40.387	
7,450.00	7,047.00	6,210.00	6,208.43	34.52	137.52	26.94	-822.58	-7,225.47	6,854.82	6,683.96	170.86	40.120	
7,500.00	7,061.73	6,210.00	6,208.43	34.69	137.52	28.36	-822.58	-7,225.47	6,810.10	6,639.18	170.92	39.845	
7,550.00	7,072.82	6,210.00	6,208.43	34.86	137.52	30.68	-822.58	-7,225.47	6,763.86	6,592.89	170.97	39.562	
7,600.00	7,080.18	6,210.00	6,208.43	35.04	137.52	34.54	-822.58	-7,225.47	6,716.35	6,545.33	171.02	39.272	
7,650.00	7,083.79	6,210.00	6,208.43	35.22	137.52	41.36	-822.58	-7,225.47	6,667.85	6,496.79	171.07	38.978	
7,674.30	7,084.18	6,210.00	6,208.43	35.32	137.52	46.72	-822.58	-7,225.47	6,644.01	6,472.92	171.09	38.833	
7,700.00	7,084.12	6,210.00	6,208.43	35.42	137.52	46.72	-822.58	-7,225.47	6,618.70	6,447.59	171.11	38.680	
7,800.00	7,083.88	6,210.00	6,208.43	35.84	137.52	46.72	-822.58	-7,225.47	6,520.29	6,349.09	171.20	38.086	
7,900.00	7,083.64	6,210.00	6,208.43	36.34	137.52	46.72	-822.58	-7,225.47	6,421.93	6,250.64	171.29	37.491	
8,000.00	7,083.40	6,210.00	6,208.43	36.90	137.52	46.72	-822.58	-7,225.47	6,323.62	6,152.24	171.39	36.896	
8,100.00	7,083.16	6,210.00	6,208.43	37.52	137.52	46.72	-822.58	-7,225.47	6,225.37	6,053.88	171.49	36.302	
8,200.00	7,082.91	6,210.00	6,208.43	38.21	137.52	46.72	-822.58	-7,225.47	6,127.17	5,955.58	171.59	35.707	
8,300.00	7,082.67	6,210.00	6,208.43	38.95	137.52	46.72	-822.58	-7,225.47	6,029.03	5,857.33	171.70	35.113	
8,400.00	7,082.43	6,210.00	6,208.43	39.74	137.52	46.72	-822.58	-7,225.47	5,930.95	5,759.14	171.82	34.519	
8,500.00	7,082.19	6,210.00	6,208.43	40.59	137.52	46.72	-822.58	-7,225.47	5,832.94	5,661.01	171.93	33.925	
8,600.00	7,081.95	6,210.00	6,208.43	41.49	137.52	46.72	-822.58	-7,225.47	5,735.00	5,562.94	172.06	33.332	
8,700.00	7,081.71	6,210.00	6,208.43	42.43	137.52	46.72	-822.58	-7,225.47	5,637.13	5,464.94	172.19	32.738	
8,800.00	7,081.47	6,210.00	6,208.43	43.41	137.52	46.72	-822.58	-7,225.47	5,539.33	5,367.01	172.32	32.145	
8,900.00	7,081.23	6,210.00	6,208.43	44.44	137.52	46.72	-822.58	-7,225.47	5,441.61	5,269.15	172.46	31.553	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
9,000.00	7,080.99	6,210.00	6,208.43	45.49	137.52	46.72	-822.58	-7,225.47	5,343.98	5,171.38	172.61	30.960	
9,100.00	7,080.74	6,210.00	6,208.43	46.58	137.52	46.72	-822.58	-7,225.47	5,246.44	5,073.68	172.76	30.369	
9,200.00	7,080.50	6,210.00	6,208.43	47.70	137.52	46.72	-822.58	-7,225.47	5,148.99	4,976.08	172.92	29.777	
9,300.00	7,080.26	6,210.00	6,208.43	48.85	137.52	46.72	-822.58	-7,225.47	5,051.65	4,878.56	173.08	29.186	
9,400.00	7,080.02	6,210.00	6,208.43	50.03	137.52	46.72	-822.58	-7,225.47	4,954.40	4,781.15	173.26	28.596	
9,500.00	7,079.78	6,210.00	6,208.43	51.23	137.52	46.72	-822.58	-7,225.47	4,857.28	4,683.84	173.44	28.006	
9,600.00	7,079.54	6,210.00	6,208.43	52.45	137.52	46.72	-822.58	-7,225.47	4,760.26	4,586.64	173.63	27.417	
9,700.00	7,079.30	6,210.00	6,208.43	53.69	137.52	46.72	-822.58	-7,225.47	4,663.38	4,489.55	173.83	26.828	
9,800.00	7,079.06	6,210.00	6,208.43	54.95	137.52	46.72	-822.58	-7,225.47	4,566.63	4,392.60	174.03	26.240	
9,900.00	7,078.82	6,210.00	6,208.43	56.23	137.52	46.72	-822.58	-7,225.47	4,470.02	4,295.77	174.25	25.653	
10,000.00	7,078.57	6,210.00	6,208.43	57.53	137.52	46.72	-822.58	-7,225.47	4,373.57	4,199.09	174.48	25.067	
10,100.00	7,078.33	6,210.00	6,208.43	58.84	137.52	46.72	-822.58	-7,225.47	4,277.27	4,102.56	174.71	24.482	
10,200.00	7,078.09	6,210.00	6,208.43	60.17	137.52	46.72	-822.58	-7,225.47	4,181.16	4,006.19	174.96	23.898	
10,300.00	7,077.85	6,210.00	6,208.43	61.51	137.52	46.72	-822.58	-7,225.47	4,085.22	3,910.00	175.22	23.314	
10,400.00	7,077.61	6,210.00	6,208.43	62.86	137.52	46.72	-822.58	-7,225.47	3,989.49	3,814.00	175.50	22.733	
10,500.00	7,077.37	6,210.00	6,208.43	64.22	137.52	46.72	-822.58	-7,225.47	3,893.98	3,718.19	175.78	22.152	
10,600.00	7,077.13	6,210.00	6,208.43	65.60	137.52	46.72	-822.58	-7,225.47	3,798.69	3,622.61	176.08	21.573	
10,700.00	7,076.89	6,210.00	6,208.43	66.98	137.52	46.72	-822.58	-7,225.47	3,703.65	3,527.25	176.40	20.996	
10,800.00	7,076.65	6,210.00	6,208.43	68.38	137.52	46.72	-822.58	-7,225.47	3,608.88	3,432.15	176.73	20.420	
10,900.00	7,076.40	6,210.00	6,208.43	69.78	137.52	46.72	-822.58	-7,225.47	3,514.40	3,337.32	177.08	19.846	
11,000.00	7,076.16	6,210.00	6,208.43	71.20	137.52	46.72	-822.58	-7,225.47	3,420.24	3,242.79	177.45	19.275	
11,100.00	7,075.92	6,210.00	6,208.43	72.62	137.52	46.72	-822.58	-7,225.47	3,326.41	3,148.58	177.83	18.705	
11,200.00	7,075.68	6,210.00	6,208.43	74.04	137.52	46.72	-822.58	-7,225.47	3,232.95	3,054.72	178.24	18.138	
11,300.00	7,075.44	6,210.00	6,208.43	75.48	137.52	46.72	-822.58	-7,225.47	3,139.90	2,961.24	178.66	17.574	
11,400.00	7,075.20	6,210.00	6,208.43	76.92	137.52	46.72	-822.58	-7,225.47	3,047.29	2,868.18	179.11	17.013	
11,500.00	7,074.96	6,210.00	6,208.43	78.37	137.52	46.72	-822.58	-7,225.47	2,955.16	2,775.58	179.59	16.455	
11,600.00	7,074.72	6,210.00	6,208.43	79.82	137.52	46.72	-822.58	-7,225.47	2,863.56	2,683.48	180.08	15.901	
11,700.00	7,074.48	6,210.00	6,208.43	81.28	137.52	46.72	-822.58	-7,225.47	2,772.54	2,591.93	180.60	15.352	
11,800.00	7,074.23	6,210.00	6,208.43	82.75	137.52	46.72	-822.58	-7,225.47	2,682.15	2,501.00	181.15	14.806	
11,900.00	7,073.99	6,210.00	6,208.43	84.22	137.52	46.72	-822.58	-7,225.47	2,592.48	2,410.75	181.73	14.266	
12,000.00	7,073.75	6,210.00	6,208.43	85.69	137.52	46.72	-822.58	-7,225.47	2,503.59	2,321.26	182.33	13.731	
12,100.00	7,073.51	6,210.00	6,208.43	87.17	137.52	46.72	-822.58	-7,225.47	2,415.56	2,232.60	182.96	13.203	
12,200.00	7,073.27	6,210.00	6,208.43	88.65	137.52	46.72	-822.58	-7,225.47	2,328.50	2,144.89	183.62	12.681	
12,300.00	7,073.03	6,210.00	6,208.43	90.14	137.52	46.72	-822.58	-7,225.47	2,242.52	2,058.22	184.30	12.168	
12,400.00	7,072.79	6,210.00	6,208.43	91.63	137.52	46.72	-822.58	-7,225.47	2,157.76	1,972.75	185.01	11.663	
12,500.00	7,072.55	6,210.00	6,208.43	93.13	137.52	46.72	-822.58	-7,225.47	2,074.34	1,888.60	185.74	11.168	
12,600.00	7,072.31	6,210.00	6,208.43	94.62	137.52	46.72	-822.58	-7,225.47	1,992.46	1,805.97	186.49	10.684	
12,700.00	7,072.06	6,210.00	6,208.43	96.13	137.52	46.72	-822.58	-7,225.47	1,912.30	1,725.05	187.25	10.212	
12,800.00	7,071.82	6,210.00	6,208.43	97.63	137.52	46.72	-822.58	-7,225.47	1,834.09	1,646.07	188.02	9.755	
12,900.00	7,071.58	6,210.00	6,208.43	99.14	137.52	46.72	-822.58	-7,225.47	1,758.09	1,569.31	188.78	9.313	
13,000.00	7,071.34	6,210.00	6,208.43	100.65	137.52	46.72	-822.58	-7,225.47	1,684.60	1,495.08	189.52	8.889	
13,100.00	7,071.10	6,210.00	6,208.43	102.16	137.52	46.72	-822.58	-7,225.47	1,613.96	1,423.74	190.22	8.485	
13,200.00	7,070.86	6,210.00	6,208.43	103.68	137.52	46.72	-822.58	-7,225.47	1,546.56	1,355.69	190.87	8.103	
13,300.00	7,070.62	6,210.00	6,208.43	105.20	137.52	46.72	-822.58	-7,225.47	1,482.85	1,291.40	191.45	7.745	
13,400.00	7,070.38	6,210.00	6,208.43	106.72	137.52	46.72	-822.58	-7,225.47	1,423.32	1,231.39	191.93	7.416	
13,500.00	7,070.14	6,210.00	6,208.43	108.24	137.52	46.72	-822.58	-7,225.47	1,368.51	1,176.22	192.29	7.117	
13,600.00	7,069.89	6,210.00	6,208.43	109.77	137.52	46.72	-822.58	-7,225.47	1,319.02	1,126.50	192.52	6.851	
13,700.00	7,069.65	6,210.00	6,208.43	111.30	137.52	46.72	-822.58	-7,225.47	1,275.47	1,082.85	192.62	6.622	
13,800.00	7,069.41	6,210.00	6,208.43	112.83	137.52	46.72	-822.58	-7,225.47	1,238.47	1,045.88	192.59	6.431	
13,900.00	7,069.17	6,210.00	6,208.43	114.36	137.52	46.72	-822.58	-7,225.47	1,208.64	1,016.17	192.47	6.280	
14,000.00	7,068.93	6,210.00	6,208.43	115.89	137.52	46.72	-822.58	-7,225.47	1,186.50	994.22	192.28	6.171	
14,100.00	7,068.69	6,210.00	6,208.43	117.43	137.52	46.72	-822.58	-7,225.47	1,172.51	980.43	192.09	6.104	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,068.45	6,210.00	6,208.43	118.97	137.52	46.72	-822.58	-7,225.47	1,166.95	975.04	191.92	6.081	SF
14,215.04	7,068.41	6,210.00	6,208.43	119.20	137.52	46.72	-822.58	-7,225.47	1,166.86	974.96	191.89	6.081	CC, ES
14,300.00	7,068.21	6,210.00	6,208.43	120.50	137.52	46.72	-822.58	-7,225.47	1,169.94	978.15	191.79	6.100	
14,400.00	7,067.97	6,210.00	6,208.43	122.05	137.52	46.72	-822.58	-7,225.47	1,181.42	989.71	191.71	6.163	
14,500.00	7,067.72	6,210.00	6,208.43	123.59	137.52	46.72	-822.58	-7,225.47	1,201.15	1,009.51	191.64	6.268	
14,600.00	7,067.48	6,210.00	6,208.43	125.13	137.52	46.72	-822.58	-7,225.47	1,228.72	1,037.18	191.54	6.415	
14,700.00	7,067.24	6,210.00	6,208.43	126.68	137.52	46.72	-822.58	-7,225.47	1,263.62	1,072.24	191.38	6.603	
14,800.00	7,067.00	6,210.00	6,208.43	128.22	137.52	46.72	-822.58	-7,225.47	1,305.27	1,114.15	191.13	6.829	
14,900.00	7,066.76	6,210.00	6,208.43	129.77	137.52	46.72	-822.58	-7,225.47	1,353.04	1,162.28	190.76	7.093	
15,000.00	7,066.52	6,210.00	6,208.43	131.32	137.52	46.72	-822.58	-7,225.47	1,406.31	1,216.01	190.30	7.390	
15,100.00	7,066.28	6,210.00	6,208.43	132.87	137.52	46.72	-822.58	-7,225.47	1,464.48	1,274.74	189.74	7.718	
15,200.00	7,066.04	6,210.00	6,208.43	134.42	137.52	46.72	-822.58	-7,225.47	1,526.99	1,337.88	189.11	8.075	
15,300.00	7,065.80	6,210.00	6,208.43	135.97	137.52	46.72	-822.58	-7,225.47	1,593.33	1,404.91	188.42	8.456	
15,400.00	7,065.55	6,210.00	6,208.43	137.53	137.52	46.72	-822.58	-7,225.47	1,663.04	1,475.34	187.69	8.860	
15,500.00	7,065.31	6,210.00	6,208.43	139.08	137.52	46.72	-822.58	-7,225.47	1,735.71	1,548.76	186.95	9.284	
15,600.00	7,065.07	6,210.00	6,208.43	140.64	137.52	46.72	-822.58	-7,225.47	1,810.99	1,624.79	186.20	9.726	
15,700.00	7,064.83	6,210.00	6,208.43	142.20	137.52	46.72	-822.58	-7,225.47	1,888.56	1,703.10	185.46	10.183	
15,800.00	7,064.59	6,210.00	6,208.43	143.75	137.52	46.72	-822.58	-7,225.47	1,968.16	1,783.42	184.74	10.654	
15,900.00	7,064.35	6,210.00	6,208.43	145.31	137.52	46.72	-822.58	-7,225.47	2,049.55	1,865.51	184.04	11.136	
16,000.00	7,064.11	6,210.00	6,208.43	146.87	137.52	46.72	-822.58	-7,225.47	2,132.52	1,949.15	183.37	11.630	
16,100.00	7,063.87	6,210.00	6,208.43	148.43	137.52	46.72	-822.58	-7,225.47	2,216.90	2,034.17	182.73	12.132	
16,200.00	7,063.63	6,210.00	6,208.43	149.99	137.52	46.72	-822.58	-7,225.47	2,302.53	2,120.40	182.13	12.642	
16,300.00	7,063.38	6,210.00	6,208.43	151.56	137.52	46.72	-822.58	-7,225.47	2,389.27	2,207.71	181.56	13.160	
16,400.00	7,063.14	6,210.00	6,208.43	153.12	137.52	46.72	-822.58	-7,225.47	2,477.02	2,295.99	181.03	13.683	
16,500.00	7,062.90	6,210.00	6,208.43	154.68	137.52	46.72	-822.58	-7,225.47	2,565.66	2,385.13	180.53	14.212	
16,600.00	7,062.66	6,210.00	6,208.43	156.25	137.52	46.72	-822.58	-7,225.47	2,655.11	2,475.05	180.06	14.746	
16,700.00	7,062.42	6,210.00	6,208.43	157.81	137.52	46.72	-822.58	-7,225.47	2,745.29	2,565.66	179.63	15.283	
16,800.00	7,062.18	6,210.00	6,208.43	159.38	137.52	46.72	-822.58	-7,225.47	2,836.12	2,656.90	179.22	15.824	
16,874.30	7,062.00	6,210.00	6,208.43	160.54	137.52	46.72	-822.58	-7,225.47	2,904.00	2,725.05	178.94	16.228	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-107.20	-2,007.43	-6,486.91	6,791.27				
100.00	100.00	0.00	0.00	3.29	0.00	-107.20	-2,007.43	-6,486.91	6,790.43	6,787.14	3.29	2,064.095	
135.84	135.84	28.84	28.84	3.30	0.27	-107.20	-2,007.43	-6,486.91	6,790.42	6,786.85	3.57	1,902.808	
200.00	200.00	93.00	93.00	3.34	0.86	-107.20	-2,007.43	-6,486.91	6,790.42	6,786.23	4.20	1,618.370	
300.00	300.00	193.00	193.00	3.42	1.78	-107.20	-2,007.43	-6,486.91	6,790.42	6,785.22	5.20	1,304.913	
400.00	400.00	293.00	293.00	3.54	2.71	-107.20	-2,007.43	-6,486.91	6,790.42	6,784.18	6.25	1,087.139	
500.00	500.00	393.00	393.00	3.69	4.49	-107.20	-2,007.43	-6,486.91	6,790.42	6,782.24	8.18	830.182	
600.00	599.98	492.98	492.98	3.86	6.34	70.91	-2,007.43	-6,486.91	6,789.85	6,779.66	10.20	665.970	
700.00	699.84	590.26	590.25	4.04	8.14	70.98	-2,006.99	-6,486.91	6,788.01	6,775.83	12.18	557.382	
800.00	799.45	686.17	686.16	4.25	9.91	71.10	-2,007.20	-6,486.91	6,785.23	6,771.07	14.16	479.152	
900.00	898.70	791.72	791.70	4.48	11.89	71.27	-2,007.43	-6,486.91	6,781.34	6,764.97	16.37	414.270	
1,000.00	997.47	890.49	890.47	4.74	13.76	71.49	-2,007.43	-6,486.91	6,776.29	6,757.79	18.51	366.160	
1,100.00	1,095.62	988.64	988.62	5.03	15.63	71.76	-2,007.43	-6,486.91	6,770.18	6,749.52	20.66	327.729	
1,200.00	1,193.06	1,083.04	1,083.02	5.35	17.42	72.07	-2,006.97	-6,486.91	6,762.90	6,740.13	22.77	297.069	
1,268.36	1,259.18	1,147.03	1,147.01	5.58	18.64	72.31	-2,007.11	-6,486.91	6,757.48	6,733.26	24.21	279.092	
1,300.00	1,289.69	1,176.57	1,176.55	5.70	19.20	72.37	-2,007.19	-6,486.91	6,754.87	6,729.99	24.88	271.448	
1,400.00	1,386.11	1,279.17	1,279.11	6.07	21.18	72.59	-2,007.43	-6,486.91	6,746.70	6,719.47	27.22	247.839	
1,500.00	1,482.54	1,375.59	1,375.54	6.45	23.07	72.79	-2,007.43	-6,486.91	6,738.55	6,709.05	29.49	228.468	
1,600.00	1,578.96	1,472.01	1,471.96	6.86	24.96	73.00	-2,007.43	-6,486.91	6,730.49	6,698.71	31.78	211.773	
1,700.00	1,675.39	1,565.19	1,565.13	7.27	26.79	73.21	-2,006.67	-6,486.91	6,722.33	6,688.31	34.02	197.615	
1,800.00	1,771.81	1,657.48	1,657.42	7.70	28.60	73.41	-2,006.94	-6,486.91	6,714.54	6,678.29	36.25	185.248	
1,900.00	1,868.24	1,761.33	1,761.24	8.13	30.64	73.63	-2,007.43	-6,486.91	6,706.89	6,668.18	38.71	173.255	
2,000.00	1,964.66	1,857.76	1,857.66	8.57	32.53	73.84	-2,007.43	-6,486.91	6,699.22	6,658.18	41.04	163.231	
2,100.00	2,061.09	1,954.18	1,954.09	9.02	34.43	74.05	-2,007.43	-6,486.91	6,691.64	6,648.26	43.38	154.263	
2,200.00	2,157.51	2,048.46	2,048.36	9.47	36.28	74.27	-2,006.65	-6,486.91	6,683.97	6,638.29	45.68	146.325	
2,300.00	2,253.94	2,140.98	2,140.87	9.93	38.10	74.47	-2,006.88	-6,486.91	6,676.64	6,628.69	47.95	139.243	
2,400.00	2,350.36	2,233.62	2,233.51	10.39	39.92	74.67	-2,007.34	-6,486.91	6,669.47	6,619.25	50.23	132.785	
2,500.00	2,446.79	2,339.92	2,339.79	10.86	42.07	74.90	-2,007.43	-6,486.91	6,662.30	6,609.46	52.84	126.089	
2,600.00	2,543.21	2,436.35	2,436.21	11.33	44.03	75.11	-2,007.43	-6,486.91	6,655.21	6,599.94	55.26	120.430	
2,700.00	2,639.64	2,532.13	2,531.99	11.80	45.98	75.33	-2,006.57	-6,486.91	6,648.01	6,590.34	57.68	115.264	
2,800.00	2,736.06	2,625.14	2,625.00	12.27	47.87	75.54	-2,006.71	-6,486.91	6,641.15	6,581.12	60.04	110.618	
2,900.00	2,832.49	2,718.27	2,718.12	12.75	49.76	75.74	-2,007.07	-6,486.91	6,634.44	6,572.04	62.40	106.317	
3,000.00	2,928.91	2,822.11	2,821.91	13.23	51.96	75.97	-2,007.43	-6,486.91	6,627.82	6,562.74	65.08	101.847	
3,100.00	3,025.34	2,918.53	2,918.34	13.71	54.13	76.18	-2,007.43	-6,486.91	6,621.22	6,553.50	67.72	97.772	
3,200.00	3,121.76	3,014.96	3,014.76	14.19	56.30	76.40	-2,007.43	-6,486.91	6,614.72	6,544.35	70.37	94.002	
3,300.00	3,218.18	3,106.88	3,106.67	14.67	58.37	76.61	-2,006.55	-6,486.91	6,608.14	6,535.23	72.92	90.627	
3,400.00	3,314.61	3,198.87	3,198.65	15.15	60.43	76.81	-2,007.01	-6,486.91	6,601.94	6,526.48	75.47	87.482	
3,500.00	3,411.03	3,304.35	3,304.03	15.64	62.78	77.05	-2,007.43	-6,486.91	6,595.83	6,517.53	78.29	84.246	
3,600.00	3,507.46	3,400.77	3,400.46	16.12	64.89	77.26	-2,007.43	-6,486.91	6,589.73	6,508.84	80.89	81.465	
3,700.00	3,603.88	3,496.66	3,496.32	16.61	66.99	77.49	-2,005.90	-6,486.91	6,583.44	6,499.96	83.48	78.864	
3,800.00	3,700.31	3,586.92	3,586.58	17.10	68.97	77.69	-2,006.16	-6,486.91	6,577.60	6,491.65	85.94	76.533	
3,900.00	3,796.73	3,677.45	3,677.09	17.59	70.96	77.89	-2,006.89	-6,486.91	6,571.95	6,483.53	88.42	74.329	
4,000.00	3,893.16	3,786.57	3,786.16	18.07	73.31	78.14	-2,007.43	-6,486.91	6,566.35	6,475.09	91.25	71.957	
4,100.00	3,989.58	3,882.99	3,882.58	18.56	75.35	78.35	-2,007.43	-6,486.91	6,560.76	6,466.97	93.79	69.952	
4,200.00	4,086.01	3,979.41	3,979.01	19.05	77.40	78.57	-2,007.43	-6,486.91	6,555.27	6,458.94	96.33	68.052	
4,300.00	4,182.43	4,075.84	4,075.43	19.55	79.45	78.79	-2,007.43	-6,486.91	6,549.88	6,451.02	98.86	66.251	
4,400.00	4,278.86	4,172.26	4,171.86	20.04	81.49	79.01	-2,007.43	-6,486.91	6,544.60	6,443.20	101.40	64.540	
4,500.00	4,375.28	4,268.69	4,268.28	20.53	83.54	79.23	-2,007.43	-6,486.91	6,539.42	6,435.48	103.94	62.914	
4,600.00	4,471.71	4,364.49	4,364.07	21.02	85.57	79.47	-2,005.53	-6,486.91	6,534.05	6,427.58	106.47	61.370	
4,700.00	4,568.13	4,459.88	4,459.46	21.51	87.60	79.68	-2,005.64	-6,486.91	6,529.10	6,420.11	108.99	59.906	
4,800.00	4,664.56	4,555.33	4,554.90	22.01	89.62	79.90	-2,005.85	-6,486.91	6,524.27	6,412.76	111.51	58.509	
4,900.00	4,760.98	4,650.83	4,650.40	22.50	91.65	80.12	-2,006.17	-6,486.91	6,519.56	6,405.53	114.03	57.173	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	4,746.39	4,745.96	22.99	93.68	80.33	-2,006.58	-6,486.91	6,514.96	6,398.41	116.56	55.896	
5,100.00	4,953.83	4,842.01	4,841.57	23.49	95.71	80.55	-2,007.10	-6,486.91	6,510.48	6,391.40	119.08	54.672	
5,200.00	5,050.25	4,943.84	4,943.25	23.98	97.91	80.78	-2,007.43	-6,486.91	6,506.08	6,384.30	121.78	53.425	
5,300.00	5,146.68	5,040.27	5,039.68	24.48	100.04	81.00	-2,007.43	-6,486.91	6,501.73	6,377.32	124.40	52.263	
5,400.00	5,243.10	5,136.69	5,136.10	24.97	102.16	81.23	-2,007.43	-6,486.91	6,497.49	6,370.46	127.03	51.149	
5,500.00	5,339.53	5,233.12	5,232.53	25.47	104.29	81.45	-2,007.43	-6,486.91	6,493.35	6,363.70	129.66	50.082	
5,600.00	5,435.95	5,329.54	5,328.95	25.96	106.42	81.67	-2,007.43	-6,486.91	6,489.32	6,357.04	132.28	49.057	
5,700.00	5,532.38	5,425.97	5,425.38	26.46	108.55	81.90	-2,007.43	-6,486.91	6,485.40	6,350.49	134.91	48.073	
5,800.00	5,628.80	5,522.39	5,521.80	26.96	110.67	82.12	-2,007.43	-6,486.91	6,481.58	6,344.05	137.53	47.127	
5,900.00	5,725.23	5,618.82	5,618.23	27.45	112.80	82.34	-2,007.43	-6,486.91	6,477.87	6,337.71	140.16	46.217	
6,000.00	5,821.65	5,715.24	5,714.65	27.95	114.93	82.57	-2,007.43	-6,486.91	6,474.26	6,331.48	142.79	45.342	
6,100.00	5,918.08	5,811.67	5,811.08	28.45	117.06	82.79	-2,007.43	-6,486.91	6,470.77	6,325.35	145.42	44.498	
6,200.00	6,014.50	5,908.09	5,907.50	28.94	119.18	83.02	-2,007.43	-6,486.91	6,467.37	6,319.33	148.04	43.685	
6,300.00	6,110.93	6,004.52	6,003.93	29.44	121.31	83.24	-2,007.43	-6,486.91	6,464.09	6,313.42	150.67	42.902	
6,400.00	6,207.35	6,100.94	6,100.35	29.94	123.44	83.47	-2,007.43	-6,486.91	6,460.91	6,307.61	153.30	42.145	
6,500.00	6,303.78	6,165.00	6,164.16	30.43	124.85	83.62	-2,007.43	-6,486.91	6,457.92	6,302.71	155.21	41.606	
6,600.00	6,400.20	6,165.00	6,164.16	30.93	124.85	83.62	-2,007.43	-6,486.91	6,456.16	6,300.47	155.69	41.467	
6,663.42	6,461.35	6,165.00	6,164.16	31.25	124.85	83.62	-2,007.43	-6,486.91	6,455.85	6,299.87	155.98	41.389	
6,677.76	6,475.18	6,165.00	6,164.16	31.32	124.85	83.62	-2,007.43	-6,486.91	6,455.87	6,299.82	156.04	41.372	
6,700.00	6,496.62	6,165.00	6,164.16	31.43	124.85	76.40	-2,007.43	-6,486.91	6,455.57	6,299.43	156.14	41.345	
6,750.00	6,544.66	6,165.00	6,164.16	31.68	124.85	61.45	-2,007.43	-6,486.91	6,452.35	6,296.00	156.35	41.269	
6,800.00	6,592.24	6,165.00	6,164.16	31.92	124.85	49.33	-2,007.43	-6,486.91	6,445.62	6,289.08	156.54	41.175	
6,850.00	6,639.07	6,165.00	6,164.16	32.16	124.85	40.10	-2,007.43	-6,486.91	6,435.42	6,278.70	156.72	41.063	
6,900.00	6,684.86	6,165.00	6,164.16	32.40	124.85	33.17	-2,007.43	-6,486.91	6,421.78	6,264.90	156.88	40.934	
6,950.00	6,729.32	6,165.00	6,164.16	32.62	124.85	27.93	-2,007.43	-6,486.91	6,404.77	6,247.74	157.03	40.787	
7,000.00	6,772.19	6,165.00	6,164.16	32.84	124.85	23.87	-2,007.43	-6,486.91	6,384.47	6,227.32	157.16	40.624	
7,050.00	6,813.20	6,165.00	6,164.16	33.05	124.85	20.64	-2,007.43	-6,486.91	6,360.98	6,203.71	157.27	40.446	
7,100.00	6,852.09	6,165.00	6,164.16	33.26	124.85	18.00	-2,007.43	-6,486.91	6,334.40	6,177.03	157.37	40.252	
7,150.00	6,888.63	6,165.00	6,164.16	33.45	124.85	15.78	-2,007.43	-6,486.91	6,304.85	6,147.40	157.45	40.044	
7,200.00	6,922.59	6,165.00	6,164.16	33.64	124.85	13.85	-2,007.43	-6,486.91	6,272.49	6,114.98	157.51	39.822	
7,250.00	6,953.76	6,165.00	6,164.16	33.82	124.85	12.11	-2,007.43	-6,486.91	6,237.47	6,079.90	157.56	39.587	
7,300.00	6,981.95	6,165.00	6,164.16	34.00	124.85	10.45	-2,007.43	-6,486.91	6,199.96	6,042.36	157.60	39.340	
7,350.00	7,006.99	6,165.00	6,164.16	34.17	124.85	8.81	-2,007.43	-6,486.91	6,160.14	6,002.52	157.62	39.082	
7,400.00	7,028.72	6,165.00	6,164.16	34.35	124.85	7.06	-2,007.43	-6,486.91	6,118.23	5,960.60	157.63	38.814	
7,450.00	7,047.00	6,165.00	6,164.16	34.52	124.85	5.07	-2,007.43	-6,486.91	6,074.44	5,916.81	157.63	38.536	
7,500.00	7,061.73	6,165.00	6,164.16	34.69	124.85	2.60	-2,007.43	-6,486.91	6,029.00	5,871.38	157.62	38.251	
7,550.00	7,072.82	6,165.00	6,164.16	34.86	124.85	-0.78	-2,007.43	-6,486.91	5,982.16	5,824.56	157.59	37.959	
7,600.00	7,080.18	6,165.00	6,164.16	35.04	124.85	-5.95	-2,007.43	-6,486.91	5,934.17	5,776.61	157.57	37.662	
7,650.00	7,083.79	6,165.00	6,164.16	35.22	124.85	-15.12	-2,007.43	-6,486.91	5,885.31	5,727.78	157.53	37.360	
7,674.30	7,084.18	6,165.00	6,164.16	35.32	124.85	-22.58	-2,007.43	-6,486.91	5,861.34	5,703.83	157.51	37.212	
7,700.00	7,084.12	6,165.00	6,164.16	35.42	124.85	-22.58	-2,007.43	-6,486.91	5,835.92	5,678.43	157.49	37.055	
7,800.00	7,083.88	6,165.00	6,164.16	35.84	124.85	-22.58	-2,007.43	-6,486.91	5,737.05	5,579.64	157.41	36.447	
7,900.00	7,083.64	6,165.00	6,164.16	36.34	124.85	-22.58	-2,007.43	-6,486.91	5,638.21	5,480.89	157.32	35.839	
8,000.00	7,083.40	6,165.00	6,164.16	36.90	124.85	-22.58	-2,007.43	-6,486.91	5,539.42	5,382.18	157.23	35.230	
8,100.00	7,083.16	6,165.00	6,164.16	37.52	124.85	-22.58	-2,007.43	-6,486.91	5,440.67	5,283.52	157.14	34.623	
8,200.00	7,082.91	6,165.00	6,164.16	38.21	124.85	-22.58	-2,007.43	-6,486.91	5,341.96	5,184.91	157.05	34.015	
8,300.00	7,082.67	6,165.00	6,164.16	38.95	124.85	-22.58	-2,007.43	-6,486.91	5,243.31	5,086.36	156.95	33.407	
8,400.00	7,082.43	6,165.00	6,164.16	39.74	124.85	-22.58	-2,007.43	-6,486.91	5,144.71	4,987.86	156.85	32.800	
8,500.00	7,082.19	6,165.00	6,164.16	40.59	124.85	-22.58	-2,007.43	-6,486.91	5,046.16	4,889.41	156.75	32.193	
8,600.00	7,081.95	6,165.00	6,164.16	41.49	124.85	-22.58	-2,007.43	-6,486.91	4,947.67	4,791.03	156.64	31.587	
8,700.00	7,081.71	6,165.00	6,164.16	42.43	124.85	-22.58	-2,007.43	-6,486.91	4,849.24	4,692.72	156.52	30.981	
8,800.00	7,081.47	6,165.00	6,164.16	43.41	124.85	-22.58	-2,007.43	-6,486.91	4,750.88	4,594.47	156.41	30.375	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,900.00	7,081.23	6,165.00	6,164.16	44.44	124.85	-22.58	-2,007.43	-6,486.91	4,652.59	4,496.30	156.29	29.770	
9,000.00	7,080.99	6,165.00	6,164.16	45.49	124.85	-22.58	-2,007.43	-6,486.91	4,554.37	4,398.21	156.16	29.165	
9,100.00	7,080.74	6,165.00	6,164.16	46.58	124.85	-22.58	-2,007.43	-6,486.91	4,456.24	4,300.21	156.03	28.560	
9,200.00	7,080.50	6,165.00	6,164.16	47.70	124.85	-22.58	-2,007.43	-6,486.91	4,358.18	4,202.29	155.89	27.957	
9,300.00	7,080.26	6,165.00	6,164.16	48.85	124.85	-22.58	-2,007.43	-6,486.91	4,260.22	4,104.47	155.75	27.353	
9,400.00	7,080.02	6,165.00	6,164.16	50.03	124.85	-22.58	-2,007.43	-6,486.91	4,162.35	4,006.76	155.60	26.751	
9,500.00	7,079.78	6,165.00	6,164.16	51.23	124.85	-22.58	-2,007.43	-6,486.91	4,064.59	3,909.15	155.44	26.149	
9,600.00	7,079.54	6,165.00	6,164.16	52.45	124.85	-22.58	-2,007.43	-6,486.91	3,966.94	3,811.67	155.28	25.548	
9,700.00	7,079.30	6,165.00	6,164.16	53.69	124.85	-22.58	-2,007.43	-6,486.91	3,869.41	3,714.31	155.10	24.947	
9,800.00	7,079.06	6,165.00	6,164.16	54.95	124.85	-22.58	-2,007.43	-6,486.91	3,772.01	3,617.09	154.92	24.348	
9,900.00	7,078.82	6,165.00	6,164.16	56.23	124.85	-22.58	-2,007.43	-6,486.91	3,674.75	3,520.02	154.73	23.749	
10,000.00	7,078.57	6,165.00	6,164.16	57.53	124.85	-22.58	-2,007.43	-6,486.91	3,577.64	3,423.11	154.53	23.152	
10,100.00	7,078.33	6,165.00	6,164.16	58.84	124.85	-22.58	-2,007.43	-6,486.91	3,480.69	3,326.37	154.32	22.555	
10,200.00	7,078.09	6,165.00	6,164.16	60.17	124.85	-22.58	-2,007.43	-6,486.91	3,383.92	3,229.83	154.10	21.960	
10,300.00	7,077.85	6,165.00	6,164.16	61.51	124.85	-22.58	-2,007.43	-6,486.91	3,287.35	3,133.49	153.86	21.366	
10,400.00	7,077.61	6,165.00	6,164.16	62.86	124.85	-22.58	-2,007.43	-6,486.91	3,190.98	3,037.37	153.61	20.773	
10,500.00	7,077.37	6,165.00	6,164.16	64.22	124.85	-22.58	-2,007.43	-6,486.91	3,094.85	2,941.50	153.35	20.182	
10,600.00	7,077.13	6,165.00	6,164.16	65.60	124.85	-22.58	-2,007.43	-6,486.91	2,998.97	2,845.90	153.07	19.592	
10,700.00	7,076.89	6,165.00	6,164.16	66.98	124.85	-22.58	-2,007.43	-6,486.91	2,903.37	2,750.60	152.77	19.005	
10,800.00	7,076.65	6,165.00	6,164.16	68.38	124.85	-22.58	-2,007.43	-6,486.91	2,808.07	2,655.62	152.45	18.419	
10,900.00	7,076.40	6,165.00	6,164.16	69.78	124.85	-22.58	-2,007.43	-6,486.91	2,713.11	2,560.99	152.12	17.836	
11,000.00	7,076.16	6,165.00	6,164.16	71.20	124.85	-22.58	-2,007.43	-6,486.91	2,618.53	2,466.77	151.76	17.255	
11,100.00	7,075.92	6,165.00	6,164.16	72.62	124.85	-22.58	-2,007.43	-6,486.91	2,524.36	2,372.99	151.38	16.676	
11,200.00	7,075.68	6,165.00	6,164.16	74.04	124.85	-22.58	-2,007.43	-6,486.91	2,430.66	2,279.70	150.97	16.101	
11,300.00	7,075.44	6,165.00	6,164.16	75.48	124.85	-22.58	-2,007.43	-6,486.91	2,337.49	2,186.96	150.53	15.529	
11,400.00	7,075.20	6,165.00	6,164.16	76.92	124.85	-22.58	-2,007.43	-6,486.91	2,244.90	2,094.84	150.06	14.960	
11,500.00	7,074.96	6,165.00	6,164.16	78.37	124.85	-22.58	-2,007.43	-6,486.91	2,152.97	2,003.42	149.55	14.396	
11,600.00	7,074.72	6,165.00	6,164.16	79.82	124.85	-22.58	-2,007.43	-6,486.91	2,061.80	1,912.79	149.00	13.837	
11,700.00	7,074.48	6,165.00	6,164.16	81.28	124.85	-22.58	-2,007.43	-6,486.91	1,971.48	1,823.07	148.41	13.284	
11,800.00	7,074.23	6,165.00	6,164.16	82.75	124.85	-22.58	-2,007.43	-6,486.91	1,882.14	1,734.37	147.77	12.737	
11,900.00	7,073.99	6,165.00	6,164.16	84.22	124.85	-22.58	-2,007.43	-6,486.91	1,793.92	1,646.86	147.07	12.198	
12,000.00	7,073.75	6,165.00	6,164.16	85.69	124.85	-22.58	-2,007.43	-6,486.91	1,707.01	1,560.71	146.30	11.668	
12,100.00	7,073.51	6,165.00	6,164.16	87.17	124.85	-22.58	-2,007.43	-6,486.91	1,621.60	1,476.16	145.44	11.149	
12,200.00	7,073.27	6,165.00	6,164.16	88.65	124.85	-22.58	-2,007.43	-6,486.91	1,537.96	1,393.46	144.49	10.644	
12,300.00	7,073.03	6,165.00	6,164.16	90.14	124.85	-22.58	-2,007.43	-6,486.91	1,456.38	1,312.96	143.42	10.155	
12,400.00	7,072.79	6,165.00	6,164.16	91.63	124.85	-22.58	-2,007.43	-6,486.91	1,377.23	1,235.03	142.20	9.685	
12,500.00	7,072.55	6,165.00	6,164.16	93.13	124.85	-22.58	-2,007.43	-6,486.91	1,300.95	1,160.16	140.79	9.241	
12,600.00	7,072.31	6,165.00	6,164.16	94.62	124.85	-22.58	-2,007.43	-6,486.91	1,228.08	1,088.95	139.14	8.827	
12,700.00	7,072.06	6,165.00	6,164.16	96.13	124.85	-22.58	-2,007.43	-6,486.91	1,159.27	1,022.08	137.19	8.450	
12,800.00	7,071.82	6,165.00	6,164.16	97.63	124.85	-22.58	-2,007.43	-6,486.91	1,095.28	960.38	134.90	8.119	
12,900.00	7,071.58	6,165.00	6,164.16	99.14	124.85	-22.58	-2,007.43	-6,486.91	1,036.99	904.78	132.21	7.844	
13,000.00	7,071.34	6,165.00	6,164.16	100.65	124.85	-22.58	-2,007.43	-6,486.91	985.43	856.30	129.13	7.631	
13,100.00	7,071.10	6,165.00	6,164.16	102.16	124.85	-22.58	-2,007.43	-6,486.91	941.69	815.91	125.78	7.487	
13,200.00	7,070.86	6,165.00	6,164.16	103.68	124.85	-22.58	-2,007.43	-6,486.91	906.92	784.42	122.50	7.403	
13,300.00	7,070.62	6,165.00	6,164.16	105.20	124.85	-22.58	-2,007.43	-6,486.91	882.17	762.25	119.92	7.356	
13,400.00	7,070.38	6,165.00	6,164.16	106.72	124.85	-22.58	-2,007.43	-6,486.91	868.30	749.33	118.96	7.299	
13,471.41	7,070.20	6,165.00	6,164.16	107.81	124.85	-22.58	-2,007.43	-6,486.91	865.36	745.60	119.75	7.226	CC
13,500.00	7,070.14	6,165.00	6,164.16	108.24	124.85	-22.58	-2,007.43	-6,486.91	865.83	745.37	120.45	7.188	ES
13,600.00	7,069.89	6,165.00	6,164.16	109.77	124.85	-22.58	-2,007.43	-6,486.91	874.86	750.38	124.48	7.028	
13,700.00	7,069.65	6,165.00	6,164.16	111.30	124.85	-22.58	-2,007.43	-6,486.91	895.04	764.78	130.26	6.871	
13,800.00	7,069.41	6,165.00	6,164.16	112.83	124.85	-22.58	-2,007.43	-6,486.91	925.64	788.95	136.69	6.772	
13,900.00	7,069.17	6,165.00	6,164.16	114.36	124.85	-22.58	-2,007.43	-6,486.91	965.68	822.75	142.92	6.757	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 752H
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 752H	**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
14,000.00	7,068.93	6,165.00	6,164.16	115.89	124.85	-22.58	-2,007.43	-6,486.91	1,014.03	865.54	148.49	6.829	
14,100.00	7,068.69	6,165.00	6,164.16	117.43	124.85	-22.58	-2,007.43	-6,486.91	1,069.57	916.35	153.21	6.981	
14,200.00	7,068.45	6,165.00	6,164.16	118.97	124.85	-22.58	-2,007.43	-6,486.91	1,131.23	974.15	157.09	7.201	
14,300.00	7,068.21	6,165.00	6,164.16	120.50	124.85	-22.58	-2,007.43	-6,486.91	1,198.09	1,037.88	160.20	7.478	
14,400.00	7,067.97	6,165.00	6,164.16	122.05	124.85	-22.58	-2,007.43	-6,486.91	1,269.30	1,106.63	162.68	7.803	
14,500.00	7,067.72	6,165.00	6,164.16	123.59	124.85	-22.58	-2,007.43	-6,486.91	1,344.19	1,179.57	164.62	8.165	
14,600.00	7,067.48	6,165.00	6,164.16	125.13	124.85	-22.58	-2,007.43	-6,486.91	1,422.17	1,256.03	166.14	8.560	
14,700.00	7,067.24	6,165.00	6,164.16	126.68	124.85	-22.58	-2,007.43	-6,486.91	1,502.76	1,335.44	167.32	8.981	
14,800.00	7,067.00	6,165.00	6,164.16	128.22	124.85	-22.58	-2,007.43	-6,486.91	1,585.56	1,417.32	168.24	9.425	
14,900.00	7,066.76	6,165.00	6,164.16	129.77	124.85	-22.58	-2,007.43	-6,486.91	1,670.25	1,501.30	168.94	9.886	
15,000.00	7,066.52	6,165.00	6,164.16	131.32	124.85	-22.58	-2,007.43	-6,486.91	1,756.54	1,587.06	169.49	10.364	
15,100.00	7,066.28	6,165.00	6,164.16	132.87	124.85	-22.58	-2,007.43	-6,486.91	1,844.22	1,674.32	169.90	10.855	
15,200.00	7,066.04	6,165.00	6,164.16	134.42	124.85	-22.58	-2,007.43	-6,486.91	1,933.10	1,762.88	170.22	11.357	
15,300.00	7,065.80	6,165.00	6,164.16	135.97	124.85	-22.58	-2,007.43	-6,486.91	2,023.02	1,852.56	170.45	11.868	
15,400.00	7,065.55	6,165.00	6,164.16	137.53	124.85	-22.58	-2,007.43	-6,486.91	2,113.84	1,943.21	170.63	12.389	
15,500.00	7,065.31	6,165.00	6,164.16	139.08	124.85	-22.58	-2,007.43	-6,486.91	2,205.46	2,034.70	170.76	12.916	
15,600.00	7,065.07	6,165.00	6,164.16	140.64	124.85	-22.58	-2,007.43	-6,486.91	2,297.77	2,126.93	170.84	13.450	
15,700.00	7,064.83	6,165.00	6,164.16	142.20	124.85	-22.58	-2,007.43	-6,486.91	2,390.71	2,219.80	170.90	13.989	
15,800.00	7,064.59	6,165.00	6,164.16	143.75	124.85	-22.58	-2,007.43	-6,486.91	2,484.19	2,313.25	170.94	14.533	
15,900.00	7,064.35	6,165.00	6,164.16	145.31	124.85	-22.58	-2,007.43	-6,486.91	2,578.16	2,407.20	170.96	15.081	
16,000.00	7,064.11	6,165.00	6,164.16	146.87	124.85	-22.58	-2,007.43	-6,486.91	2,672.57	2,501.61	170.96	15.633	
16,100.00	7,063.87	6,165.00	6,164.16	148.43	124.85	-22.58	-2,007.43	-6,486.91	2,767.37	2,596.42	170.95	16.188	
16,200.00	7,063.63	6,165.00	6,164.16	149.99	124.85	-22.58	-2,007.43	-6,486.91	2,862.53	2,691.59	170.94	16.746	
16,300.00	7,063.38	6,165.00	6,164.16	151.56	124.85	-22.58	-2,007.43	-6,486.91	2,958.00	2,787.08	170.92	17.306	
16,400.00	7,063.14	6,165.00	6,164.16	153.12	124.85	-22.58	-2,007.43	-6,486.91	3,053.77	2,882.87	170.90	17.869	
16,500.00	7,062.90	6,165.00	6,164.16	154.68	124.85	-22.58	-2,007.43	-6,486.91	3,149.80	2,978.93	170.87	18.434	
16,600.00	7,062.66	6,165.00	6,164.16	156.25	124.85	-22.58	-2,007.43	-6,486.91	3,246.07	3,075.22	170.84	19.001	
16,700.00	7,062.42	6,165.00	6,164.16	157.81	124.85	-22.58	-2,007.43	-6,486.91	3,342.55	3,171.74	170.81	19.569	
16,800.00	7,062.18	6,165.00	6,164.16	159.38	124.85	-22.58	-2,007.43	-6,486.91	3,439.24	3,268.46	170.78	20.138	
16,874.30	7,062.00	6,165.00	6,164.16	160.54	124.85	-22.58	-2,007.43	-6,486.91	3,511.20	3,340.44	170.76	20.562	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-103.01	-1,940.30	-8,397.73	8,619.57				
100.00	100.00	0.00	0.00	3.29	3.28	-103.01	-1,940.30	-8,397.73	8,618.97	8,612.40	6.57	1,311.950	
200.00	200.00	118.52	118.52	3.34	3.28	-103.01	-1,940.43	-8,397.55	8,618.85	8,612.23	6.62	1,302.589	
300.00	300.00	200.00	200.00	3.42	3.29	-103.01	-1,940.67	-8,397.28	8,618.61	8,611.91	6.70	1,285.841	
304.45	304.45	200.00	200.00	3.42	3.29	-103.01	-1,940.67	-8,397.28	8,618.61	8,611.91	6.71	1,284.969	
400.00	400.00	225.00	225.00	3.54	3.29	-103.01	-1,940.79	-8,397.37	8,619.04	8,612.22	6.82	1,263.615	
500.00	500.00	293.86	293.85	3.69	3.29	-103.01	-1,941.05	-8,397.93	8,619.96	8,612.99	6.97	1,236.507	
600.00	599.98	350.00	349.99	3.86	3.29	75.05	-1,941.36	-8,398.69	8,620.96	8,613.82	7.14	1,207.231	
700.00	699.84	431.40	431.37	4.04	3.30	75.06	-1,942.23	-8,400.12	8,621.54	8,614.21	7.33	1,175.899	
800.00	799.45	534.59	534.54	4.25	3.31	75.12	-1,943.40	-8,401.87	8,621.20	8,613.65	7.55	1,141.256	
900.00	898.70	623.41	623.34	4.48	3.33	75.21	-1,944.56	-8,403.41	8,620.05	8,612.25	7.80	1,104.722	
1,000.00	997.47	700.00	699.91	4.74	3.35	75.32	-1,945.67	-8,404.85	8,618.21	8,610.13	8.08	1,066.928	
1,100.00	1,095.62	775.00	774.88	5.03	3.37	75.45	-1,946.82	-8,406.41	8,615.72	8,607.34	8.38	1,028.012	
1,200.00	1,193.06	859.35	859.20	5.35	3.40	75.62	-1,948.48	-8,408.35	8,612.69	8,603.97	8.72	988.021	
1,268.36	1,259.18	933.75	933.56	5.58	3.42	75.79	-1,950.03	-8,410.00	8,610.12	8,601.15	8.97	959.841	
1,300.00	1,289.69	962.15	961.95	5.70	3.44	75.83	-1,950.64	-8,410.62	8,608.84	8,599.75	9.09	947.033	
1,400.00	1,386.11	1,046.46	1,046.21	6.07	3.47	75.97	-1,952.52	-8,412.54	8,604.95	8,595.47	9.48	907.338	
1,500.00	1,482.54	1,142.14	1,141.85	6.45	3.51	76.12	-1,954.67	-8,414.69	8,601.10	8,591.20	9.90	868.666	
1,600.00	1,578.96	1,234.77	1,234.43	6.86	3.56	76.27	-1,956.83	-8,416.93	8,597.50	8,587.16	10.34	831.809	
1,700.00	1,675.39	1,350.00	1,349.59	7.27	3.62	76.46	-1,959.46	-8,419.58	8,593.84	8,583.05	10.80	796.063	
1,800.00	1,771.81	1,436.45	1,436.00	7.70	3.67	76.59	-1,961.40	-8,421.56	8,590.23	8,578.98	11.26	763.210	
1,900.00	1,868.24	1,600.00	1,599.47	8.13	3.77	76.86	-1,965.14	-8,424.99	8,586.63	8,574.87	11.76	729.917	
2,000.00	1,964.66	1,667.28	1,666.72	8.57	3.81	76.97	-1,966.53	-8,426.26	8,582.71	8,570.47	12.23	701.491	
2,100.00	2,061.09	1,725.00	1,724.42	9.02	3.85	77.06	-1,967.73	-8,427.40	8,579.03	8,566.33	12.71	675.068	
2,200.00	2,157.51	1,831.22	1,830.59	9.47	3.92	77.23	-1,970.03	-8,429.81	8,575.67	8,562.45	13.22	648.823	
2,300.00	2,253.94	1,962.21	1,961.52	9.93	4.02	77.45	-1,972.38	-8,432.62	8,572.19	8,558.44	13.75	623.394	
2,400.00	2,350.36	2,104.47	2,103.74	10.39	4.13	77.68	-1,974.70	-8,434.94	8,568.23	8,553.93	14.30	599.308	
2,500.00	2,446.79	2,176.66	2,175.92	10.86	4.18	77.80	-1,975.93	-8,436.06	8,564.30	8,549.50	14.80	578.526	
2,600.00	2,543.21	2,280.96	2,280.19	11.33	4.27	77.97	-1,977.67	-8,437.71	8,560.46	8,545.12	15.34	558.181	
2,700.00	2,639.64	2,383.47	2,382.68	11.80	4.36	78.14	-1,979.17	-8,439.38	8,556.70	8,540.83	15.87	539.009	
2,800.00	2,736.06	2,470.40	2,469.58	12.27	4.43	78.29	-1,980.50	-8,440.82	8,553.05	8,536.65	16.41	521.322	
2,900.00	2,832.49	2,572.29	2,571.45	12.75	4.52	78.46	-1,981.77	-8,442.59	8,549.52	8,532.56	16.96	504.220	
3,000.00	2,928.91	2,695.84	2,694.98	13.23	4.63	78.67	-1,983.22	-8,444.53	8,545.89	8,528.36	17.53	487.619	
3,100.00	3,025.34	2,824.56	2,823.68	13.71	4.75	78.88	-1,984.48	-8,445.92	8,541.78	8,523.68	18.10	471.902	
3,200.00	3,121.76	2,930.53	2,929.64	14.19	4.86	79.06	-1,985.44	-8,446.95	8,537.68	8,519.02	18.66	457.513	
3,300.00	3,218.18	3,024.73	3,023.84	14.67	4.95	79.22	-1,986.31	-8,447.84	8,533.62	8,514.41	19.21	444.128	
3,400.00	3,314.61	3,118.27	3,117.36	15.15	5.04	79.38	-1,987.33	-8,448.70	8,529.64	8,509.88	19.77	431.528	
3,500.00	3,411.03	3,186.69	3,185.78	15.64	5.11	79.50	-1,988.26	-8,449.44	8,525.94	8,505.64	20.30	419.996	
3,600.00	3,507.46	3,267.94	3,267.01	16.12	5.19	79.63	-1,989.42	-8,450.52	8,522.55	8,501.71	20.85	408.806	
3,700.00	3,603.88	3,359.99	3,359.04	16.61	5.28	79.79	-1,990.84	-8,451.86	8,519.37	8,497.97	21.41	397.998	
3,800.00	3,700.31	3,488.65	3,487.67	17.10	5.42	80.00	-1,992.89	-8,453.59	8,516.19	8,494.20	21.99	387.235	
3,900.00	3,796.73	3,567.78	3,566.79	17.59	5.50	80.13	-1,993.94	-8,454.53	8,512.88	8,490.33	22.54	377.639	
4,000.00	3,893.16	3,689.08	3,688.06	18.07	5.63	80.34	-1,995.56	-8,455.90	8,509.55	8,486.42	23.13	367.953	
4,100.00	3,989.58	3,884.63	3,883.60	18.56	5.82	80.67	-1,998.17	-8,456.84	8,505.74	8,482.00	23.73	358.377	
4,200.00	4,086.01	4,004.08	4,003.03	19.05	5.91	80.86	-2,000.30	-8,456.47	8,501.26	8,477.00	24.26	350.427	
4,300.00	4,182.43	4,111.51	4,110.43	19.55	6.00	81.04	-2,002.85	-8,455.88	8,496.70	8,471.92	24.78	342.905	
4,400.00	4,278.86	4,203.51	4,202.39	20.04	6.07	81.18	-2,005.20	-8,455.33	8,492.17	8,466.87	25.29	335.735	
4,500.00	4,375.28	4,293.49	4,292.34	20.53	6.14	81.33	-2,007.50	-8,454.82	8,487.74	8,461.93	25.81	328.838	
4,600.00	4,471.71	4,370.30	4,369.14	21.02	6.21	81.45	-2,009.17	-8,454.57	8,483.56	8,457.23	26.33	322.214	
4,700.00	4,568.13	4,462.42	4,461.24	21.51	6.29	81.60	-2,011.00	-8,454.47	8,479.63	8,452.77	26.86	315.724	
4,800.00	4,664.56	4,550.00	4,548.80	22.01	6.38	81.75	-2,012.75	-8,454.40	8,475.81	8,448.42	27.39	309.495	
4,900.00	4,760.98	4,632.70	4,631.48	22.50	6.46	81.88	-2,014.38	-8,454.42	8,472.16	8,444.24	27.92	303.493	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
5,000.00	4,857.41	4,735.95	4,734.71	22.99	6.56	82.05	-2,016.35	-8,454.53	8,468.64	8,440.18	28.46	297.594	
5,100.00	4,953.83	4,831.57	4,830.31	23.49	6.66	82.21	-2,018.20	-8,454.58	8,465.15	8,436.16	28.99	291.957	
5,200.00	5,050.25	4,925.00	4,923.73	23.98	6.75	82.37	-2,020.04	-8,454.65	8,461.76	8,432.23	29.53	286.529	
5,300.00	5,146.68	5,033.85	5,032.55	24.48	6.86	82.54	-2,022.21	-8,454.60	8,458.32	8,428.24	30.07	281.257	
5,400.00	5,243.10	5,126.97	5,125.66	24.97	6.96	82.70	-2,024.07	-8,454.60	8,454.99	8,424.38	30.61	276.221	
5,500.00	5,339.53	5,225.00	5,223.67	25.47	7.06	82.86	-2,025.97	-8,454.59	8,451.72	8,420.57	31.15	271.341	
5,600.00	5,435.95	5,338.95	5,337.60	25.96	7.17	83.05	-2,028.14	-8,454.39	8,448.35	8,416.66	31.69	266.607	
5,700.00	5,532.38	5,445.94	5,444.57	26.46	7.28	83.23	-2,030.25	-8,454.11	8,444.98	8,412.76	32.22	262.069	
5,800.00	5,628.80	5,546.98	5,545.58	26.96	7.38	83.39	-2,032.40	-8,453.76	8,441.62	8,408.86	32.76	257.703	
5,900.00	5,725.23	5,660.33	5,658.89	27.45	7.49	83.58	-2,035.34	-8,453.11	8,438.14	8,404.85	33.29	253.461	
6,000.00	5,821.65	5,750.00	5,748.52	27.95	7.58	83.72	-2,037.93	-8,452.54	8,434.68	8,400.86	33.82	249.408	
6,100.00	5,918.08	5,825.00	5,823.50	28.45	7.66	83.84	-2,039.85	-8,452.22	8,431.48	8,397.14	34.34	245.503	
6,200.00	6,014.50	5,887.01	5,885.49	28.94	7.72	83.94	-2,041.31	-8,452.22	8,428.72	8,393.85	34.87	241.724	
6,300.00	6,110.93	5,975.00	5,973.46	29.44	7.82	84.09	-2,043.23	-8,452.38	8,426.22	8,390.81	35.41	237.955	
6,400.00	6,207.35	6,068.26	6,066.70	29.94	7.93	84.24	-2,045.13	-8,452.68	8,423.91	8,387.95	35.96	234.262	
6,500.00	6,303.78	6,153.12	6,151.54	30.43	8.03	84.38	-2,046.93	-8,453.04	8,421.76	8,385.25	36.50	230.704	
6,600.00	6,400.20	6,232.87	6,231.27	30.93	8.12	84.52	-2,048.59	-8,453.41	8,419.75	8,382.70	37.05	227.265	
6,677.76	6,475.18	6,313.04	6,311.42	31.32	8.22	84.65	-2,050.02	-8,453.91	8,418.31	8,380.83	37.49	224.571	
6,700.00	6,496.62	6,350.00	6,348.38	31.43	8.26	77.50	-2,050.59	-8,454.09	8,417.49	8,379.87	37.62	223.750	
6,750.00	6,544.66	6,381.27	6,379.65	31.68	8.30	62.60	-2,051.04	-8,454.27	8,412.88	8,374.99	37.89	222.058	
6,800.00	6,592.24	6,450.00	6,448.37	31.92	8.38	50.59	-2,051.92	-8,454.60	8,404.33	8,366.16	38.17	220.173	
6,850.00	6,639.07	6,475.00	6,473.37	32.16	8.41	41.41	-2,052.21	-8,454.75	8,392.03	8,353.61	38.42	218.420	
6,900.00	6,684.86	6,525.00	6,523.37	32.40	8.47	34.59	-2,052.75	-8,455.06	8,376.01	8,337.33	38.68	216.535	
6,950.00	6,729.32	6,556.97	6,555.34	32.62	8.51	29.42	-2,053.03	-8,455.31	8,356.40	8,317.48	38.92	214.702	
7,000.00	6,772.19	6,600.00	6,598.36	32.84	8.56	25.47	-2,053.33	-8,455.65	8,333.27	8,294.11	39.16	212.804	
7,050.00	6,813.20	6,639.64	6,638.00	33.05	8.60	22.35	-2,053.58	-8,455.98	8,306.77	8,267.39	39.38	210.921	
7,100.00	6,852.09	6,675.00	6,673.36	33.26	8.64	19.84	-2,053.81	-8,456.29	8,277.06	8,237.47	39.59	209.069	
7,150.00	6,888.63	6,707.86	6,706.21	33.45	8.68	17.75	-2,054.01	-8,456.60	8,244.33	8,204.55	39.78	207.245	
7,200.00	6,922.59	6,750.00	6,748.35	33.64	8.72	15.98	-2,054.27	-8,456.97	8,208.71	8,168.75	39.96	205.403	
7,250.00	6,953.76	6,775.00	6,773.35	33.82	8.75	14.38	-2,054.41	-8,457.18	8,170.48	8,130.36	40.12	203.672	
7,300.00	6,981.95	6,812.78	6,811.13	34.00	8.79	12.92	-2,054.65	-8,457.51	8,129.84	8,089.58	40.26	201.921	
7,350.00	7,006.99	6,836.28	6,834.63	34.17	8.82	11.45	-2,054.77	-8,457.70	8,087.05	8,046.67	40.38	200.276	
7,400.00	7,028.72	6,858.76	6,857.10	34.35	8.84	9.85	-2,054.90	-8,457.90	8,042.38	8,001.90	40.48	198.684	
7,450.00	7,047.00	6,884.10	6,882.45	34.52	8.87	7.95	-2,055.04	-8,458.10	7,996.09	7,955.53	40.56	197.134	
7,500.00	7,061.73	6,904.94	6,903.29	34.69	8.90	5.28	-2,055.15	-8,458.25	7,948.47	7,907.84	40.62	195.660	
7,550.00	7,072.82	6,921.13	6,919.48	34.86	8.92	0.81	-2,055.24	-8,458.35	7,899.80	7,859.14	40.66	194.266	
7,600.00	7,080.18	6,925.00	6,923.34	35.04	8.92	-9.06	-2,055.26	-8,458.38	7,850.41	7,809.73	40.68	192.981	
7,650.00	7,083.79	6,930.78	6,929.12	35.22	8.93	-44.02	-2,055.30	-8,458.41	7,800.60	7,759.92	40.68	191.751	
7,674.30	7,084.18	6,931.13	6,929.48	35.32	8.93	-85.00	-2,055.30	-8,458.42	7,776.34	7,735.66	40.67	191.185	
7,700.00	7,084.12	6,931.20	6,929.55	35.42	8.93	-85.01	-2,055.30	-8,458.42	7,750.67	7,710.00	40.67	190.597	
7,800.00	7,083.88	6,931.47	6,929.82	35.84	8.93	-85.05	-2,055.30	-8,458.42	7,650.80	7,610.17	40.63	188.308	
7,900.00	7,083.64	6,931.74	6,930.09	36.34	8.93	-85.09	-2,055.30	-8,458.42	7,550.93	7,510.33	40.59	186.015	
8,000.00	7,083.40	6,932.02	6,930.36	36.90	8.93	-85.13	-2,055.30	-8,458.42	7,451.06	7,410.51	40.56	183.720	
8,100.00	7,083.16	6,932.29	6,930.64	37.52	8.93	-85.17	-2,055.31	-8,458.42	7,351.20	7,310.68	40.52	181.422	
8,200.00	7,082.91	6,932.57	6,930.91	38.21	8.93	-85.21	-2,055.31	-8,458.43	7,251.34	7,210.86	40.48	179.122	
8,300.00	7,082.67	6,932.85	6,931.20	38.95	8.93	-85.25	-2,055.31	-8,458.43	7,151.49	7,111.05	40.45	176.819	
8,400.00	7,082.43	6,933.14	6,931.48	39.74	8.93	-85.30	-2,055.31	-8,458.43	7,051.64	7,011.23	40.41	174.513	
8,500.00	7,082.19	6,933.42	6,931.77	40.59	8.93	-85.34	-2,055.31	-8,458.43	6,951.80	6,911.43	40.37	172.204	
8,600.00	7,081.95	6,933.71	6,932.06	41.49	8.93	-85.38	-2,055.31	-8,458.43	6,851.96	6,811.63	40.33	169.894	
8,700.00	7,081.71	6,934.00	6,932.35	42.43	8.93	-85.42	-2,055.31	-8,458.44	6,752.12	6,711.83	40.29	167.580	
8,800.00	7,081.47	6,934.30	6,932.64	43.41	8.93	-85.47	-2,055.32	-8,458.44	6,652.29	6,612.04	40.25	165.265	
8,900.00	7,081.23	6,934.60	6,932.94	44.44	8.93	-85.51	-2,055.32	-8,458.44	6,552.46	6,512.25	40.21	162.947	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	6,934.90	6,933.24	45.49	8.93	-85.55	-2,055.32	-8,458.44	6,452.64	6,412.47	40.17	160.628	
9,100.00	7,080.74	6,935.20	6,933.55	46.58	8.93	-85.60	-2,055.32	-8,458.44	6,352.83	6,312.70	40.13	158.306	
9,200.00	7,080.50	6,935.51	6,933.85	47.70	8.93	-85.64	-2,055.32	-8,458.45	6,253.02	6,212.93	40.09	155.982	
9,300.00	7,080.26	6,935.82	6,934.16	48.85	8.93	-85.69	-2,055.33	-8,458.45	6,153.22	6,113.17	40.05	153.656	
9,400.00	7,080.02	6,936.13	6,934.48	50.03	8.93	-85.73	-2,055.33	-8,458.45	6,053.42	6,013.42	40.00	151.328	
9,500.00	7,079.78	6,936.45	6,934.79	51.23	8.93	-85.78	-2,055.33	-8,458.45	5,953.63	5,913.68	39.96	148.998	
9,600.00	7,079.54	6,936.77	6,935.11	52.45	8.93	-85.83	-2,055.33	-8,458.46	5,853.85	5,813.94	39.91	146.667	
9,700.00	7,079.30	6,937.09	6,935.44	53.69	8.93	-85.88	-2,055.33	-8,458.46	5,754.08	5,714.21	39.87	144.333	
9,800.00	7,079.06	6,937.42	6,935.76	54.95	8.93	-85.92	-2,055.33	-8,458.46	5,654.31	5,614.49	39.82	141.998	
9,900.00	7,078.82	6,937.75	6,936.09	56.23	8.93	-85.97	-2,055.34	-8,458.46	5,554.55	5,514.78	39.77	139.660	
10,000.00	7,078.57	6,938.08	6,936.42	57.53	8.93	-86.02	-2,055.34	-8,458.46	5,454.80	5,415.08	39.72	137.321	
10,100.00	7,078.33	6,938.42	6,936.76	58.84	8.94	-86.07	-2,055.34	-8,458.47	5,355.06	5,315.39	39.67	134.980	
10,200.00	7,078.09	6,938.76	6,937.10	60.17	8.94	-86.12	-2,055.34	-8,458.47	5,255.33	5,215.71	39.62	132.638	
10,300.00	7,077.85	6,939.10	6,937.44	61.51	8.94	-86.17	-2,055.34	-8,458.47	5,155.61	5,116.04	39.57	130.293	
10,400.00	7,077.61	6,939.45	6,937.79	62.86	8.94	-86.22	-2,055.34	-8,458.47	5,055.90	5,016.39	39.52	127.946	
10,500.00	7,077.37	6,939.80	6,938.14	64.22	8.94	-86.27	-2,055.35	-8,458.48	4,956.21	4,916.75	39.46	125.598	
10,600.00	7,077.13	6,940.15	6,938.50	65.60	8.94	-86.32	-2,055.35	-8,458.48	4,856.52	4,817.12	39.40	123.247	
10,700.00	7,076.89	6,940.51	6,938.86	66.98	8.94	-86.38	-2,055.35	-8,458.48	4,756.85	4,717.50	39.35	120.894	
10,800.00	7,076.65	6,940.87	6,939.22	68.38	8.94	-86.43	-2,055.35	-8,458.48	4,657.19	4,617.91	39.29	118.539	
10,900.00	7,076.40	6,941.24	6,939.58	69.78	8.94	-86.48	-2,055.35	-8,458.49	4,557.55	4,518.32	39.23	116.181	
11,000.00	7,076.16	6,941.61	6,939.95	71.20	8.94	-86.54	-2,055.36	-8,458.49	4,457.93	4,418.76	39.17	113.820	
11,100.00	7,075.92	6,941.98	6,940.33	72.62	8.94	-86.59	-2,055.36	-8,458.49	4,358.32	4,319.21	39.10	111.457	
11,200.00	7,075.68	6,942.36	6,940.71	74.04	8.94	-86.65	-2,055.36	-8,458.50	4,258.73	4,219.69	39.04	109.091	
11,300.00	7,075.44	6,942.75	6,941.09	75.48	8.94	-86.71	-2,055.36	-8,458.50	4,159.15	4,120.18	38.97	106.721	
11,400.00	7,075.20	6,943.13	6,941.48	76.92	8.94	-86.76	-2,055.36	-8,458.50	4,059.60	4,020.70	38.90	104.347	
11,500.00	7,074.96	6,943.52	6,941.87	78.37	8.94	-86.82	-2,055.37	-8,458.50	3,960.08	3,921.24	38.84	101.969	
11,600.00	7,074.72	6,943.92	6,942.26	79.82	8.94	-86.88	-2,055.37	-8,458.51	3,860.57	3,821.81	38.77	99.586	
11,700.00	7,074.48	6,944.32	6,942.66	81.28	8.94	-86.94	-2,055.37	-8,458.51	3,761.10	3,722.40	38.70	97.198	
11,800.00	7,074.23	6,944.72	6,943.07	82.75	8.94	-87.00	-2,055.37	-8,458.51	3,661.65	3,623.02	38.62	94.805	
11,900.00	7,073.99	6,945.13	6,943.48	84.22	8.94	-87.06	-2,055.37	-8,458.52	3,562.23	3,523.68	38.55	92.404	
12,000.00	7,073.75	6,945.55	6,943.89	85.69	8.94	-87.12	-2,055.38	-8,458.52	3,462.84	3,424.37	38.48	89.996	
12,100.00	7,073.51	6,945.97	6,944.31	87.17	8.94	-87.18	-2,055.38	-8,458.52	3,363.50	3,325.09	38.41	87.579	
12,200.00	7,073.27	6,946.39	6,944.73	88.65	8.94	-87.24	-2,055.38	-8,458.53	3,264.19	3,225.86	38.33	85.153	
12,300.00	7,073.03	6,946.82	6,945.16	90.14	8.94	-87.30	-2,055.38	-8,458.53	3,164.92	3,126.66	38.26	82.716	
12,400.00	7,072.79	6,947.25	6,945.60	91.63	8.95	-87.37	-2,055.39	-8,458.53	3,065.71	3,027.51	38.19	80.266	
12,500.00	7,072.55	6,947.69	6,946.04	93.13	8.95	-87.43	-2,055.39	-8,458.53	2,966.54	2,928.41	38.13	77.801	
12,600.00	7,072.31	6,950.00	6,948.34	94.62	8.95	-87.77	-2,055.40	-8,458.55	2,867.44	2,829.37	38.07	75.323	
12,700.00	7,072.06	6,950.00	6,948.34	96.13	8.95	-87.77	-2,055.40	-8,458.55	2,768.39	2,730.38	38.02	72.822	
12,800.00	7,071.82	6,950.00	6,948.34	97.63	8.95	-87.77	-2,055.40	-8,458.55	2,669.42	2,631.45	37.97	70.299	
12,900.00	7,071.58	6,950.00	6,948.34	99.14	8.95	-87.77	-2,055.40	-8,458.55	2,570.53	2,532.59	37.94	67.751	
13,000.00	7,071.34	6,950.00	6,948.34	100.65	8.95	-87.77	-2,055.40	-8,458.55	2,471.73	2,433.80	37.93	65.174	
13,100.00	7,071.10	6,950.50	6,948.84	102.16	8.95	-87.85	-2,055.40	-8,458.56	2,373.03	2,335.10	37.93	62.564	
13,200.00	7,070.86	6,951.04	6,949.38	103.68	8.95	-87.93	-2,055.40	-8,458.56	2,274.44	2,236.48	37.96	59.916	
13,300.00	7,070.62	6,951.58	6,949.92	105.20	8.95	-88.01	-2,055.41	-8,458.57	2,175.98	2,137.95	38.03	57.224	
13,400.00	7,070.38	6,952.12	6,950.46	106.72	8.95	-88.08	-2,055.41	-8,458.57	2,077.66	2,039.53	38.13	54.482	
13,500.00	7,070.14	6,952.65	6,951.00	108.24	8.95	-88.16	-2,055.41	-8,458.57	1,979.52	1,941.22	38.30	51.684	
13,600.00	7,069.89	6,953.19	6,951.54	109.77	8.95	-88.24	-2,055.41	-8,458.58	1,881.57	1,843.03	38.54	48.823	
13,700.00	7,069.65	6,953.73	6,952.07	111.30	8.95	-88.32	-2,055.42	-8,458.58	1,783.85	1,744.98	38.87	45.892	
13,800.00	7,069.41	6,954.27	6,952.61	112.83	8.95	-88.40	-2,055.42	-8,458.59	1,686.39	1,647.07	39.32	42.886	
13,900.00	7,069.17	6,954.80	6,953.15	114.36	8.95	-88.48	-2,055.42	-8,458.59	1,589.26	1,549.33	39.93	39.802	
14,000.00	7,068.93	6,955.34	6,953.68	115.89	8.95	-88.56	-2,055.43	-8,458.59	1,492.49	1,451.76	40.74	36.639	
14,100.00	7,068.69	6,955.88	6,954.22	117.43	8.95	-88.64	-2,055.43	-8,458.60	1,396.19	1,354.39	41.80	33.403	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	6,956.42	6,954.76	118.97	8.96	-88.72	-2,055.43	-8,458.60	1,300.44	1,257.25	43.19	30.108	
14,300.00	7,068.21	6,956.95	6,955.30	120.50	8.96	-88.80	-2,055.43	-8,458.61	1,205.39	1,160.37	45.01	26.778	
14,400.00	7,067.97	6,957.49	6,955.83	122.05	8.96	-88.88	-2,055.44	-8,458.61	1,111.20	1,063.82	47.38	23.451	
14,500.00	7,067.72	6,958.02	6,956.37	123.59	8.96	-88.96	-2,055.44	-8,458.62	1,018.12	967.66	50.46	20.176	
14,600.00	7,067.48	6,958.56	6,956.90	125.13	8.96	-89.03	-2,055.44	-8,458.62	926.48	872.04	54.45	17.016	
14,700.00	7,067.24	6,959.10	6,957.44	126.68	8.96	-89.11	-2,055.44	-8,458.62	836.76	777.16	59.60	14.039	
14,800.00	7,067.00	6,959.63	6,957.98	128.22	8.96	-89.19	-2,055.45	-8,458.63	749.65	683.39	66.26	11.314	
14,900.00	7,066.76	6,960.17	6,958.51	129.77	8.96	-89.27	-2,055.45	-8,458.63	666.17	591.37	74.79	8.907	
15,000.00	7,066.52	6,960.70	6,959.05	131.32	8.96	-89.35	-2,055.45	-8,458.64	587.86	502.23	85.63	6.865	
15,100.00	7,066.28	6,961.24	6,959.58	132.87	8.96	-89.43	-2,055.46	-8,458.64	517.09	418.09	99.00	5.223	
15,200.00	7,066.04	6,961.77	6,960.12	134.42	8.96	-89.51	-2,055.46	-8,458.65	457.36	342.85	114.52	3.994	
15,300.00	7,065.80	6,962.31	6,960.65	135.97	8.96	-89.59	-2,055.46	-8,458.65	413.50	283.19	130.31	3.173	
15,400.00	7,065.55	6,962.84	6,961.19	137.53	8.96	-89.67	-2,055.46	-8,458.65	390.87	248.35	142.52	2.743	
15,441.01	7,065.46	6,963.06	6,961.40	138.17	8.96	-89.70	-2,055.46	-8,458.66	388.71	243.24	145.47	2.672	CC, ES, SF
15,500.00	7,065.31	6,963.38	6,961.72	139.08	8.96	-89.74	-2,055.47	-8,458.66	393.16	246.03	147.13	2.672	
15,600.00	7,065.07	6,963.91	6,962.25	140.64	8.96	-89.82	-2,055.47	-8,458.66	419.97	276.38	143.59	2.925	
15,700.00	7,064.83	6,964.45	6,962.79	142.20	8.96	-89.90	-2,055.47	-8,458.67	467.09	332.08	135.01	3.460	
15,800.00	7,064.59	6,964.98	6,963.32	143.75	8.96	-89.98	-2,055.48	-8,458.67	529.12	404.20	124.92	4.236	
15,900.00	7,064.35	6,965.51	6,963.86	145.31	8.97	-90.06	-2,055.48	-8,458.67	601.47	486.12	115.34	5.215	
16,000.00	7,064.11	6,966.05	6,964.39	146.87	8.97	-90.14	-2,055.48	-8,458.68	680.85	573.85	107.00	6.363	
16,100.00	7,063.87	6,966.58	6,964.92	148.43	8.97	-90.22	-2,055.48	-8,458.68	765.08	665.10	99.98	7.652	
16,200.00	7,063.63	6,967.11	6,965.46	149.99	8.97	-90.29	-2,055.49	-8,458.69	852.73	758.59	94.14	9.059	
16,300.00	7,063.38	6,967.65	6,965.99	151.56	8.97	-90.37	-2,055.49	-8,458.69	942.84	853.57	89.27	10.562	
16,400.00	7,063.14	6,968.18	6,966.52	153.12	8.97	-90.45	-2,055.49	-8,458.70	1,034.76	949.57	85.19	12.146	
16,500.00	7,062.90	6,968.71	6,967.06	154.68	8.97	-90.53	-2,055.49	-8,458.70	1,128.06	1,046.30	81.76	13.797	
16,600.00	7,062.66	6,969.25	6,967.59	156.25	8.97	-90.61	-2,055.50	-8,458.70	1,222.42	1,143.58	78.84	15.505	
16,700.00	7,062.42	6,969.78	6,968.12	157.81	8.97	-90.69	-2,055.50	-8,458.71	1,317.62	1,241.27	76.34	17.259	
16,800.00	7,062.18	6,970.31	6,968.65	159.38	8.97	-90.77	-2,055.50	-8,458.71	1,413.47	1,339.28	74.19	19.052	
16,874.30	7,062.00	6,970.71	6,969.05	160.54	8.97	-90.82	-2,055.51	-8,458.72	1,485.04	1,412.27	72.77	20.406	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	15.00	15.00	3.28	0.14	97.83	-1,150.04	8,361.69	8,440.41				
100.00	100.00	115.00	115.00	3.29	1.06	97.83	-1,150.04	8,361.69	8,440.41	8,436.05	4.35	1,939.157	
200.00	200.00	215.00	215.00	3.34	1.99	97.83	-1,150.04	8,361.69	8,440.41	8,435.08	5.32	1,585.540	
300.00	300.00	315.00	315.00	3.42	3.11	97.83	-1,150.04	8,361.69	8,440.41	8,433.87	6.53	1,291.633	
400.00	400.00	415.00	415.00	3.54	4.96	97.83	-1,150.04	8,361.69	8,440.41	8,431.91	8.50	992.823	
500.00	500.00	515.00	515.00	3.69	6.81	97.83	-1,150.04	8,361.69	8,440.41	8,429.91	10.50	803.898	
600.00	599.98	613.57	613.56	3.86	8.63	-84.11	-1,149.54	8,361.69	8,440.16	8,427.67	12.49	675.800	
700.00	699.84	711.48	711.47	4.04	10.44	-84.16	-1,149.75	8,361.69	8,439.65	8,425.17	14.48	582.702	
800.00	799.45	814.47	814.45	4.25	12.37	-84.23	-1,150.04	8,361.69	8,438.81	8,422.19	16.62	507.727	
900.00	898.70	913.72	913.70	4.48	14.32	-84.34	-1,150.04	8,361.69	8,437.58	8,418.78	18.80	448.827	
1,000.00	997.47	1,012.49	1,012.47	4.74	16.25	-84.47	-1,150.04	8,361.69	8,436.04	8,415.05	20.99	401.833	
1,100.00	1,095.62	1,109.52	1,109.50	5.03	18.15	-84.64	-1,149.52	8,361.69	8,434.13	8,410.95	23.18	363.823	
1,200.00	1,193.06	1,205.24	1,205.22	5.35	20.02	-84.82	-1,149.69	8,361.69	8,432.03	8,406.66	25.37	332.323	
1,268.36	1,259.18	1,270.26	1,270.23	5.58	21.30	-84.97	-1,149.90	8,361.69	8,430.47	8,403.59	26.88	313.637	
1,300.00	1,289.69	1,300.27	1,300.24	5.70	21.89	-85.02	-1,150.02	8,361.69	8,429.72	8,402.14	27.58	305.649	
1,400.00	1,386.11	1,401.18	1,401.11	6.07	24.07	-85.20	-1,150.04	8,361.69	8,427.38	8,397.25	30.13	279.701	
1,500.00	1,482.54	1,497.61	1,497.54	6.45	26.16	-85.37	-1,150.04	8,361.69	8,425.13	8,392.52	32.61	258.355	
1,600.00	1,578.96	1,594.02	1,593.94	6.86	28.25	-85.55	-1,148.78	8,361.69	8,422.81	8,387.70	35.11	239.927	
1,700.00	1,675.39	1,687.80	1,687.72	7.27	30.29	-85.72	-1,148.92	8,361.69	8,420.73	8,383.18	37.56	224.216	
1,800.00	1,771.81	1,781.74	1,781.66	7.70	32.33	-85.89	-1,149.32	8,361.69	8,418.77	8,378.75	40.02	210.361	
1,900.00	1,868.24	1,883.42	1,883.24	8.13	34.53	-86.07	-1,150.04	8,361.69	8,416.92	8,374.26	42.66	197.304	
2,000.00	1,964.66	1,979.84	1,979.66	8.57	36.50	-86.24	-1,150.04	8,361.69	8,415.08	8,370.01	45.07	186.707	
2,100.00	2,061.09	2,076.27	2,076.09	9.02	38.47	-86.41	-1,150.04	8,361.69	8,413.32	8,365.83	47.49	177.164	
2,200.00	2,157.51	2,171.08	2,170.89	9.47	40.41	-86.59	-1,148.76	8,361.69	8,411.52	8,361.64	49.88	168.638	
2,300.00	2,253.94	2,264.36	2,264.15	9.93	42.31	-86.76	-1,149.14	8,361.69	8,409.96	8,357.72	52.24	160.979	
2,400.00	2,350.36	2,357.85	2,357.64	10.39	44.22	-86.92	-1,149.91	8,361.69	8,408.53	8,353.91	54.61	153.960	
2,500.00	2,446.79	2,462.03	2,461.79	10.86	46.42	-87.11	-1,150.04	8,361.69	8,407.11	8,349.83	57.28	146.772	
2,600.00	2,543.21	2,558.45	2,558.21	11.33	48.47	-87.28	-1,150.04	8,361.69	8,405.76	8,345.97	59.79	140.580	
2,700.00	2,639.64	2,654.88	2,654.64	11.80	50.51	-87.46	-1,150.04	8,361.69	8,404.50	8,342.19	62.31	134.882	
2,800.00	2,736.06	2,751.30	2,751.06	12.27	52.56	-87.63	-1,150.04	8,361.69	8,403.32	8,338.49	64.83	129.624	
2,900.00	2,832.49	2,847.12	2,846.87	12.75	54.59	-87.81	-1,149.24	8,361.69	8,402.17	8,334.83	67.34	124.779	
3,000.00	2,928.91	2,942.94	2,942.69	13.23	56.62	-87.98	-1,149.38	8,361.69	8,401.17	8,331.32	69.85	120.281	
3,100.00	3,025.34	3,038.82	3,038.57	13.71	58.66	-88.15	-1,149.63	8,361.69	8,400.26	8,327.90	72.36	116.091	
3,200.00	3,121.76	3,134.75	3,134.50	14.19	60.69	-88.32	-1,149.99	8,361.69	8,399.44	8,324.57	74.88	112.180	
3,300.00	3,218.18	3,233.55	3,233.18	14.67	63.07	-88.50	-1,150.04	8,361.69	8,398.69	8,320.95	77.73	108.044	
3,400.00	3,314.61	3,329.98	3,329.61	15.15	65.43	-88.68	-1,150.04	8,361.69	8,398.01	8,317.43	80.58	104.219	
3,500.00	3,411.03	3,425.64	3,425.25	15.64	67.77	-88.86	-1,148.46	8,361.69	8,397.33	8,313.92	83.41	100.677	
3,600.00	3,507.46	3,519.98	3,519.58	16.12	70.08	-89.03	-1,148.86	8,361.69	8,396.85	8,310.64	86.21	97.405	
3,700.00	3,603.88	3,614.61	3,614.19	16.61	72.40	-89.19	-1,149.73	8,361.69	8,396.47	8,307.46	89.01	94.331	
3,800.00	3,700.31	3,715.85	3,715.31	17.10	74.77	-89.37	-1,150.04	8,361.69	8,396.14	8,304.28	91.86	91.399	
3,900.00	3,796.73	3,810.79	3,810.24	17.59	76.95	-89.55	-1,149.29	8,361.69	8,395.85	8,301.32	94.53	88.816	
4,000.00	3,893.16	3,908.76	3,908.16	18.07	79.18	-89.72	-1,150.04	8,361.69	8,395.70	8,298.45	97.25	86.329	
4,100.00	3,989.58	4,005.18	4,004.58	18.56	81.23	-89.90	-1,150.04	8,361.69	8,395.61	8,295.82	99.79	84.129	
4,159.48	4,046.93	4,062.53	4,061.93	18.86	82.45	-90.00	-1,150.04	8,361.69	8,395.60	8,294.29	101.31	82.874 CC	
4,200.00	4,086.01	4,101.61	4,101.01	19.05	83.28	-90.07	-1,150.04	8,361.69	8,395.60	8,293.27	102.34	82.039	
4,300.00	4,182.43	4,198.03	4,197.43	19.55	85.33	-90.25	-1,150.04	8,361.69	8,395.68	8,290.80	104.88	80.051	
4,400.00	4,278.86	4,294.46	4,293.86	20.04	87.39	-90.42	-1,150.04	8,361.69	8,395.84	8,288.42	107.42	78.157	
4,500.00	4,375.28	4,390.88	4,390.28	20.53	89.44	-90.59	-1,150.04	8,361.69	8,396.08	8,286.12	109.97	76.352	
4,600.00	4,471.71	4,487.31	4,486.71	21.02	91.49	-90.77	-1,150.04	8,361.69	8,396.41	8,283.90	112.51	74.628	
4,700.00	4,568.13	4,583.58	4,582.96	21.51	93.54	-90.96	-1,147.44	8,361.69	8,396.78	8,281.72	115.05	72.983	
4,800.00	4,664.56	4,679.90	4,679.27	22.01	95.59	-91.13	-1,147.62	8,361.69	8,397.28	8,279.69	117.59	71.409	
4,900.00	4,760.98	4,776.29	4,775.65	22.50	97.64	-91.30	-1,147.93	8,361.69	8,397.87	8,277.73	120.14	69.902	

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 752H
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 752H	**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
5,000.00	4,857.41	4,872.76	4,872.12	22.99	99.69	-91.48	-1,148.37	8,361.69	8,398.54	8,275.85	122.68	68.457	
5,100.00	4,953.83	4,969.30	4,968.65	23.49	101.75	-91.65	-1,148.95	8,361.69	8,399.29	8,274.06	125.23	67.070	
5,200.00	5,050.25	5,065.92	5,065.27	23.98	103.80	-91.82	-1,149.67	8,361.69	8,400.12	8,272.34	127.78	65.738	
5,300.00	5,146.68	5,162.46	5,161.68	24.48	105.81	-91.99	-1,150.04	8,361.69	8,401.04	8,270.75	130.29	64.481	
5,400.00	5,243.10	5,258.89	5,258.10	24.97	107.78	-92.16	-1,150.04	8,361.69	8,402.03	8,269.28	132.75	63.292	
5,500.00	5,339.53	5,355.31	5,354.53	25.47	109.75	-92.34	-1,150.04	8,361.69	8,403.11	8,267.89	135.21	62.146	
5,600.00	5,435.95	5,451.74	5,450.95	25.96	111.72	-92.51	-1,150.04	8,361.69	8,404.27	8,266.59	137.68	61.043	
5,700.00	5,532.38	5,548.16	5,547.38	26.46	113.69	-92.68	-1,150.04	8,361.69	8,405.52	8,265.37	140.14	59.978	
5,800.00	5,628.80	5,644.59	5,643.80	26.96	115.66	-92.86	-1,150.04	8,361.69	8,406.85	8,264.24	142.61	58.951	
5,900.00	5,725.23	5,741.11	5,740.30	27.45	117.64	-93.05	-1,147.46	8,361.69	8,408.31	8,263.24	145.07	57.959	
6,000.00	5,821.65	5,837.86	5,837.04	27.95	119.61	-93.22	-1,147.58	8,361.69	8,409.81	8,262.27	147.54	56.999	
6,100.00	5,918.08	5,934.68	5,933.86	28.45	121.59	-93.40	-1,147.84	8,361.69	8,411.39	8,261.38	150.02	56.070	
6,200.00	6,014.50	6,031.58	6,030.76	28.94	123.57	-93.57	-1,148.23	8,361.69	8,413.05	8,260.56	152.49	55.171	
6,300.00	6,110.93	6,128.56	6,127.73	29.44	125.55	-93.74	-1,148.76	8,361.69	8,414.78	8,259.81	154.97	54.301	
6,400.00	6,207.35	6,225.62	6,224.78	29.94	127.54	-93.91	-1,149.44	8,361.69	8,416.59	8,259.14	157.44	53.458	
6,500.00	6,303.78	6,308.00	6,307.08	30.43	129.21	-94.05	-1,150.04	8,361.69	8,418.48	8,258.87	159.61	52.743 ES	
6,600.00	6,400.20	6,308.00	6,307.08	30.93	129.21	-94.05	-1,150.04	8,361.69	8,421.16	8,261.07	160.09	52.602	
6,677.76	6,475.18	6,308.00	6,307.08	31.32	129.21	-94.05	-1,150.04	8,361.69	8,424.07	8,263.62	160.45	52.503	
6,700.00	6,496.62	6,308.00	6,307.08	31.43	129.21	-101.27	-1,150.04	8,361.69	8,425.42	8,264.87	160.55	52.478	
6,750.00	6,544.66	6,308.00	6,307.08	31.68	129.21	-116.22	-1,150.04	8,361.69	8,431.49	8,270.72	160.77	52.445	
6,800.00	6,592.24	6,308.00	6,307.08	31.92	129.21	-128.34	-1,150.04	8,361.69	8,441.71	8,280.73	160.98	52.440 SF	
6,850.00	6,639.07	6,308.00	6,307.08	32.16	129.21	-137.55	-1,150.04	8,361.69	8,456.01	8,294.84	161.17	52.465	
6,900.00	6,684.86	6,308.00	6,307.08	32.40	129.21	-144.44	-1,150.04	8,361.69	8,474.29	8,312.93	161.36	52.520	
6,950.00	6,729.32	6,308.00	6,307.08	32.62	129.21	-149.64	-1,150.04	8,361.69	8,496.39	8,334.87	161.52	52.602	
7,000.00	6,772.19	6,308.00	6,307.08	32.84	129.21	-153.65	-1,150.04	8,361.69	8,522.17	8,360.49	161.68	52.712	
7,050.00	6,813.20	6,308.00	6,307.08	33.05	129.21	-156.82	-1,150.04	8,361.69	8,551.42	8,389.60	161.81	52.848	
7,100.00	6,852.09	6,308.00	6,307.08	33.26	129.21	-159.38	-1,150.04	8,361.69	8,583.93	8,421.99	161.93	53.009	
7,150.00	6,888.63	6,308.00	6,307.08	33.45	129.21	-161.52	-1,150.04	8,361.69	8,619.46	8,457.42	162.04	53.193	
7,200.00	6,922.59	6,308.00	6,307.08	33.64	129.21	-163.37	-1,150.04	8,361.69	8,657.77	8,495.63	162.13	53.400	
7,250.00	6,953.76	6,308.00	6,307.08	33.82	129.21	-165.04	-1,150.04	8,361.69	8,698.57	8,536.36	162.21	53.626	
7,300.00	6,981.95	6,308.00	6,307.08	34.00	129.21	-166.63	-1,150.04	8,361.69	8,741.59	8,579.32	162.27	53.871	
7,350.00	7,006.99	6,308.00	6,307.08	34.17	129.21	-168.29	-1,150.04	8,361.69	8,786.52	8,624.20	162.32	54.132	
7,400.00	7,028.72	6,308.00	6,307.08	34.35	129.21	-170.20	-1,150.04	8,361.69	8,833.07	8,670.72	162.35	54.407	
7,450.00	7,047.00	6,308.00	6,307.08	34.52	129.21	-172.79	-1,150.04	8,361.69	8,880.92	8,718.55	162.38	54.693	
7,500.00	7,061.73	6,308.00	6,307.08	34.69	129.21	-177.16	-1,150.04	8,361.69	8,929.77	8,767.38	162.39	54.989	
7,550.00	7,072.82	6,308.00	6,307.08	34.86	129.21	172.40	-1,150.04	8,361.69	8,979.29	8,816.89	162.39	55.293	
7,600.00	7,080.18	6,308.00	6,307.08	35.04	129.21	123.50	-1,150.04	8,361.69	9,029.17	8,866.78	162.39	55.602	
7,650.00	7,083.79	6,308.00	6,307.08	35.22	129.21	45.97	-1,150.04	8,361.69	9,079.10	8,916.72	162.38	55.913	
7,674.30	7,084.18	6,308.00	6,307.08	35.32	129.21	35.88	-1,150.04	8,361.69	9,103.29	8,940.91	162.37	56.064	
7,700.00	7,084.12	6,308.00	6,307.08	35.42	129.21	35.88	-1,150.04	8,361.69	9,128.84	8,966.47	162.37	56.224	
7,800.00	7,083.88	6,308.00	6,307.08	35.84	129.21	35.88	-1,150.04	8,361.69	9,228.24	9,065.90	162.34	56.846	
7,900.00	7,083.64	6,308.00	6,307.08	36.34	129.21	35.88	-1,150.04	8,361.69	9,327.65	9,165.34	162.31	57.468	
8,000.00	7,083.40	6,308.00	6,307.08	36.90	129.21	35.88	-1,150.04	8,361.69	9,427.07	9,264.78	162.29	58.089	
8,100.00	7,083.16	6,308.00	6,307.08	37.52	129.21	35.88	-1,150.04	8,361.69	9,526.51	9,364.24	162.26	58.710	
8,200.00	7,082.91	6,308.00	6,307.08	38.21	129.21	35.88	-1,150.04	8,361.69	9,625.96	9,463.71	162.24	59.331	
8,300.00	7,082.67	6,308.00	6,307.08	38.95	129.21	35.88	-1,150.04	8,361.69	9,725.42	9,563.19	162.22	59.951	
8,400.00	7,082.43	6,308.00	6,307.08	39.74	129.21	35.88	-1,150.04	8,361.69	9,824.89	9,662.68	162.20	60.571	
8,500.00	7,082.19	6,308.00	6,307.08	40.59	129.21	35.88	-1,150.04	8,361.69	9,924.37	9,762.18	162.19	61.191	
8,600.00	7,081.95	6,308.00	6,307.08	41.49	129.21	35.88	-1,150.04	8,361.69	10,023.86	9,861.69	162.17	61.810	
8,700.00	7,081.71	6,308.00	6,307.08	42.43	129.21	35.88	-1,150.04	8,361.69	10,123.36	9,961.20	162.16	62.429	
8,800.00	7,081.47	6,308.00	6,307.08	43.41	129.21	35.88	-1,150.04	8,361.69	10,222.87	10,060.73	162.15	63.048	
8,900.00	7,081.23	6,308.00	6,307.08	44.44	129.21	35.88	-1,150.04	8,361.69	10,322.39	10,160.26	162.13	63.666	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	6,308.00	6,307.08	45.49	129.21	35.88	-1,150.04	8,361.69	10,421.92	10,259.80	162.12	64.284	
9,100.00	7,080.74	6,308.00	6,307.08	46.58	129.21	35.88	-1,150.04	8,361.69	10,521.46	10,359.35	162.12	64.901	
9,200.00	7,080.50	6,308.00	6,307.08	47.70	129.21	35.88	-1,150.04	8,361.69	10,621.01	10,458.90	162.11	65.518	
9,300.00	7,080.26	6,308.00	6,307.08	48.85	129.21	35.88	-1,150.04	8,361.69	10,720.56	10,558.46	162.10	66.135	
9,400.00	7,080.02	6,308.00	6,307.08	50.03	129.21	35.88	-1,150.04	8,361.69	10,820.13	10,658.03	162.10	66.751	
9,500.00	7,079.78	6,308.00	6,307.08	51.23	129.21	35.88	-1,150.04	8,361.69	10,919.70	10,757.61	162.09	67.366	
9,600.00	7,079.54	6,308.00	6,307.08	52.45	129.21	35.88	-1,150.04	8,361.69	11,019.28	10,857.19	162.09	67.982	
9,700.00	7,079.30	6,308.00	6,307.08	53.69	129.21	35.88	-1,150.04	8,361.69	11,118.87	10,956.78	162.09	68.596	
9,800.00	7,079.06	6,308.00	6,307.08	54.95	129.21	35.88	-1,150.04	8,361.69	11,218.46	11,056.37	162.09	69.211	
9,900.00	7,078.82	6,308.00	6,307.08	56.23	129.21	35.88	-1,150.04	8,361.69	11,318.06	11,155.97	162.09	69.825	
10,000.00	7,078.57	6,308.00	6,307.08	57.53	129.21	35.88	-1,150.04	8,361.69	11,417.67	11,255.58	162.10	70.438	
10,100.00	7,078.33	6,308.00	6,307.08	58.84	129.21	35.88	-1,150.04	8,361.69	11,517.29	11,355.19	162.10	71.051	
10,200.00	7,078.09	6,308.00	6,307.08	60.17	129.21	35.88	-1,150.04	8,361.69	11,616.91	11,454.81	162.10	71.663	
10,300.00	7,077.85	6,308.00	6,307.08	61.51	129.21	35.88	-1,150.04	8,361.69	11,716.54	11,554.43	162.11	72.275	
10,400.00	7,077.61	6,308.00	6,307.08	62.86	129.21	35.88	-1,150.04	8,361.69	11,816.17	11,654.06	162.12	72.886	
10,500.00	7,077.37	6,308.00	6,307.08	64.22	129.21	35.88	-1,150.04	8,361.69	11,915.82	11,753.69	162.13	73.497	
10,600.00	7,077.13	6,308.00	6,307.08	65.60	129.21	35.88	-1,150.04	8,361.69	12,015.46	11,853.33	162.14	74.107	
10,700.00	7,076.89	6,308.00	6,307.08	66.98	129.21	35.88	-1,150.04	8,361.69	12,115.12	11,952.97	162.15	74.717	
10,800.00	7,076.65	6,308.00	6,307.08	68.38	129.21	35.88	-1,150.04	8,361.69	12,214.77	12,052.62	162.16	75.326	
10,900.00	7,076.40	6,308.00	6,307.08	69.78	129.21	35.88	-1,150.04	8,361.69	12,314.44	12,152.27	162.17	75.935	
11,000.00	7,076.16	6,308.00	6,307.08	71.20	129.21	35.88	-1,150.04	8,361.69	12,414.11	12,251.92	162.18	76.543	
11,100.00	7,075.92	6,308.00	6,307.08	72.62	129.21	35.88	-1,150.04	8,361.69	12,513.78	12,351.58	162.20	77.150	
11,200.00	7,075.68	6,308.00	6,307.08	74.04	129.21	35.88	-1,150.04	8,361.69	12,613.46	12,451.25	162.22	77.757	
11,300.00	7,075.44	6,308.00	6,307.08	75.48	129.21	35.88	-1,150.04	8,361.69	12,713.15	12,550.91	162.23	78.364	
11,400.00	7,075.20	6,308.00	6,307.08	76.92	129.21	35.88	-1,150.04	8,361.69	12,812.84	12,650.59	162.25	78.969	
11,500.00	7,074.96	6,308.00	6,307.08	78.37	129.21	35.88	-1,150.04	8,361.69	12,912.53	12,750.26	162.27	79.575	
11,600.00	7,074.72	6,308.00	6,307.08	79.82	129.21	35.88	-1,150.04	8,361.69	13,012.23	12,849.94	162.29	80.179	
11,700.00	7,074.48	6,308.00	6,307.08	81.28	129.21	35.88	-1,150.04	8,361.69	13,111.93	12,949.62	162.31	80.783	
11,800.00	7,074.23	6,308.00	6,307.08	82.75	129.21	35.88	-1,150.04	8,361.69	13,211.64	13,049.31	162.33	81.386	
11,900.00	7,073.99	6,308.00	6,307.08	84.22	129.21	35.88	-1,150.04	8,361.69	13,311.35	13,149.00	162.36	81.989	
12,000.00	7,073.75	6,308.00	6,307.08	85.69	129.21	35.88	-1,150.04	8,361.69	13,411.07	13,248.69	162.38	82.591	
12,100.00	7,073.51	6,308.00	6,307.08	87.17	129.21	35.88	-1,150.04	8,361.69	13,510.79	13,348.39	162.40	83.193	
12,200.00	7,073.27	6,308.00	6,307.08	88.65	129.21	35.88	-1,150.04	8,361.69	13,610.52	13,448.09	162.43	83.793	
12,300.00	7,073.03	6,308.00	6,307.08	90.14	129.21	35.88	-1,150.04	8,361.69	13,710.25	13,547.79	162.46	84.393	
12,400.00	7,072.79	6,308.00	6,307.08	91.63	129.21	35.88	-1,150.04	8,361.69	13,809.98	13,647.50	162.48	84.993	
12,500.00	7,072.55	6,308.00	6,307.08	93.13	129.21	35.88	-1,150.04	8,361.69	13,909.72	13,747.20	162.51	85.592	
12,600.00	7,072.31	6,308.00	6,307.08	94.62	129.21	35.88	-1,150.04	8,361.69	14,009.46	13,846.92	162.54	86.190	
12,700.00	7,072.06	6,308.00	6,307.08	96.13	129.21	35.88	-1,150.04	8,361.69	14,109.20	13,946.63	162.57	86.787	
12,800.00	7,071.82	6,308.00	6,307.08	97.63	129.21	35.88	-1,150.04	8,361.69	14,208.95	14,046.35	162.60	87.384	
12,900.00	7,071.58	6,308.00	6,307.08	99.14	129.21	35.88	-1,150.04	8,361.69	14,308.70	14,146.07	162.64	87.980	
13,000.00	7,071.34	6,308.00	6,307.08	100.65	129.21	35.88	-1,150.04	8,361.69	14,408.46	14,245.79	162.67	88.575	
13,100.00	7,071.10	6,308.00	6,307.08	102.16	129.21	35.88	-1,150.04	8,361.69	14,508.22	14,345.51	162.70	89.170	
13,200.00	7,070.86	6,308.00	6,307.08	103.68	129.21	35.88	-1,150.04	8,361.69	14,607.98	14,445.24	162.74	89.764	
13,300.00	7,070.62	6,308.00	6,307.08	105.20	129.21	35.88	-1,150.04	8,361.69	14,707.74	14,544.97	162.77	90.357	
13,400.00	7,070.38	6,308.00	6,307.08	106.72	129.21	35.88	-1,150.04	8,361.69	14,807.51	14,644.70	162.81	90.950	
13,500.00	7,070.14	6,308.00	6,307.08	108.24	129.21	35.88	-1,150.04	8,361.69	14,907.28	14,744.43	162.85	91.542	
13,600.00	7,069.89	6,308.00	6,307.08	109.77	129.21	35.88	-1,150.04	8,361.69	15,007.06	14,844.17	162.88	92.133	
13,700.00	7,069.65	6,308.00	6,307.08	111.30	129.21	35.88	-1,150.04	8,361.69	15,106.83	14,943.91	162.92	92.723	
13,800.00	7,069.41	6,308.00	6,307.08	112.83	129.21	35.88	-1,150.04	8,361.69	15,206.61	15,043.65	162.96	93.313	
13,900.00	7,069.17	6,308.00	6,307.08	114.36	129.21	35.88	-1,150.04	8,361.69	15,306.40	15,143.39	163.00	93.902	
14,000.00	7,068.93	6,308.00	6,307.08	115.89	129.21	35.88	-1,150.04	8,361.69	15,406.18	15,243.14	163.05	94.490	
14,100.00	7,068.69	6,308.00	6,307.08	117.43	129.21	35.88	-1,150.04	8,361.69	15,505.97	15,342.88	163.09	95.077	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,068.45	6,308.00	6,307.08	118.97	129.21	35.88	-1,150.04	8,361.69	15,605.76	15,442.63	163.13	95.664	
14,300.00	7,068.21	6,308.00	6,307.08	120.50	129.21	35.88	-1,150.04	8,361.69	15,705.55	15,542.38	163.17	96.250	
14,400.00	7,067.97	6,308.00	6,307.08	122.05	129.21	35.88	-1,150.04	8,361.69	15,805.35	15,642.13	163.22	96.835	
14,500.00	7,067.72	6,308.00	6,307.08	123.59	129.21	35.88	-1,150.04	8,361.69	15,905.15	15,741.89	163.26	97.419	
14,600.00	7,067.48	6,308.00	6,307.08	125.13	129.21	35.88	-1,150.04	8,361.69	16,004.95	15,841.64	163.31	98.003	
14,700.00	7,067.24	6,308.00	6,307.08	126.68	129.21	35.88	-1,150.04	8,361.69	16,104.76	15,941.40	163.36	98.586	
14,800.00	7,067.00	6,308.00	6,307.08	128.22	129.21	35.88	-1,150.04	8,361.69	16,204.56	16,041.16	163.41	99.168	
14,900.00	7,066.76	6,308.00	6,307.08	129.77	129.21	35.88	-1,150.04	8,361.69	16,304.37	16,140.92	163.45	99.749	
15,000.00	7,066.52	6,308.00	6,307.08	131.32	129.21	35.88	-1,150.04	8,361.69	16,404.18	16,240.68	163.50	100.330	
15,100.00	7,066.28	6,308.00	6,307.08	132.87	129.21	35.88	-1,150.04	8,361.69	16,504.00	16,340.44	163.55	100.909	
15,200.00	7,066.04	6,308.00	6,307.08	134.42	129.21	35.88	-1,150.04	8,361.69	16,603.81	16,440.21	163.60	101.488	
15,300.00	7,065.80	6,308.00	6,307.08	135.97	129.21	35.88	-1,150.04	8,361.69	16,703.63	16,539.97	163.65	102.066	
15,400.00	7,065.55	6,308.00	6,307.08	137.53	129.21	35.88	-1,150.04	8,361.69	16,803.45	16,639.74	163.71	102.643	
15,500.00	7,065.31	6,308.00	6,307.08	139.08	129.21	35.88	-1,150.04	8,361.69	16,903.27	16,739.51	163.76	103.220	
15,600.00	7,065.07	6,308.00	6,307.08	140.64	129.21	35.88	-1,150.04	8,361.69	17,003.10	16,839.28	163.81	103.796	
15,700.00	7,064.83	6,308.00	6,307.08	142.20	129.21	35.88	-1,150.04	8,361.69	17,102.92	16,939.06	163.87	104.370	
15,800.00	7,064.59	6,308.00	6,307.08	143.75	129.21	35.88	-1,150.04	8,361.69	17,202.75	17,038.83	163.92	104.944	
15,900.00	7,064.35	6,308.00	6,307.08	145.31	129.21	35.88	-1,150.04	8,361.69	17,302.58	17,138.60	163.98	105.518	
16,000.00	7,064.11	6,308.00	6,307.08	146.87	129.21	35.88	-1,150.04	8,361.69	17,402.41	17,238.38	164.03	106.090	
16,100.00	7,063.87	6,308.00	6,307.08	148.43	129.21	35.88	-1,150.04	8,361.69	17,502.25	17,338.16	164.09	106.661	
16,200.00	7,063.63	6,308.00	6,307.08	149.99	129.21	35.88	-1,150.04	8,361.69	17,602.08	17,437.93	164.15	107.232	
16,300.00	7,063.38	6,308.00	6,307.08	151.56	129.21	35.88	-1,150.04	8,361.69	17,701.92	17,537.71	164.21	107.802	
16,400.00	7,063.14	6,308.00	6,307.08	153.12	129.21	35.88	-1,150.04	8,361.69	17,801.76	17,637.49	164.27	108.371	
16,500.00	7,062.90	6,308.00	6,307.08	154.68	129.21	35.88	-1,150.04	8,361.69	17,901.60	17,737.28	164.33	108.939	
16,600.00	7,062.66	6,308.00	6,307.08	156.25	129.21	35.88	-1,150.04	8,361.69	18,001.45	17,837.06	164.39	109.507	
16,700.00	7,062.42	6,308.00	6,307.08	157.81	129.21	35.88	-1,150.04	8,361.69	18,101.29	17,936.84	164.45	110.073	
16,800.00	7,062.18	6,308.00	6,307.08	159.38	129.21	35.88	-1,150.04	8,361.69	18,201.14	18,036.63	164.51	110.639	
16,874.30	7,062.00	6,308.00	6,307.08	160.54	129.21	35.88	-1,150.04	8,361.69	18,275.32	18,110.77	164.56	111.059	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	5.00	5.00	3.28	0.05	102.12	-2,010.78	9,362.00	9,575.51				
100.00	100.00	105.00	105.00	3.29	1.12	102.12	-2,010.78	9,362.00	9,575.51	9,571.10	4.41	2,172.748	
200.00	200.00	205.00	205.00	3.34	2.18	102.12	-2,010.78	9,362.00	9,575.51	9,569.99	5.52	1,735.402	
300.00	300.00	305.00	305.00	3.42	3.25	102.12	-2,010.78	9,362.00	9,575.51	9,568.84	6.67	1,436.568	
400.00	400.00	405.02	405.00	3.54	4.85	102.12	-2,010.78	9,362.00	9,575.51	9,567.12	8.39	1,141.675	
500.00	500.00	505.02	505.00	3.69	6.89	102.12	-2,010.78	9,362.00	9,575.51	9,564.93	10.58	904.988	
600.00	599.98	605.00	604.98	3.86	8.94	-79.82	-2,010.78	9,362.00	9,575.20	9,562.41	12.79	748.511	
700.00	699.84	703.33	703.30	4.04	10.95	-79.88	-2,009.38	9,362.00	9,573.98	9,558.99	14.99	638.817	
800.00	799.45	797.90	797.86	4.25	12.88	-79.95	-2,009.57	9,362.00	9,572.49	9,555.36	17.13	558.822	
900.00	898.70	892.18	892.14	4.48	14.81	-80.06	-2,010.00	9,362.00	9,570.46	9,551.16	19.29	496.092	
1,000.00	997.47	1,002.56	1,002.47	4.74	17.09	-80.21	-2,010.78	9,362.00	9,567.90	9,546.07	21.83	438.248	
1,100.00	1,095.62	1,100.72	1,100.62	5.03	20.01	-80.38	-2,010.78	9,362.00	9,564.62	9,539.58	25.04	381.905	
1,200.00	1,193.06	1,198.15	1,198.06	5.35	22.92	-80.59	-2,010.78	9,362.00	9,560.81	9,532.55	28.26	338.270	
1,268.36	1,259.18	1,263.59	1,263.49	5.58	24.87	-80.75	-2,009.97	9,362.00	9,557.74	9,527.30	30.45	313.918	
1,300.00	1,289.69	1,292.65	1,292.55	5.70	25.73	-80.79	-2,009.99	9,362.00	9,556.36	9,524.93	31.42	304.102	
1,400.00	1,386.11	1,384.60	1,384.49	6.07	28.47	-80.94	-2,010.21	9,362.00	9,552.04	9,517.51	34.53	276.603	
1,500.00	1,482.54	1,476.67	1,476.56	6.45	31.22	-81.08	-2,010.64	9,362.00	9,547.85	9,510.18	37.66	253.504	
1,600.00	1,578.96	1,584.73	1,583.96	6.86	36.54	-81.25	-2,010.78	9,362.00	9,543.65	9,500.27	43.38	219.978	
1,700.00	1,675.39	1,681.16	1,680.39	7.27	43.67	-81.40	-2,010.78	9,362.00	9,539.51	9,488.58	50.93	187.297	
1,800.00	1,771.81	1,753.64	1,752.63	7.70	49.04	-81.53	-2,007.43	9,362.00	9,534.85	9,478.13	56.72	168.104	
1,900.00	1,868.24	1,875.79	1,873.24	8.13	58.26	-81.70	-2,010.78	9,362.00	9,531.44	9,465.07	66.38	143.597	
2,000.00	1,964.66	1,972.21	1,969.66	8.57	66.35	-81.85	-2,010.78	9,362.00	9,527.51	9,452.61	74.91	127.191	
2,100.00	2,061.09	2,068.64	2,066.09	9.02	74.44	-82.01	-2,010.78	9,362.00	9,523.66	9,440.22	83.44	114.132	
2,200.00	2,157.51	2,145.07	2,141.98	9.47	80.85	-82.17	-2,003.77	9,362.00	9,518.67	9,428.37	90.31	105.400	
2,300.00	2,253.94	2,214.04	2,210.77	9.93	86.64	-82.27	-2,005.21	9,362.00	9,515.33	9,418.78	96.55	98.551	
2,400.00	2,350.36	2,361.51	2,355.36	10.39	98.56	-82.46	-2,010.78	9,362.00	9,512.53	9,403.59	108.94	87.322	
2,500.00	2,446.79	2,457.94	2,451.79	10.86	104.63	-82.62	-2,010.78	9,362.00	9,508.96	9,393.50	115.47	82.352	
2,600.00	2,543.21	2,554.36	2,548.21	11.33	110.70	-82.77	-2,010.78	9,362.00	9,505.47	9,383.47	122.00	77.913	
2,700.00	2,639.64	2,644.77	2,638.05	11.80	116.38	-82.96	-2,002.11	9,362.00	9,500.66	9,372.50	128.16	74.131	
2,800.00	2,736.06	2,718.46	2,711.58	12.27	121.02	-83.07	-2,002.98	9,362.00	9,497.51	9,364.24	133.27	71.266	
2,900.00	2,832.49	2,792.97	2,785.88	12.75	125.71	-83.18	-2,005.02	9,362.00	9,494.67	9,356.24	138.43	68.587	
3,000.00	2,928.91	2,942.36	2,933.91	13.23	134.39	-83.38	-2,010.78	9,362.00	9,492.22	9,344.64	147.59	64.315	
3,100.00	3,025.34	3,038.79	3,030.34	13.71	138.01	-83.54	-2,010.78	9,362.00	9,489.09	9,337.41	151.69	62.556	
3,200.00	3,121.76	3,135.21	3,126.76	14.19	141.63	-83.69	-2,010.78	9,362.00	9,486.04	9,330.25	155.79	60.890	
3,300.00	3,218.18	3,225.30	3,216.75	14.67	145.01	-83.85	-2,007.44	9,362.00	9,482.57	9,322.92	159.65	59.394	
3,400.00	3,314.61	3,310.65	3,302.05	15.15	148.21	-83.98	-2,008.20	9,362.00	9,479.79	9,316.45	163.34	58.036	
3,500.00	3,411.03	3,396.44	3,387.79	15.64	151.44	-84.11	-2,009.68	9,362.00	9,477.20	9,310.15	167.05	56.733	
3,600.00	3,507.46	3,521.52	3,512.46	16.12	155.69	-84.30	-2,010.78	9,362.00	9,474.55	9,302.75	171.79	55.151	
3,700.00	3,603.88	3,617.95	3,608.88	16.61	158.78	-84.46	-2,010.78	9,362.00	9,471.85	9,296.49	175.36	54.013	
3,800.00	3,700.31	3,711.86	3,702.73	17.10	161.78	-84.62	-2,008.13	9,362.00	9,468.89	9,290.04	178.86	52.942	
3,900.00	3,796.73	3,799.06	3,789.91	17.59	164.57	-84.76	-2,008.64	9,362.00	9,466.43	9,284.30	182.13	51.976	
4,000.00	3,893.16	3,886.67	3,877.48	18.07	167.37	-84.89	-2,009.84	9,362.00	9,464.13	9,278.71	185.42	51.041	
4,100.00	3,989.58	4,004.03	3,994.58	18.56	170.94	-85.07	-2,010.78	9,362.00	9,461.83	9,272.35	189.48	49.935	
4,200.00	4,086.01	4,100.45	4,091.01	19.05	173.77	-85.23	-2,010.78	9,362.00	9,459.51	9,266.70	192.80	49.063	
4,300.00	4,182.43	4,196.88	4,187.43	19.55	176.60	-85.38	-2,010.78	9,362.00	9,457.26	9,261.14	196.12	48.222	
4,400.00	4,278.86	4,293.30	4,283.86	20.04	179.42	-85.54	-2,010.78	9,362.00	9,455.08	9,255.64	199.44	47.408	
4,500.00	4,375.28	4,389.72	4,380.28	20.53	182.25	-85.69	-2,010.78	9,362.00	9,452.98	9,250.22	202.76	46.621	
4,600.00	4,471.71	4,482.71	4,473.18	21.02	184.98	-85.86	-2,006.94	9,362.00	9,450.54	9,244.56	205.98	45.881	
4,700.00	4,568.13	4,575.75	4,566.21	21.51	187.71	-86.01	-2,007.42	9,362.00	9,448.65	9,239.44	209.20	45.165	
4,800.00	4,664.56	4,668.99	4,659.42	22.01	190.44	-86.15	-2,008.23	9,362.00	9,446.86	9,234.43	212.43	44.470	
4,900.00	4,760.98	4,762.43	4,752.83	22.50	193.18	-86.30	-2,009.38	9,362.00	9,445.18	9,229.52	215.66	43.796	
5,000.00	4,857.41	4,872.41	4,862.41	22.99	196.27	-86.46	-2,010.78	9,362.00	9,443.58	9,224.33	219.25	43.072	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
5,100.00	4,953.83	4,968.83	4,958.83	23.49	198.46	-86.62	-2,010.78	9,362.00	9,441.92	9,219.99	221.94	42.543	
5,200.00	5,050.25	5,065.26	5,055.25	23.98	200.65	-86.77	-2,010.78	9,362.00	9,440.34	9,215.72	224.63	42.027	
5,300.00	5,146.68	5,161.68	5,151.68	24.48	202.85	-86.93	-2,010.78	9,362.00	9,438.83	9,211.52	227.31	41.523	
5,400.00	5,243.10	5,258.11	5,248.10	24.97	205.04	-87.08	-2,010.78	9,362.00	9,437.40	9,207.39	230.00	41.032	
5,500.00	5,339.53	5,354.53	5,344.53	25.47	207.23	-87.24	-2,010.78	9,362.00	9,436.04	9,203.34	232.69	40.552	
5,600.00	5,435.95	5,450.96	5,440.95	25.96	209.42	-87.39	-2,010.78	9,362.00	9,434.75	9,199.37	235.38	40.083	
5,700.00	5,532.38	5,547.38	5,537.38	26.46	211.62	-87.55	-2,010.78	9,362.00	9,433.54	9,195.47	238.07	39.625	
5,800.00	5,628.80	5,642.38	5,632.26	26.96	213.78	-87.74	-2,004.71	9,362.00	9,431.94	9,191.22	240.73	39.181	
5,900.00	5,725.23	5,737.33	5,727.19	27.45	215.94	-87.89	-2,005.02	9,362.00	9,430.92	9,187.54	243.38	38.750	
6,000.00	5,821.65	5,832.41	5,822.26	27.95	218.10	-88.04	-2,005.55	9,362.00	9,429.98	9,183.94	246.04	38.327	
6,100.00	5,918.08	5,927.63	5,917.45	28.45	220.26	-88.19	-2,006.31	9,362.00	9,429.13	9,180.43	248.70	37.913	
6,200.00	6,014.50	6,022.97	6,012.77	28.94	222.43	-88.33	-2,007.29	9,362.00	9,428.37	9,177.00	251.37	37.508	
6,300.00	6,110.93	6,118.45	6,108.22	29.44	224.60	-88.48	-2,008.50	9,362.00	9,427.68	9,173.65	254.04	37.112	
6,400.00	6,207.35	6,214.06	6,203.79	29.94	226.77	-88.63	-2,009.93	9,362.00	9,427.08	9,170.38	256.71	36.723	
6,500.00	6,303.78	6,298.00	6,287.56	30.43	228.47	-88.76	-2,010.78	9,362.00	9,426.54	9,167.64	258.90	36.410	
6,534.24	6,336.79	6,298.00	6,287.56	30.60	228.47	-88.76	-2,010.78	9,362.00	9,426.47	9,167.41	259.07	36.386 CC	
6,600.00	6,400.20	6,298.00	6,287.56	30.93	228.47	-88.76	-2,010.78	9,362.00	9,426.70	9,167.32	259.38	36.343 ES	
6,677.76	6,475.18	6,298.00	6,287.56	31.32	228.47	-88.76	-2,010.78	9,362.00	9,427.57	9,167.83	259.73	36.297	
6,700.00	6,496.62	6,298.00	6,287.56	31.43	228.47	-95.97	-2,010.78	9,362.00	9,428.32	9,168.49	259.83	36.286	
6,750.00	6,544.66	6,298.00	6,287.56	31.68	228.47	-110.87	-2,010.78	9,362.00	9,433.03	9,172.98	260.05	36.274 SF	
6,800.00	6,592.24	6,298.00	6,287.56	31.92	228.47	-122.90	-2,010.78	9,362.00	9,441.88	9,181.62	260.25	36.279	
6,850.00	6,639.07	6,298.00	6,287.56	32.16	228.47	-131.99	-2,010.78	9,362.00	9,454.81	9,194.36	260.45	36.302	
6,900.00	6,684.86	6,298.00	6,287.56	32.40	228.47	-138.72	-2,010.78	9,362.00	9,471.72	9,211.08	260.63	36.341	
6,950.00	6,729.32	6,298.00	6,287.56	32.62	228.47	-143.70	-2,010.78	9,362.00	9,492.48	9,231.68	260.80	36.397	
7,000.00	6,772.19	6,298.00	6,287.56	32.84	228.47	-147.44	-2,010.78	9,362.00	9,516.95	9,255.99	260.96	36.469	
7,050.00	6,813.20	6,298.00	6,287.56	33.05	228.47	-150.25	-2,010.78	9,362.00	9,544.94	9,283.84	261.10	36.557	
7,100.00	6,852.09	6,298.00	6,287.56	33.26	228.47	-152.38	-2,010.78	9,362.00	9,576.25	9,315.03	261.23	36.659	
7,150.00	6,888.63	6,298.00	6,287.56	33.45	228.47	-153.96	-2,010.78	9,362.00	9,610.66	9,349.32	261.34	36.774	
7,200.00	6,922.59	6,298.00	6,287.56	33.64	228.47	-155.09	-2,010.78	9,362.00	9,647.93	9,386.48	261.45	36.902	
7,250.00	6,953.76	6,298.00	6,287.56	33.82	228.47	-155.82	-2,010.78	9,362.00	9,687.78	9,426.25	261.54	37.042	
7,300.00	6,981.95	6,298.00	6,287.56	34.00	228.47	-156.16	-2,010.78	9,362.00	9,729.95	9,468.34	261.62	37.192	
7,350.00	7,006.99	6,298.00	6,287.56	34.17	228.47	-156.06	-2,010.78	9,362.00	9,774.15	9,512.47	261.68	37.351	
7,400.00	7,028.72	6,298.00	6,287.56	34.35	228.47	-155.40	-2,010.78	9,362.00	9,820.08	9,558.34	261.74	37.518	
7,450.00	7,047.00	6,298.00	6,287.56	34.52	228.47	-153.86	-2,010.78	9,362.00	9,867.43	9,605.64	261.79	37.692	
7,500.00	7,061.73	6,298.00	6,287.56	34.69	228.47	-150.65	-2,010.78	9,362.00	9,915.89	9,654.06	261.83	37.871	
7,550.00	7,072.82	6,298.00	6,287.56	34.86	228.47	-143.11	-2,010.78	9,362.00	9,965.16	9,703.29	261.87	38.054	
7,600.00	7,080.18	6,298.00	6,287.56	35.04	228.47	-117.60	-2,010.78	9,362.00	10,014.91	9,753.02	261.90	38.240	
7,650.00	7,083.79	6,298.00	6,287.56	35.22	228.47	-38.99	-2,010.78	9,362.00	10,064.84	9,802.92	261.92	38.427	
7,674.30	7,084.18	6,298.00	6,287.56	35.32	228.47	-17.96	-2,010.78	9,362.00	10,089.08	9,827.14	261.93	38.518	
7,700.00	7,084.12	6,298.00	6,287.56	35.42	228.47	-17.96	-2,010.78	9,362.00	10,114.69	9,852.74	261.94	38.614	
7,800.00	7,083.88	6,298.00	6,287.56	35.84	228.47	-17.96	-2,010.78	9,362.00	10,214.32	9,952.33	261.99	38.988	
7,900.00	7,083.64	6,298.00	6,287.56	36.34	228.47	-17.96	-2,010.78	9,362.00	10,313.96	10,051.93	262.03	39.361	
8,000.00	7,083.40	6,298.00	6,287.56	36.90	228.47	-17.96	-2,010.78	9,362.00	10,413.61	10,151.53	262.08	39.735	
8,100.00	7,083.16	6,298.00	6,287.56	37.52	228.47	-17.96	-2,010.78	9,362.00	10,513.27	10,251.15	262.12	40.108	
8,200.00	7,082.91	6,298.00	6,287.56	38.21	228.47	-17.96	-2,010.78	9,362.00	10,612.93	10,350.76	262.16	40.482	
8,300.00	7,082.67	6,298.00	6,287.56	38.95	228.47	-17.96	-2,010.78	9,362.00	10,712.60	10,450.39	262.21	40.855	
8,400.00	7,082.43	6,298.00	6,287.56	39.74	228.47	-17.96	-2,010.78	9,362.00	10,812.27	10,550.02	262.25	41.228	
8,500.00	7,082.19	6,298.00	6,287.56	40.59	228.47	-17.96	-2,010.78	9,362.00	10,911.95	10,649.65	262.30	41.602	
8,600.00	7,081.95	6,298.00	6,287.56	41.49	228.47	-17.96	-2,010.78	9,362.00	11,011.64	10,749.30	262.34	41.975	
8,700.00	7,081.71	6,298.00	6,287.56	42.43	228.47	-17.96	-2,010.78	9,362.00	11,111.33	10,848.94	262.38	42.347	
8,800.00	7,081.47	6,298.00	6,287.56	43.41	228.47	-17.96	-2,010.78	9,362.00	11,211.03	10,948.60	262.43	42.720	
8,900.00	7,081.23	6,298.00	6,287.56	44.44	228.47	-17.96	-2,010.78	9,362.00	11,310.73	11,048.25	262.47	43.093	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,080.99	6,298.00	6,287.56	45.49	228.47	-17.96	-2,010.78	9,362.00	11,410.44	11,147.92	262.52	43.465	
9,100.00	7,080.74	6,298.00	6,287.56	46.58	228.47	-17.96	-2,010.78	9,362.00	11,510.15	11,247.59	262.56	43.838	
9,200.00	7,080.50	6,298.00	6,287.56	47.70	228.47	-17.96	-2,010.78	9,362.00	11,609.87	11,347.26	262.61	44.210	
9,300.00	7,080.26	6,298.00	6,287.56	48.85	228.47	-17.96	-2,010.78	9,362.00	11,709.59	11,446.94	262.65	44.582	
9,400.00	7,080.02	6,298.00	6,287.56	50.03	228.47	-17.96	-2,010.78	9,362.00	11,809.31	11,546.62	262.70	44.954	
9,500.00	7,079.78	6,298.00	6,287.56	51.23	228.47	-17.96	-2,010.78	9,362.00	11,909.05	11,646.31	262.74	45.326	
9,600.00	7,079.54	6,298.00	6,287.56	52.45	228.47	-17.96	-2,010.78	9,362.00	12,008.78	11,746.00	262.79	45.698	
9,700.00	7,079.30	6,298.00	6,287.56	53.69	228.47	-17.96	-2,010.78	9,362.00	12,108.52	11,845.69	262.83	46.069	
9,800.00	7,079.06	6,298.00	6,287.56	54.95	228.47	-17.96	-2,010.78	9,362.00	12,208.27	11,945.39	262.88	46.441	
9,900.00	7,078.82	6,298.00	6,287.56	56.23	228.47	-17.96	-2,010.78	9,362.00	12,308.02	12,045.09	262.92	46.812	
10,000.00	7,078.57	6,298.00	6,287.56	57.53	228.47	-17.96	-2,010.78	9,362.00	12,407.77	12,144.80	262.97	47.183	
10,100.00	7,078.33	6,298.00	6,287.56	58.84	228.47	-17.96	-2,010.78	9,362.00	12,507.53	12,244.51	263.02	47.554	
10,200.00	7,078.09	6,298.00	6,287.56	60.17	228.47	-17.96	-2,010.78	9,362.00	12,607.29	12,344.22	263.06	47.925	
10,300.00	7,077.85	6,298.00	6,287.56	61.51	228.47	-17.96	-2,010.78	9,362.00	12,707.05	12,443.94	263.11	48.296	
10,400.00	7,077.61	6,298.00	6,287.56	62.86	228.47	-17.96	-2,010.78	9,362.00	12,806.82	12,543.66	263.16	48.666	
10,500.00	7,077.37	6,298.00	6,287.56	64.22	228.47	-17.96	-2,010.78	9,362.00	12,906.59	12,643.39	263.20	49.036	
10,600.00	7,077.13	6,298.00	6,287.56	65.60	228.47	-17.96	-2,010.78	9,362.00	13,006.37	12,743.12	263.25	49.407	
10,700.00	7,076.89	6,298.00	6,287.56	66.98	228.47	-17.96	-2,010.78	9,362.00	13,106.15	12,842.85	263.30	49.777	
10,800.00	7,076.65	6,298.00	6,287.56	68.38	228.47	-17.96	-2,010.78	9,362.00	13,205.93	12,942.58	263.35	50.146	
10,900.00	7,076.40	6,298.00	6,287.56	69.78	228.47	-17.96	-2,010.78	9,362.00	13,305.71	13,042.32	263.40	50.516	
11,000.00	7,076.16	6,298.00	6,287.56	71.20	228.47	-17.96	-2,010.78	9,362.00	13,405.50	13,142.06	263.44	50.885	
11,100.00	7,075.92	6,298.00	6,287.56	72.62	228.47	-17.96	-2,010.78	9,362.00	13,505.29	13,241.80	263.49	51.255	
11,200.00	7,075.68	6,298.00	6,287.56	74.04	228.47	-17.96	-2,010.78	9,362.00	13,605.09	13,341.54	263.54	51.624	
11,300.00	7,075.44	6,298.00	6,287.56	75.48	228.47	-17.96	-2,010.78	9,362.00	13,704.89	13,441.29	263.59	51.993	
11,400.00	7,075.20	6,298.00	6,287.56	76.92	228.47	-17.96	-2,010.78	9,362.00	13,804.69	13,541.04	263.64	52.361	
11,500.00	7,074.96	6,298.00	6,287.56	78.37	228.47	-17.96	-2,010.78	9,362.00	13,904.49	13,640.80	263.69	52.730	
11,600.00	7,074.72	6,298.00	6,287.56	79.82	228.47	-17.96	-2,010.78	9,362.00	14,004.30	13,740.55	263.74	53.098	
11,700.00	7,074.48	6,298.00	6,287.56	81.28	228.47	-17.96	-2,010.78	9,362.00	14,104.11	13,840.31	263.80	53.466	
11,800.00	7,074.23	6,298.00	6,287.56	82.75	228.47	-17.96	-2,010.78	9,362.00	14,203.92	13,940.07	263.85	53.834	
11,900.00	7,073.99	6,298.00	6,287.56	84.22	228.47	-17.96	-2,010.78	9,362.00	14,303.73	14,039.83	263.90	54.202	
12,000.00	7,073.75	6,298.00	6,287.56	85.69	228.47	-17.96	-2,010.78	9,362.00	14,403.55	14,139.60	263.95	54.569	
12,100.00	7,073.51	6,298.00	6,287.56	87.17	228.47	-17.96	-2,010.78	9,362.00	14,503.37	14,239.36	264.00	54.936	
12,200.00	7,073.27	6,298.00	6,287.56	88.65	228.47	-17.96	-2,010.78	9,362.00	14,603.19	14,339.13	264.06	55.303	
12,300.00	7,073.03	6,298.00	6,287.56	90.14	228.47	-17.96	-2,010.78	9,362.00	14,703.01	14,438.90	264.11	55.670	
12,400.00	7,072.79	6,298.00	6,287.56	91.63	228.47	-17.96	-2,010.78	9,362.00	14,802.84	14,538.68	264.16	56.037	
12,500.00	7,072.55	6,298.00	6,287.56	93.13	228.47	-17.96	-2,010.78	9,362.00	14,902.67	14,638.45	264.22	56.403	
12,600.00	7,072.31	6,298.00	6,287.56	94.62	228.47	-17.96	-2,010.78	9,362.00	15,002.50	14,738.23	264.27	56.769	
12,700.00	7,072.06	6,298.00	6,287.56	96.13	228.47	-17.96	-2,010.78	9,362.00	15,102.33	14,838.01	264.33	57.135	
12,800.00	7,071.82	6,298.00	6,287.56	97.63	228.47	-17.96	-2,010.78	9,362.00	15,202.17	14,937.79	264.38	57.501	
12,900.00	7,071.58	6,298.00	6,287.56	99.14	228.47	-17.96	-2,010.78	9,362.00	15,302.01	15,037.57	264.44	57.867	
13,000.00	7,071.34	6,298.00	6,287.56	100.65	228.47	-17.96	-2,010.78	9,362.00	15,401.85	15,137.36	264.49	58.232	
13,100.00	7,071.10	6,298.00	6,287.56	102.16	228.47	-17.96	-2,010.78	9,362.00	15,501.69	15,237.14	264.55	58.597	
13,200.00	7,070.86	6,298.00	6,287.56	103.68	228.47	-17.96	-2,010.78	9,362.00	15,601.53	15,336.93	264.60	58.962	
13,300.00	7,070.62	6,298.00	6,287.56	105.20	228.47	-17.96	-2,010.78	9,362.00	15,701.38	15,436.72	264.66	59.326	
13,400.00	7,070.38	6,298.00	6,287.56	106.72	228.47	-17.96	-2,010.78	9,362.00	15,801.23	15,536.51	264.72	59.691	
13,500.00	7,070.14	6,298.00	6,287.56	108.24	228.47	-17.96	-2,010.78	9,362.00	15,901.08	15,636.30	264.78	60.055	
13,600.00	7,069.89	6,298.00	6,287.56	109.77	228.47	-17.96	-2,010.78	9,362.00	16,000.93	15,736.10	264.83	60.419	
13,700.00	7,069.65	6,298.00	6,287.56	111.30	228.47	-17.96	-2,010.78	9,362.00	16,100.78	15,835.89	264.89	60.782	
13,800.00	7,069.41	6,298.00	6,287.56	112.83	228.47	-17.96	-2,010.78	9,362.00	16,200.64	15,935.69	264.95	61.146	
13,900.00	7,069.17	6,298.00	6,287.56	114.36	228.47	-17.96	-2,010.78	9,362.00	16,300.50	16,035.49	265.01	61.509	
14,000.00	7,068.93	6,298.00	6,287.56	115.89	228.47	-17.96	-2,010.78	9,362.00	16,400.36	16,135.29	265.07	61.872	
14,100.00	7,068.69	6,298.00	6,287.56	117.43	228.47	-17.96	-2,010.78	9,362.00	16,500.22	16,235.09	265.13	62.234	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,068.45	6,298.00	6,287.56	118.97	228.47	-17.96	-2,010.78	9,362.00	16,600.08	16,334.89	265.19	62.597	
14,300.00	7,068.21	6,298.00	6,287.56	120.50	228.47	-17.96	-2,010.78	9,362.00	16,699.94	16,434.69	265.25	62.959	
14,400.00	7,067.97	6,298.00	6,287.56	122.05	228.47	-17.96	-2,010.78	9,362.00	16,799.81	16,534.50	265.31	63.321	
14,500.00	7,067.72	6,298.00	6,287.56	123.59	228.47	-17.96	-2,010.78	9,362.00	16,899.67	16,634.30	265.37	63.682	
14,600.00	7,067.48	6,298.00	6,287.56	125.13	228.47	-17.96	-2,010.78	9,362.00	16,999.54	16,734.11	265.44	64.044	
14,700.00	7,067.24	6,298.00	6,287.56	126.68	228.47	-17.96	-2,010.78	9,362.00	17,099.41	16,833.92	265.50	64.405	
14,800.00	7,067.00	6,298.00	6,287.56	128.22	228.47	-17.96	-2,010.78	9,362.00	17,199.29	16,933.72	265.56	64.766	
14,900.00	7,066.76	6,298.00	6,287.56	129.77	228.47	-17.96	-2,010.78	9,362.00	17,299.16	17,033.53	265.62	65.126	
15,000.00	7,066.52	6,298.00	6,287.56	131.32	228.47	-17.96	-2,010.78	9,362.00	17,399.03	17,133.35	265.69	65.487	
15,100.00	7,066.28	6,298.00	6,287.56	132.87	228.47	-17.96	-2,010.78	9,362.00	17,498.91	17,233.16	265.75	65.847	
15,200.00	7,066.04	6,298.00	6,287.56	134.42	228.47	-17.96	-2,010.78	9,362.00	17,598.79	17,332.97	265.82	66.206	
15,300.00	7,065.80	6,298.00	6,287.56	135.97	228.47	-17.96	-2,010.78	9,362.00	17,698.67	17,432.78	265.88	66.566	
15,400.00	7,065.55	6,298.00	6,287.56	137.53	228.47	-17.96	-2,010.78	9,362.00	17,798.55	17,532.60	265.95	66.925	
15,500.00	7,065.31	6,298.00	6,287.56	139.08	228.47	-17.96	-2,010.78	9,362.00	17,898.43	17,632.42	266.01	67.284	
15,600.00	7,065.07	6,298.00	6,287.56	140.64	228.47	-17.96	-2,010.78	9,362.00	17,998.31	17,732.23	266.08	67.643	
15,700.00	7,064.83	6,298.00	6,287.56	142.20	228.47	-17.96	-2,010.78	9,362.00	18,098.20	17,832.05	266.14	68.001	
15,800.00	7,064.59	6,298.00	6,287.56	143.75	228.47	-17.96	-2,010.78	9,362.00	18,198.08	17,931.87	266.21	68.359	
15,900.00	7,064.35	6,298.00	6,287.56	145.31	228.47	-17.96	-2,010.78	9,362.00	18,297.97	18,031.69	266.28	68.717	
16,000.00	7,064.11	6,298.00	6,287.56	146.87	228.47	-17.96	-2,010.78	9,362.00	18,397.86	18,131.51	266.35	69.075	
16,100.00	7,063.87	6,298.00	6,287.56	148.43	228.47	-17.96	-2,010.78	9,362.00	18,497.74	18,231.33	266.41	69.432	
16,200.00	7,063.63	6,298.00	6,287.56	149.99	228.47	-17.96	-2,010.78	9,362.00	18,597.64	18,331.15	266.48	69.789	
16,300.00	7,063.38	6,298.00	6,287.56	151.56	228.47	-17.96	-2,010.78	9,362.00	18,697.53	18,430.97	266.55	70.146	
16,400.00	7,063.14	6,298.00	6,287.56	153.12	228.47	-17.96	-2,010.78	9,362.00	18,797.42	18,530.80	266.62	70.502	
16,500.00	7,062.90	6,298.00	6,287.56	154.68	228.47	-17.96	-2,010.78	9,362.00	18,897.31	18,630.62	266.69	70.858	
16,600.00	7,062.66	6,298.00	6,287.56	156.25	228.47	-17.96	-2,010.78	9,362.00	18,997.21	18,730.45	266.76	71.214	
16,700.00	7,062.42	6,298.00	6,287.56	157.81	228.47	-17.96	-2,010.78	9,362.00	19,097.10	18,830.27	266.83	71.570	
16,800.00	7,062.18	6,298.00	6,287.56	159.38	228.47	-17.96	-2,010.78	9,362.00	19,197.00	18,930.10	266.90	71.925	
16,874.30	7,062.00	6,298.00	6,287.56	160.54	228.47	-17.96	-2,010.78	9,362.00	19,271.22	19,004.27	266.96	72.189	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	96.00	-636.75	6,060.21	6,093.57				
100.00	100.00	270.00	270.00	3.29	2.50	96.00	-636.75	6,060.21	6,093.57	6,087.78	5.79	1,053.317	
200.00	200.00	370.00	370.00	3.34	4.36	96.00	-636.75	6,060.21	6,093.57	6,085.87	7.69	792.074	
300.00	300.00	470.00	470.00	3.42	6.32	96.00	-636.75	6,060.21	6,093.57	6,083.82	9.74	625.466	
362.57	362.57	532.57	532.57	3.49	7.55	95.99	-636.20	6,060.21	6,093.51	6,082.47	11.04	551.827	
400.00	400.00	569.60	569.59	3.54	8.28	95.99	-636.21	6,060.21	6,093.51	6,081.69	11.82	515.604	
500.00	500.00	668.51	668.50	3.69	10.22	95.99	-636.36	6,060.21	6,093.53	6,079.61	13.91	438.010	
600.00	599.98	767.41	767.40	3.86	12.17	-85.95	-636.68	6,060.21	6,093.44	6,077.41	16.02	380.278	
700.00	699.84	869.89	869.84	4.04	14.19	-86.00	-636.75	6,060.21	6,093.08	6,074.85	18.23	334.314	
800.00	799.45	969.50	969.45	4.25	16.15	-86.10	-636.75	6,060.21	6,092.47	6,072.08	20.40	298.693	
900.00	898.70	1,068.09	1,068.03	4.48	18.09	-86.23	-635.67	6,060.21	6,091.54	6,068.97	22.57	269.856	
1,000.00	997.47	1,164.89	1,164.83	4.74	20.00	-86.39	-635.94	6,060.21	6,090.55	6,065.81	24.74	246.178	
1,100.00	1,095.62	1,261.24	1,261.17	5.03	21.89	-86.58	-636.53	6,060.21	6,089.42	6,062.50	26.93	226.157	
1,200.00	1,193.06	1,363.15	1,363.06	5.35	23.90	-86.82	-636.75	6,060.21	6,088.11	6,058.86	29.25	208.144	
1,268.36	1,259.18	1,429.27	1,429.18	5.58	25.20	-87.00	-636.75	6,060.21	6,087.15	6,056.36	30.79	197.727	
1,300.00	1,289.69	1,459.78	1,459.69	5.70	25.80	-87.08	-636.75	6,060.21	6,086.70	6,055.20	31.50	193.235	
1,400.00	1,386.11	1,556.06	1,555.96	6.07	27.70	-87.32	-636.21	6,060.21	6,085.31	6,051.54	33.77	180.223	
1,500.00	1,482.54	1,651.70	1,651.61	6.45	29.58	-87.56	-636.32	6,060.21	6,084.09	6,048.05	36.04	168.827	
1,600.00	1,578.96	1,747.44	1,747.34	6.86	31.47	-87.79	-636.59	6,060.21	6,083.00	6,044.67	38.33	158.717	
1,700.00	1,675.39	1,845.53	1,845.39	7.27	33.44	-88.04	-636.75	6,060.21	6,082.01	6,041.30	40.71	149.387	
1,800.00	1,771.81	1,941.95	1,941.81	7.70	35.41	-88.28	-636.75	6,060.21	6,081.13	6,038.02	43.11	141.074	
1,900.00	1,868.24	2,038.38	2,038.24	8.13	37.38	-88.52	-636.75	6,060.21	6,080.36	6,034.85	45.51	133.612	
2,000.00	1,964.66	2,133.70	2,133.55	8.57	39.32	-88.76	-635.81	6,060.21	6,079.65	6,031.76	47.89	126.939	
2,100.00	2,061.09	2,229.19	2,229.04	9.02	41.27	-89.00	-636.28	6,060.21	6,079.14	6,028.85	50.29	120.881	
2,200.00	2,157.51	2,327.71	2,327.51	9.47	43.28	-89.24	-636.75	6,060.21	6,078.75	6,025.99	52.75	115.227	
2,300.00	2,253.94	2,424.13	2,423.94	9.93	45.25	-89.48	-636.75	6,060.21	6,078.44	6,023.26	55.18	110.154	
2,400.00	2,350.36	2,520.56	2,520.36	10.39	47.22	-89.72	-636.75	6,060.21	6,078.25	6,020.64	57.61	105.503	
2,500.00	2,446.79	2,616.53	2,616.33	10.86	49.18	-89.97	-636.05	6,060.21	6,078.15	6,018.11	60.04	101.239	
2,505.99	2,452.56	2,622.28	2,622.07	10.89	49.30	-89.98	-636.06	6,060.21	6,078.15	6,017.97	60.18	100.994 CC	
2,600.00	2,543.21	2,712.56	2,712.35	11.33	51.14	-90.21	-636.38	6,060.21	6,078.20	6,015.74	62.47	97.303	
2,700.00	2,639.64	2,809.89	2,809.64	11.80	53.15	-90.44	-636.75	6,060.21	6,078.37	6,013.42	64.95	93.585	
2,800.00	2,736.06	2,906.31	2,906.06	12.27	55.19	-90.69	-636.75	6,060.21	6,078.64	6,011.18	67.47	90.100	
2,900.00	2,832.49	3,002.74	3,002.49	12.75	57.24	-90.93	-636.75	6,060.21	6,079.03	6,009.04	69.98	86.864	
3,000.00	2,928.91	3,098.95	3,098.68	13.23	59.27	-91.18	-635.84	6,060.21	6,079.52	6,007.02	72.50	83.858	
3,100.00	3,025.34	3,195.30	3,195.03	13.71	61.31	-91.41	-636.30	6,060.21	6,080.14	6,005.13	75.02	81.050	
3,200.00	3,121.76	3,292.09	3,291.76	14.19	63.28	-91.65	-636.75	6,060.21	6,080.88	6,003.42	77.46	78.501	
3,300.00	3,218.18	3,388.51	3,388.18	14.67	65.11	-91.89	-636.75	6,060.21	6,081.73	6,001.96	79.77	76.240	
3,400.00	3,314.61	3,484.94	3,484.61	15.15	66.93	-92.13	-636.75	6,060.21	6,082.69	6,000.61	82.08	74.107	
3,500.00	3,411.03	3,581.53	3,581.19	15.64	68.76	-92.38	-635.78	6,060.21	6,083.78	5,999.39	84.39	72.088	
3,600.00	3,507.46	3,678.33	3,677.99	16.12	70.60	-92.62	-636.21	6,060.21	6,084.97	5,998.26	86.71	70.174	
3,700.00	3,603.88	3,774.24	3,773.88	16.61	72.45	-92.85	-636.75	6,060.21	6,086.28	5,997.23	89.05	68.347	
3,800.00	3,700.31	3,870.67	3,870.31	17.10	74.42	-93.09	-636.75	6,060.21	6,087.70	5,996.19	91.51	66.528	
3,900.00	3,796.73	3,967.16	3,966.80	17.59	76.39	-93.33	-636.56	6,060.21	6,089.24	5,995.28	93.96	64.804	
4,000.00	3,893.16	4,063.82	4,063.46	18.07	78.36	-93.57	-636.66	6,060.21	6,090.90	5,994.47	96.43	63.167	
4,100.00	3,989.58	4,159.99	4,159.58	18.56	80.41	-93.81	-636.75	6,060.21	6,092.66	5,993.71	98.95	61.571	
4,200.00	4,086.01	4,256.42	4,256.01	19.05	82.52	-94.05	-636.75	6,060.21	6,094.55	5,992.99	101.56	60.008	
4,300.00	4,182.43	4,352.84	4,352.43	19.55	84.64	-94.29	-636.75	6,060.21	6,096.55	5,992.38	104.17	58.525	
4,400.00	4,278.86	4,449.27	4,448.86	20.04	86.76	-94.53	-636.75	6,060.21	6,098.66	5,991.88	106.78	57.116	
4,500.00	4,375.28	4,545.69	4,545.28	20.53	88.88	-94.77	-636.75	6,060.21	6,100.89	5,991.50	109.39	55.774	
4,600.00	4,471.71	4,642.11	4,641.71	21.02	91.00	-95.01	-636.75	6,060.21	6,103.23	5,991.23	111.99	54.496	
4,700.00	4,568.13	4,739.14	4,738.68	21.51	93.14	-95.28	-633.13	6,060.21	6,105.91	5,991.29	114.62	53.273	
4,800.00	4,664.56	4,836.56	4,836.08	22.01	95.28	-95.52	-633.39	6,060.21	6,108.47	5,991.23	117.25	52.100 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 752H
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 752H	**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	4,760.98	4,934.10	4,933.62	22.50	97.42	-95.76	-633.87	6,060.21	6,111.14	5,991.26	119.88	50.977	
5,000.00	4,857.41	5,031.78	5,031.28	22.99	99.57	-95.99	-634.58	6,060.21	6,113.90	5,991.38	122.52	49.903	
5,100.00	4,953.83	5,129.58	5,129.06	23.49	101.72	-96.23	-635.50	6,060.21	6,116.74	5,991.59	125.15	48.873	
5,200.00	5,050.25	5,227.51	5,226.97	23.98	103.87	-96.46	-636.66	6,060.21	6,119.68	5,991.88	127.80	47.886	
5,300.00	5,146.68	5,317.31	5,316.68	24.48	105.72	-96.68	-636.75	6,060.21	6,122.81	5,992.67	130.13	47.050	
5,400.00	5,243.10	5,413.74	5,413.10	24.97	107.69	-96.91	-636.75	6,060.21	6,126.06	5,993.46	132.60	46.201	
5,500.00	5,339.53	5,510.16	5,509.53	25.47	109.66	-97.15	-636.75	6,060.21	6,129.42	5,994.36	135.06	45.384	
5,600.00	5,435.95	5,606.59	5,605.95	25.96	111.63	-97.39	-636.75	6,060.21	6,132.90	5,995.38	137.52	44.597	
5,700.00	5,532.38	5,703.01	5,702.38	26.46	113.60	-97.63	-636.75	6,060.21	6,136.48	5,996.51	139.98	43.839	
5,800.00	5,628.80	5,799.44	5,798.80	26.96	115.58	-97.86	-636.75	6,060.21	6,140.19	5,997.75	142.44	43.108	
5,900.00	5,725.23	5,895.86	5,895.23	27.45	117.55	-98.10	-636.75	6,060.21	6,144.00	5,999.10	144.90	42.402	
6,000.00	5,821.65	5,992.29	5,991.65	27.95	119.52	-98.33	-636.75	6,060.21	6,147.92	6,000.56	147.36	41.721	
6,100.00	5,918.08	6,088.71	6,088.08	28.45	121.49	-98.57	-636.75	6,060.21	6,151.96	6,002.14	149.82	41.063	
6,200.00	6,014.50	6,185.14	6,184.50	28.94	123.46	-98.81	-636.75	6,060.21	6,156.11	6,003.83	152.28	40.427	
6,300.00	6,110.93	6,281.56	6,280.93	29.44	125.44	-99.04	-636.75	6,060.21	6,160.37	6,005.63	154.74	39.812	
6,400.00	6,207.35	6,377.98	6,377.35	29.94	127.41	-99.28	-636.75	6,060.21	6,164.74	6,007.54	157.20	39.217	
6,500.00	6,303.78	6,474.41	6,473.78	30.43	129.38	-99.51	-636.75	6,060.21	6,169.22	6,009.56	159.66	38.641	
6,600.00	6,400.20	6,476.00	6,475.22	30.93	129.41	-99.51	-636.75	6,060.21	6,174.54	6,014.39	160.15	38.556	
6,677.76	6,475.18	6,476.00	6,475.22	31.32	129.41	-99.51	-636.75	6,060.21	6,179.79	6,019.32	160.48	38.509	
6,700.00	6,496.62	6,476.00	6,475.22	31.43	129.41	-106.75	-636.75	6,060.21	6,181.86	6,021.29	160.56	38.501 SF	
6,750.00	6,544.66	6,476.00	6,475.22	31.68	129.41	-121.77	-636.75	6,060.21	6,189.57	6,028.82	160.76	38.503	
6,800.00	6,592.24	6,476.00	6,475.22	31.92	129.41	-134.00	-636.75	6,060.21	6,201.49	6,040.56	160.93	38.535	
6,850.00	6,639.07	6,476.00	6,475.22	32.16	129.41	-143.37	-636.75	6,060.21	6,217.50	6,056.41	161.09	38.597	
6,900.00	6,684.86	6,476.00	6,475.22	32.40	129.41	-150.48	-636.75	6,060.21	6,237.49	6,076.26	161.22	38.688	
6,950.00	6,729.32	6,476.00	6,475.22	32.62	129.41	-155.95	-636.75	6,060.21	6,261.28	6,099.94	161.34	38.808	
7,000.00	6,772.19	6,476.00	6,475.22	32.84	129.41	-160.31	-636.75	6,060.21	6,288.70	6,127.26	161.44	38.953	
7,050.00	6,813.20	6,476.00	6,475.22	33.05	129.41	-163.91	-636.75	6,060.21	6,319.53	6,158.01	161.52	39.125	
7,100.00	6,852.09	6,476.00	6,475.22	33.26	129.41	-167.02	-636.75	6,060.21	6,353.52	6,191.94	161.59	39.319	
7,150.00	6,888.63	6,476.00	6,475.22	33.45	129.41	-169.87	-636.75	6,060.21	6,390.43	6,228.79	161.64	39.536	
7,200.00	6,922.59	6,476.00	6,475.22	33.64	129.41	-172.63	-636.75	6,060.21	6,429.97	6,268.30	161.67	39.772	
7,250.00	6,953.76	6,476.00	6,475.22	33.82	129.41	-175.51	-636.75	6,060.21	6,471.85	6,310.16	161.69	40.027	
7,300.00	6,981.95	6,476.00	6,475.22	34.00	129.41	-178.76	-636.75	6,060.21	6,515.78	6,354.09	161.69	40.297	
7,350.00	7,006.99	6,476.00	6,475.22	34.17	129.41	177.21	-636.75	6,060.21	6,561.44	6,399.75	161.69	40.581	
7,400.00	7,028.72	6,476.00	6,475.22	34.35	129.41	171.71	-636.75	6,060.21	6,608.53	6,446.85	161.68	40.875	
7,450.00	7,047.00	6,476.00	6,475.22	34.52	129.41	163.29	-636.75	6,060.21	6,656.71	6,495.06	161.65	41.179	
7,500.00	7,061.73	6,476.00	6,475.22	34.69	129.41	148.81	-636.75	6,060.21	6,705.68	6,544.06	161.62	41.489	
7,550.00	7,072.82	6,476.00	6,475.22	34.86	129.41	122.80	-636.75	6,060.21	6,755.12	6,593.53	161.59	41.804	
7,600.00	7,080.18	6,476.00	6,475.22	35.04	129.41	87.81	-636.75	6,060.21	6,804.72	6,643.17	161.55	42.120	
7,650.00	7,083.79	6,476.00	6,475.22	35.22	129.41	61.91	-636.75	6,060.21	6,854.18	6,692.66	161.52	42.436	
7,674.30	7,084.18	6,476.00	6,475.22	35.32	129.41	53.94	-636.75	6,060.21	6,878.06	6,716.56	161.50	42.589	
7,700.00	7,084.12	6,476.00	6,475.22	35.42	129.41	53.94	-636.75	6,060.21	6,903.27	6,741.79	161.48	42.750	
7,800.00	7,083.88	6,476.00	6,475.22	35.84	129.41	53.94	-636.75	6,060.21	7,001.36	6,839.95	161.41	43.376	
7,900.00	7,083.64	6,476.00	6,475.22	36.34	129.41	53.94	-636.75	6,060.21	7,099.51	6,938.16	161.34	44.002	
8,000.00	7,083.40	6,476.00	6,475.22	36.90	129.41	53.94	-636.75	6,060.21	7,197.71	7,036.42	161.28	44.628	
8,100.00	7,083.16	6,476.00	6,475.22	37.52	129.41	53.94	-636.75	6,060.21	7,295.95	7,134.73	161.22	45.254	
8,200.00	7,082.91	6,476.00	6,475.22	38.21	129.41	53.94	-636.75	6,060.21	7,394.25	7,233.08	161.17	45.879	
8,300.00	7,082.67	6,476.00	6,475.22	38.95	129.41	53.94	-636.75	6,060.21	7,492.59	7,331.47	161.12	46.504	
8,400.00	7,082.43	6,476.00	6,475.22	39.74	129.41	53.94	-636.75	6,060.21	7,590.97	7,429.90	161.07	47.129	
8,500.00	7,082.19	6,476.00	6,475.22	40.59	129.41	53.94	-636.75	6,060.21	7,689.39	7,528.37	161.02	47.754	
8,600.00	7,081.95	6,476.00	6,475.22	41.49	129.41	53.94	-636.75	6,060.21	7,787.86	7,626.88	160.98	48.378	
8,700.00	7,081.71	6,476.00	6,475.22	42.43	129.41	53.94	-636.75	6,060.21	7,886.36	7,725.42	160.94	49.002	
8,800.00	7,081.47	6,476.00	6,475.22	43.41	129.41	53.94	-636.75	6,060.21	7,984.90	7,824.00	160.90	49.626	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
8,900.00	7,081.23	6,476.00	6,475.22	44.44	129.41	53.94	-636.75	6,060.21	8,083.47	7,922.61	160.87	50.249	
9,000.00	7,080.99	6,476.00	6,475.22	45.49	129.41	53.94	-636.75	6,060.21	8,182.08	8,021.25	160.84	50.872	
9,100.00	7,080.74	6,476.00	6,475.22	46.58	129.41	53.94	-636.75	6,060.21	8,280.73	8,119.92	160.81	51.495	
9,200.00	7,080.50	6,476.00	6,475.22	47.70	129.41	53.94	-636.75	6,060.21	8,379.40	8,218.62	160.78	52.117	
9,300.00	7,080.26	6,476.00	6,475.22	48.85	129.41	53.94	-636.75	6,060.21	8,478.11	8,317.36	160.76	52.739	
9,400.00	7,080.02	6,476.00	6,475.22	50.03	129.41	53.94	-636.75	6,060.21	8,576.85	8,416.11	160.73	53.360	
9,500.00	7,079.78	6,476.00	6,475.22	51.23	129.41	53.94	-636.75	6,060.21	8,675.61	8,514.90	160.71	53.982	
9,600.00	7,079.54	6,476.00	6,475.22	52.45	129.41	53.94	-636.75	6,060.21	8,774.41	8,613.71	160.70	54.602	
9,700.00	7,079.30	6,476.00	6,475.22	53.69	129.41	53.94	-636.75	6,060.21	8,873.23	8,712.55	160.68	55.223	
9,800.00	7,079.06	6,476.00	6,475.22	54.95	129.41	53.94	-636.75	6,060.21	8,972.08	8,811.41	160.67	55.842	
9,900.00	7,078.82	6,476.00	6,475.22	56.23	129.41	53.94	-636.75	6,060.21	9,070.95	8,910.29	160.66	56.462	
10,000.00	7,078.57	6,476.00	6,475.22	57.53	129.41	53.94	-636.75	6,060.21	9,169.84	9,009.20	160.65	57.081	
10,100.00	7,078.33	6,476.00	6,475.22	58.84	129.41	53.94	-636.75	6,060.21	9,268.77	9,108.13	160.64	57.699	
10,200.00	7,078.09	6,476.00	6,475.22	60.17	129.41	53.94	-636.75	6,060.21	9,367.71	9,207.08	160.63	58.317	
10,300.00	7,077.85	6,476.00	6,475.22	61.51	129.41	53.94	-636.75	6,060.21	9,466.67	9,306.04	160.63	58.935	
10,400.00	7,077.61	6,476.00	6,475.22	62.86	129.41	53.94	-636.75	6,060.21	9,565.66	9,405.03	160.63	59.552	
10,500.00	7,077.37	6,476.00	6,475.22	64.22	129.41	53.94	-636.75	6,060.21	9,664.67	9,504.04	160.63	60.169	
10,600.00	7,077.13	6,476.00	6,475.22	65.60	129.41	53.94	-636.75	6,060.21	9,763.70	9,603.07	160.63	60.785	
10,700.00	7,076.89	6,476.00	6,475.22	66.98	129.41	53.94	-636.75	6,060.21	9,862.74	9,702.11	160.63	61.400	
10,800.00	7,076.65	6,476.00	6,475.22	68.38	129.41	53.94	-636.75	6,060.21	9,961.81	9,801.18	160.63	62.015	
10,900.00	7,076.40	6,476.00	6,475.22	69.78	129.41	53.94	-636.75	6,060.21	10,060.90	9,900.26	160.64	62.630	
11,000.00	7,076.16	6,476.00	6,475.22	71.20	129.41	53.94	-636.75	6,060.21	10,160.00	9,999.35	160.65	63.244	
11,100.00	7,075.92	6,476.00	6,475.22	72.62	129.41	53.94	-636.75	6,060.21	10,259.12	10,098.46	160.66	63.857	
11,200.00	7,075.68	6,476.00	6,475.22	74.04	129.41	53.94	-636.75	6,060.21	10,358.26	10,197.59	160.67	64.470	
11,300.00	7,075.44	6,476.00	6,475.22	75.48	129.41	53.94	-636.75	6,060.21	10,457.41	10,296.73	160.68	65.082	
11,400.00	7,075.20	6,476.00	6,475.22	76.92	129.41	53.94	-636.75	6,060.21	10,556.58	10,395.89	160.69	65.694	
11,500.00	7,074.96	6,476.00	6,475.22	78.37	129.41	53.94	-636.75	6,060.21	10,655.77	10,495.06	160.71	66.305	
11,600.00	7,074.72	6,476.00	6,475.22	79.82	129.41	53.94	-636.75	6,060.21	10,754.97	10,594.24	160.72	66.915	
11,700.00	7,074.48	6,476.00	6,475.22	81.28	129.41	53.94	-636.75	6,060.21	10,854.18	10,693.44	160.74	67.525	
11,800.00	7,074.23	6,476.00	6,475.22	82.75	129.41	53.94	-636.75	6,060.21	10,953.41	10,792.65	160.76	68.135	
11,900.00	7,073.99	6,476.00	6,475.22	84.22	129.41	53.94	-636.75	6,060.21	11,052.65	10,891.87	160.78	68.743	
12,000.00	7,073.75	6,476.00	6,475.22	85.69	129.41	53.94	-636.75	6,060.21	11,151.91	10,991.11	160.80	69.351	
12,100.00	7,073.51	6,476.00	6,475.22	87.17	129.41	53.94	-636.75	6,060.21	11,251.18	11,090.36	160.83	69.959	
12,200.00	7,073.27	6,476.00	6,475.22	88.65	129.41	53.94	-636.75	6,060.21	11,350.46	11,189.61	160.85	70.565	
12,300.00	7,073.03	6,476.00	6,475.22	90.14	129.41	53.94	-636.75	6,060.21	11,449.76	11,288.88	160.88	71.172	
12,400.00	7,072.79	6,476.00	6,475.22	91.63	129.41	53.94	-636.75	6,060.21	11,549.07	11,388.17	160.90	71.777	
12,500.00	7,072.55	6,476.00	6,475.22	93.13	129.41	53.94	-636.75	6,060.21	11,648.39	11,487.46	160.93	72.382	
12,600.00	7,072.31	6,476.00	6,475.22	94.62	129.41	53.94	-636.75	6,060.21	11,747.72	11,586.76	160.96	72.986	
12,700.00	7,072.06	6,476.00	6,475.22	96.13	129.41	53.94	-636.75	6,060.21	11,847.06	11,686.07	160.99	73.590	
12,800.00	7,071.82	6,476.00	6,475.22	97.63	129.41	53.94	-636.75	6,060.21	11,946.41	11,785.39	161.02	74.192	
12,900.00	7,071.58	6,476.00	6,475.22	99.14	129.41	53.94	-636.75	6,060.21	12,045.78	11,884.72	161.05	74.795	
13,000.00	7,071.34	6,476.00	6,475.22	100.65	129.41	53.94	-636.75	6,060.21	12,145.15	11,984.07	161.08	75.396	
13,100.00	7,071.10	6,476.00	6,475.22	102.16	129.41	53.94	-636.75	6,060.21	12,244.53	12,083.42	161.12	75.997	
13,200.00	7,070.86	6,476.00	6,475.22	103.68	129.41	53.94	-636.75	6,060.21	12,343.93	12,182.77	161.15	76.597	
13,300.00	7,070.62	6,476.00	6,475.22	105.20	129.41	53.94	-636.75	6,060.21	12,443.33	12,282.14	161.19	77.196	
13,400.00	7,070.38	6,476.00	6,475.22	106.72	129.41	53.94	-636.75	6,060.21	12,542.75	12,381.52	161.23	77.795	
13,500.00	7,070.14	6,476.00	6,475.22	108.24	129.41	53.94	-636.75	6,060.21	12,642.17	12,480.90	161.27	78.393	
13,600.00	7,069.89	6,476.00	6,475.22	109.77	129.41	53.94	-636.75	6,060.21	12,741.60	12,580.29	161.31	78.990	
13,700.00	7,069.65	6,476.00	6,475.22	111.30	129.41	53.94	-636.75	6,060.21	12,841.04	12,679.69	161.35	79.587	
13,800.00	7,069.41	6,476.00	6,475.22	112.83	129.41	53.94	-636.75	6,060.21	12,940.49	12,779.10	161.39	80.182	
13,900.00	7,069.17	6,476.00	6,475.22	114.36	129.41	53.94	-636.75	6,060.21	13,039.95	12,878.52	161.43	80.777	
14,000.00	7,068.93	6,476.00	6,475.22	115.89	129.41	53.94	-636.75	6,060.21	13,139.41	12,977.94	161.47	81.372	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)	Rule Assigned: Distance Between Ellipses (usft)	Rule Assigned: Minimum Separation (usft)	Separation Factor	Warning
14,100.00	7,068.69	6,476.00	6,475.22	117.43	129.41	53.94	-636.75	6,060.21	13,238.89	13,077.37	161.52	81.965	
14,200.00	7,068.45	6,476.00	6,475.22	118.97	129.41	53.94	-636.75	6,060.21	13,338.37	13,176.81	161.56	82.558	
14,300.00	7,068.21	6,476.00	6,475.22	120.50	129.41	53.94	-636.75	6,060.21	13,437.86	13,276.25	161.61	83.150	
14,400.00	7,067.97	6,476.00	6,475.22	122.05	129.41	53.94	-636.75	6,060.21	13,537.36	13,375.70	161.66	83.741	
14,500.00	7,067.72	6,476.00	6,475.22	123.59	129.41	53.94	-636.75	6,060.21	13,636.86	13,475.16	161.70	84.332	
14,600.00	7,067.48	6,476.00	6,475.22	125.13	129.41	53.94	-636.75	6,060.21	13,736.37	13,574.62	161.75	84.922	
14,700.00	7,067.24	6,476.00	6,475.22	126.68	129.41	53.94	-636.75	6,060.21	13,835.89	13,674.09	161.80	85.510	
14,800.00	7,067.00	6,476.00	6,475.22	128.22	129.41	53.94	-636.75	6,060.21	13,935.42	13,773.56	161.85	86.099	
14,900.00	7,066.76	6,476.00	6,475.22	129.77	129.41	53.94	-636.75	6,060.21	14,034.95	13,873.04	161.91	86.686	
15,000.00	7,066.52	6,476.00	6,475.22	131.32	129.41	53.94	-636.75	6,060.21	14,134.49	13,972.53	161.96	87.273	
15,100.00	7,066.28	6,476.00	6,475.22	132.87	129.41	53.94	-636.75	6,060.21	14,234.03	14,072.02	162.01	87.858	
15,200.00	7,066.04	6,476.00	6,475.22	134.42	129.41	53.94	-636.75	6,060.21	14,333.59	14,171.52	162.06	88.443	
15,300.00	7,065.80	6,476.00	6,475.22	135.97	129.41	53.94	-636.75	6,060.21	14,433.14	14,271.02	162.12	89.028	
15,400.00	7,065.55	6,476.00	6,475.22	137.53	129.41	53.94	-636.75	6,060.21	14,532.71	14,370.53	162.18	89.611	
15,500.00	7,065.31	6,476.00	6,475.22	139.08	129.41	53.94	-636.75	6,060.21	14,632.28	14,470.05	162.23	90.194	
15,600.00	7,065.07	6,476.00	6,475.22	140.64	129.41	53.94	-636.75	6,060.21	14,731.85	14,569.56	162.29	90.776	
15,700.00	7,064.83	6,476.00	6,475.22	142.20	129.41	53.94	-636.75	6,060.21	14,831.43	14,669.09	162.35	91.357	
15,800.00	7,064.59	6,476.00	6,475.22	143.75	129.41	53.94	-636.75	6,060.21	14,931.02	14,768.62	162.41	91.937	
15,900.00	7,064.35	6,476.00	6,475.22	145.31	129.41	53.94	-636.75	6,060.21	15,030.61	14,868.15	162.46	92.516	
16,000.00	7,064.11	6,476.00	6,475.22	146.87	129.41	53.94	-636.75	6,060.21	15,130.21	14,967.69	162.53	93.095	
16,100.00	7,063.87	6,476.00	6,475.22	148.43	129.41	53.94	-636.75	6,060.21	15,229.81	15,067.23	162.59	93.672	
16,200.00	7,063.63	6,476.00	6,475.22	149.99	129.41	53.94	-636.75	6,060.21	15,329.42	15,166.77	162.65	94.249	
16,300.00	7,063.38	6,476.00	6,475.22	151.56	129.41	53.94	-636.75	6,060.21	15,429.04	15,266.33	162.71	94.825	
16,400.00	7,063.14	6,476.00	6,475.22	153.12	129.41	53.94	-636.75	6,060.21	15,528.65	15,365.88	162.77	95.400	
16,500.00	7,062.90	6,476.00	6,475.22	154.68	129.41	53.94	-636.75	6,060.21	15,628.28	15,465.44	162.84	95.975	
16,600.00	7,062.66	6,476.00	6,475.22	156.25	129.41	53.94	-636.75	6,060.21	15,727.91	15,565.00	162.90	96.548	
16,700.00	7,062.42	6,476.00	6,475.22	157.81	129.41	53.94	-636.75	6,060.21	15,827.54	15,664.57	162.97	97.121	
16,800.00	7,062.18	6,476.00	6,475.22	159.38	129.41	53.94	-636.75	6,060.21	15,927.18	15,764.14	163.03	97.693	
16,874.30	7,062.00	6,476.00	6,475.22	160.54	129.41	53.94	-636.75	6,060.21	16,001.20	15,838.12	163.08	98.117	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	161.99	161.99	3.28	3.28	104.64	-1,768.50	6,772.23	6,999.34				
100.00	100.00	242.87	242.87	3.29	3.29	104.63	-1,767.94	6,772.46	6,999.45	6,992.88	6.57	1,065.017	
200.00	200.00	343.78	343.77	3.34	3.30	104.62	-1,767.17	6,772.93	6,999.71	6,993.09	6.62	1,056.952	
300.00	300.00	440.11	440.09	3.42	3.32	104.62	-1,766.34	6,773.47	7,000.03	6,993.32	6.71	1,042.965	
400.00	400.00	538.34	538.32	3.54	3.34	104.61	-1,765.58	6,774.05	7,000.40	6,993.56	6.84	1,023.835	
500.00	500.00	635.57	635.55	3.69	3.37	104.60	-1,764.84	6,774.62	7,000.78	6,993.79	7.00	1,000.638	
600.00	599.98	732.39	732.36	3.86	3.40	-77.34	-1,764.07	6,775.27	7,000.85	6,993.67	7.18	975.640	
700.00	699.84	820.42	820.38	4.04	3.43	-77.40	-1,763.25	6,775.97	7,000.24	6,992.87	7.37	949.504	
800.00	799.45	906.02	905.97	4.25	3.46	-77.49	-1,762.40	6,776.81	6,999.04	6,991.45	7.60	921.391	
900.00	898.70	999.71	999.65	4.48	3.50	-77.63	-1,761.50	6,777.92	6,997.31	6,989.47	7.85	891.469	
1,000.00	997.47	1,100.00	1,099.94	4.74	3.55	-77.81	-1,760.63	6,779.06	6,994.84	6,986.71	8.13	860.139	
1,100.00	1,095.62	1,198.19	1,198.12	5.03	3.60	-78.03	-1,759.63	6,780.23	6,991.69	6,983.25	8.44	828.038	
1,200.00	1,193.06	1,318.68	1,318.59	5.35	3.66	-78.34	-1,757.98	6,781.40	6,987.58	6,978.79	8.79	795.137	
1,268.36	1,259.18	1,386.06	1,385.96	5.58	3.70	-78.55	-1,757.01	6,782.00	6,984.37	6,975.34	9.04	772.857	
1,300.00	1,289.69	1,413.93	1,413.82	5.70	3.72	-78.61	-1,756.59	6,782.27	6,982.84	6,973.68	9.16	762.645	
1,400.00	1,386.11	1,489.00	1,488.88	6.07	3.77	-78.78	-1,755.45	6,783.07	6,978.18	6,968.63	9.54	731.092	
1,500.00	1,482.54	1,587.56	1,587.43	6.45	3.83	-79.01	-1,754.21	6,784.30	6,973.85	6,963.88	9.96	699.995	
1,600.00	1,578.96	1,650.00	1,649.85	6.86	3.88	-79.15	-1,753.34	6,785.17	6,969.75	6,959.36	10.39	671.131	
1,700.00	1,675.39	1,745.68	1,745.51	7.27	3.94	-79.37	-1,752.07	6,786.86	6,966.10	6,955.27	10.84	642.880	
1,800.00	1,771.81	1,810.32	1,810.12	7.70	3.99	-79.52	-1,751.07	6,788.15	6,962.72	6,951.44	11.29	616.924	
1,900.00	1,868.24	1,915.20	1,914.98	8.13	4.07	-79.75	-1,749.71	6,790.27	6,959.54	6,947.77	11.77	591.489	
2,000.00	1,964.66	1,993.43	1,993.19	8.57	4.13	-79.94	-1,748.50	6,791.98	6,956.58	6,944.34	12.24	568.203	
2,100.00	2,061.09	2,058.97	2,058.70	9.02	4.18	-80.09	-1,747.49	6,793.62	6,954.04	6,941.32	12.72	546.575	
2,200.00	2,157.51	2,166.72	2,166.40	9.47	4.26	-80.33	-1,746.28	6,796.50	6,951.84	6,938.60	13.24	525.243	
2,300.00	2,253.94	2,248.05	2,247.70	9.93	4.32	-80.52	-1,745.30	6,798.62	6,949.68	6,935.94	13.74	505.794	
2,400.00	2,350.36	2,331.18	2,330.78	10.39	4.39	-80.71	-1,744.29	6,801.03	6,947.89	6,933.64	14.25	487.479	
2,500.00	2,446.79	2,416.85	2,416.41	10.86	4.46	-80.91	-1,743.33	6,803.42	6,946.15	6,931.38	14.77	470.194	
2,600.00	2,543.21	2,520.44	2,519.95	11.33	4.55	-81.14	-1,742.11	6,806.57	6,944.74	6,929.43	15.31	453.579	
2,700.00	2,639.64	2,586.68	2,586.15	11.80	4.60	-81.30	-1,741.30	6,808.76	6,943.63	6,927.80	15.83	438.675	
2,800.00	2,736.06	2,655.21	2,654.63	12.27	4.66	-81.46	-1,740.39	6,811.18	6,942.91	6,926.55	16.35	424.599	
2,900.00	2,832.49	2,737.91	2,737.25	12.75	4.74	-81.65	-1,739.38	6,814.41	6,942.64	6,925.75	16.89	411.057	
2,919.94	2,851.71	2,750.00	2,749.34	12.84	4.75	-81.68	-1,739.20	6,814.91	6,942.63	6,925.63	16.99	408.533	
3,000.00	2,928.91	2,804.73	2,804.01	13.23	4.80	-81.80	-1,738.36	6,817.27	6,942.78	6,925.36	17.42	398.588	
3,100.00	3,025.34	2,914.38	2,913.54	13.71	4.89	-82.06	-1,736.81	6,822.17	6,943.25	6,925.27	17.99	386.050	
3,200.00	3,121.76	3,016.94	3,016.00	14.19	4.99	-82.30	-1,735.10	6,826.44	6,943.49	6,924.94	18.55	374.330	
3,300.00	3,218.18	3,089.68	3,088.65	14.67	5.06	-82.47	-1,733.88	6,829.63	6,944.06	6,924.97	19.09	363.718	
3,400.00	3,314.61	3,175.00	3,173.87	15.15	5.14	-82.67	-1,732.27	6,833.50	6,944.87	6,925.23	19.65	353.478	
3,500.00	3,411.03	3,241.22	3,240.00	15.64	5.20	-82.83	-1,731.05	6,836.78	6,946.20	6,926.01	20.19	344.057	
3,600.00	3,507.46	3,325.00	3,323.65	16.12	5.29	-83.03	-1,729.49	6,841.20	6,947.94	6,927.19	20.75	334.856	
3,700.00	3,603.88	3,407.68	3,406.19	16.61	5.37	-83.23	-1,727.90	6,845.69	6,949.94	6,928.63	21.31	326.131	
3,800.00	3,700.31	3,513.01	3,511.34	17.10	5.47	-83.48	-1,725.97	6,851.50	6,952.16	6,930.26	21.90	317.509	
3,900.00	3,796.73	3,685.79	3,683.95	17.59	5.64	-83.88	-1,724.09	6,859.16	6,953.34	6,930.79	22.55	308.303	
4,000.00	3,893.16	3,806.05	3,804.11	18.07	5.76	-84.15	-1,723.10	6,863.85	6,954.37	6,931.21	23.16	300.226	
4,100.00	3,989.58	3,907.93	3,905.91	18.56	5.87	-84.38	-1,722.30	6,867.70	6,955.40	6,931.64	23.76	292.758	
4,200.00	4,086.01	4,041.87	4,039.76	19.05	6.00	-84.69	-1,721.49	6,872.30	6,956.26	6,931.88	24.39	285.223	
4,300.00	4,182.43	4,269.08	4,266.93	19.55	6.21	-85.18	-1,721.85	6,876.66	6,955.63	6,930.51	25.12	276.875	
4,400.00	4,278.86	4,432.08	4,429.92	20.04	6.28	-85.53	-1,723.16	6,877.86	6,954.35	6,928.60	25.76	269.991	
4,500.00	4,375.28	4,557.96	4,555.80	20.53	6.27	-85.80	-1,723.41	6,877.73	6,952.18	6,925.91	26.26	264.695	
4,600.00	4,471.71	4,655.06	4,652.89	21.02	6.26	-86.01	-1,723.58	6,877.46	6,949.95	6,923.19	26.76	259.705	
4,700.00	4,568.13	4,737.16	4,734.99	21.51	6.25	-86.18	-1,724.31	6,877.27	6,947.94	6,920.66	27.28	254.645	
4,800.00	4,664.56	4,826.42	4,824.25	22.01	6.24	-86.37	-1,725.16	6,877.12	6,946.09	6,918.28	27.81	249.727	
4,900.00	4,760.98	4,922.94	4,920.76	22.50	6.24	-86.57	-1,726.17	6,876.99	6,944.37	6,916.02	28.35	244.942	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	5,036.42	5,034.24	22.99	6.23	-86.81	-1,727.20	6,876.80	6,942.70	6,913.81	28.89	240.317	
5,100.00	4,953.83	5,114.90	5,112.72	23.49	6.23	-86.98	-1,728.05	6,876.66	6,941.14	6,911.72	29.42	235.941	
5,200.00	5,050.25	5,215.62	5,213.43	23.98	6.24	-87.19	-1,729.08	6,876.51	6,939.68	6,909.72	29.96	231.652	
5,300.00	5,146.68	5,312.12	5,309.92	24.48	6.25	-87.39	-1,730.17	6,876.39	6,938.34	6,907.85	30.50	227.519	
5,400.00	5,243.10	5,407.49	5,405.28	24.97	6.26	-87.59	-1,731.25	6,876.25	6,937.09	6,906.06	31.03	223.540	
5,500.00	5,339.53	5,500.00	5,497.79	25.47	6.27	-87.78	-1,732.41	6,876.06	6,935.88	6,904.31	31.57	219.717	
5,600.00	5,435.95	5,589.66	5,587.45	25.96	6.28	-87.97	-1,733.41	6,875.98	6,934.88	6,902.77	32.11	215.998	
5,700.00	5,532.38	5,693.20	5,690.98	26.46	6.31	-88.19	-1,734.40	6,876.02	6,934.07	6,901.41	32.66	212.326	
5,800.00	5,628.80	5,775.00	5,772.77	26.96	6.34	-88.36	-1,735.18	6,876.14	6,933.44	6,900.24	33.20	208.815	
5,900.00	5,725.23	5,863.69	5,861.45	27.45	6.39	-88.55	-1,736.16	6,876.43	6,933.10	6,899.34	33.76	205.349	
6,000.00	5,821.65	5,971.64	5,969.38	27.95	6.42	-88.77	-1,738.57	6,876.54	6,932.70	6,898.38	34.32	202.019	
6,100.00	5,918.08	6,092.09	6,089.79	28.45	6.46	-89.01	-1,741.46	6,876.39	6,932.16	6,897.29	34.87	198.797	
6,200.00	6,014.50	6,194.84	6,192.53	28.94	6.49	-89.22	-1,743.33	6,876.08	6,931.51	6,896.11	35.41	195.756	
6,300.00	6,110.93	6,297.30	6,294.98	29.44	6.52	-89.43	-1,744.99	6,875.70	6,930.88	6,894.94	35.94	192.826	
6,400.00	6,207.35	6,393.88	6,391.54	29.94	6.55	-89.63	-1,746.39	6,875.39	6,930.39	6,893.91	36.48	189.993	
6,500.00	6,303.78	6,492.29	6,489.94	30.43	6.58	-89.83	-1,747.91	6,875.02	6,929.94	6,892.93	37.01	187.243	
6,600.00	6,400.20	6,588.56	6,586.20	30.93	6.61	-90.03	-1,749.45	6,874.68	6,929.59	6,892.05	37.54	184.572	
6,677.76	6,475.18	6,661.62	6,659.25	31.32	6.64	-90.18	-1,750.57	6,874.45	6,929.41	6,891.46	37.96	182.551	
6,679.07	6,476.44	6,662.52	6,660.15	31.33	6.64	-90.61	-1,750.58	6,874.45	6,929.41	6,891.45	37.97	182.518	CC, ES
6,700.00	6,496.62	6,675.00	6,672.63	31.43	6.65	-97.42	-1,750.76	6,874.41	6,929.77	6,891.69	38.07	182.006	
6,750.00	6,544.66	6,722.93	6,720.55	31.68	6.67	-112.44	-1,751.39	6,874.32	6,933.46	6,895.11	38.34	180.831	
6,800.00	6,592.24	6,762.69	6,760.31	31.92	6.68	-124.58	-1,751.86	6,874.25	6,941.07	6,902.47	38.60	179.806	
6,850.00	6,639.07	6,815.40	6,813.02	32.16	6.71	-133.83	-1,752.52	6,874.20	6,952.60	6,913.73	38.86	178.892	
6,900.00	6,684.86	6,850.00	6,847.61	32.40	6.72	-140.69	-1,752.88	6,874.15	6,967.91	6,928.80	39.11	178.163	
6,950.00	6,729.32	6,898.26	6,895.87	32.62	6.75	-145.86	-1,753.45	6,874.16	6,987.00	6,947.64	39.35	177.538	
7,000.00	6,772.19	6,952.88	6,950.49	32.84	6.78	-149.83	-1,754.09	6,874.09	7,009.61	6,970.02	39.59	177.057	
7,050.00	6,813.20	6,989.25	6,986.86	33.05	6.80	-152.88	-1,754.41	6,874.02	7,035.64	6,995.84	39.80	176.767	
7,100.00	6,852.09	7,030.62	7,028.22	33.26	6.81	-155.30	-1,754.76	6,873.96	7,064.96	7,024.96	40.00	176.608	
7,150.00	6,888.63	7,064.41	7,062.01	33.45	6.83	-157.21	-1,755.06	6,873.89	7,097.38	7,057.19	40.19	176.604	SF
7,200.00	6,922.59	7,099.83	7,097.43	33.64	6.85	-158.76	-1,755.33	6,873.85	7,132.71	7,092.35	40.36	176.731	
7,250.00	6,953.76	7,135.26	7,132.86	33.82	6.86	-160.03	-1,755.60	6,873.78	7,170.69	7,130.18	40.51	176.995	
7,300.00	6,981.95	7,160.96	7,158.56	34.00	6.88	-161.03	-1,755.82	6,873.72	7,211.12	7,170.47	40.65	177.403	
7,350.00	7,006.99	7,181.70	7,179.30	34.17	6.89	-161.82	-1,756.02	6,873.69	7,253.74	7,212.98	40.77	177.940	
7,400.00	7,028.72	7,200.00	7,197.60	34.35	6.90	-162.42	-1,756.20	6,873.68	7,298.31	7,257.45	40.87	178.593	
7,450.00	7,047.00	7,208.88	7,206.48	34.52	6.90	-162.82	-1,756.28	6,873.68	7,344.54	7,303.59	40.95	179.375	
7,500.00	7,061.73	7,220.86	7,218.46	34.69	6.91	-163.05	-1,756.39	6,873.69	7,392.12	7,351.11	41.01	180.246	
7,550.00	7,072.82	7,238.28	7,235.87	34.86	6.92	-163.11	-1,756.51	6,873.70	7,440.77	7,399.70	41.07	181.192	
7,600.00	7,080.18	7,254.84	7,252.43	35.04	6.93	-162.77	-1,756.62	6,873.69	7,490.15	7,449.05	41.11	182.218	
7,650.00	7,083.79	7,258.69	7,256.28	35.22	6.93	-159.41	-1,756.64	6,873.69	7,539.99	7,498.87	41.12	183.352	
7,674.30	7,084.18	7,259.31	7,256.91	35.32	6.93	-68.53	-1,756.65	6,873.69	7,564.28	7,523.15	41.13	183.924	
7,700.00	7,084.12	7,259.27	7,256.86	35.42	6.93	-68.43	-1,756.65	6,873.69	7,589.99	7,548.86	41.13	184.540	
7,800.00	7,083.88	7,259.08	7,256.67	35.84	6.93	-68.05	-1,756.65	6,873.69	7,689.99	7,648.85	41.14	186.932	
7,900.00	7,083.64	7,258.89	7,256.48	36.34	6.93	-67.66	-1,756.65	6,873.69	7,789.98	7,748.84	41.15	189.321	
8,000.00	7,083.40	7,258.70	7,256.29	36.90	6.93	-67.27	-1,756.65	6,873.69	7,889.98	7,848.83	41.16	191.706	
8,100.00	7,083.16	7,258.50	7,256.10	37.52	6.93	-66.88	-1,756.64	6,873.69	7,989.98	7,948.82	41.17	194.086	
8,200.00	7,082.91	7,258.31	7,255.90	38.21	6.93	-66.48	-1,756.64	6,873.69	8,089.98	8,048.81	41.18	196.462	
8,300.00	7,082.67	7,258.10	7,255.70	38.95	6.93	-66.08	-1,756.64	6,873.69	8,189.98	8,148.79	41.19	198.834	
8,400.00	7,082.43	7,257.90	7,255.50	39.74	6.93	-65.68	-1,756.64	6,873.69	8,289.98	8,248.78	41.20	201.201	
8,500.00	7,082.19	7,257.70	7,255.29	40.59	6.93	-65.28	-1,756.64	6,873.69	8,389.98	8,348.77	41.22	203.564	
8,600.00	7,081.95	7,257.49	7,255.08	41.49	6.93	-64.87	-1,756.64	6,873.69	8,489.98	8,448.75	41.23	205.922	
8,700.00	7,081.71	7,257.28	7,254.87	42.43	6.93	-64.46	-1,756.64	6,873.69	8,589.98	8,548.74	41.24	208.275	
8,800.00	7,081.47	7,257.06	7,254.66	43.41	6.93	-64.04	-1,756.63	6,873.69	8,689.98	8,648.72	41.26	210.623	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,081.23	7,256.84	7,254.44	44.44	6.93	-63.63	-1,756.63	6,873.69	8,789.98	8,748.71	41.27	212.966	
9,000.00	7,080.99	7,256.62	7,254.22	45.49	6.93	-63.20	-1,756.63	6,873.69	8,889.98	8,848.69	41.29	215.304	
9,100.00	7,080.74	7,256.40	7,253.99	46.58	6.93	-62.78	-1,756.63	6,873.69	8,989.98	8,948.67	41.31	217.636	
9,200.00	7,080.50	7,256.17	7,253.77	47.70	6.93	-62.35	-1,756.63	6,873.69	9,089.98	9,048.65	41.32	219.964	
9,300.00	7,080.26	7,245.04	7,242.63	48.85	6.93	-45.36	-1,756.56	6,873.70	9,189.98	9,148.64	41.34	222.321	
9,400.00	7,080.02	7,244.78	7,242.38	50.03	6.93	-45.05	-1,756.55	6,873.70	9,289.98	9,248.62	41.36	224.638	
9,500.00	7,079.78	7,244.52	7,242.12	51.23	6.93	-44.74	-1,756.55	6,873.70	9,389.98	9,348.60	41.37	226.949	
9,600.00	7,079.54	7,244.27	7,241.86	52.45	6.93	-44.44	-1,756.55	6,873.70	9,489.98	9,448.58	41.39	229.254	
9,700.00	7,079.30	7,244.01	7,241.61	53.69	6.93	-44.14	-1,756.55	6,873.70	9,589.98	9,548.56	41.42	231.554	
9,800.00	7,079.06	7,243.75	7,241.35	54.95	6.93	-43.84	-1,756.55	6,873.70	9,689.97	9,648.54	41.44	233.847	
9,900.00	7,078.82	7,243.50	7,241.09	56.23	6.93	-43.55	-1,756.54	6,873.70	9,789.97	9,748.51	41.46	236.134	
10,000.00	7,078.57	7,243.24	7,240.84	57.53	6.93	-43.25	-1,756.54	6,873.70	9,889.97	9,848.49	41.48	238.415	
10,100.00	7,078.33	7,242.98	7,240.58	58.84	6.93	-42.97	-1,756.54	6,873.70	9,989.97	9,948.47	41.51	240.690	
10,200.00	7,078.09	7,242.73	7,240.32	60.17	6.93	-42.68	-1,756.54	6,873.70	10,089.97	10,048.44	41.53	242.958	
10,300.00	7,077.85	7,242.47	7,240.06	61.51	6.93	-42.40	-1,756.54	6,873.70	10,189.97	10,148.42	41.55	245.220	
10,400.00	7,077.61	7,242.21	7,239.81	62.86	6.92	-42.12	-1,756.54	6,873.70	10,289.97	10,248.39	41.58	247.476	
10,500.00	7,077.37	7,241.95	7,239.55	64.22	6.92	-41.85	-1,756.53	6,873.70	10,389.97	10,348.36	41.61	249.724	
10,600.00	7,077.13	7,241.70	7,239.29	65.60	6.92	-41.57	-1,756.53	6,873.70	10,489.97	10,448.34	41.63	251.966	
10,700.00	7,076.89	7,241.44	7,239.04	66.98	6.92	-41.30	-1,756.53	6,873.70	10,589.97	10,548.31	41.66	254.201	
10,800.00	7,076.65	7,255.09	7,252.69	68.38	6.93	-60.37	-1,756.62	6,873.69	10,689.97	10,648.27	41.70	256.372	
10,900.00	7,076.40	7,254.46	7,252.06	69.78	6.93	-59.25	-1,756.62	6,873.69	10,789.97	10,748.25	41.73	258.595	
11,000.00	7,076.16	7,253.78	7,251.38	71.20	6.93	-58.08	-1,756.61	6,873.70	10,889.97	10,848.22	41.75	260.810	
11,100.00	7,075.92	7,253.05	7,250.65	72.62	6.93	-56.84	-1,756.61	6,873.70	10,989.97	10,948.19	41.78	263.019	
11,200.00	7,075.68	7,252.26	7,249.86	74.04	6.93	-55.54	-1,756.60	6,873.70	11,089.97	11,048.16	41.81	265.220	
11,300.00	7,075.44	7,251.41	7,249.00	75.48	6.93	-54.17	-1,756.60	6,873.70	11,189.97	11,148.13	41.84	267.415	
11,400.00	7,075.20	7,250.47	7,248.07	76.92	6.93	-52.73	-1,756.59	6,873.70	11,289.97	11,248.09	41.88	269.603	
11,500.00	7,074.96	7,249.45	7,247.04	78.37	6.93	-51.22	-1,756.59	6,873.70	11,389.97	11,348.06	41.91	271.783	
11,600.00	7,074.72	7,248.32	7,245.92	79.82	6.93	-49.62	-1,756.58	6,873.70	11,489.97	11,448.03	41.94	273.957	
11,700.00	7,074.48	7,247.09	7,244.68	81.28	6.93	-47.95	-1,756.57	6,873.70	11,589.97	11,547.99	41.97	276.123	
11,800.00	7,074.23	7,245.71	7,243.31	82.75	6.93	-46.19	-1,756.56	6,873.70	11,689.97	11,647.96	42.01	278.283	
11,900.00	7,073.99	7,244.18	7,241.77	84.22	6.93	-44.34	-1,756.55	6,873.70	11,789.97	11,747.93	42.04	280.435	
12,000.00	7,073.75	7,242.46	7,240.06	85.69	6.93	-42.40	-1,756.54	6,873.70	11,889.97	11,847.89	42.08	282.581	
12,100.00	7,073.51	7,240.52	7,238.11	87.17	6.92	-40.36	-1,756.53	6,873.70	11,989.97	11,947.86	42.11	284.720	
12,200.00	7,073.27	7,238.30	7,235.90	88.65	6.92	-38.23	-1,756.51	6,873.70	12,089.97	12,047.82	42.15	286.852	
12,300.00	7,073.03	7,235.76	7,233.35	90.14	6.92	-36.00	-1,756.50	6,873.70	12,189.97	12,147.78	42.18	288.978	
12,400.00	7,072.79	7,232.80	7,230.40	91.63	6.92	-33.68	-1,756.48	6,873.70	12,289.97	12,247.75	42.22	291.097	
12,500.00	7,072.55	7,229.32	7,226.92	93.13	6.92	-31.26	-1,756.45	6,873.70	12,389.96	12,347.71	42.26	293.212	
12,600.00	7,072.31	7,225.17	7,222.77	94.62	6.91	-28.75	-1,756.42	6,873.70	12,489.96	12,447.67	42.29	295.321	
12,700.00	7,072.06	7,225.00	7,222.60	96.13	6.91	-28.65	-1,756.42	6,873.70	12,589.96	12,547.63	42.33	297.404	
12,800.00	7,071.82	7,225.00	7,222.60	97.63	6.91	-28.65	-1,756.42	6,873.70	12,689.96	12,647.59	42.37	299.477	
12,900.00	7,071.58	7,225.00	7,222.60	99.14	6.91	-28.65	-1,756.42	6,873.70	12,789.96	12,747.55	42.42	301.542	
13,000.00	7,071.34	7,225.00	7,222.60	100.65	6.91	-28.65	-1,756.42	6,873.70	12,889.96	12,847.50	42.46	303.599	
13,100.00	7,071.10	7,225.00	7,222.60	102.16	6.91	-28.65	-1,756.42	6,873.70	12,989.96	12,947.46	42.50	305.647	
13,200.00	7,070.86	7,225.00	7,222.60	103.68	6.91	-28.65	-1,756.42	6,873.70	13,089.96	13,047.42	42.54	307.687	
13,300.00	7,070.62	7,225.00	7,222.60	105.20	6.91	-28.65	-1,756.42	6,873.70	13,189.96	13,147.37	42.59	309.718	
13,400.00	7,070.38	7,225.00	7,222.60	106.72	6.91	-28.65	-1,756.42	6,873.70	13,289.96	13,247.33	42.63	311.741	
13,500.00	7,070.14	7,225.00	7,222.60	108.24	6.91	-28.65	-1,756.42	6,873.70	13,389.96	13,347.28	42.68	313.755	
13,600.00	7,069.89	7,225.00	7,222.60	109.77	6.91	-28.65	-1,756.42	6,873.70	13,489.96	13,447.23	42.72	315.760	
13,700.00	7,069.65	7,225.00	7,222.60	111.30	6.91	-28.65	-1,756.42	6,873.70	13,589.96	13,547.19	42.77	317.757	
13,800.00	7,069.41	7,225.00	7,222.60	112.83	6.91	-28.65	-1,756.42	6,873.70	13,689.96	13,647.14	42.82	319.744	
13,900.00	7,069.17	7,225.00	7,222.60	114.36	6.91	-28.65	-1,756.42	6,873.70	13,789.95	13,747.09	42.86	321.723	
14,000.00	7,068.93	7,225.00	7,222.60	115.89	6.91	-28.65	-1,756.42	6,873.70	13,889.95	13,847.04	42.91	323.693	

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 752H
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 752H	**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
14,100.00	7,068.69	7,225.00	7,222.60	117.43	6.91	-28.65	-1,756.42	6,873.70	13,989.95	13,946.99	42.96	325.655	
14,200.00	7,068.45	7,221.13	7,218.73	118.97	6.91	-26.63	-1,756.39	6,873.69	14,089.95	14,046.95	43.01	327.628	
14,300.00	7,068.21	7,220.90	7,218.50	120.50	6.91	-26.52	-1,756.39	6,873.69	14,189.95	14,146.90	43.06	329.572	
14,400.00	7,067.97	7,220.67	7,218.27	122.05	6.91	-26.41	-1,756.38	6,873.69	14,289.95	14,246.84	43.11	331.508	
14,500.00	7,067.72	7,220.44	7,218.03	123.59	6.91	-26.30	-1,756.38	6,873.69	14,389.95	14,346.79	43.16	333.435	
14,600.00	7,067.48	7,220.21	7,217.80	125.13	6.91	-26.19	-1,756.38	6,873.69	14,489.95	14,446.74	43.21	335.352	
14,700.00	7,067.24	7,219.98	7,217.57	126.68	6.91	-26.08	-1,756.38	6,873.69	14,589.95	14,546.69	43.26	337.261	
14,800.00	7,067.00	7,219.75	7,217.35	128.22	6.91	-25.97	-1,756.38	6,873.69	14,689.95	14,646.63	43.31	339.160	
14,900.00	7,066.76	7,219.52	7,217.12	129.77	6.91	-25.87	-1,756.38	6,873.69	14,789.95	14,746.58	43.37	341.051	
15,000.00	7,066.52	7,219.30	7,216.89	131.32	6.91	-25.76	-1,756.37	6,873.69	14,889.95	14,846.53	43.42	342.932	
15,100.00	7,066.28	7,219.07	7,216.67	132.87	6.91	-25.66	-1,756.37	6,873.69	14,989.95	14,946.47	43.47	344.804	
15,200.00	7,066.04	7,218.85	7,216.44	134.42	6.91	-25.56	-1,756.37	6,873.69	15,089.94	15,046.42	43.53	346.667	
15,300.00	7,065.80	7,218.62	7,216.22	135.97	6.91	-25.46	-1,756.37	6,873.69	15,189.94	15,146.36	43.58	348.521	
15,400.00	7,065.55	7,218.40	7,216.00	137.53	6.91	-25.36	-1,756.37	6,873.69	15,289.94	15,246.30	43.64	350.365	
15,500.00	7,065.31	7,218.18	7,215.78	139.08	6.91	-25.26	-1,756.36	6,873.69	15,389.94	15,346.25	43.70	352.200	
15,600.00	7,065.07	7,217.96	7,215.56	140.64	6.91	-25.16	-1,756.36	6,873.69	15,489.94	15,446.19	43.75	354.026	
15,700.00	7,064.83	7,217.74	7,215.34	142.20	6.91	-25.06	-1,756.36	6,873.69	15,589.94	15,546.13	43.81	355.843	
15,800.00	7,064.59	7,217.52	7,215.12	143.75	6.91	-24.97	-1,756.36	6,873.69	15,689.94	15,646.07	43.87	357.651	
15,900.00	7,064.35	7,217.30	7,214.90	145.31	6.91	-24.87	-1,756.36	6,873.69	15,789.94	15,746.01	43.93	359.449	
16,000.00	7,064.11	7,217.09	7,214.68	146.87	6.91	-24.78	-1,756.36	6,873.69	15,889.94	15,845.95	43.99	361.238	
16,100.00	7,063.87	7,216.87	7,214.47	148.43	6.91	-24.69	-1,756.35	6,873.69	15,989.94	15,945.89	44.05	363.018	
16,200.00	7,063.63	7,216.66	7,214.25	149.99	6.91	-24.60	-1,756.35	6,873.69	16,089.94	16,045.83	44.11	364.788	
16,300.00	7,063.38	7,216.44	7,214.04	151.56	6.91	-24.51	-1,756.35	6,873.69	16,189.94	16,145.77	44.17	366.549	
16,400.00	7,063.14	7,216.23	7,213.82	153.12	6.91	-24.42	-1,756.35	6,873.69	16,289.94	16,245.71	44.23	368.301	
16,500.00	7,062.90	7,216.02	7,213.61	154.68	6.91	-24.33	-1,756.35	6,873.69	16,389.94	16,345.64	44.29	370.043	
16,600.00	7,062.66	7,215.80	7,213.40	156.25	6.91	-24.24	-1,756.34	6,873.69	16,489.94	16,445.58	44.35	371.776	
16,700.00	7,062.42	7,215.59	7,213.19	157.81	6.91	-24.15	-1,756.34	6,873.69	16,589.94	16,545.52	44.42	373.500	
16,800.00	7,062.18	7,215.38	7,212.98	159.38	6.91	-24.07	-1,756.34	6,873.69	16,689.93	16,645.45	44.48	375.215	
16,874.30	7,062.00	7,215.23	7,212.83	160.54	6.91	-24.01	-1,756.34	6,873.69	16,764.23	16,719.70	44.53	376.482	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	0.00	-98.48	-1,391.35	-9,335.04	9,438.18				
100.00	100.00	79.00	79.00	3.29	0.70	-98.48	-1,391.35	-9,335.04	9,438.16	9,434.17	3.99	2,365.728	
200.00	200.00	179.00	179.00	3.34	1.59	-98.48	-1,391.35	-9,335.04	9,438.16	9,433.23	4.92	1,917.606	
300.00	300.00	279.00	279.00	3.42	2.92	-98.48	-1,391.35	-9,335.04	9,438.16	9,431.82	6.34	1,488.479	
400.00	400.00	379.00	379.00	3.54	4.72	-98.48	-1,391.35	-9,335.04	9,438.16	9,429.89	8.26	1,142.342	
500.00	500.00	479.00	479.00	3.69	6.53	-98.48	-1,391.35	-9,335.04	9,438.16	9,427.94	10.21	923.986	
600.00	599.98	578.44	578.44	3.86	8.32	79.62	-1,391.04	-9,335.04	9,437.80	9,425.62	12.18	775.158	
700.00	699.84	677.29	677.28	4.04	10.10	79.67	-1,391.12	-9,335.04	9,436.86	9,422.72	14.14	667.281	
800.00	799.45	775.91	775.91	4.25	11.88	79.75	-1,391.26	-9,335.04	9,435.32	9,419.19	16.13	584.949	
900.00	898.70	877.72	877.70	4.48	13.74	79.86	-1,391.35	-9,335.04	9,433.16	9,414.94	18.22	517.643	
1,000.00	997.47	976.48	976.47	4.74	15.56	80.01	-1,391.35	-9,335.04	9,430.40	9,410.09	20.30	464.457	
1,100.00	1,095.62	1,073.03	1,073.02	5.03	17.34	80.19	-1,390.96	-9,335.04	9,427.00	9,404.63	22.37	421.391	
1,200.00	1,193.06	1,167.76	1,167.74	5.35	19.09	80.39	-1,391.17	-9,335.04	9,423.14	9,398.71	24.43	385.674	
1,268.36	1,259.18	1,238.21	1,238.18	5.58	20.40	80.55	-1,391.35	-9,335.04	9,420.20	9,394.23	25.98	362.663	
1,300.00	1,289.69	1,268.72	1,268.69	5.70	20.97	80.60	-1,391.35	-9,335.04	9,418.78	9,392.12	26.66	353.235	
1,400.00	1,386.11	1,365.14	1,365.11	6.07	22.80	80.76	-1,391.35	-9,335.04	9,414.33	9,385.48	28.86	326.237	
1,500.00	1,482.54	1,461.57	1,461.54	6.45	24.62	80.91	-1,391.35	-9,335.04	9,409.96	9,378.89	31.07	302.881	
1,600.00	1,578.96	1,556.02	1,555.99	6.86	26.41	81.06	-1,390.89	-9,335.04	9,405.60	9,372.34	33.26	282.822	
1,700.00	1,675.39	1,650.53	1,650.49	7.27	28.20	81.21	-1,391.13	-9,335.04	9,401.40	9,365.94	35.46	265.143	
1,800.00	1,771.81	1,750.87	1,750.81	7.70	30.14	81.37	-1,391.35	-9,335.04	9,397.27	9,359.45	37.83	248.431	
1,900.00	1,868.24	1,847.30	1,847.24	8.13	32.08	81.53	-1,391.35	-9,335.04	9,393.19	9,353.00	40.19	233.704	
2,000.00	1,964.66	1,943.72	1,943.66	8.57	34.01	81.68	-1,391.35	-9,335.04	9,389.18	9,346.61	42.57	220.578	
2,100.00	2,061.09	2,037.97	2,037.90	9.02	35.90	81.84	-1,390.62	-9,335.04	9,385.16	9,340.26	44.90	209.012	
2,200.00	2,157.51	2,131.89	2,131.82	9.47	37.78	81.98	-1,390.92	-9,335.04	9,381.33	9,334.10	47.24	198.598	
2,300.00	2,253.94	2,233.05	2,232.94	9.93	39.83	82.14	-1,391.35	-9,335.04	9,377.59	9,327.85	49.74	188.527	
2,400.00	2,350.36	2,329.48	2,329.36	10.39	41.84	82.30	-1,391.35	-9,335.04	9,373.87	9,321.66	52.21	179.538	
2,500.00	2,446.79	2,425.90	2,425.79	10.86	43.85	82.45	-1,391.35	-9,335.04	9,370.23	9,315.55	54.68	171.350	
2,600.00	2,543.21	2,520.24	2,520.11	11.33	45.82	82.61	-1,390.35	-9,335.04	9,366.56	9,309.44	57.12	163.986	
2,700.00	2,639.64	2,613.73	2,613.60	11.80	47.76	82.76	-1,390.71	-9,335.04	9,363.10	9,303.57	59.54	157.266	
2,800.00	2,736.06	2,715.25	2,715.06	12.27	49.88	82.92	-1,391.35	-9,335.04	9,359.74	9,297.62	62.13	150.655	
2,900.00	2,832.49	2,811.68	2,811.49	12.75	51.91	83.08	-1,391.35	-9,335.04	9,356.39	9,291.77	64.63	144.775	
3,000.00	2,928.91	2,908.10	2,907.91	13.23	53.93	83.23	-1,391.35	-9,335.04	9,353.12	9,285.99	67.13	139.329	
3,100.00	3,025.34	3,004.53	3,004.34	13.71	55.96	83.39	-1,391.35	-9,335.04	9,349.92	9,280.28	69.63	134.272	
3,200.00	3,121.76	3,099.02	3,098.81	14.19	57.94	83.55	-1,390.12	-9,335.04	9,346.69	9,274.59	72.10	129.636	
3,300.00	3,218.18	3,193.50	3,193.29	14.67	59.93	83.70	-1,390.49	-9,335.04	9,343.67	9,269.10	74.57	125.306	
3,400.00	3,314.61	3,288.14	3,287.92	15.15	61.91	83.85	-1,391.11	-9,335.04	9,340.74	9,263.70	77.04	121.249	
3,500.00	3,411.03	3,337.00	3,336.71	15.64	62.94	83.92	-1,391.35	-9,335.04	9,338.01	9,259.46	78.55	118.880	
3,600.00	3,507.46	3,337.00	3,336.71	16.12	62.94	83.92	-1,391.35	-9,335.04	9,336.23	9,257.20	79.03	118.136	
3,700.00	3,603.88	3,337.00	3,336.71	16.61	62.94	83.92	-1,391.35	-9,335.04	9,335.52	9,256.01	79.50	117.425	
3,716.30	3,619.60	3,337.00	3,336.71	16.69	62.94	83.92	-1,391.35	-9,335.04	9,335.50	9,255.92	79.58	117.312	
3,800.00	3,700.31	3,337.00	3,336.71	17.10	62.94	83.92	-1,391.35	-9,335.04	9,335.88	9,255.91	79.97	116.746	
3,900.00	3,796.73	3,337.00	3,336.71	17.59	62.94	83.92	-1,391.35	-9,335.04	9,337.31	9,256.88	80.42	116.100	
4,000.00	3,893.16	3,337.00	3,336.71	18.07	62.94	83.92	-1,391.35	-9,335.04	9,339.81	9,258.94	80.87	115.485	
4,100.00	3,989.58	3,337.00	3,336.71	18.56	62.94	83.92	-1,391.35	-9,335.04	9,343.38	9,262.07	81.32	114.901	
4,200.00	4,086.01	3,337.00	3,336.71	19.05	62.94	83.92	-1,391.35	-9,335.04	9,348.02	9,266.27	81.75	114.349	
4,300.00	4,182.43	3,337.00	3,336.71	19.55	62.94	83.92	-1,391.35	-9,335.04	9,353.73	9,271.56	82.18	113.826	
4,400.00	4,278.86	3,337.00	3,336.71	20.04	62.94	83.92	-1,391.35	-9,335.04	9,360.50	9,277.91	82.59	113.333	
4,500.00	4,375.28	3,337.00	3,336.71	20.53	62.94	83.92	-1,391.35	-9,335.04	9,368.34	9,285.34	83.00	112.870	
4,600.00	4,471.71	3,337.00	3,336.71	21.02	62.94	83.92	-1,391.35	-9,335.04	9,377.23	9,293.83	83.40	112.435	
4,700.00	4,568.13	3,337.00	3,336.71	21.51	62.94	83.92	-1,391.35	-9,335.04	9,387.19	9,303.39	83.79	112.029	
4,800.00	4,664.56	3,337.00	3,336.71	22.01	62.94	83.92	-1,391.35	-9,335.04	9,398.19	9,314.02	84.17	111.651	
4,900.00	4,760.98	3,337.00	3,336.71	22.50	62.94	83.92	-1,391.35	-9,335.04	9,410.25	9,325.70	84.55	111.301	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	4,857.41	3,337.00	3,336.71	22.99	62.94	83.92	-1,391.35	-9,335.04	9,423.35	9,338.44	84.91	110.977	
5,100.00	4,953.83	3,337.00	3,336.71	23.49	62.94	83.92	-1,391.35	-9,335.04	9,437.49	9,352.22	85.27	110.680	
5,200.00	5,050.25	3,337.00	3,336.71	23.98	62.94	83.92	-1,391.35	-9,335.04	9,452.67	9,367.05	85.61	110.410	
5,300.00	5,146.68	3,337.00	3,336.71	24.48	62.94	83.92	-1,391.35	-9,335.04	9,468.88	9,382.93	85.95	110.165	
5,400.00	5,243.10	3,337.00	3,336.71	24.97	62.94	83.92	-1,391.35	-9,335.04	9,486.12	9,399.84	86.28	109.945	
5,500.00	5,339.53	3,337.00	3,336.71	25.47	62.94	83.92	-1,391.35	-9,335.04	9,504.38	9,417.78	86.60	109.751	
5,600.00	5,435.95	3,337.00	3,336.71	25.96	62.94	83.92	-1,391.35	-9,335.04	9,523.65	9,436.74	86.91	109.581	
5,700.00	5,532.38	3,337.00	3,336.71	26.46	62.94	83.92	-1,391.35	-9,335.04	9,543.93	9,456.72	87.21	109.434	
5,800.00	5,628.80	3,337.00	3,336.71	26.96	62.94	83.92	-1,391.35	-9,335.04	9,565.22	9,477.71	87.50	109.312	
5,900.00	5,725.23	3,337.00	3,336.71	27.45	62.94	83.92	-1,391.35	-9,335.04	9,587.50	9,499.71	87.79	109.213	
6,000.00	5,821.65	3,337.00	3,336.71	27.95	62.94	83.92	-1,391.35	-9,335.04	9,610.77	9,522.71	88.06	109.136	
6,100.00	5,918.08	3,337.00	3,336.71	28.45	62.94	83.92	-1,391.35	-9,335.04	9,635.02	9,546.69	88.33	109.082	
6,200.00	6,014.50	3,337.00	3,336.71	28.94	62.94	83.92	-1,391.35	-9,335.04	9,660.25	9,571.66	88.59	109.050	
6,300.00	6,110.93	3,337.00	3,336.71	29.44	62.94	83.92	-1,391.35	-9,335.04	9,686.44	9,597.60	88.83	109.040	
6,400.00	6,207.35	3,337.00	3,336.71	29.94	62.94	83.92	-1,391.35	-9,335.04	9,713.59	9,624.52	89.07	109.050	
6,500.00	6,303.78	3,337.00	3,336.71	30.43	62.94	83.92	-1,391.35	-9,335.04	9,741.69	9,652.39	89.31	109.082	
6,600.00	6,400.20	3,337.00	3,336.71	30.93	62.94	83.92	-1,391.35	-9,335.04	9,770.74	9,681.21	89.53	109.134	
6,677.76	6,475.18	3,337.00	3,336.71	31.32	62.94	83.92	-1,391.35	-9,335.04	9,793.97	9,704.27	89.70	109.188	
6,700.00	6,496.62	3,337.00	3,336.71	31.43	62.94	76.76	-1,391.35	-9,335.04	9,800.35	9,710.60	89.74	109.203	
6,750.00	6,544.66	3,337.00	3,336.71	31.68	62.94	61.91	-1,391.35	-9,335.04	9,812.12	9,722.28	89.84	109.212	
6,800.00	6,592.24	3,337.00	3,336.71	31.92	62.94	49.89	-1,391.35	-9,335.04	9,820.31	9,730.37	89.94	109.188	
6,850.00	6,639.07	3,337.00	3,336.71	32.16	62.94	40.77	-1,391.35	-9,335.04	9,824.86	9,734.84	90.03	109.131	
6,900.00	6,684.86	3,337.00	3,336.71	32.40	62.94	33.97	-1,391.35	-9,335.04	9,825.76	9,735.65	90.11	109.042	
6,950.00	6,729.32	3,337.00	3,336.71	32.62	62.94	28.85	-1,391.35	-9,335.04	9,823.00	9,732.82	90.18	108.922	
7,000.00	6,772.19	3,337.00	3,336.71	32.84	62.94	24.93	-1,391.35	-9,335.04	9,816.60	9,726.35	90.25	108.771	
7,050.00	6,813.20	3,337.00	3,336.71	33.05	62.94	21.86	-1,391.35	-9,335.04	9,806.58	9,716.27	90.31	108.590	
7,100.00	6,852.09	3,337.00	3,336.71	33.26	62.94	19.40	-1,391.35	-9,335.04	9,792.99	9,702.63	90.36	108.380	
7,150.00	6,888.63	3,337.00	3,336.71	33.45	62.94	17.40	-1,391.35	-9,335.04	9,775.92	9,685.52	90.40	108.142	
7,200.00	6,922.59	3,337.00	3,336.71	33.64	62.94	15.73	-1,391.35	-9,335.04	9,755.43	9,665.00	90.43	107.876	
7,250.00	6,953.76	3,337.00	3,336.71	33.82	62.94	14.30	-1,391.35	-9,335.04	9,731.65	9,641.19	90.46	107.584	
7,300.00	6,981.95	3,337.00	3,336.71	34.00	62.94	13.06	-1,391.35	-9,335.04	9,704.69	9,614.21	90.47	107.267	
7,350.00	7,006.99	3,337.00	3,336.71	34.17	62.94	11.95	-1,391.35	-9,335.04	9,674.69	9,584.21	90.48	106.926	
7,400.00	7,028.72	3,337.00	3,336.71	34.35	62.94	10.92	-1,391.35	-9,335.04	9,641.80	9,551.32	90.48	106.563	
7,450.00	7,047.00	3,337.00	3,336.71	34.52	62.94	9.93	-1,391.35	-9,335.04	9,606.22	9,515.75	90.47	106.179	
7,500.00	7,061.73	3,337.00	3,336.71	34.69	62.94	8.93	-1,391.35	-9,335.04	9,568.12	9,477.66	90.46	105.775	
7,550.00	7,072.82	3,337.00	3,336.71	34.86	62.94	7.86	-1,391.35	-9,335.04	9,527.71	9,437.27	90.44	105.354	
7,600.00	7,080.18	3,337.00	3,336.71	35.04	62.94	6.63	-1,391.35	-9,335.04	9,485.21	9,394.80	90.41	104.916	
7,650.00	7,083.79	3,337.00	3,336.71	35.22	62.94	5.10	-1,391.35	-9,335.04	9,440.85	9,350.48	90.37	104.464	
7,674.30	7,084.18	3,337.00	3,336.71	35.32	62.94	4.19	-1,391.35	-9,335.04	9,418.71	9,328.35	90.36	104.238	
7,700.00	7,084.12	3,337.00	3,336.71	35.42	62.94	4.19	-1,391.35	-9,335.04	9,395.09	9,304.76	90.34	104.001	
7,800.00	7,083.88	3,337.00	3,336.71	35.84	62.94	4.19	-1,391.35	-9,335.04	9,303.33	9,213.08	90.25	103.081	
7,900.00	7,083.64	3,337.00	3,336.71	36.34	62.94	4.19	-1,391.35	-9,335.04	9,211.74	9,121.57	90.17	102.160	
8,000.00	7,083.40	3,337.00	3,336.71	36.90	62.94	4.19	-1,391.35	-9,335.04	9,120.32	9,030.24	90.09	101.239	
8,100.00	7,083.16	3,337.00	3,336.71	37.52	62.94	4.19	-1,391.35	-9,335.04	9,029.09	8,939.08	90.01	100.317	
8,200.00	7,082.91	3,337.00	3,336.71	38.21	62.94	4.19	-1,391.35	-9,335.04	8,938.04	8,848.12	89.93	99.394	
8,300.00	7,082.67	3,337.00	3,336.71	38.95	62.94	4.19	-1,391.35	-9,335.04	8,847.19	8,757.34	89.85	98.470	
8,400.00	7,082.43	3,337.00	3,336.71	39.74	62.94	4.19	-1,391.35	-9,335.04	8,756.54	8,666.77	89.77	97.545	
8,500.00	7,082.19	3,337.00	3,336.71	40.59	62.94	4.19	-1,391.35	-9,335.04	8,666.09	8,576.40	89.69	96.620	
8,600.00	7,081.95	3,337.00	3,336.71	41.49	62.94	4.19	-1,391.35	-9,335.04	8,575.86	8,486.24	89.62	95.694	
8,700.00	7,081.71	3,337.00	3,336.71	42.43	62.94	4.19	-1,391.35	-9,335.04	8,485.84	8,396.29	89.54	94.767	
8,800.00	7,081.47	3,337.00	3,336.71	43.41	62.94	4.19	-1,391.35	-9,335.04	8,396.05	8,306.58	89.47	93.839	
8,900.00	7,081.23	3,337.00	3,336.71	44.44	62.94	4.19	-1,391.35	-9,335.04	8,306.49	8,217.09	89.40	92.911	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,080.99	3,337.00	3,336.71	45.49	62.94	4.19	-1,391.35	-9,335.04	8,217.18	8,127.84	89.33	91.983	
9,100.00	7,080.74	3,337.00	3,336.71	46.58	62.94	4.19	-1,391.35	-9,335.04	8,128.11	8,038.84	89.27	91.053	
9,200.00	7,080.50	3,337.00	3,336.71	47.70	62.94	4.19	-1,391.35	-9,335.04	8,039.30	7,950.09	89.20	90.124	
9,300.00	7,080.26	3,337.00	3,336.71	48.85	62.94	4.19	-1,391.35	-9,335.04	7,950.75	7,861.61	89.14	89.194	
9,400.00	7,080.02	3,337.00	3,336.71	50.03	62.94	4.19	-1,391.35	-9,335.04	7,862.48	7,773.40	89.08	88.263	
9,500.00	7,079.78	3,337.00	3,336.71	51.23	62.94	4.19	-1,391.35	-9,335.04	7,774.50	7,685.48	89.02	87.332	
9,600.00	7,079.54	3,337.00	3,336.71	52.45	62.94	4.19	-1,391.35	-9,335.04	7,686.81	7,597.84	88.97	86.401	
9,700.00	7,079.30	3,337.00	3,336.71	53.69	62.94	4.19	-1,391.35	-9,335.04	7,599.42	7,510.50	88.91	85.470	
9,800.00	7,079.06	3,337.00	3,336.71	54.95	62.94	4.19	-1,391.35	-9,335.04	7,512.34	7,423.48	88.86	84.539	
9,900.00	7,078.82	3,337.00	3,336.71	56.23	62.94	4.19	-1,391.35	-9,335.04	7,425.60	7,336.78	88.81	83.608	
10,000.00	7,078.57	3,337.00	3,336.71	57.53	62.94	4.19	-1,391.35	-9,335.04	7,339.19	7,250.42	88.77	82.677	
10,100.00	7,078.33	3,337.00	3,336.71	58.84	62.94	4.19	-1,391.35	-9,335.04	7,253.12	7,164.40	88.73	81.746	
10,200.00	7,078.09	3,337.00	3,336.71	60.17	62.94	4.19	-1,391.35	-9,335.04	7,167.42	7,078.74	88.69	80.816	
10,300.00	7,077.85	3,337.00	3,336.71	61.51	62.94	4.19	-1,391.35	-9,335.04	7,082.10	6,993.45	88.65	79.886	
10,400.00	7,077.61	3,337.00	3,336.71	62.86	62.94	4.19	-1,391.35	-9,335.04	6,997.16	6,908.55	88.62	78.957	
10,500.00	7,077.37	3,337.00	3,336.71	64.22	62.94	4.19	-1,391.35	-9,335.04	6,912.63	6,824.04	88.59	78.029	
10,600.00	7,077.13	3,337.00	3,336.71	65.60	62.94	4.19	-1,391.35	-9,335.04	6,828.52	6,739.95	88.56	77.103	
10,700.00	7,076.89	3,337.00	3,336.71	66.98	62.94	4.19	-1,391.35	-9,335.04	6,744.84	6,656.30	88.54	76.177	
10,800.00	7,076.65	3,337.00	3,336.71	68.38	62.94	4.19	-1,391.35	-9,335.04	6,661.61	6,573.08	88.52	75.253	
10,900.00	7,076.40	3,337.00	3,336.71	69.78	62.94	4.19	-1,391.35	-9,335.04	6,578.84	6,490.33	88.51	74.331	
11,000.00	7,076.16	3,337.00	3,336.71	71.20	62.94	4.19	-1,391.35	-9,335.04	6,496.56	6,408.07	88.50	73.411	
11,100.00	7,075.92	3,337.00	3,336.71	72.62	62.94	4.19	-1,391.35	-9,335.04	6,414.79	6,326.30	88.49	72.494	
11,200.00	7,075.68	3,337.00	3,336.71	74.04	62.94	4.19	-1,391.35	-9,335.04	6,333.53	6,245.05	88.48	71.579	
11,300.00	7,075.44	3,337.00	3,336.71	75.48	62.94	4.19	-1,391.35	-9,335.04	6,252.83	6,164.34	88.48	70.667	
11,400.00	7,075.20	3,337.00	3,336.71	76.92	62.94	4.19	-1,391.35	-9,335.04	6,172.68	6,084.20	88.49	69.759	
11,500.00	7,074.96	3,337.00	3,336.71	78.37	62.94	4.19	-1,391.35	-9,335.04	6,093.12	6,004.63	88.49	68.854	
11,600.00	7,074.72	3,337.00	3,336.71	79.82	62.94	4.19	-1,391.35	-9,335.04	6,014.18	5,925.67	88.50	67.954	
11,700.00	7,074.48	3,337.00	3,336.71	81.28	62.94	4.19	-1,391.35	-9,335.04	5,935.87	5,847.35	88.52	67.058	
11,800.00	7,074.23	3,337.00	3,336.71	82.75	62.94	4.19	-1,391.35	-9,335.04	5,858.21	5,769.68	88.54	66.168	
11,900.00	7,073.99	3,337.00	3,336.71	84.22	62.94	4.19	-1,391.35	-9,335.04	5,781.25	5,692.69	88.56	65.283	
12,000.00	7,073.75	3,337.00	3,336.71	85.69	62.94	4.19	-1,391.35	-9,335.04	5,705.00	5,616.42	88.58	64.405	
12,100.00	7,073.51	3,337.00	3,336.71	87.17	62.94	4.19	-1,391.35	-9,335.04	5,629.49	5,540.88	88.61	63.533	
12,200.00	7,073.27	3,337.00	3,336.71	88.65	62.94	4.19	-1,391.35	-9,335.04	5,554.76	5,466.12	88.64	62.669	
12,300.00	7,073.03	3,337.00	3,336.71	90.14	62.94	4.19	-1,391.35	-9,335.04	5,480.83	5,392.16	88.67	61.812	
12,400.00	7,072.79	3,337.00	3,336.71	91.63	62.94	4.19	-1,391.35	-9,335.04	5,407.74	5,319.04	88.70	60.965	
12,500.00	7,072.55	3,337.00	3,336.71	93.13	62.94	4.19	-1,391.35	-9,335.04	5,335.53	5,246.79	88.74	60.127	
12,600.00	7,072.31	3,337.00	3,336.71	94.62	62.94	4.19	-1,391.35	-9,335.04	5,264.22	5,175.45	88.77	59.299	
12,700.00	7,072.06	3,337.00	3,336.71	96.13	62.94	4.19	-1,391.35	-9,335.04	5,193.86	5,105.05	88.81	58.482	
12,800.00	7,071.82	3,337.00	3,336.71	97.63	62.94	4.19	-1,391.35	-9,335.04	5,124.48	5,035.64	88.85	57.677	
12,900.00	7,071.58	3,337.00	3,336.71	99.14	62.94	4.19	-1,391.35	-9,335.04	5,056.14	4,967.25	88.88	56.885	
13,000.00	7,071.34	3,337.00	3,336.71	100.65	62.94	4.19	-1,391.35	-9,335.04	4,988.86	4,899.94	88.92	56.106	
13,100.00	7,071.10	3,337.00	3,336.71	102.16	62.94	4.19	-1,391.35	-9,335.04	4,922.69	4,833.74	88.95	55.342	
13,200.00	7,070.86	3,337.00	3,336.71	103.68	62.94	4.19	-1,391.35	-9,335.04	4,857.68	4,768.70	88.98	54.593	
13,300.00	7,070.62	3,337.00	3,336.71	105.20	62.94	4.19	-1,391.35	-9,335.04	4,793.87	4,704.86	89.01	53.861	
13,400.00	7,070.38	3,337.00	3,336.71	106.72	62.94	4.19	-1,391.35	-9,335.04	4,731.32	4,642.29	89.03	53.146	
13,500.00	7,070.14	3,337.00	3,336.71	108.24	62.94	4.19	-1,391.35	-9,335.04	4,670.07	4,581.03	89.04	52.450	
13,600.00	7,069.89	3,337.00	3,336.71	109.77	62.94	4.19	-1,391.35	-9,335.04	4,610.17	4,521.13	89.05	51.773	
13,700.00	7,069.65	3,337.00	3,336.71	111.30	62.94	4.19	-1,391.35	-9,335.04	4,551.69	4,462.64	89.04	51.117	
13,800.00	7,069.41	3,337.00	3,336.71	112.83	62.94	4.19	-1,391.35	-9,335.04	4,494.67	4,405.63	89.03	50.483	
13,900.00	7,069.17	3,337.00	3,336.71	114.36	62.94	4.19	-1,391.35	-9,335.04	4,439.17	4,350.15	89.01	49.872	
14,000.00	7,068.93	3,337.00	3,336.71	115.89	62.94	4.19	-1,391.35	-9,335.04	4,385.24	4,296.27	88.98	49.285	
14,100.00	7,068.69	3,337.00	3,336.71	117.43	62.94	4.19	-1,391.35	-9,335.04	4,332.96	4,244.03	88.93	48.723	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	3,337.00	3,336.71	118.97	62.94	4.19	-1,391.35	-9,335.04	4,282.37	4,193.50	88.87	48.188	
14,300.00	7,068.21	3,337.00	3,336.71	120.50	62.94	4.19	-1,391.35	-9,335.04	4,233.54	4,144.75	88.79	47.681	
14,400.00	7,067.97	3,337.00	3,336.71	122.05	62.94	4.19	-1,391.35	-9,335.04	4,186.53	4,097.84	88.69	47.202	
14,500.00	7,067.72	3,337.00	3,336.71	123.59	62.94	4.19	-1,391.35	-9,335.04	4,141.40	4,052.82	88.58	46.753	
14,600.00	7,067.48	3,337.00	3,336.71	125.13	62.94	4.19	-1,391.35	-9,335.04	4,098.21	4,009.77	88.45	46.334	
14,700.00	7,067.24	3,337.00	3,336.71	126.68	62.94	4.19	-1,391.35	-9,335.04	4,057.03	3,968.74	88.30	45.947	
14,800.00	7,067.00	3,337.00	3,336.71	128.22	62.94	4.19	-1,391.35	-9,335.04	4,017.92	3,929.79	88.13	45.592	
14,900.00	7,066.76	3,337.00	3,336.71	129.77	62.94	4.19	-1,391.35	-9,335.04	3,980.94	3,893.00	87.94	45.269	
15,000.00	7,066.52	3,337.00	3,336.71	131.32	62.94	4.19	-1,391.35	-9,335.04	3,946.14	3,858.41	87.73	44.979	
15,100.00	7,066.28	3,337.00	3,336.71	132.87	62.94	4.19	-1,391.35	-9,335.04	3,913.59	3,826.08	87.51	44.721	
15,200.00	7,066.04	3,337.00	3,336.71	134.42	62.94	4.19	-1,391.35	-9,335.04	3,883.35	3,796.07	87.28	44.495	
15,300.00	7,065.80	3,337.00	3,336.71	135.97	62.94	4.19	-1,391.35	-9,335.04	3,855.46	3,768.42	87.03	44.299	
15,400.00	7,065.55	3,337.00	3,336.71	137.53	62.94	4.19	-1,391.35	-9,335.04	3,829.97	3,743.19	86.79	44.130	
15,500.00	7,065.31	3,337.00	3,336.71	139.08	62.94	4.19	-1,391.35	-9,335.04	3,806.95	3,720.40	86.55	43.985	
15,600.00	7,065.07	3,337.00	3,336.71	140.64	62.94	4.19	-1,391.35	-9,335.04	3,786.43	3,700.10	86.33	43.859	
15,700.00	7,064.83	3,337.00	3,336.71	142.20	62.94	4.19	-1,391.35	-9,335.04	3,768.45	3,682.30	86.14	43.745	
15,800.00	7,064.59	3,337.00	3,336.71	143.75	62.94	4.19	-1,391.35	-9,335.04	3,753.05	3,667.04	86.01	43.634	
15,900.00	7,064.35	3,337.00	3,336.71	145.31	62.94	4.19	-1,391.35	-9,335.04	3,740.26	3,654.30	85.96	43.513	
16,000.00	7,064.11	3,337.00	3,336.71	146.87	62.94	4.19	-1,391.35	-9,335.04	3,730.11	3,644.10	86.01	43.369	
16,100.00	7,063.87	3,337.00	3,336.71	148.43	62.94	4.19	-1,391.35	-9,335.04	3,722.62	3,636.42	86.20	43.187	
16,200.00	7,063.63	3,337.00	3,336.71	149.99	62.94	4.19	-1,391.35	-9,335.04	3,717.80	3,631.25	86.56	42.953	
16,300.00	7,063.38	3,337.00	3,336.71	151.56	62.94	4.19	-1,391.35	-9,335.04	3,715.67	3,628.57	87.11	42.657	
16,329.16	7,063.31	3,337.00	3,336.71	152.01	62.94	4.19	-1,391.35	-9,335.04	3,715.56	3,628.25	87.30	42.559	CC, ES
16,400.00	7,063.14	3,337.00	3,336.71	153.12	62.94	4.19	-1,391.35	-9,335.04	3,716.23	3,628.37	87.86	42.298	
16,500.00	7,062.90	3,337.00	3,336.71	154.68	62.94	4.19	-1,391.35	-9,335.04	3,719.48	3,630.68	88.80	41.884	
16,600.00	7,062.66	3,337.00	3,336.71	156.25	62.94	4.19	-1,391.35	-9,335.04	3,725.42	3,635.49	89.92	41.428	
16,700.00	7,062.42	3,337.00	3,336.71	157.81	62.94	4.19	-1,391.35	-9,335.04	3,734.02	3,642.83	91.19	40.949	
16,800.00	7,062.18	3,337.00	3,336.71	159.38	62.94	4.19	-1,391.35	-9,335.04	3,745.27	3,652.72	92.55	40.465	
16,874.30	7,062.00	3,337.00	3,336.71	160.54	62.94	4.19	-1,391.35	-9,335.04	3,755.33	3,661.71	93.62	40.112	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 752H
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 752H	**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	-105.50	-1,772.74	-6,390.86	6,632.96				
100.00	100.00	0.00	0.00	3.29	0.00	-105.50	-1,772.74	-6,390.86	6,632.18	6,628.89	3.29	2,015.991	
134.01	134.01	32.01	32.01	3.30	0.34	-105.50	-1,772.74	-6,390.86	6,632.18	6,628.53	3.64	1,821.034	
200.00	200.00	98.00	98.00	3.34	1.04	-105.50	-1,772.74	-6,390.86	6,632.18	6,627.80	4.38	1,514.489	
300.00	300.00	198.00	198.00	3.42	2.11	-105.50	-1,772.74	-6,390.86	6,632.18	6,626.65	5.53	1,199.972	
400.00	400.00	298.00	298.00	3.54	3.17	-105.50	-1,772.74	-6,390.86	6,632.18	6,625.47	6.71	988.513	
500.00	500.00	398.02	398.00	3.69	4.98	-105.50	-1,772.74	-6,390.86	6,632.18	6,623.51	8.67	765.153	
600.00	599.98	498.00	497.98	3.86	7.02	72.60	-1,772.74	-6,390.86	6,631.65	6,620.77	10.88	609.575	
700.00	699.84	594.71	594.69	4.04	9.00	72.68	-1,771.80	-6,390.86	6,629.84	6,616.80	13.04	508.394	
800.00	799.45	688.04	688.01	4.25	10.91	72.79	-1,772.13	-6,390.86	6,627.34	6,612.18	15.16	437.217	
900.00	898.70	796.77	796.70	4.48	13.13	72.96	-1,772.74	-6,390.86	6,623.88	6,606.26	17.61	376.038	
1,000.00	997.47	895.53	895.47	4.74	15.15	73.18	-1,772.74	-6,390.86	6,619.27	6,599.38	19.89	332.727	
1,100.00	1,095.62	993.69	993.62	5.03	17.16	73.44	-1,772.74	-6,390.86	6,613.70	6,591.51	22.19	298.090	
1,200.00	1,193.06	1,089.80	1,089.72	5.35	19.12	73.75	-1,771.84	-6,390.86	6,606.96	6,582.49	24.47	270.050	
1,268.36	1,259.18	1,153.46	1,153.39	5.58	20.42	73.98	-1,771.93	-6,390.86	6,602.02	6,576.02	26.00	253.939	
1,300.00	1,289.69	1,182.86	1,182.78	5.70	21.03	74.04	-1,772.01	-6,390.86	6,599.65	6,572.94	26.71	247.081	
1,400.00	1,386.11	1,275.83	1,275.75	6.07	22.93	74.25	-1,772.39	-6,390.86	6,592.27	6,563.29	28.98	227.506	
1,500.00	1,482.54	1,380.67	1,380.54	6.45	25.11	74.48	-1,772.74	-6,390.86	6,584.97	6,553.43	31.54	208.795	
1,600.00	1,578.96	1,477.10	1,476.96	6.86	27.16	74.69	-1,772.74	-6,390.86	6,577.68	6,543.70	33.99	193.547	
1,700.00	1,675.39	1,572.47	1,572.32	7.27	29.18	74.91	-1,771.80	-6,390.86	6,570.27	6,533.85	36.42	180.392	
1,800.00	1,771.81	1,663.37	1,663.22	7.70	31.12	75.12	-1,772.02	-6,390.86	6,563.24	6,524.47	38.77	169.266	
1,900.00	1,868.24	1,754.47	1,754.31	8.13	33.05	75.32	-1,772.58	-6,390.86	6,556.39	6,515.25	41.14	159.366	
2,000.00	1,964.66	1,862.87	1,862.66	8.57	35.36	75.56	-1,772.74	-6,390.86	6,549.53	6,505.65	43.88	149.253	
2,100.00	2,061.09	1,959.29	1,959.09	9.02	37.41	75.78	-1,772.74	-6,390.86	6,542.74	6,496.37	46.38	141.080	
2,200.00	2,157.51	2,054.19	2,053.98	9.47	39.43	76.00	-1,771.67	-6,390.86	6,535.82	6,486.98	48.84	133.812	
2,300.00	2,253.94	2,146.16	2,145.95	9.93	41.39	76.20	-1,771.92	-6,390.86	6,529.30	6,478.04	51.25	127.392	
2,400.00	2,350.36	2,238.31	2,238.08	10.39	43.35	76.41	-1,772.46	-6,390.86	6,522.93	6,469.26	53.67	121.534	
2,500.00	2,446.79	2,345.06	2,344.79	10.86	45.62	76.65	-1,772.74	-6,390.86	6,516.60	6,460.19	56.40	115.534	
2,600.00	2,543.21	2,441.49	2,441.21	11.33	47.67	76.87	-1,772.74	-6,390.86	6,510.32	6,451.40	58.92	110.492	
2,700.00	2,639.64	2,537.20	2,536.91	11.80	49.71	77.09	-1,771.66	-6,390.86	6,503.92	6,442.49	61.43	105.883	
2,800.00	2,736.06	2,629.55	2,629.26	12.27	51.67	77.30	-1,771.86	-6,390.86	6,497.89	6,434.02	63.86	101.749	
2,900.00	2,832.49	2,722.08	2,721.78	12.75	53.64	77.51	-1,772.37	-6,390.86	6,492.01	6,425.71	66.30	97.913	
3,000.00	2,928.91	2,827.26	2,826.91	13.23	55.83	77.75	-1,772.74	-6,390.86	6,486.21	6,417.24	68.97	94.046	
3,100.00	3,025.34	2,923.69	2,923.34	13.71	57.80	77.97	-1,772.74	-6,390.86	6,480.43	6,409.02	71.42	90.741	
3,200.00	3,121.76	3,015.62	3,015.26	14.19	59.68	78.19	-1,772.15	-6,390.86	6,474.66	6,400.89	73.78	87.762	
3,300.00	3,218.18	3,116.58	3,116.18	14.67	61.74	78.41	-1,772.74	-6,390.86	6,469.20	6,392.89	76.31	84.771	
3,400.00	3,314.61	3,213.00	3,212.61	15.15	63.63	78.63	-1,772.74	-6,390.86	6,463.74	6,385.06	78.69	82.144	
3,500.00	3,411.03	3,309.43	3,309.03	15.64	65.52	78.86	-1,772.74	-6,390.86	6,458.39	6,377.33	81.06	79.672	
3,600.00	3,507.46	3,384.00	3,383.58	16.12	66.98	79.03	-1,772.74	-6,390.86	6,453.17	6,370.16	83.01	77.739	
3,700.00	3,603.88	3,384.00	3,383.58	16.61	66.98	79.03	-1,772.74	-6,390.86	6,449.07	6,365.58	83.49	77.243	
3,800.00	3,700.31	3,384.00	3,383.58	17.10	66.98	79.03	-1,772.74	-6,390.86	6,446.52	6,362.57	83.95	76.787	
3,900.00	3,796.73	3,384.00	3,383.58	17.59	66.98	79.03	-1,772.74	-6,390.86	6,445.53	6,361.13	84.40	76.370	
3,914.00	3,810.23	3,384.00	3,383.58	17.65	66.98	79.03	-1,772.74	-6,390.86	6,445.51	6,361.05	84.46	76.315	
4,000.00	3,893.16	3,384.00	3,383.58	18.07	66.98	79.03	-1,772.74	-6,390.86	6,446.08	6,361.25	84.83	75.991	
4,100.00	3,989.58	3,384.00	3,383.58	18.56	66.98	79.03	-1,772.74	-6,390.86	6,448.18	6,362.94	85.24	75.651	
4,200.00	4,086.01	3,384.00	3,383.58	19.05	66.98	79.03	-1,772.74	-6,390.86	6,451.83	6,366.21	85.63	75.347	
4,300.00	4,182.43	3,384.00	3,383.58	19.55	66.98	79.03	-1,772.74	-6,390.86	6,457.03	6,371.03	86.00	75.081	
4,400.00	4,278.86	3,384.00	3,383.58	20.04	66.98	79.03	-1,772.74	-6,390.86	6,463.77	6,377.42	86.36	74.851	
4,500.00	4,375.28	3,384.00	3,383.58	20.53	66.98	79.03	-1,772.74	-6,390.86	6,472.06	6,385.36	86.69	74.656	
4,600.00	4,471.71	3,384.00	3,383.58	21.02	66.98	79.03	-1,772.74	-6,390.86	6,481.87	6,394.86	87.01	74.497	
4,700.00	4,568.13	3,384.00	3,383.58	21.51	66.98	79.03	-1,772.74	-6,390.86	6,493.21	6,405.90	87.31	74.373	
4,800.00	4,664.56	3,384.00	3,383.58	22.01	66.98	79.03	-1,772.74	-6,390.86	6,506.06	6,418.48	87.59	74.283	

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 752H
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 752H	**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
4,900.00	4,760.98	3,384.00	3,383.58	22.50	66.98	79.03	-1,772.74	-6,390.86	6,520.43	6,432.58	87.85	74.226	
5,000.00	4,857.41	3,384.00	3,383.58	22.99	66.98	79.03	-1,772.74	-6,390.86	6,536.29	6,448.20	88.09	74.203	
5,100.00	4,953.83	3,384.00	3,383.58	23.49	66.98	79.03	-1,772.74	-6,390.86	6,553.64	6,465.33	88.31	74.212	
5,200.00	5,050.25	3,384.00	3,383.58	23.98	66.98	79.03	-1,772.74	-6,390.86	6,572.47	6,483.95	88.51	74.253	
5,300.00	5,146.68	3,384.00	3,383.58	24.48	66.98	79.03	-1,772.74	-6,390.86	6,592.76	6,504.06	88.70	74.326	
5,400.00	5,243.10	3,384.00	3,383.58	24.97	66.98	79.03	-1,772.74	-6,390.86	6,614.50	6,525.63	88.87	74.430	
5,500.00	5,339.53	3,384.00	3,383.58	25.47	66.98	79.03	-1,772.74	-6,390.86	6,637.67	6,548.65	89.02	74.564	
5,600.00	5,435.95	3,384.00	3,383.58	25.96	66.98	79.03	-1,772.74	-6,390.86	6,662.27	6,573.11	89.15	74.728	
5,700.00	5,532.38	3,384.00	3,383.58	26.46	66.98	79.03	-1,772.74	-6,390.86	6,688.27	6,599.00	89.27	74.922	
5,800.00	5,628.80	3,384.00	3,383.58	26.96	66.98	79.03	-1,772.74	-6,390.86	6,715.66	6,626.28	89.37	75.144	
5,900.00	5,725.23	3,384.00	3,383.58	27.45	66.98	79.03	-1,772.74	-6,390.86	6,744.42	6,654.96	89.45	75.395	
6,000.00	5,821.65	3,384.00	3,383.58	27.95	66.98	79.03	-1,772.74	-6,390.86	6,774.53	6,685.01	89.52	75.674	
6,100.00	5,918.08	3,384.00	3,383.58	28.45	66.98	79.03	-1,772.74	-6,390.86	6,805.98	6,716.40	89.58	75.980	
6,200.00	6,014.50	3,384.00	3,383.58	28.94	66.98	79.03	-1,772.74	-6,390.86	6,838.75	6,749.13	89.61	76.313	
6,300.00	6,110.93	3,384.00	3,383.58	29.44	66.98	79.03	-1,772.74	-6,390.86	6,872.82	6,783.18	89.64	76.672	
6,400.00	6,207.35	3,384.00	3,383.58	29.94	66.98	79.03	-1,772.74	-6,390.86	6,908.16	6,818.51	89.65	77.057	
6,500.00	6,303.78	3,384.00	3,383.58	30.43	66.98	79.03	-1,772.74	-6,390.86	6,944.77	6,855.12	89.65	77.468	
6,600.00	6,400.20	3,384.00	3,383.58	30.93	66.98	79.03	-1,772.74	-6,390.86	6,982.62	6,892.99	89.63	77.903	
6,677.76	6,475.18	3,384.00	3,383.58	31.32	66.98	79.03	-1,772.74	-6,390.86	7,012.89	6,923.28	89.61	78.258	
6,700.00	6,496.62	3,384.00	3,383.58	31.43	66.98	71.95	-1,772.74	-6,390.86	7,021.33	6,931.73	89.60	78.360	
6,750.00	6,544.66	3,384.00	3,383.58	31.68	66.98	57.27	-1,772.74	-6,390.86	7,037.91	6,948.34	89.58	78.570	
6,800.00	6,592.24	3,384.00	3,383.58	31.92	66.98	45.39	-1,772.74	-6,390.86	7,051.11	6,961.58	89.54	78.752	
6,850.00	6,639.07	3,384.00	3,383.58	32.16	66.98	36.37	-1,772.74	-6,390.86	7,060.87	6,971.39	89.48	78.906	
6,900.00	6,684.86	3,384.00	3,383.58	32.40	66.98	29.64	-1,772.74	-6,390.86	7,067.14	6,977.72	89.42	79.032	
6,950.00	6,729.32	3,384.00	3,383.58	32.62	66.98	24.58	-1,772.74	-6,390.86	7,069.90	6,980.56	89.35	79.129	
7,000.00	6,772.19	3,384.00	3,383.58	32.84	66.98	20.69	-1,772.74	-6,390.86	7,069.13	6,979.87	89.26	79.196	
7,050.00	6,813.20	3,384.00	3,383.58	33.05	66.98	17.63	-1,772.74	-6,390.86	7,064.84	6,975.67	89.17	79.233	
7,100.00	6,852.09	3,384.00	3,383.58	33.26	66.98	15.17	-1,772.74	-6,390.86	7,057.04	6,967.98	89.06	79.240	
7,150.00	6,888.63	3,384.00	3,383.58	33.45	66.98	13.14	-1,772.74	-6,390.86	7,045.77	6,956.83	88.94	79.217	
7,200.00	6,922.59	3,384.00	3,383.58	33.64	66.98	11.41	-1,772.74	-6,390.86	7,031.09	6,942.27	88.82	79.163	
7,250.00	6,953.76	3,384.00	3,383.58	33.82	66.98	9.92	-1,772.74	-6,390.86	7,013.06	6,924.37	88.69	79.078	
7,300.00	6,981.95	3,384.00	3,383.58	34.00	66.98	8.58	-1,772.74	-6,390.86	6,991.77	6,903.23	88.55	78.963	
7,350.00	7,006.99	3,384.00	3,383.58	34.17	66.98	7.35	-1,772.74	-6,390.86	6,967.32	6,878.93	88.40	78.817	
7,400.00	7,028.72	3,384.00	3,383.58	34.35	66.98	6.18	-1,772.74	-6,390.86	6,939.84	6,851.59	88.25	78.641	
7,450.00	7,047.00	3,384.00	3,383.58	34.52	66.98	5.02	-1,772.74	-6,390.86	6,909.45	6,821.36	88.09	78.435	
7,500.00	7,061.73	3,384.00	3,383.58	34.69	66.98	3.82	-1,772.74	-6,390.86	6,876.30	6,788.37	87.93	78.199	
7,550.00	7,072.82	3,384.00	3,383.58	34.86	66.98	2.54	-1,772.74	-6,390.86	6,840.56	6,752.79	87.77	77.935	
7,600.00	7,080.18	3,384.00	3,383.58	35.04	66.98	1.10	-1,772.74	-6,390.86	6,802.42	6,714.81	87.61	77.643	
7,650.00	7,083.79	3,384.00	3,383.58	35.22	66.98	-0.59	-1,772.74	-6,390.86	6,762.06	6,674.61	87.45	77.323	
7,674.30	7,084.18	3,384.00	3,383.58	35.32	66.98	-1.55	-1,772.74	-6,390.86	6,741.72	6,654.34	87.38	77.156	
7,700.00	7,084.12	3,384.00	3,383.58	35.42	66.98	-1.55	-1,772.74	-6,390.86	6,719.97	6,632.67	87.30	76.979	
7,800.00	7,083.88	3,384.00	3,383.58	35.84	66.98	-1.55	-1,772.74	-6,390.86	6,635.61	6,548.64	86.97	76.300	
7,900.00	7,083.64	3,384.00	3,383.58	36.34	66.98	-1.55	-1,772.74	-6,390.86	6,551.69	6,465.06	86.63	75.625	
8,000.00	7,083.40	3,384.00	3,383.58	36.90	66.98	-1.55	-1,772.74	-6,390.86	6,468.24	6,381.94	86.30	74.955	
8,100.00	7,083.16	3,384.00	3,383.58	37.52	66.98	-1.55	-1,772.74	-6,390.86	6,385.25	6,299.30	85.95	74.289	
8,200.00	7,082.91	3,384.00	3,383.58	38.21	66.98	-1.55	-1,772.74	-6,390.86	6,302.77	6,217.16	85.60	73.628	
8,300.00	7,082.67	3,384.00	3,383.58	38.95	66.98	-1.55	-1,772.74	-6,390.86	6,220.79	6,135.54	85.25	72.972	
8,400.00	7,082.43	3,384.00	3,383.58	39.74	66.98	-1.55	-1,772.74	-6,390.86	6,139.35	6,054.46	84.89	72.321	
8,500.00	7,082.19	3,384.00	3,383.58	40.59	66.98	-1.55	-1,772.74	-6,390.86	6,058.47	5,973.94	84.53	71.675	
8,600.00	7,081.95	3,384.00	3,383.58	41.49	66.98	-1.55	-1,772.74	-6,390.86	5,978.16	5,894.00	84.16	71.034	
8,700.00	7,081.71	3,384.00	3,383.58	42.43	66.98	-1.55	-1,772.74	-6,390.86	5,898.46	5,814.67	83.79	70.399	
8,800.00	7,081.47	3,384.00	3,383.58	43.41	66.98	-1.55	-1,772.74	-6,390.86	5,819.38	5,735.97	83.41	69.770	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
8,900.00	7,081.23	3,384.00	3,383.58	44.44	66.98	-1.55	-1,772.74	-6,390.86	5,740.95	5,657.93	83.03	69.147	
9,000.00	7,080.99	3,384.00	3,383.58	45.49	66.98	-1.55	-1,772.74	-6,390.86	5,663.21	5,580.57	82.64	68.530	
9,100.00	7,080.74	3,384.00	3,383.58	46.58	66.98	-1.55	-1,772.74	-6,390.86	5,586.17	5,503.93	82.25	67.920	
9,200.00	7,080.50	3,384.00	3,383.58	47.70	66.98	-1.55	-1,772.74	-6,390.86	5,509.87	5,428.02	81.85	67.317	
9,300.00	7,080.26	3,384.00	3,383.58	48.85	66.98	-1.55	-1,772.74	-6,390.86	5,434.34	5,352.89	81.45	66.720	
9,400.00	7,080.02	3,384.00	3,383.58	50.03	66.98	-1.55	-1,772.74	-6,390.86	5,359.61	5,278.57	81.04	66.131	
9,500.00	7,079.78	3,384.00	3,383.58	51.23	66.98	-1.55	-1,772.74	-6,390.86	5,285.72	5,205.09	80.64	65.551	
9,600.00	7,079.54	3,384.00	3,383.58	52.45	66.98	-1.55	-1,772.74	-6,390.86	5,212.70	5,132.48	80.22	64.978	
9,700.00	7,079.30	3,384.00	3,383.58	53.69	66.98	-1.55	-1,772.74	-6,390.86	5,140.59	5,060.78	79.81	64.414	
9,800.00	7,079.06	3,384.00	3,383.58	54.95	66.98	-1.55	-1,772.74	-6,390.86	5,069.42	4,990.03	79.38	63.859	
9,900.00	7,078.82	3,384.00	3,383.58	56.23	66.98	-1.55	-1,772.74	-6,390.86	4,999.24	4,920.28	78.96	63.315	
10,000.00	7,078.57	3,384.00	3,383.58	57.53	66.98	-1.55	-1,772.74	-6,390.86	4,930.09	4,851.56	78.53	62.781	
10,100.00	7,078.33	3,384.00	3,383.58	58.84	66.98	-1.55	-1,772.74	-6,390.86	4,862.01	4,783.92	78.09	62.258	
10,200.00	7,078.09	3,384.00	3,383.58	60.17	66.98	-1.55	-1,772.74	-6,390.86	4,795.05	4,717.40	77.66	61.747	
10,300.00	7,077.85	3,384.00	3,383.58	61.51	66.98	-1.55	-1,772.74	-6,390.86	4,729.26	4,652.05	77.21	61.249	
10,400.00	7,077.61	3,384.00	3,383.58	62.86	66.98	-1.55	-1,772.74	-6,390.86	4,664.69	4,587.92	76.77	60.766	
10,500.00	7,077.37	3,384.00	3,383.58	64.22	66.98	-1.55	-1,772.74	-6,390.86	4,601.38	4,525.07	76.31	60.297	
10,600.00	7,077.13	3,384.00	3,383.58	65.60	66.98	-1.55	-1,772.74	-6,390.86	4,539.39	4,463.54	75.85	59.844	
10,700.00	7,076.89	3,384.00	3,383.58	66.98	66.98	-1.55	-1,772.74	-6,390.86	4,478.78	4,403.39	75.39	59.408	
10,800.00	7,076.65	3,384.00	3,383.58	68.38	66.98	-1.55	-1,772.74	-6,390.86	4,419.60	4,344.68	74.92	58.991	
10,900.00	7,076.40	3,384.00	3,383.58	69.78	66.98	-1.55	-1,772.74	-6,390.86	4,361.91	4,287.46	74.44	58.594	
11,000.00	7,076.16	3,384.00	3,383.58	71.20	66.98	-1.55	-1,772.74	-6,390.86	4,305.76	4,231.81	73.96	58.219	
11,100.00	7,075.92	3,384.00	3,383.58	72.62	66.98	-1.55	-1,772.74	-6,390.86	4,251.23	4,177.77	73.47	57.867	
11,200.00	7,075.68	3,384.00	3,383.58	74.04	66.98	-1.55	-1,772.74	-6,390.86	4,198.38	4,125.41	72.97	57.539	
11,300.00	7,075.44	3,384.00	3,383.58	75.48	66.98	-1.55	-1,772.74	-6,390.86	4,147.26	4,074.80	72.46	57.238	
11,400.00	7,075.20	3,384.00	3,383.58	76.92	66.98	-1.55	-1,772.74	-6,390.86	4,097.94	4,026.01	71.94	56.965	
11,500.00	7,074.96	3,384.00	3,383.58	78.37	66.98	-1.55	-1,772.74	-6,390.86	4,050.50	3,979.09	71.41	56.721	
11,600.00	7,074.72	3,384.00	3,383.58	79.82	66.98	-1.55	-1,772.74	-6,390.86	4,004.99	3,934.11	70.87	56.510	
11,700.00	7,074.48	3,384.00	3,383.58	81.28	66.98	-1.55	-1,772.74	-6,390.86	3,961.48	3,891.15	70.32	56.331	
11,800.00	7,074.23	3,384.00	3,383.58	82.75	66.98	-1.55	-1,772.74	-6,390.86	3,920.04	3,850.27	69.77	56.187	
11,900.00	7,073.99	3,384.00	3,383.58	84.22	66.98	-1.55	-1,772.74	-6,390.86	3,880.73	3,811.53	69.20	56.079	
12,000.00	7,073.75	3,384.00	3,383.58	85.69	66.98	-1.55	-1,772.74	-6,390.86	3,843.63	3,775.00	68.63	56.008	
12,100.00	7,073.51	3,384.00	3,383.58	87.17	66.98	-1.55	-1,772.74	-6,390.86	3,808.78	3,740.74	68.05	55.973	
12,200.00	7,073.27	3,384.00	3,383.58	88.65	66.98	-1.55	-1,772.74	-6,390.86	3,776.27	3,708.81	67.46	55.975	
12,300.00	7,073.03	3,384.00	3,383.58	90.14	66.98	-1.55	-1,772.74	-6,390.86	3,746.15	3,679.26	66.88	56.012	
12,400.00	7,072.79	3,384.00	3,383.58	91.63	66.98	-1.55	-1,772.74	-6,390.86	3,718.47	3,652.16	66.31	56.081	
12,500.00	7,072.55	3,384.00	3,383.58	93.13	66.98	-1.55	-1,772.74	-6,390.86	3,693.29	3,627.54	65.74	56.177	
12,600.00	7,072.31	3,384.00	3,383.58	94.62	66.98	-1.55	-1,772.74	-6,390.86	3,670.66	3,605.45	65.21	56.292	
12,700.00	7,072.06	3,384.00	3,383.58	96.13	66.98	-1.55	-1,772.74	-6,390.86	3,650.64	3,585.93	64.71	56.415	
12,800.00	7,071.82	3,384.00	3,383.58	97.63	66.98	-1.55	-1,772.74	-6,390.86	3,633.25	3,568.98	64.27	56.528	
12,900.00	7,071.58	3,384.00	3,383.58	99.14	66.98	-1.55	-1,772.74	-6,390.86	3,618.55	3,554.63	63.92	56.607	
13,000.00	7,071.34	3,384.00	3,383.58	100.65	66.98	-1.55	-1,772.74	-6,390.86	3,606.56	3,542.87	63.69	56.623	
13,100.00	7,071.10	3,384.00	3,383.58	102.16	66.98	-1.55	-1,772.74	-6,390.86	3,597.32	3,533.69	63.63	56.537	
13,200.00	7,070.86	3,384.00	3,383.58	103.68	66.98	-1.55	-1,772.74	-6,390.86	3,590.83	3,527.06	63.77	56.307	
13,300.00	7,070.62	3,384.00	3,383.58	105.20	66.98	-1.55	-1,772.74	-6,390.86	3,587.12	3,522.95	64.17	55.898	
13,383.08	7,070.42	3,384.00	3,383.58	106.46	66.98	-1.55	-1,772.74	-6,390.86	3,586.16	3,521.44	64.72	55.409 CC	
13,400.00	7,070.38	3,384.00	3,383.58	106.72	66.98	-1.55	-1,772.74	-6,390.86	3,586.20	3,521.34	64.86	55.292 ES	
13,500.00	7,070.14	3,384.00	3,383.58	108.24	66.98	-1.55	-1,772.74	-6,390.86	3,588.07	3,522.23	65.84	54.500	
13,600.00	7,069.89	3,384.00	3,383.58	109.77	66.98	-1.55	-1,772.74	-6,390.86	3,592.72	3,525.63	67.08	53.558	
13,700.00	7,069.65	3,384.00	3,383.58	111.30	66.98	-1.55	-1,772.74	-6,390.86	3,600.14	3,531.59	68.55	52.520	
13,800.00	7,069.41	3,384.00	3,383.58	112.83	66.98	-1.55	-1,772.74	-6,390.86	3,610.31	3,540.13	70.19	51.439	
13,900.00	7,069.17	3,384.00	3,383.58	114.36	66.98	-1.55	-1,772.74	-6,390.86	3,623.22	3,551.28	71.95	50.360	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,068.93	3,384.00	3,383.58	115.89	66.98	-1.55	-1,772.74	-6,390.86	3,638.84	3,565.05	73.78	49.318	
14,100.00	7,068.69	3,384.00	3,383.58	117.43	66.98	-1.55	-1,772.74	-6,390.86	3,657.12	3,581.45	75.67	48.333	
14,200.00	7,068.45	3,384.00	3,383.58	118.97	66.98	-1.55	-1,772.74	-6,390.86	3,678.03	3,600.47	77.56	47.420	
14,300.00	7,068.21	3,384.00	3,383.58	120.50	66.98	-1.55	-1,772.74	-6,390.86	3,701.53	3,622.07	79.46	46.585	
14,400.00	7,067.97	3,384.00	3,383.58	122.05	66.98	-1.55	-1,772.74	-6,390.86	3,727.56	3,646.22	81.33	45.832	
14,500.00	7,067.72	3,384.00	3,383.58	123.59	66.98	-1.55	-1,772.74	-6,390.86	3,756.07	3,672.90	83.17	45.159	
14,600.00	7,067.48	3,384.00	3,383.58	125.13	66.98	-1.55	-1,772.74	-6,390.86	3,787.01	3,702.03	84.98	44.565	
14,700.00	7,067.24	3,384.00	3,383.58	126.68	66.98	-1.55	-1,772.74	-6,390.86	3,820.32	3,733.59	86.73	44.048	
14,800.00	7,067.00	3,384.00	3,383.58	128.22	66.98	-1.55	-1,772.74	-6,390.86	3,855.93	3,767.50	88.43	43.603	
14,900.00	7,066.76	3,384.00	3,383.58	129.77	66.98	-1.55	-1,772.74	-6,390.86	3,893.79	3,803.71	90.08	43.226	
15,000.00	7,066.52	3,384.00	3,383.58	131.32	66.98	-1.55	-1,772.74	-6,390.86	3,933.83	3,842.16	91.67	42.915	
15,100.00	7,066.28	3,384.00	3,383.58	132.87	66.98	-1.55	-1,772.74	-6,390.86	3,975.97	3,882.78	93.19	42.664	
15,200.00	7,066.04	3,384.00	3,383.58	134.42	66.98	-1.55	-1,772.74	-6,390.86	4,020.17	3,925.51	94.66	42.471	
15,300.00	7,065.80	3,384.00	3,383.58	135.97	66.98	-1.55	-1,772.74	-6,390.86	4,066.34	3,970.28	96.06	42.331	
15,400.00	7,065.55	3,384.00	3,383.58	137.53	66.98	-1.55	-1,772.74	-6,390.86	4,114.43	4,017.02	97.40	42.241	
15,500.00	7,065.31	3,384.00	3,383.58	139.08	66.98	-1.55	-1,772.74	-6,390.86	4,164.36	4,065.68	98.69	42.198	SF
15,600.00	7,065.07	3,384.00	3,383.58	140.64	66.98	-1.55	-1,772.74	-6,390.86	4,216.07	4,116.17	99.91	42.199	
15,700.00	7,064.83	3,384.00	3,383.58	142.20	66.98	-1.55	-1,772.74	-6,390.86	4,269.50	4,168.43	101.07	42.242	
15,800.00	7,064.59	3,384.00	3,383.58	143.75	66.98	-1.55	-1,772.74	-6,390.86	4,324.59	4,222.41	102.18	42.322	
15,900.00	7,064.35	3,384.00	3,383.58	145.31	66.98	-1.55	-1,772.74	-6,390.86	4,381.26	4,278.02	103.24	42.439	
16,000.00	7,064.11	3,384.00	3,383.58	146.87	66.98	-1.55	-1,772.74	-6,390.86	4,439.46	4,335.23	104.24	42.590	
16,100.00	7,063.87	3,384.00	3,383.58	148.43	66.98	-1.55	-1,772.74	-6,390.86	4,499.13	4,393.95	105.19	42.773	
16,200.00	7,063.63	3,384.00	3,383.58	149.99	66.98	-1.55	-1,772.74	-6,390.86	4,560.22	4,454.13	106.09	42.985	
16,300.00	7,063.38	3,384.00	3,383.58	151.56	66.98	-1.55	-1,772.74	-6,390.86	4,622.66	4,515.72	106.94	43.225	
16,400.00	7,063.14	3,384.00	3,383.58	153.12	66.98	-1.55	-1,772.74	-6,390.86	4,686.40	4,578.65	107.75	43.492	
16,500.00	7,062.90	3,384.00	3,383.58	154.68	66.98	-1.55	-1,772.74	-6,390.86	4,751.39	4,642.87	108.52	43.784	
16,600.00	7,062.66	3,384.00	3,383.58	156.25	66.98	-1.55	-1,772.74	-6,390.86	4,817.59	4,708.34	109.25	44.098	
16,700.00	7,062.42	3,384.00	3,383.58	157.81	66.98	-1.55	-1,772.74	-6,390.86	4,884.93	4,774.99	109.93	44.435	
16,800.00	7,062.18	3,384.00	3,383.58	159.38	66.98	-1.55	-1,772.74	-6,390.86	4,953.37	4,842.79	110.59	44.792	
16,874.30	7,062.00	3,384.00	3,383.58	160.54	66.98	-1.55	-1,772.74	-6,390.86	5,004.91	4,893.86	111.05	45.070	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-178.11	-1,358.33	-44.77	1,359.78				
100.00	100.00	56.00	56.00	3.29	3.44	-178.11	-1,358.33	-44.77	1,359.07	1,352.34	6.73	201.969	
200.00	200.00	156.00	156.00	3.34	4.37	-178.11	-1,358.33	-44.77	1,359.07	1,351.37	7.70	176.421	
300.00	300.00	256.00	256.00	3.42	5.76	-178.11	-1,358.33	-44.77	1,359.07	1,349.89	9.18	148.084	
400.00	400.00	356.00	356.00	3.54	7.35	-178.11	-1,358.33	-44.77	1,359.07	1,348.18	10.89	124.789	
500.00	500.00	456.00	456.00	3.69	9.05	-178.11	-1,358.33	-44.77	1,359.07	1,346.34	12.73	106.740	
600.00	599.98	554.84	554.83	3.86	10.77	-0.04	-1,357.77	-44.77	1,356.76	1,342.14	14.62	92.777	
700.00	699.84	652.56	652.55	4.04	12.50	-0.04	-1,357.93	-44.77	1,351.69	1,335.15	16.54	81.709	
800.00	799.45	750.07	750.06	4.25	14.25	-0.04	-1,358.25	-44.77	1,343.30	1,324.80	18.50	72.612	
900.00	898.70	854.72	854.70	4.48	16.18	-0.04	-1,358.33	-44.77	1,331.19	1,310.53	20.66	64.426	
1,000.00	997.47	953.49	953.47	4.74	18.02	-0.04	-1,358.33	-44.77	1,315.55	1,292.79	22.75	57.818	
1,100.00	1,095.62	1,051.59	1,051.57	5.03	19.86	-0.04	-1,357.73	-44.77	1,295.86	1,271.01	24.85	52.138	
1,200.00	1,193.06	1,147.12	1,147.09	5.35	21.65	-0.04	-1,357.80	-44.77	1,273.45	1,246.52	26.93	47.294	
1,268.36	1,259.18	1,212.00	1,211.97	5.58	22.87	-0.04	-1,357.94	-44.77	1,256.25	1,227.91	28.35	44.320	
1,300.00	1,289.69	1,241.95	1,241.92	5.70	23.44	-0.04	-1,358.02	-44.77	1,247.95	1,218.95	29.00	43.029	
1,400.00	1,386.11	1,342.17	1,342.11	6.07	25.34	-0.04	-1,358.33	-44.77	1,221.76	1,190.56	31.20	39.155	
1,500.00	1,482.54	1,438.60	1,438.54	6.45	27.28	-0.04	-1,358.33	-44.77	1,195.26	1,161.82	33.44	35.740	
1,600.00	1,578.96	1,535.02	1,534.96	6.86	29.21	-0.04	-1,358.33	-44.77	1,168.76	1,133.07	35.69	32.744	
1,700.00	1,675.39	1,629.71	1,629.65	7.27	31.11	-0.04	-1,357.57	-44.77	1,141.50	1,103.58	37.92	30.103	
1,800.00	1,771.81	1,723.40	1,723.34	7.70	33.00	-0.05	-1,357.83	-44.77	1,115.27	1,075.14	40.13	27.788	
1,900.00	1,868.24	1,824.35	1,824.24	8.13	35.03	-0.05	-1,358.33	-44.77	1,089.26	1,046.76	42.50	25.627	
2,000.00	1,964.66	1,920.78	1,920.66	8.57	37.05	-0.05	-1,358.33	-44.77	1,062.76	1,017.90	44.86	23.690	
2,100.00	2,061.09	2,017.20	2,017.09	9.02	39.07	-0.05	-1,358.33	-44.77	1,036.26	989.04	47.22	21.944	
2,200.00	2,157.51	2,111.96	2,111.83	9.47	41.05	-0.05	-1,357.29	-44.77	1,008.72	959.17	49.56	20.355	
2,300.00	2,253.94	2,205.21	2,205.08	9.93	43.00	-0.05	-1,357.60	-44.77	982.54	930.68	51.86	18.944	
2,400.00	2,350.36	2,298.64	2,298.50	10.39	44.96	-0.05	-1,358.22	-44.77	956.68	902.50	54.18	17.658	
2,500.00	2,446.79	2,402.98	2,402.79	10.86	48.29	-0.06	-1,358.33	-44.77	930.26	872.39	57.86	16.077	
2,600.00	2,543.21	2,497.77	2,497.57	11.33	51.47	-0.06	-1,357.69	-44.77	903.12	841.71	61.41	14.707	
2,700.00	2,639.64	2,589.69	2,589.49	11.80	54.56	-0.06	-1,358.10	-44.77	877.04	812.18	64.87	13.521	
2,800.00	2,736.06	2,692.98	2,692.06	12.27	59.35	-0.06	-1,358.33	-44.77	850.76	780.74	70.02	12.151	
2,900.00	2,832.49	2,787.71	2,786.28	12.75	65.04	-0.06	-1,357.92	-44.77	823.84	747.76	76.08	10.828	
3,000.00	2,928.91	2,886.18	2,884.24	13.23	72.01	-0.06	-1,356.91	-44.77	796.34	712.92	83.42	9.547	
3,100.00	3,025.34	2,978.78	2,975.93	13.71	78.94	-0.07	-1,357.87	-44.77	770.81	680.09	90.72	8.496	
3,200.00	3,121.76	3,062.10	3,058.93	14.19	84.87	-0.07	-1,357.18	-44.77	743.84	646.81	97.03	7.666	
3,300.00	3,218.18	3,169.41	3,165.66	14.67	91.90	-0.07	-1,356.73	-44.77	716.70	612.26	104.44	6.862	
3,400.00	3,314.61	3,274.85	3,270.61	15.15	98.40	-0.08	-1,358.33	-44.77	691.75	580.46	111.30	6.215	
3,500.00	3,411.03	3,371.28	3,367.03	15.64	104.16	-0.08	-1,358.33	-44.77	665.25	547.82	117.43	5.665	
3,600.00	3,507.46	3,392.00	3,387.10	16.12	105.40	-0.08	-1,358.33	-44.77	643.30	524.79	118.51	5.428	SF
3,695.65	3,599.69	3,392.00	3,387.10	16.59	105.40	-0.08	-1,358.33	-44.77	636.15	520.25	115.90	5.489	CC, ES
3,700.00	3,603.88	3,392.00	3,387.10	16.61	105.40	-0.08	-1,358.33	-44.77	636.17	520.44	115.72	5.497	
3,800.00	3,700.31	3,392.00	3,387.10	17.10	105.40	-0.08	-1,358.33	-44.77	644.65	534.44	110.21	5.849	
3,900.00	3,796.73	3,392.00	3,387.10	17.59	105.40	-0.08	-1,358.33	-44.77	668.17	565.60	102.57	6.514	
4,000.00	3,893.16	3,392.00	3,387.10	18.07	105.40	-0.08	-1,358.33	-44.77	705.21	611.50	93.71	7.526	
4,100.00	3,989.58	3,392.00	3,387.10	18.56	105.40	-0.08	-1,358.33	-44.77	753.78	669.28	84.50	8.920	
4,200.00	4,086.01	3,392.00	3,387.10	19.05	105.40	-0.08	-1,358.33	-44.77	811.83	736.21	75.61	10.736	
4,300.00	4,182.43	3,392.00	3,387.10	19.55	105.40	-0.08	-1,358.33	-44.77	877.46	810.04	67.42	13.016	
4,400.00	4,278.86	3,392.00	3,387.10	20.04	105.40	-0.08	-1,358.33	-44.77	949.11	889.04	60.07	15.800	
4,500.00	4,375.28	3,392.00	3,387.10	20.53	105.40	-0.08	-1,358.33	-44.77	1,025.51	971.91	53.60	19.133	
4,600.00	4,471.71	3,392.00	3,387.10	21.02	105.40	-0.08	-1,358.33	-44.77	1,105.69	1,057.73	47.96	23.054	
4,700.00	4,568.13	3,392.00	3,387.10	21.51	105.40	-0.08	-1,358.33	-44.77	1,188.87	1,145.79	43.08	27.598	
4,800.00	4,664.56	3,392.00	3,387.10	22.01	105.40	-0.08	-1,358.33	-44.77	1,274.47	1,235.61	38.87	32.792	
4,900.00	4,760.98	3,392.00	3,387.10	22.50	105.40	-0.08	-1,358.33	-44.77	1,362.04	1,326.80	35.25	38.645	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	3,392.00	3,387.10	22.99	105.40	-0.08	-1,358.33	-44.77	1,451.22	1,419.07	32.15	45.141	
5,100.00	4,953.83	3,392.00	3,387.10	23.49	105.40	-0.08	-1,358.33	-44.77	1,541.72	1,512.20	29.52	52.233	
5,200.00	5,050.25	3,392.00	3,387.10	23.98	105.40	-0.08	-1,358.33	-44.77	1,633.33	1,606.03	27.30	59.830	
5,300.00	5,146.68	3,392.00	3,387.10	24.48	105.40	-0.08	-1,358.33	-44.77	1,725.87	1,700.41	25.46	67.785	
5,400.00	5,243.10	3,392.00	3,387.10	24.97	105.40	-0.08	-1,358.33	-44.77	1,819.21	1,795.24	23.97	75.901	
5,500.00	5,339.53	3,392.00	3,387.10	25.47	105.40	-0.08	-1,358.33	-44.77	1,913.21	1,890.42	22.79	83.935	
5,600.00	5,435.95	3,392.00	3,387.10	25.96	105.40	-0.08	-1,358.33	-44.77	2,007.80	1,985.88	21.91	91.624	
5,700.00	5,532.38	3,392.00	3,387.10	26.46	105.40	-0.08	-1,358.33	-44.77	2,102.88	2,081.58	21.30	98.723	
5,800.00	5,628.80	3,392.00	3,387.10	26.96	105.40	-0.08	-1,358.33	-44.77	2,198.41	2,177.48	20.93	105.050	
5,900.00	5,725.23	3,392.00	3,387.10	27.45	105.40	-0.08	-1,358.33	-44.77	2,294.31	2,273.55	20.76	110.507	
6,000.00	5,821.65	3,392.00	3,387.10	27.95	105.40	-0.08	-1,358.33	-44.77	2,390.55	2,369.78	20.77	115.094	
6,100.00	5,918.08	3,392.00	3,387.10	28.45	105.40	-0.08	-1,358.33	-44.77	2,487.09	2,466.17	20.92	118.878	
6,200.00	6,014.50	3,392.00	3,387.10	28.94	105.40	-0.08	-1,358.33	-44.77	2,583.89	2,562.70	21.18	121.975	
6,300.00	6,110.93	3,392.00	3,387.10	29.44	105.40	-0.08	-1,358.33	-44.77	2,680.92	2,659.39	21.53	124.512	
6,400.00	6,207.35	3,392.00	3,387.10	29.94	105.40	-0.08	-1,358.33	-44.77	2,778.17	2,756.23	21.94	126.611	
6,500.00	6,303.78	3,392.00	3,387.10	30.43	105.40	-0.08	-1,358.33	-44.77	2,875.60	2,853.20	22.40	128.378	
6,600.00	6,400.20	3,392.00	3,387.10	30.93	105.40	-0.08	-1,358.33	-44.77	2,973.21	2,950.32	22.89	129.899	
6,677.76	6,475.18	3,392.00	3,387.10	31.32	105.40	-0.08	-1,358.33	-44.77	3,049.21	3,025.93	23.28	130.955	
6,700.00	6,496.62	3,392.00	3,387.10	31.43	105.40	2.00	-1,358.33	-44.77	3,070.96	3,047.56	23.40	131.240	
6,750.00	6,544.66	3,392.00	3,387.10	31.68	105.40	5.66	-1,358.33	-44.77	3,119.73	3,096.06	23.66	131.847	
6,800.00	6,592.24	3,392.00	3,387.10	31.92	105.40	7.37	-1,358.33	-44.77	3,168.09	3,144.16	23.93	132.391	
6,850.00	6,639.07	3,392.00	3,387.10	32.16	105.40	7.75	-1,358.33	-44.77	3,215.77	3,191.56	24.21	132.832	
6,900.00	6,684.86	3,392.00	3,387.10	32.40	105.40	7.56	-1,358.33	-44.77	3,262.51	3,238.00	24.51	133.120	
6,950.00	6,729.32	3,392.00	3,387.10	32.62	105.40	7.17	-1,358.33	-44.77	3,308.07	3,283.24	24.84	133.199	
7,000.00	6,772.19	3,392.00	3,387.10	32.84	105.40	6.76	-1,358.33	-44.77	3,352.23	3,327.02	25.20	133.015	
7,050.00	6,813.20	3,392.00	3,387.10	33.05	105.40	6.39	-1,358.33	-44.77	3,394.76	3,369.15	25.62	132.520	
7,100.00	6,852.09	3,392.00	3,387.10	33.26	105.40	6.07	-1,358.33	-44.77	3,435.48	3,409.39	26.09	131.678	
7,150.00	6,888.63	3,392.00	3,387.10	33.45	105.40	5.80	-1,358.33	-44.77	3,474.20	3,447.57	26.63	130.465	
7,200.00	6,922.59	3,392.00	3,387.10	33.64	105.40	5.58	-1,358.33	-44.77	3,510.75	3,483.51	27.24	128.876	
7,250.00	6,953.76	3,392.00	3,387.10	33.82	105.40	5.41	-1,358.33	-44.77	3,544.98	3,517.05	27.93	126.919	
7,300.00	6,981.95	3,392.00	3,387.10	34.00	105.40	5.28	-1,358.33	-44.77	3,576.74	3,548.04	28.70	124.621	
7,350.00	7,006.99	3,392.00	3,387.10	34.17	105.40	5.19	-1,358.33	-44.77	3,605.91	3,576.35	29.55	122.019	
7,400.00	7,028.72	3,392.00	3,387.10	34.35	105.40	5.13	-1,358.33	-44.77	3,632.37	3,601.88	30.48	119.158	
7,450.00	7,047.00	3,392.00	3,387.10	34.52	105.40	5.11	-1,358.33	-44.77	3,656.02	3,624.52	31.49	116.088	
7,500.00	7,061.73	3,392.00	3,387.10	34.69	105.40	5.11	-1,358.33	-44.77	3,676.76	3,644.19	32.58	112.860	
7,550.00	7,072.82	3,392.00	3,387.10	34.86	105.40	5.15	-1,358.33	-44.77	3,694.53	3,660.80	33.73	109.524	
7,600.00	7,080.18	3,392.00	3,387.10	35.04	105.40	5.22	-1,358.33	-44.77	3,709.26	3,674.30	34.95	106.125	
7,650.00	7,083.79	3,392.00	3,387.10	35.22	105.40	5.32	-1,358.33	-44.77	3,720.88	3,684.65	36.23	102.705	
7,674.30	7,084.18	3,392.00	3,387.10	35.32	105.40	5.38	-1,358.33	-44.77	3,725.39	3,688.53	36.87	101.050	
7,700.00	7,084.12	3,392.00	3,387.10	35.42	105.40	5.38	-1,358.33	-44.77	3,729.86	3,692.31	37.56	99.316	
7,800.00	7,083.88	3,392.00	3,387.10	35.84	105.40	5.38	-1,358.33	-44.77	3,748.88	3,708.56	40.32	92.984	
7,900.00	7,083.64	3,392.00	3,387.10	36.34	105.40	5.38	-1,358.33	-44.77	3,770.45	3,727.28	43.17	87.339	
8,000.00	7,083.40	3,392.00	3,387.10	36.90	105.40	5.38	-1,358.33	-44.77	3,794.54	3,748.46	46.08	82.348	
8,100.00	7,083.16	3,392.00	3,387.10	37.52	105.40	5.38	-1,358.33	-44.77	3,821.09	3,772.07	49.02	77.956	
8,200.00	7,082.91	3,392.00	3,387.10	38.21	105.40	5.38	-1,358.33	-44.77	3,850.05	3,798.10	51.96	74.100	
8,300.00	7,082.67	3,392.00	3,387.10	38.95	105.40	5.38	-1,358.33	-44.77	3,881.38	3,826.49	54.89	70.716	
8,400.00	7,082.43	3,392.00	3,387.10	39.74	105.40	5.38	-1,358.33	-44.77	3,915.01	3,857.22	57.79	67.747	
8,500.00	7,082.19	3,392.00	3,387.10	40.59	105.40	5.38	-1,358.33	-44.77	3,950.89	3,890.24	60.65	65.140	
8,600.00	7,081.95	3,392.00	3,387.10	41.49	105.40	5.38	-1,358.33	-44.77	3,988.95	3,925.49	63.47	62.851	
8,700.00	7,081.71	3,392.00	3,387.10	42.43	105.40	5.38	-1,358.33	-44.77	4,029.14	3,962.91	66.23	60.839	
8,800.00	7,081.47	3,392.00	3,387.10	43.41	105.40	5.38	-1,358.33	-44.77	4,071.38	4,002.46	68.92	59.071	
8,900.00	7,081.23	3,392.00	3,387.10	44.44	105.40	5.38	-1,358.33	-44.77	4,115.62	4,044.07	71.56	57.517	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	3,392.00	3,387.10	45.49	105.40	5.38	-1,358.33	-44.77	4,161.80	4,087.68	74.12	56.152	
9,100.00	7,080.74	3,392.00	3,387.10	46.58	105.40	5.38	-1,358.33	-44.77	4,209.84	4,133.24	76.61	54.954	
9,200.00	7,080.50	3,392.00	3,387.10	47.70	105.40	5.38	-1,358.33	-44.77	4,259.69	4,180.67	79.02	53.905	
9,300.00	7,080.26	3,392.00	3,387.10	48.85	105.40	5.38	-1,358.33	-44.77	4,311.29	4,229.92	81.36	52.989	
9,400.00	7,080.02	3,392.00	3,387.10	50.03	105.40	5.38	-1,358.33	-44.77	4,364.56	4,280.93	83.63	52.190	
9,500.00	7,079.78	3,392.00	3,387.10	51.23	105.40	5.38	-1,358.33	-44.77	4,419.46	4,333.64	85.82	51.497	
9,600.00	7,079.54	3,392.00	3,387.10	52.45	105.40	5.38	-1,358.33	-44.77	4,475.91	4,387.98	87.93	50.900	
9,700.00	7,079.30	3,392.00	3,387.10	53.69	105.40	5.38	-1,358.33	-44.77	4,533.87	4,443.90	89.98	50.389	
9,800.00	7,079.06	3,392.00	3,387.10	54.95	105.40	5.38	-1,358.33	-44.77	4,593.28	4,501.33	91.95	49.955	
9,900.00	7,078.82	3,392.00	3,387.10	56.23	105.40	5.38	-1,358.33	-44.77	4,654.08	4,560.23	93.85	49.592	
10,000.00	7,078.57	3,392.00	3,387.10	57.53	105.40	5.38	-1,358.33	-44.77	4,716.21	4,620.53	95.68	49.293	
10,100.00	7,078.33	3,392.00	3,387.10	58.84	105.40	5.38	-1,358.33	-44.77	4,779.63	4,682.19	97.44	49.053	
10,200.00	7,078.09	3,392.00	3,387.10	60.17	105.40	5.38	-1,358.33	-44.77	4,844.28	4,745.14	99.13	48.866	
10,300.00	7,077.85	3,392.00	3,387.10	61.51	105.40	5.38	-1,358.33	-44.77	4,910.12	4,809.35	100.77	48.728	
10,400.00	7,077.61	3,392.00	3,387.10	62.86	105.40	5.38	-1,358.33	-44.77	4,977.09	4,874.76	102.34	48.634	
10,500.00	7,077.37	3,392.00	3,387.10	64.22	105.40	5.38	-1,358.33	-44.77	5,045.16	4,941.31	103.85	48.582	
10,600.00	7,077.13	3,392.00	3,387.10	65.60	105.40	5.38	-1,358.33	-44.77	5,114.28	5,008.98	105.30	48.568	
10,700.00	7,076.89	3,392.00	3,387.10	66.98	105.40	5.38	-1,358.33	-44.77	5,184.41	5,077.71	106.70	48.589	
10,800.00	7,076.65	3,392.00	3,387.10	68.38	105.40	5.38	-1,358.33	-44.77	5,255.50	5,147.46	108.04	48.642	
10,900.00	7,076.40	3,392.00	3,387.10	69.78	105.40	5.38	-1,358.33	-44.77	5,327.52	5,218.18	109.34	48.726	
11,000.00	7,076.16	3,392.00	3,387.10	71.20	105.40	5.38	-1,358.33	-44.77	5,400.43	5,289.85	110.58	48.837	
11,100.00	7,075.92	3,392.00	3,387.10	72.62	105.40	5.38	-1,358.33	-44.77	5,474.20	5,362.43	111.78	48.975	
11,200.00	7,075.68	3,392.00	3,387.10	74.04	105.40	5.38	-1,358.33	-44.77	5,548.79	5,435.87	112.93	49.136	
11,300.00	7,075.44	3,392.00	3,387.10	75.48	105.40	5.38	-1,358.33	-44.77	5,624.17	5,510.14	114.03	49.320	
11,400.00	7,075.20	3,392.00	3,387.10	76.92	105.40	5.38	-1,358.33	-44.77	5,700.31	5,585.21	115.10	49.525	
11,500.00	7,074.96	3,392.00	3,387.10	78.37	105.40	5.38	-1,358.33	-44.77	5,777.17	5,661.05	116.12	49.750	
11,600.00	7,074.72	3,392.00	3,387.10	79.82	105.40	5.38	-1,358.33	-44.77	5,854.74	5,737.62	117.11	49.993	
11,700.00	7,074.48	3,392.00	3,387.10	81.28	105.40	5.38	-1,358.33	-44.77	5,932.97	5,814.91	118.06	50.253	
11,800.00	7,074.23	3,392.00	3,387.10	82.75	105.40	5.38	-1,358.33	-44.77	6,011.85	5,892.87	118.98	50.529	
11,900.00	7,073.99	3,392.00	3,387.10	84.22	105.40	5.38	-1,358.33	-44.77	6,091.35	5,971.49	119.86	50.821	
12,000.00	7,073.75	3,392.00	3,387.10	85.69	105.40	5.38	-1,358.33	-44.77	6,171.45	6,050.74	120.71	51.127	
12,100.00	7,073.51	3,392.00	3,387.10	87.17	105.40	5.38	-1,358.33	-44.77	6,252.12	6,130.59	121.53	51.446	
12,200.00	7,073.27	3,392.00	3,387.10	88.65	105.40	5.38	-1,358.33	-44.77	6,333.34	6,211.02	122.32	51.778	
12,300.00	7,073.03	3,392.00	3,387.10	90.14	105.40	5.38	-1,358.33	-44.77	6,415.09	6,292.01	123.08	52.122	
12,400.00	7,072.79	3,392.00	3,387.10	91.63	105.40	5.38	-1,358.33	-44.77	6,497.35	6,373.54	123.81	52.477	
12,500.00	7,072.55	3,392.00	3,387.10	93.13	105.40	5.38	-1,358.33	-44.77	6,580.10	6,455.58	124.52	52.843	
12,600.00	7,072.31	3,392.00	3,387.10	94.62	105.40	5.38	-1,358.33	-44.77	6,663.33	6,538.13	125.21	53.219	
12,700.00	7,072.06	3,392.00	3,387.10	96.13	105.40	5.38	-1,358.33	-44.77	6,747.01	6,621.15	125.87	53.604	
12,800.00	7,071.82	3,392.00	3,387.10	97.63	105.40	5.38	-1,358.33	-44.77	6,831.13	6,704.63	126.51	53.998	
12,900.00	7,071.58	3,392.00	3,387.10	99.14	105.40	5.38	-1,358.33	-44.77	6,915.68	6,788.55	127.12	54.401	
13,000.00	7,071.34	3,392.00	3,387.10	100.65	105.40	5.38	-1,358.33	-44.77	7,000.63	6,872.91	127.72	54.812	
13,100.00	7,071.10	3,392.00	3,387.10	102.16	105.40	5.38	-1,358.33	-44.77	7,085.97	6,957.68	128.30	55.231	
13,200.00	7,070.86	3,392.00	3,387.10	103.68	105.40	5.38	-1,358.33	-44.77	7,171.70	7,042.84	128.86	55.656	
13,300.00	7,070.62	3,392.00	3,387.10	105.20	105.40	5.38	-1,358.33	-44.77	7,257.78	7,128.39	129.40	56.089	
13,400.00	7,070.38	3,392.00	3,387.10	106.72	105.40	5.38	-1,358.33	-44.77	7,344.22	7,214.30	129.92	56.528	
13,500.00	7,070.14	3,392.00	3,387.10	108.24	105.40	5.38	-1,358.33	-44.77	7,431.01	7,300.58	130.43	56.974	
13,600.00	7,069.89	3,392.00	3,387.10	109.77	105.40	5.38	-1,358.33	-44.77	7,518.11	7,387.20	130.92	57.425	
13,700.00	7,069.65	3,392.00	3,387.10	111.30	105.40	5.38	-1,358.33	-44.77	7,605.54	7,474.14	131.40	57.883	
13,800.00	7,069.41	3,392.00	3,387.10	112.83	105.40	5.38	-1,358.33	-44.77	7,693.27	7,561.42	131.86	58.345	
13,900.00	7,069.17	3,392.00	3,387.10	114.36	105.40	5.38	-1,358.33	-44.77	7,781.30	7,649.00	132.31	58.813	
14,000.00	7,068.93	3,392.00	3,387.10	115.89	105.40	5.38	-1,358.33	-44.77	7,869.62	7,736.88	132.74	59.285	
14,100.00	7,068.69	3,392.00	3,387.10	117.43	105.40	5.38	-1,358.33	-44.77	7,958.21	7,825.04	133.16	59.762	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	3,392.00	3,387.10	118.97	105.40	5.38	-1,358.33	-44.77	8,047.07	7,913.49	133.58	60.244	
14,300.00	7,068.21	3,392.00	3,387.10	120.50	105.40	5.38	-1,358.33	-44.77	8,136.18	8,002.21	133.97	60.729	
14,400.00	7,067.97	3,392.00	3,387.10	122.05	105.40	5.38	-1,358.33	-44.77	8,225.55	8,091.19	134.36	61.219	
14,500.00	7,067.72	3,392.00	3,387.10	123.59	105.40	5.38	-1,358.33	-44.77	8,315.16	8,180.42	134.74	61.713	
14,600.00	7,067.48	3,392.00	3,387.10	125.13	105.40	5.38	-1,358.33	-44.77	8,405.01	8,269.90	135.11	62.210	
14,700.00	7,067.24	3,392.00	3,387.10	126.68	105.40	5.38	-1,358.33	-44.77	8,495.08	8,359.61	135.46	62.711	
14,800.00	7,067.00	3,392.00	3,387.10	128.22	105.40	5.38	-1,358.33	-44.77	8,585.37	8,449.55	135.81	63.215	
14,900.00	7,066.76	3,392.00	3,387.10	129.77	105.40	5.38	-1,358.33	-44.77	8,675.87	8,539.72	136.15	63.722	
15,000.00	7,066.52	3,392.00	3,387.10	131.32	105.40	5.38	-1,358.33	-44.77	8,766.58	8,630.10	136.48	64.232	
15,100.00	7,066.28	3,392.00	3,387.10	132.87	105.40	5.38	-1,358.33	-44.77	8,857.49	8,720.69	136.81	64.745	
15,200.00	7,066.04	3,392.00	3,387.10	134.42	105.40	5.38	-1,358.33	-44.77	8,948.59	8,811.48	137.12	65.261	
15,300.00	7,065.80	3,392.00	3,387.10	135.97	105.40	5.38	-1,358.33	-44.77	9,039.89	8,902.46	137.43	65.780	
15,400.00	7,065.55	3,392.00	3,387.10	137.53	105.40	5.38	-1,358.33	-44.77	9,131.36	8,993.64	137.73	66.301	
15,500.00	7,065.31	3,392.00	3,387.10	139.08	105.40	5.38	-1,358.33	-44.77	9,223.01	9,084.99	138.02	66.825	
15,600.00	7,065.07	3,392.00	3,387.10	140.64	105.40	5.38	-1,358.33	-44.77	9,314.84	9,176.53	138.30	67.351	
15,700.00	7,064.83	3,392.00	3,387.10	142.20	105.40	5.38	-1,358.33	-44.77	9,406.83	9,268.24	138.58	67.879	
15,800.00	7,064.59	3,392.00	3,387.10	143.75	105.40	5.38	-1,358.33	-44.77	9,498.98	9,360.12	138.86	68.409	
15,900.00	7,064.35	3,392.00	3,387.10	145.31	105.40	5.38	-1,358.33	-44.77	9,591.29	9,452.16	139.12	68.941	
16,000.00	7,064.11	3,392.00	3,387.10	146.87	105.40	5.38	-1,358.33	-44.77	9,683.75	9,544.36	139.38	69.475	
16,100.00	7,063.87	3,392.00	3,387.10	148.43	105.40	5.38	-1,358.33	-44.77	9,776.36	9,636.72	139.64	70.011	
16,200.00	7,063.63	3,392.00	3,387.10	149.99	105.40	5.38	-1,358.33	-44.77	9,869.11	9,729.22	139.89	70.549	
16,300.00	7,063.38	3,392.00	3,387.10	151.56	105.40	5.38	-1,358.33	-44.77	9,962.01	9,821.87	140.14	71.088	
16,400.00	7,063.14	3,392.00	3,387.10	153.12	105.40	5.38	-1,358.33	-44.77	10,055.04	9,914.66	140.38	71.629	
16,500.00	7,062.90	3,392.00	3,387.10	154.68	105.40	5.38	-1,358.33	-44.77	10,148.20	10,007.59	140.61	72.171	
16,600.00	7,062.66	3,392.00	3,387.10	156.25	105.40	5.38	-1,358.33	-44.77	10,241.50	10,100.65	140.84	72.715	
16,700.00	7,062.42	3,392.00	3,387.10	157.81	105.40	5.38	-1,358.33	-44.77	10,334.91	10,193.84	141.07	73.261	
16,800.00	7,062.18	3,392.00	3,387.10	159.38	105.40	5.38	-1,358.33	-44.77	10,428.45	10,287.16	141.29	73.807	
16,874.30	7,062.00	3,392.00	3,387.10	160.54	105.40	5.38	-1,358.33	-44.77	10,498.03	10,356.57	141.46	74.214	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	0.00	108.20	-1,056.67	3,214.28	3,383.92				
100.00	100.00	47.00	47.00	3.29	0.43	108.20	-1,056.67	3,214.28	3,383.51	3,379.78	3.72	908.543	
200.00	200.00	147.00	147.00	3.34	1.81	108.20	-1,056.67	3,214.28	3,383.51	3,378.36	5.14	657.634	
230.62	230.62	177.61	177.61	3.36	2.39	108.20	-1,056.50	3,214.28	3,383.45	3,377.71	5.75	588.506	
300.00	300.00	243.05	243.05	3.42	3.64	108.20	-1,056.62	3,214.28	3,383.50	3,376.44	7.06	479.497	
400.00	400.00	347.01	347.00	3.54	5.56	108.20	-1,056.67	3,214.28	3,383.51	3,374.41	9.10	371.782	
423.05	423.05	369.51	369.49	3.57	5.98	108.19	-1,056.32	3,214.28	3,383.40	3,373.85	9.55	354.353	
500.00	500.00	441.80	441.78	3.69	7.31	108.20	-1,056.52	3,214.28	3,383.46	3,372.46	11.00	307.563	
600.00	599.98	547.00	546.98	3.86	9.26	-73.76	-1,056.67	3,214.28	3,383.02	3,369.91	13.11	257.995	
700.00	699.84	646.86	646.84	4.04	11.10	-73.88	-1,056.67	3,214.28	3,381.56	3,366.42	15.14	223.309	
800.00	799.45	746.33	746.31	4.25	12.94	-74.07	-1,056.38	3,214.28	3,379.06	3,361.86	17.19	196.559	
900.00	898.70	844.74	844.72	4.48	14.76	-74.33	-1,056.44	3,214.28	3,375.73	3,356.49	19.24	175.415	
1,000.00	997.47	942.69	942.67	4.74	16.57	-74.66	-1,056.57	3,214.28	3,371.54	3,350.23	21.31	158.182	
1,100.00	1,095.62	1,042.66	1,042.62	5.03	18.51	-75.07	-1,056.67	3,214.28	3,366.50	3,342.97	23.53	143.043	
1,200.00	1,193.06	1,140.10	1,140.06	5.35	20.47	-75.54	-1,056.67	3,214.28	3,360.65	3,334.84	25.82	130.174	
1,268.36	1,259.18	1,206.22	1,206.18	5.58	21.81	-75.91	-1,056.67	3,214.28	3,356.25	3,328.86	27.38	122.564	
1,300.00	1,289.69	1,236.73	1,236.69	5.70	22.42	-76.04	-1,056.67	3,214.28	3,354.14	3,326.03	28.11	119.317	
1,400.00	1,386.11	1,330.97	1,330.92	6.07	24.33	-76.47	-1,055.96	3,214.28	3,347.43	3,317.05	30.38	110.183	
1,500.00	1,482.54	1,425.26	1,425.20	6.45	26.23	-76.88	-1,056.30	3,214.28	3,341.21	3,308.54	32.67	102.275	
1,600.00	1,578.96	1,526.06	1,525.96	6.86	28.27	-77.32	-1,056.67	3,214.28	3,335.19	3,300.08	35.11	94.995	
1,700.00	1,675.39	1,622.49	1,622.39	7.27	30.23	-77.75	-1,056.67	3,214.28	3,329.26	3,291.78	37.48	88.824	
1,800.00	1,771.81	1,718.91	1,718.81	7.70	32.19	-78.18	-1,056.67	3,214.28	3,323.54	3,283.68	39.87	83.370	
1,900.00	1,868.24	1,813.29	1,813.18	8.13	34.11	-78.62	-1,055.68	3,214.28	3,317.79	3,275.57	42.22	78.591	
2,000.00	1,964.66	1,907.31	1,907.19	8.57	36.02	-79.04	-1,056.08	3,214.28	3,312.58	3,268.01	44.57	74.327	
2,100.00	2,061.09	2,008.25	2,008.09	9.02	38.09	-79.48	-1,056.67	3,214.28	3,307.60	3,260.52	47.08	70.252	
2,200.00	2,157.51	2,104.67	2,104.51	9.47	40.12	-79.92	-1,056.67	3,214.28	3,302.69	3,253.12	49.57	66.630	
2,300.00	2,253.94	2,201.10	2,200.94	9.93	42.16	-80.36	-1,056.67	3,214.28	3,297.99	3,245.93	52.06	63.352	
2,400.00	2,350.36	2,296.50	2,296.34	10.39	44.17	-80.80	-1,055.90	3,214.28	3,293.34	3,238.81	54.53	60.392	
2,500.00	2,446.79	2,391.41	2,391.24	10.86	46.17	-81.23	-1,056.17	3,214.28	3,289.11	3,232.11	57.00	57.704	
2,600.00	2,543.21	2,490.45	2,490.21	11.33	48.25	-81.68	-1,056.67	3,214.28	3,285.12	3,225.57	59.55	55.162	
2,700.00	2,639.64	2,586.87	2,586.64	11.80	50.22	-82.12	-1,056.67	3,214.28	3,281.25	3,219.26	62.00	52.927	
2,800.00	2,736.06	2,683.30	2,683.06	12.27	52.19	-82.56	-1,056.67	3,214.28	3,277.59	3,213.15	64.44	50.863	
2,900.00	2,832.49	2,779.72	2,779.49	12.75	54.16	-83.00	-1,056.67	3,214.28	3,274.14	3,207.26	66.89	48.951	
3,000.00	2,928.91	2,875.44	2,875.18	13.23	56.12	-83.48	-1,054.82	3,214.28	3,270.62	3,201.30	69.32	47.181	
3,100.00	3,025.34	2,970.52	2,970.26	13.71	58.06	-83.91	-1,055.10	3,214.28	3,267.65	3,195.91	71.74	45.546	
3,200.00	3,121.76	3,065.77	3,065.49	14.19	60.00	-84.34	-1,055.67	3,214.28	3,264.93	3,190.75	74.17	44.018	
3,300.00	3,218.18	3,161.18	3,160.89	14.67	61.95	-84.77	-1,056.53	3,214.28	3,262.44	3,185.84	76.61	42.588	
3,400.00	3,314.61	3,261.93	3,261.61	15.15	63.82	-85.23	-1,056.67	3,214.28	3,260.07	3,181.11	78.96	41.289	
3,500.00	3,411.03	3,358.35	3,358.03	15.64	65.58	-85.68	-1,056.67	3,214.28	3,257.89	3,176.69	81.20	40.120	
3,600.00	3,507.46	3,414.00	3,413.67	16.12	66.59	-85.94	-1,056.67	3,214.28	3,256.18	3,173.48	82.70	39.373	
3,621.04	3,527.75	3,414.00	3,413.67	16.22	66.59	-85.94	-1,056.67	3,214.28	3,256.12	3,173.32	82.80	39.326	CC, ES
3,700.00	3,603.88	3,414.00	3,413.67	16.61	66.59	-85.94	-1,056.67	3,214.28	3,257.07	3,173.94	83.13	39.181	
3,800.00	3,700.31	3,414.00	3,413.67	17.10	66.59	-85.94	-1,056.67	3,214.28	3,261.03	3,177.54	83.49	39.060	
3,900.00	3,796.73	3,414.00	3,413.67	17.59	66.59	-85.94	-1,056.67	3,214.28	3,268.04	3,184.27	83.77	39.010	SF
4,000.00	3,893.16	3,414.00	3,413.67	18.07	66.59	-85.94	-1,056.67	3,214.28	3,278.10	3,194.10	83.99	39.029	
4,100.00	3,989.58	3,414.00	3,413.67	18.56	66.59	-85.94	-1,056.67	3,214.28	3,291.15	3,207.02	84.14	39.117	
4,200.00	4,086.01	3,414.00	3,413.67	19.05	66.59	-85.94	-1,056.67	3,214.28	3,307.19	3,222.97	84.22	39.271	
4,300.00	4,182.43	3,414.00	3,413.67	19.55	66.59	-85.94	-1,056.67	3,214.28	3,326.15	3,241.93	84.23	39.491	
4,400.00	4,278.86	3,414.00	3,413.67	20.04	66.59	-85.94	-1,056.67	3,214.28	3,348.00	3,263.82	84.17	39.775	
4,500.00	4,375.28	3,414.00	3,413.67	20.53	66.59	-85.94	-1,056.67	3,214.28	3,372.67	3,288.60	84.06	40.122	
4,600.00	4,471.71	3,414.00	3,413.67	21.02	66.59	-85.94	-1,056.67	3,214.28	3,400.10	3,316.21	83.89	40.531	
4,700.00	4,568.13	3,414.00	3,413.67	21.51	66.59	-85.94	-1,056.67	3,214.28	3,430.23	3,346.56	83.66	41.001	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
4,800.00	4,664.56	3,414.00	3,413.67	22.01	66.59	-85.94	-1,056.67	3,214.28	3,462.98	3,379.60	83.39	41.530	
4,900.00	4,760.98	3,414.00	3,413.67	22.50	66.59	-85.94	-1,056.67	3,214.28	3,498.29	3,415.23	83.06	42.116	
5,000.00	4,857.41	3,414.00	3,413.67	22.99	66.59	-85.94	-1,056.67	3,214.28	3,536.08	3,453.38	82.70	42.760	
5,100.00	4,953.83	3,414.00	3,413.67	23.49	66.59	-85.94	-1,056.67	3,214.28	3,576.26	3,493.97	82.29	43.458	
5,200.00	5,050.25	3,414.00	3,413.67	23.98	66.59	-85.94	-1,056.67	3,214.28	3,618.76	3,536.91	81.85	44.210	
5,300.00	5,146.68	3,414.00	3,413.67	24.48	66.59	-85.94	-1,056.67	3,214.28	3,663.50	3,582.11	81.38	45.015	
5,400.00	5,243.10	3,414.00	3,413.67	24.97	66.59	-85.94	-1,056.67	3,214.28	3,710.39	3,629.50	80.89	45.871	
5,500.00	5,339.53	3,414.00	3,413.67	25.47	66.59	-85.94	-1,056.67	3,214.28	3,759.36	3,678.99	80.37	46.777	
5,600.00	5,435.95	3,414.00	3,413.67	25.96	66.59	-85.94	-1,056.67	3,214.28	3,810.33	3,730.50	79.83	47.731	
5,700.00	5,532.38	3,414.00	3,413.67	26.46	66.59	-85.94	-1,056.67	3,214.28	3,863.21	3,783.93	79.28	48.731	
5,800.00	5,628.80	3,414.00	3,413.67	26.96	66.59	-85.94	-1,056.67	3,214.28	3,917.93	3,839.22	78.71	49.778	
5,900.00	5,725.23	3,414.00	3,413.67	27.45	66.59	-85.94	-1,056.67	3,214.28	3,974.41	3,896.28	78.13	50.868	
6,000.00	5,821.65	3,414.00	3,413.67	27.95	66.59	-85.94	-1,056.67	3,214.28	4,032.59	3,955.04	77.55	52.001	
6,100.00	5,918.08	3,414.00	3,413.67	28.45	66.59	-85.94	-1,056.67	3,214.28	4,092.38	4,015.42	76.96	53.176	
6,200.00	6,014.50	3,414.00	3,413.67	28.94	66.59	-85.94	-1,056.67	3,214.28	4,153.71	4,077.34	76.37	54.390	
6,300.00	6,110.93	3,414.00	3,413.67	29.44	66.59	-85.94	-1,056.67	3,214.28	4,216.53	4,140.75	75.78	55.642	
6,400.00	6,207.35	3,414.00	3,413.67	29.94	66.59	-85.94	-1,056.67	3,214.28	4,280.76	4,205.57	75.19	56.931	
6,500.00	6,303.78	3,414.00	3,413.67	30.43	66.59	-85.94	-1,056.67	3,214.28	4,346.34	4,271.74	74.61	58.256	
6,600.00	6,400.20	3,414.00	3,413.67	30.93	66.59	-85.94	-1,056.67	3,214.28	4,413.22	4,339.19	74.03	59.615	
6,677.76	6,475.18	3,414.00	3,413.67	31.32	66.59	-85.94	-1,056.67	3,214.28	4,466.08	4,392.49	73.58	60.694	
6,700.00	6,496.62	3,414.00	3,413.67	31.43	66.59	-92.96	-1,056.67	3,214.28	4,481.61	4,408.14	73.46	61.006	
6,750.00	6,544.66	3,414.00	3,413.67	31.68	66.59	-107.35	-1,056.67	3,214.28	4,518.66	4,445.45	73.21	61.721	
6,800.00	6,592.24	3,414.00	3,413.67	31.92	66.59	-118.72	-1,056.67	3,214.28	4,558.43	4,485.44	72.99	62.450	
6,850.00	6,639.07	3,414.00	3,413.67	32.16	66.59	-126.94	-1,056.67	3,214.28	4,600.61	4,527.80	72.81	63.188	
6,900.00	6,684.86	3,414.00	3,413.67	32.40	66.59	-132.44	-1,056.67	3,214.28	4,644.87	4,572.21	72.66	63.929	
6,950.00	6,729.32	3,414.00	3,413.67	32.62	66.59	-135.64	-1,056.67	3,214.28	4,690.88	4,618.34	72.54	64.665	
7,000.00	6,772.19	3,414.00	3,413.67	32.84	66.59	-136.51	-1,056.67	3,214.28	4,738.32	4,665.86	72.46	65.392	
7,050.00	6,813.20	3,414.00	3,413.67	33.05	66.59	-134.18	-1,056.67	3,214.28	4,786.86	4,714.44	72.42	66.102	
7,100.00	6,852.09	3,414.00	3,413.67	33.26	66.59	-125.00	-1,056.67	3,214.28	4,836.16	4,763.75	72.41	66.790	
7,150.00	6,888.63	3,414.00	3,413.67	33.45	66.59	-93.77	-1,056.67	3,214.28	4,885.91	4,813.47	72.44	67.450	
7,200.00	6,922.59	3,414.00	3,413.67	33.64	66.59	-34.38	-1,056.67	3,214.28	4,935.79	4,863.29	72.50	68.079	
7,250.00	6,953.76	3,414.00	3,413.67	33.82	66.59	-8.54	-1,056.67	3,214.28	4,985.49	4,912.89	72.60	68.670	
7,300.00	6,981.95	3,414.00	3,413.67	34.00	66.59	0.33	-1,056.67	3,214.28	5,034.71	4,961.98	72.73	69.221	
7,350.00	7,006.99	3,414.00	3,413.67	34.17	66.59	4.30	-1,056.67	3,214.28	5,083.18	5,010.27	72.90	69.727	
7,400.00	7,028.72	3,414.00	3,413.67	34.35	66.59	6.42	-1,056.67	3,214.28	5,130.61	5,057.51	73.10	70.185	
7,450.00	7,047.00	3,414.00	3,413.67	34.52	66.59	7.69	-1,056.67	3,214.28	5,176.75	5,103.41	73.33	70.592	
7,500.00	7,061.73	3,414.00	3,413.67	34.69	66.59	8.54	-1,056.67	3,214.28	5,221.35	5,147.75	73.60	70.945	
7,550.00	7,072.82	3,414.00	3,413.67	34.86	66.59	9.17	-1,056.67	3,214.28	5,264.18	5,190.28	73.89	71.242	
7,600.00	7,080.18	3,414.00	3,413.67	35.04	66.59	9.67	-1,056.67	3,214.28	5,305.01	5,230.80	74.22	71.481	
7,650.00	7,083.79	3,414.00	3,413.67	35.22	66.59	10.11	-1,056.67	3,214.28	5,343.66	5,269.09	74.57	71.661	
7,674.30	7,084.18	3,414.00	3,413.67	35.32	66.59	10.32	-1,056.67	3,214.28	5,361.59	5,286.84	74.75	71.729	
7,700.00	7,084.12	3,414.00	3,413.67	35.42	66.59	10.32	-1,056.67	3,214.28	5,380.28	5,305.34	74.94	71.790	
7,800.00	7,083.88	3,414.00	3,413.67	35.84	66.59	10.32	-1,056.67	3,214.28	5,453.55	5,377.85	75.70	72.038	
7,900.00	7,083.64	3,414.00	3,413.67	36.34	66.59	10.32	-1,056.67	3,214.28	5,527.66	5,451.21	76.44	72.311	
8,000.00	7,083.40	3,414.00	3,413.67	36.90	66.59	10.32	-1,056.67	3,214.28	5,602.57	5,525.40	77.16	72.608	
8,100.00	7,083.16	3,414.00	3,413.67	37.52	66.59	10.32	-1,056.67	3,214.28	5,678.25	5,600.39	77.86	72.928	
8,200.00	7,082.91	3,414.00	3,413.67	38.21	66.59	10.32	-1,056.67	3,214.28	5,754.67	5,676.13	78.54	73.270	
8,300.00	7,082.67	3,414.00	3,413.67	38.95	66.59	10.32	-1,056.67	3,214.28	5,831.81	5,752.61	79.20	73.633	
8,400.00	7,082.43	3,414.00	3,413.67	39.74	66.59	10.32	-1,056.67	3,214.28	5,909.64	5,829.79	79.84	74.015	
8,500.00	7,082.19	3,414.00	3,413.67	40.59	66.59	10.32	-1,056.67	3,214.28	5,988.12	5,907.65	80.47	74.416	
8,600.00	7,081.95	3,414.00	3,413.67	41.49	66.59	10.32	-1,056.67	3,214.28	6,067.23	5,986.16	81.07	74.835	
8,700.00	7,081.71	3,414.00	3,413.67	42.43	66.59	10.32	-1,056.67	3,214.28	6,146.96	6,065.30	81.66	75.272	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,800.00	7,081.47	3,414.00	3,413.67	43.41	66.59	10.32	-1,056.67	3,214.28	6,227.27	6,145.03	82.24	75.724	
8,900.00	7,081.23	3,414.00	3,413.67	44.44	66.59	10.32	-1,056.67	3,214.28	6,308.14	6,225.35	82.79	76.191	
9,000.00	7,080.99	3,414.00	3,413.67	45.49	66.59	10.32	-1,056.67	3,214.28	6,389.55	6,306.22	83.33	76.674	
9,100.00	7,080.74	3,414.00	3,413.67	46.58	66.59	10.32	-1,056.67	3,214.28	6,471.49	6,387.63	83.86	77.170	
9,200.00	7,080.50	3,414.00	3,413.67	47.70	66.59	10.32	-1,056.67	3,214.28	6,553.93	6,469.55	84.37	77.679	
9,300.00	7,080.26	3,414.00	3,413.67	48.85	66.59	10.32	-1,056.67	3,214.28	6,636.84	6,551.98	84.87	78.201	
9,400.00	7,080.02	3,414.00	3,413.67	50.03	66.59	10.32	-1,056.67	3,214.28	6,720.23	6,634.88	85.35	78.736	
9,500.00	7,079.78	3,414.00	3,413.67	51.23	66.59	10.32	-1,056.67	3,214.28	6,804.06	6,718.24	85.82	79.281	
9,600.00	7,079.54	3,414.00	3,413.67	52.45	66.59	10.32	-1,056.67	3,214.28	6,888.32	6,802.04	86.28	79.838	
9,700.00	7,079.30	3,414.00	3,413.67	53.69	66.59	10.32	-1,056.67	3,214.28	6,973.00	6,886.28	86.72	80.405	
9,800.00	7,079.06	3,414.00	3,413.67	54.95	66.59	10.32	-1,056.67	3,214.28	7,058.08	6,970.93	87.16	80.982	
9,900.00	7,078.82	3,414.00	3,413.67	56.23	66.59	10.32	-1,056.67	3,214.28	7,143.55	7,055.97	87.58	81.568	
10,000.00	7,078.57	3,414.00	3,413.67	57.53	66.59	10.32	-1,056.67	3,214.28	7,229.39	7,141.40	87.99	82.163	
10,100.00	7,078.33	3,414.00	3,413.67	58.84	66.59	10.32	-1,056.67	3,214.28	7,315.59	7,227.20	88.39	82.767	
10,200.00	7,078.09	3,414.00	3,413.67	60.17	66.59	10.32	-1,056.67	3,214.28	7,402.13	7,313.36	88.78	83.379	
10,300.00	7,077.85	3,414.00	3,413.67	61.51	66.59	10.32	-1,056.67	3,214.28	7,489.02	7,399.86	89.16	83.999	
10,400.00	7,077.61	3,414.00	3,413.67	62.86	66.59	10.32	-1,056.67	3,214.28	7,576.22	7,486.70	89.53	84.627	
10,500.00	7,077.37	3,414.00	3,413.67	64.22	66.59	10.32	-1,056.67	3,214.28	7,663.74	7,573.85	89.89	85.261	
10,600.00	7,077.13	3,414.00	3,413.67	65.60	66.59	10.32	-1,056.67	3,214.28	7,751.56	7,661.32	90.24	85.902	
10,700.00	7,076.89	3,414.00	3,413.67	66.98	66.59	10.32	-1,056.67	3,214.28	7,839.67	7,749.09	90.58	86.550	
10,800.00	7,076.65	3,414.00	3,413.67	68.38	66.59	10.32	-1,056.67	3,214.28	7,928.06	7,837.15	90.91	87.204	
10,900.00	7,076.40	3,414.00	3,413.67	69.78	66.59	10.32	-1,056.67	3,214.28	8,016.73	7,925.49	91.24	87.864	
11,000.00	7,076.16	3,414.00	3,413.67	71.20	66.59	10.32	-1,056.67	3,214.28	8,105.66	8,014.10	91.56	88.529	
11,100.00	7,075.92	3,414.00	3,413.67	72.62	66.59	10.32	-1,056.67	3,214.28	8,194.85	8,102.97	91.87	89.200	
11,200.00	7,075.68	3,414.00	3,413.67	74.04	66.59	10.32	-1,056.67	3,214.28	8,284.28	8,192.10	92.17	89.876	
11,300.00	7,075.44	3,414.00	3,413.67	75.48	66.59	10.32	-1,056.67	3,214.28	8,373.95	8,281.48	92.47	90.557	
11,400.00	7,075.20	3,414.00	3,413.67	76.92	66.59	10.32	-1,056.67	3,214.28	8,463.85	8,371.09	92.76	91.242	
11,500.00	7,074.96	3,414.00	3,413.67	78.37	66.59	10.32	-1,056.67	3,214.28	8,553.98	8,460.93	93.05	91.932	
11,600.00	7,074.72	3,414.00	3,413.67	79.82	66.59	10.32	-1,056.67	3,214.28	8,644.32	8,551.00	93.32	92.626	
11,700.00	7,074.48	3,414.00	3,413.67	81.28	66.59	10.32	-1,056.67	3,214.28	8,734.88	8,641.28	93.60	93.324	
11,800.00	7,074.23	3,414.00	3,413.67	82.75	66.59	10.32	-1,056.67	3,214.28	8,825.64	8,731.77	93.86	94.026	
11,900.00	7,073.99	3,414.00	3,413.67	84.22	66.59	10.32	-1,056.67	3,214.28	8,916.59	8,822.47	94.12	94.732	
12,000.00	7,073.75	3,414.00	3,413.67	85.69	66.59	10.32	-1,056.67	3,214.28	9,007.74	8,913.36	94.38	95.441	
12,100.00	7,073.51	3,414.00	3,413.67	87.17	66.59	10.32	-1,056.67	3,214.28	9,099.07	9,004.44	94.63	96.154	
12,200.00	7,073.27	3,414.00	3,413.67	88.65	66.59	10.32	-1,056.67	3,214.28	9,190.59	9,095.71	94.88	96.869	
12,300.00	7,073.03	3,414.00	3,413.67	90.14	66.59	10.32	-1,056.67	3,214.28	9,282.28	9,187.16	95.12	97.588	
12,400.00	7,072.79	3,414.00	3,413.67	91.63	66.59	10.32	-1,056.67	3,214.28	9,374.14	9,278.78	95.35	98.310	
12,500.00	7,072.55	3,414.00	3,413.67	93.13	66.59	10.32	-1,056.67	3,214.28	9,466.16	9,370.58	95.58	99.034	
12,600.00	7,072.31	3,414.00	3,413.67	94.62	66.59	10.32	-1,056.67	3,214.28	9,558.35	9,462.53	95.81	99.761	
12,700.00	7,072.06	3,414.00	3,413.67	96.13	66.59	10.32	-1,056.67	3,214.28	9,650.69	9,554.65	96.04	100.491	
12,800.00	7,071.82	3,414.00	3,413.67	97.63	66.59	10.32	-1,056.67	3,214.28	9,743.18	9,646.92	96.26	101.223	
12,900.00	7,071.58	3,414.00	3,413.67	99.14	66.59	10.32	-1,056.67	3,214.28	9,835.82	9,739.35	96.47	101.957	
13,000.00	7,071.34	3,414.00	3,413.67	100.65	66.59	10.32	-1,056.67	3,214.28	9,928.60	9,831.91	96.68	102.693	
13,100.00	7,071.10	3,414.00	3,413.67	102.16	66.59	10.32	-1,056.67	3,214.28	10,021.52	9,924.63	96.89	103.431	
13,200.00	7,070.86	3,414.00	3,413.67	103.68	66.59	10.32	-1,056.67	3,214.28	10,114.57	10,017.48	97.10	104.171	
13,300.00	7,070.62	3,414.00	3,413.67	105.20	66.59	10.32	-1,056.67	3,214.28	10,207.76	10,110.46	97.30	104.913	
13,400.00	7,070.38	3,414.00	3,413.67	106.72	66.59	10.32	-1,056.67	3,214.28	10,301.07	10,203.58	97.50	105.657	
13,500.00	7,070.14	3,414.00	3,413.67	108.24	66.59	10.32	-1,056.67	3,214.28	10,394.51	10,296.82	97.69	106.402	
13,600.00	7,069.89	3,414.00	3,413.67	109.77	66.59	10.32	-1,056.67	3,214.28	10,488.07	10,390.19	97.88	107.149	
13,700.00	7,069.65	3,414.00	3,413.67	111.30	66.59	10.32	-1,056.67	3,214.28	10,581.75	10,483.68	98.07	107.897	
13,800.00	7,069.41	3,414.00	3,413.67	112.83	66.59	10.32	-1,056.67	3,214.28	10,675.54	10,577.28	98.26	108.647	
13,900.00	7,069.17	3,414.00	3,413.67	114.36	66.59	10.32	-1,056.67	3,214.28	10,769.44	10,671.00	98.44	109.398	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,000.00	7,068.93	3,414.00	3,413.67	115.89	66.59	10.32	-1,056.67	3,214.28	10,863.46	10,764.83	98.62	110.150	
14,100.00	7,068.69	3,414.00	3,413.67	117.43	66.59	10.32	-1,056.67	3,214.28	10,957.58	10,858.77	98.80	110.903	
14,200.00	7,068.45	3,414.00	3,413.67	118.97	66.59	10.32	-1,056.67	3,214.28	11,051.80	10,952.82	98.98	111.657	
14,300.00	7,068.21	3,414.00	3,413.67	120.50	66.59	10.32	-1,056.67	3,214.28	11,146.12	11,046.97	99.15	112.413	
14,400.00	7,067.97	3,414.00	3,413.67	122.05	66.59	10.32	-1,056.67	3,214.28	11,240.54	11,141.22	99.33	113.169	
14,500.00	7,067.72	3,414.00	3,413.67	123.59	66.59	10.32	-1,056.67	3,214.28	11,335.06	11,235.56	99.50	113.926	
14,600.00	7,067.48	3,414.00	3,413.67	125.13	66.59	10.32	-1,056.67	3,214.28	11,429.67	11,330.01	99.66	114.684	
14,700.00	7,067.24	3,414.00	3,413.67	126.68	66.59	10.32	-1,056.67	3,214.28	11,524.37	11,424.54	99.83	115.442	
14,800.00	7,067.00	3,414.00	3,413.67	128.22	66.59	10.32	-1,056.67	3,214.28	11,619.16	11,519.17	99.99	116.201	
14,900.00	7,066.76	3,414.00	3,413.67	129.77	66.59	10.32	-1,056.67	3,214.28	11,714.03	11,613.88	100.15	116.961	
15,000.00	7,066.52	3,414.00	3,413.67	131.32	66.59	10.32	-1,056.67	3,214.28	11,809.00	11,708.68	100.31	117.721	
15,100.00	7,066.28	3,414.00	3,413.67	132.87	66.59	10.32	-1,056.67	3,214.28	11,904.04	11,803.57	100.47	118.482	
15,200.00	7,066.04	3,414.00	3,413.67	134.42	66.59	10.32	-1,056.67	3,214.28	11,999.16	11,898.53	100.63	119.243	
15,300.00	7,065.80	3,414.00	3,413.67	135.97	66.59	10.32	-1,056.67	3,214.28	12,094.37	11,993.58	100.78	120.004	
15,400.00	7,065.55	3,414.00	3,413.67	137.53	66.59	10.32	-1,056.67	3,214.28	12,189.64	12,088.71	100.94	120.766	
15,500.00	7,065.31	3,414.00	3,413.67	139.08	66.59	10.32	-1,056.67	3,214.28	12,285.00	12,183.91	101.09	121.528	
15,600.00	7,065.07	3,414.00	3,413.67	140.64	66.59	10.32	-1,056.67	3,214.28	12,380.43	12,279.19	101.24	122.291	
15,700.00	7,064.83	3,414.00	3,413.67	142.20	66.59	10.32	-1,056.67	3,214.28	12,475.93	12,374.54	101.39	123.053	
15,800.00	7,064.59	3,414.00	3,413.67	143.75	66.59	10.32	-1,056.67	3,214.28	12,571.50	12,469.96	101.53	123.816	
15,900.00	7,064.35	3,414.00	3,413.67	145.31	66.59	10.32	-1,056.67	3,214.28	12,667.13	12,565.45	101.68	124.579	
16,000.00	7,064.11	3,414.00	3,413.67	146.87	66.59	10.32	-1,056.67	3,214.28	12,762.84	12,661.01	101.82	125.342	
16,100.00	7,063.87	3,414.00	3,413.67	148.43	66.59	10.32	-1,056.67	3,214.28	12,858.61	12,756.64	101.97	126.104	
16,200.00	7,063.63	3,414.00	3,413.67	149.99	66.59	10.32	-1,056.67	3,214.28	12,954.44	12,852.33	102.11	126.867	
16,300.00	7,063.38	3,414.00	3,413.67	151.56	66.59	10.32	-1,056.67	3,214.28	13,050.34	12,948.09	102.25	127.630	
16,400.00	7,063.14	3,414.00	3,413.67	153.12	66.59	10.32	-1,056.67	3,214.28	13,146.30	13,043.90	102.39	128.393	
16,500.00	7,062.90	3,414.00	3,413.67	154.68	66.59	10.32	-1,056.67	3,214.28	13,242.31	13,139.78	102.53	129.155	
16,600.00	7,062.66	3,414.00	3,413.67	156.25	66.59	10.32	-1,056.67	3,214.28	13,338.39	13,235.72	102.67	129.917	
16,700.00	7,062.42	3,414.00	3,413.67	157.81	66.59	10.32	-1,056.67	3,214.28	13,434.52	13,331.72	102.81	130.680	
16,800.00	7,062.18	3,414.00	3,413.67	159.38	66.59	10.32	-1,056.67	3,214.28	13,530.71	13,427.77	102.94	131.442	
16,874.30	7,062.00	3,414.00	3,413.67	160.54	66.59	10.32	-1,056.67	3,214.28	13,602.21	13,499.17	103.04	132.007	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	47.21	47.21	3.28	0.14	98.16	-1,195.61	8,337.02	8,422.37				
100.00	100.00	210.82	210.81	3.29	0.63	98.15	-1,194.16	8,335.82	8,421.46	8,417.53	3.92	2,147.268	
200.00	200.00	300.13	300.11	3.34	0.90	98.15	-1,193.72	8,334.83	8,420.30	8,416.07	4.24	1,987.588	
300.00	300.00	373.40	373.38	3.42	1.12	98.15	-1,193.76	8,334.21	8,419.47	8,414.93	4.54	1,854.511	
400.00	400.00	428.68	428.66	3.54	1.29	98.16	-1,194.36	8,333.86	8,419.01	8,414.19	4.82	1,745.205	
424.97	424.97	441.00	440.97	3.57	1.32	98.16	-1,194.61	8,333.82	8,419.00	8,414.10	4.90	1,719.724	CC
500.00	500.00	472.00	471.96	3.69	1.42	98.16	-1,195.44	8,333.75	8,419.17	8,414.06	5.10	1,649.717	ES
600.00	599.98	502.00	501.94	3.86	1.51	-83.74	-1,196.47	8,333.80	8,419.84	8,414.47	5.36	1,570.589	
700.00	699.84	546.55	546.44	4.04	1.64	-83.72	-1,198.42	8,334.21	8,420.88	8,415.20	5.68	1,482.880	
800.00	799.45	581.69	581.52	4.25	1.75	-83.70	-1,200.39	8,334.78	8,422.33	8,416.34	5.99	1,405.336	
900.00	898.70	620.00	619.74	4.48	1.86	-83.68	-1,202.91	8,335.64	8,424.14	8,417.80	6.34	1,328.352	
1,000.00	997.47	651.00	650.65	4.74	1.95	-83.66	-1,205.15	8,336.53	8,426.34	8,419.64	6.69	1,258.795	
1,100.00	1,095.62	681.00	680.53	5.03	2.04	-83.63	-1,207.58	8,337.56	8,428.93	8,421.86	7.07	1,192.226	
1,200.00	1,193.06	713.00	712.38	5.35	2.14	-83.60	-1,210.45	8,338.88	8,431.95	8,424.47	7.48	1,127.222	
1,268.36	1,259.18	730.86	730.14	5.58	2.19	-83.57	-1,212.16	8,339.75	8,434.31	8,426.54	7.77	1,086.127	
1,300.00	1,289.69	744.00	743.18	5.70	2.23	-83.59	-1,213.51	8,340.46	8,435.51	8,427.59	7.92	1,065.567	
1,400.00	1,386.11	775.00	773.96	6.07	2.33	-83.62	-1,216.81	8,342.24	8,439.79	8,431.41	8.38	1,007.564	
1,500.00	1,482.54	806.00	804.70	6.45	2.42	-83.66	-1,220.31	8,344.18	8,444.82	8,435.97	8.85	953.838	
1,600.00	1,578.96	836.00	834.39	6.86	2.51	-83.69	-1,224.00	8,346.34	8,450.76	8,441.42	9.34	904.640	
1,700.00	1,675.39	855.77	853.92	7.27	2.57	-83.71	-1,226.59	8,347.92	8,457.58	8,447.77	9.81	862.160	
1,800.00	1,771.81	898.00	895.60	7.70	2.69	-83.75	-1,232.38	8,351.58	8,465.22	8,454.87	10.36	817.404	
1,900.00	1,868.24	930.00	927.12	8.13	2.79	-83.78	-1,237.04	8,354.53	8,473.58	8,462.70	10.88	778.888	
2,000.00	1,964.66	961.00	957.59	8.57	2.88	-83.80	-1,241.86	8,357.53	8,482.67	8,471.27	11.41	743.757	
2,100.00	2,061.09	1,018.57	1,014.01	9.02	3.06	-83.85	-1,251.65	8,363.48	8,492.49	8,480.48	12.02	706.595	
2,200.00	2,157.51	1,056.00	1,050.57	9.47	3.17	-83.87	-1,258.58	8,367.47	8,502.89	8,490.32	12.57	676.192	
2,300.00	2,253.94	1,093.02	1,086.64	9.93	3.28	-83.89	-1,265.80	8,371.66	8,514.04	8,500.91	13.13	648.310	
2,400.00	2,350.36	1,118.00	1,110.92	10.39	3.35	-83.90	-1,270.90	8,374.61	8,525.93	8,512.28	13.66	624.352	
2,500.00	2,446.79	1,178.00	1,169.11	10.86	3.54	-83.93	-1,283.39	8,382.21	8,538.59	8,524.30	14.29	597.478	
2,600.00	2,543.21	1,222.11	1,211.83	11.33	3.67	-83.96	-1,292.65	8,388.12	8,551.86	8,536.99	14.88	574.775	
2,700.00	2,639.64	1,275.07	1,263.05	11.80	3.83	-83.98	-1,303.99	8,395.31	8,565.56	8,550.07	15.50	552.765	
2,800.00	2,736.06	1,338.50	1,324.29	12.27	4.02	-84.01	-1,317.91	8,404.29	8,579.85	8,563.70	16.15	531.324	
2,900.00	2,832.49	1,402.69	1,386.19	12.75	4.21	-84.04	-1,332.17	8,413.49	8,594.41	8,577.61	16.80	511.448	
3,000.00	2,928.91	1,471.97	1,452.79	13.23	4.42	-84.06	-1,348.31	8,423.69	8,609.46	8,591.98	17.48	492.596	
3,100.00	3,025.34	1,636.79	1,610.97	13.71	4.91	-84.11	-1,388.11	8,447.36	8,624.31	8,605.85	18.46	467.176	
3,200.00	3,121.76	2,020.00	1,980.86	14.19	6.06	-84.25	-1,475.24	8,496.40	8,638.29	8,618.15	20.14	428.855	
3,300.00	3,218.18	2,050.00	2,009.88	14.67	6.15	-84.26	-1,482.05	8,499.72	8,649.78	8,629.08	20.70	417.888	
3,400.00	3,314.61	2,114.00	2,071.94	15.15	6.34	-84.28	-1,495.71	8,507.34	8,661.85	8,640.49	21.36	405.450	
3,500.00	3,411.03	2,199.77	2,155.21	15.64	6.60	-84.33	-1,513.29	8,518.02	8,674.32	8,652.22	22.10	392.522	
3,600.00	3,507.46	2,412.60	2,361.49	16.12	7.24	-84.42	-1,559.44	8,542.81	8,686.11	8,662.86	23.24	373.707	
3,700.00	3,603.88	3,512.00	3,448.77	16.61	10.54	-85.65	-1,673.04	8,615.06	8,691.38	8,664.24	27.13	320.312	
3,704.45	3,608.17	3,512.00	3,448.77	16.63	10.54	-85.65	-1,673.04	8,615.06	8,691.38	8,664.22	27.16	320.057	
3,800.00	3,700.31	3,512.00	3,448.77	17.10	10.54	-85.65	-1,673.04	8,615.06	8,691.91	8,664.29	27.62	314.700	
3,900.00	3,796.73	3,512.00	3,448.77	17.59	10.54	-85.65	-1,673.04	8,615.06	8,693.60	8,665.49	28.10	309.337	
4,000.00	3,893.16	3,512.00	3,448.77	18.07	10.54	-85.65	-1,673.04	8,615.06	8,696.43	8,667.84	28.59	304.214	
4,100.00	3,989.58	3,512.00	3,448.77	18.56	10.54	-85.65	-1,673.04	8,615.06	8,700.41	8,671.35	29.07	299.318	
4,200.00	4,086.01	3,512.00	3,448.77	19.05	10.54	-85.65	-1,673.04	8,615.06	8,705.54	8,676.00	29.55	294.641	
4,300.00	4,182.43	3,512.00	3,448.77	19.55	10.54	-85.65	-1,673.04	8,615.06	8,711.82	8,681.80	30.02	290.173	
4,400.00	4,278.86	3,512.00	3,448.77	20.04	10.54	-85.65	-1,673.04	8,615.06	8,719.24	8,688.74	30.50	285.905	
4,500.00	4,375.28	3,512.00	3,448.77	20.53	10.54	-85.65	-1,673.04	8,615.06	8,727.79	8,696.82	30.97	281.829	
4,600.00	4,471.71	3,512.00	3,448.77	21.02	10.54	-85.65	-1,673.04	8,615.06	8,737.49	8,706.05	31.44	277.936	
4,700.00	4,568.13	3,512.00	3,448.77	21.51	10.54	-85.65	-1,673.04	8,615.06	8,748.31	8,716.41	31.90	274.218	
4,800.00	4,664.56	3,512.00	3,448.77	22.01	10.54	-85.65	-1,673.04	8,615.06	8,760.27	8,727.90	32.37	270.668	

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 752H
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 752H	**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
4,900.00	4,760.98	3,512.00	3,448.77	22.50	10.54	-85.65	-1,673.04	8,615.06	8,773.34	8,740.52	32.82	267.280	
5,000.00	4,857.41	3,512.00	3,448.77	22.99	10.54	-85.65	-1,673.04	8,615.06	8,787.54	8,754.26	33.28	264.046	
5,100.00	4,953.83	3,512.00	3,448.77	23.49	10.54	-85.65	-1,673.04	8,615.06	8,802.85	8,769.12	33.73	260.961	
5,200.00	5,050.25	3,512.00	3,448.77	23.98	10.54	-85.65	-1,673.04	8,615.06	8,819.26	8,785.08	34.18	258.017	
5,300.00	5,146.68	3,512.00	3,448.77	24.48	10.54	-85.65	-1,673.04	8,615.06	8,836.78	8,802.16	34.63	255.210	
5,400.00	5,243.10	3,512.00	3,448.77	24.97	10.54	-85.65	-1,673.04	8,615.06	8,855.39	8,820.33	35.07	252.533	
5,500.00	5,339.53	3,512.00	3,448.77	25.47	10.54	-85.65	-1,673.04	8,615.06	8,875.09	8,839.59	35.50	249.982	
5,600.00	5,435.95	3,512.00	3,448.77	25.96	10.54	-85.65	-1,673.04	8,615.06	8,895.88	8,859.94	35.94	247.552	
5,700.00	5,532.38	3,512.00	3,448.77	26.46	10.54	-85.65	-1,673.04	8,615.06	8,917.73	8,881.37	36.36	245.237	
5,800.00	5,628.80	3,512.00	3,448.77	26.96	10.54	-85.65	-1,673.04	8,615.06	8,940.65	8,903.86	36.79	243.034	
5,900.00	5,725.23	3,512.00	3,448.77	27.45	10.54	-85.65	-1,673.04	8,615.06	8,964.62	8,927.42	37.21	240.937	
6,000.00	5,821.65	3,512.00	3,448.77	27.95	10.54	-85.65	-1,673.04	8,615.06	8,989.65	8,952.03	37.62	238.943	
6,100.00	5,918.08	3,512.00	3,448.77	28.45	10.54	-85.65	-1,673.04	8,615.06	9,015.71	8,977.68	38.03	237.048	
6,200.00	6,014.50	3,512.00	3,448.77	28.94	10.54	-85.65	-1,673.04	8,615.06	9,042.81	9,004.37	38.44	235.248	
6,300.00	6,110.93	3,512.00	3,448.77	29.44	10.54	-85.65	-1,673.04	8,615.06	9,070.92	9,032.08	38.84	233.539	
6,400.00	6,207.35	3,512.00	3,448.77	29.94	10.54	-85.65	-1,673.04	8,615.06	9,100.05	9,060.81	39.24	231.917	
6,500.00	6,303.78	3,512.00	3,448.77	30.43	10.54	-85.65	-1,673.04	8,615.06	9,130.18	9,090.55	39.63	230.381	
6,600.00	6,400.20	3,512.00	3,448.77	30.93	10.54	-85.65	-1,673.04	8,615.06	9,161.31	9,121.29	40.02	228.925	
6,677.76	6,475.18	3,512.00	3,448.77	31.32	10.54	-85.65	-1,673.04	8,615.06	9,186.19	9,145.87	40.32	227.848	
6,700.00	6,496.62	3,512.00	3,448.77	31.43	10.54	-92.79	-1,673.04	8,615.06	9,193.78	9,153.37	40.40	227.554	
6,750.00	6,544.66	3,512.00	3,448.77	31.68	10.54	-107.51	-1,673.04	8,615.06	9,213.62	9,173.03	40.59	226.979	
6,800.00	6,592.24	3,512.00	3,448.77	31.92	10.54	-119.31	-1,673.04	8,615.06	9,237.20	9,196.42	40.78	226.529	
6,850.00	6,639.07	3,512.00	3,448.77	32.16	10.54	-128.12	-1,673.04	8,615.06	9,264.34	9,223.39	40.95	226.216	
6,900.00	6,684.86	3,512.00	3,448.77	32.40	10.54	-134.51	-1,673.04	8,615.06	9,294.84	9,253.72	41.12	226.040	
6,950.00	6,729.32	3,512.00	3,448.77	32.62	10.54	-139.06	-1,673.04	8,615.06	9,328.48	9,287.21	41.28	225.997 SF	
7,000.00	6,772.19	3,512.00	3,448.77	32.84	10.54	-142.25	-1,673.04	8,615.06	9,365.03	9,323.60	41.42	226.083	
7,050.00	6,813.20	3,512.00	3,448.77	33.05	10.54	-144.36	-1,673.04	8,615.06	9,404.22	9,362.66	41.56	226.291	
7,100.00	6,852.09	3,512.00	3,448.77	33.26	10.54	-145.55	-1,673.04	8,615.06	9,445.78	9,404.09	41.68	226.617	
7,150.00	6,888.63	3,512.00	3,448.77	33.45	10.54	-145.83	-1,673.04	8,615.06	9,489.42	9,447.63	41.79	227.052	
7,200.00	6,922.59	3,512.00	3,448.77	33.64	10.54	-145.07	-1,673.04	8,615.06	9,534.86	9,492.96	41.89	227.590	
7,250.00	6,953.76	3,512.00	3,448.77	33.82	10.54	-142.87	-1,673.04	8,615.06	9,581.78	9,539.79	41.98	228.220	
7,300.00	6,981.95	3,512.00	3,448.77	34.00	10.54	-138.23	-1,673.04	8,615.06	9,629.88	9,587.81	42.06	228.935	
7,350.00	7,006.99	3,512.00	3,448.77	34.17	10.54	-128.50	-1,673.04	8,615.06	9,678.84	9,636.71	42.13	229.723	
7,400.00	7,028.72	3,512.00	3,448.77	34.35	10.54	-106.17	-1,673.04	8,615.06	9,728.36	9,686.16	42.19	230.575	
7,450.00	7,047.00	3,512.00	3,448.77	34.52	10.54	-62.94	-1,673.04	8,615.06	9,778.11	9,735.87	42.24	231.477	
7,500.00	7,061.73	3,512.00	3,448.77	34.69	10.54	-28.18	-1,673.04	8,615.06	9,827.81	9,785.52	42.29	232.416	
7,550.00	7,072.82	3,512.00	3,448.77	34.86	10.54	-12.47	-1,673.04	8,615.06	9,877.13	9,834.81	42.32	233.380	
7,600.00	7,080.18	3,512.00	3,448.77	35.04	10.54	-4.83	-1,673.04	8,615.06	9,925.78	9,883.43	42.35	234.355	
7,650.00	7,083.79	3,512.00	3,448.77	35.22	10.54	-0.47	-1,673.04	8,615.06	9,973.49	9,931.10	42.38	235.324	
7,674.30	7,084.18	3,512.00	3,448.77	35.32	10.54	1.04	-1,673.04	8,615.06	9,996.24	9,953.84	42.39	235.795	
7,700.00	7,084.12	3,512.00	3,448.77	35.42	10.54	1.04	-1,673.04	8,615.06	10,020.15	9,977.74	42.41	236.279	
7,800.00	7,083.88	3,512.00	3,448.77	35.84	10.54	1.04	-1,673.04	8,615.06	10,113.25	10,070.78	42.47	238.135	
7,900.00	7,083.64	3,512.00	3,448.77	36.34	10.54	1.04	-1,673.04	8,615.06	10,206.48	10,163.95	42.53	239.981	
8,000.00	7,083.40	3,512.00	3,448.77	36.90	10.54	1.04	-1,673.04	8,615.06	10,299.83	10,257.24	42.59	241.818	
8,100.00	7,083.16	3,512.00	3,448.77	37.52	10.54	1.04	-1,673.04	8,615.06	10,393.31	10,350.66	42.66	243.645	
8,200.00	7,082.91	3,512.00	3,448.77	38.21	10.54	1.04	-1,673.04	8,615.06	10,486.92	10,444.19	42.72	245.463	
8,300.00	7,082.67	3,512.00	3,448.77	38.95	10.54	1.04	-1,673.04	8,615.06	10,580.64	10,537.85	42.79	247.272	
8,400.00	7,082.43	3,512.00	3,448.77	39.74	10.54	1.04	-1,673.04	8,615.06	10,674.47	10,631.61	42.86	249.072	
8,500.00	7,082.19	3,512.00	3,448.77	40.59	10.54	1.04	-1,673.04	8,615.06	10,768.41	10,725.49	42.93	250.864	
8,600.00	7,081.95	3,512.00	3,448.77	41.49	10.54	1.04	-1,673.04	8,615.06	10,862.46	10,819.47	42.99	252.647	
8,700.00	7,081.71	3,512.00	3,448.77	42.43	10.54	1.04	-1,673.04	8,615.06	10,956.62	10,913.56	43.06	254.422	
8,800.00	7,081.47	3,512.00	3,448.77	43.41	10.54	1.04	-1,673.04	8,615.06	11,050.88	11,007.74	43.14	256.189	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,900.00	7,081.23	3,512.00	3,448.77	44.44	10.54	1.04	-1,673.04	8,615.06	11,145.24	11,102.03	43.21	257.948	
9,000.00	7,080.99	3,512.00	3,448.77	45.49	10.54	1.04	-1,673.04	8,615.06	11,239.70	11,196.42	43.28	259.700	
9,100.00	7,080.74	3,512.00	3,448.77	46.58	10.54	1.04	-1,673.04	8,615.06	11,334.25	11,290.90	43.35	261.443	
9,200.00	7,080.50	3,512.00	3,448.77	47.70	10.54	1.04	-1,673.04	8,615.06	11,428.89	11,385.47	43.43	263.179	
9,300.00	7,080.26	3,512.00	3,448.77	48.85	10.54	1.04	-1,673.04	8,615.06	11,523.63	11,480.13	43.50	264.907	
9,400.00	7,080.02	3,512.00	3,448.77	50.03	10.54	1.04	-1,673.04	8,615.06	11,618.45	11,574.88	43.58	266.628	
9,500.00	7,079.78	3,512.00	3,448.77	51.23	10.54	1.04	-1,673.04	8,615.06	11,713.36	11,669.71	43.65	268.342	
9,600.00	7,079.54	3,512.00	3,448.77	52.45	10.54	1.04	-1,673.04	8,615.06	11,808.36	11,764.63	43.73	270.048	
9,700.00	7,079.30	3,512.00	3,448.77	53.69	10.54	1.04	-1,673.04	8,615.06	11,903.43	11,859.63	43.80	271.748	
9,800.00	7,079.06	3,512.00	3,448.77	54.95	10.54	1.04	-1,673.04	8,615.06	11,998.59	11,954.71	43.88	273.440	
9,900.00	7,078.82	3,512.00	3,448.77	56.23	10.54	1.04	-1,673.04	8,615.06	12,093.82	12,049.87	43.96	275.126	
10,000.00	7,078.57	3,512.00	3,448.77	57.53	10.54	1.04	-1,673.04	8,615.06	12,189.14	12,145.10	44.04	276.804	
10,100.00	7,078.33	3,512.00	3,448.77	58.84	10.54	1.04	-1,673.04	8,615.06	12,284.52	12,240.41	44.11	278.476	
10,200.00	7,078.09	3,512.00	3,448.77	60.17	10.54	1.04	-1,673.04	8,615.06	12,379.98	12,335.79	44.19	280.141	
10,300.00	7,077.85	3,512.00	3,448.77	61.51	10.54	1.04	-1,673.04	8,615.06	12,475.51	12,431.24	44.27	281.799	
10,400.00	7,077.61	3,512.00	3,448.77	62.86	10.54	1.04	-1,673.04	8,615.06	12,571.11	12,526.76	44.35	283.451	
10,500.00	7,077.37	3,512.00	3,448.77	64.22	10.54	1.04	-1,673.04	8,615.06	12,666.77	12,622.34	44.43	285.097	
10,600.00	7,077.13	3,512.00	3,448.77	65.60	10.54	1.04	-1,673.04	8,615.06	12,762.51	12,718.00	44.51	286.735	
10,700.00	7,076.89	3,512.00	3,448.77	66.98	10.54	1.04	-1,673.04	8,615.06	12,858.30	12,813.71	44.59	288.368	
10,800.00	7,076.65	3,512.00	3,448.77	68.38	10.54	1.04	-1,673.04	8,615.06	12,954.17	12,909.49	44.67	289.994	
10,900.00	7,076.40	3,512.00	3,448.77	69.78	10.54	1.04	-1,673.04	8,615.06	13,050.09	13,005.34	44.75	291.614	
11,000.00	7,076.16	3,512.00	3,448.77	71.20	10.54	1.04	-1,673.04	8,615.06	13,146.07	13,101.24	44.83	293.227	
11,100.00	7,075.92	3,512.00	3,448.77	72.62	10.54	1.04	-1,673.04	8,615.06	13,242.12	13,197.20	44.91	294.834	
11,200.00	7,075.68	3,512.00	3,448.77	74.04	10.54	1.04	-1,673.04	8,615.06	13,338.22	13,293.22	45.00	296.435	
11,300.00	7,075.44	3,512.00	3,448.77	75.48	10.54	1.04	-1,673.04	8,615.06	13,434.38	13,389.30	45.08	298.030	
11,400.00	7,075.20	3,512.00	3,448.77	76.92	10.54	1.04	-1,673.04	8,615.06	13,530.59	13,485.43	45.16	299.618	
11,500.00	7,074.96	3,512.00	3,448.77	78.37	10.54	1.04	-1,673.04	8,615.06	13,626.86	13,581.62	45.24	301.201	
11,600.00	7,074.72	3,512.00	3,448.77	79.82	10.54	1.04	-1,673.04	8,615.06	13,723.18	13,677.86	45.32	302.777	
11,700.00	7,074.48	3,512.00	3,448.77	81.28	10.54	1.04	-1,673.04	8,615.06	13,819.56	13,774.15	45.41	304.347	
11,800.00	7,074.23	3,512.00	3,448.77	82.75	10.54	1.04	-1,673.04	8,615.06	13,915.98	13,870.49	45.49	305.912	
11,900.00	7,073.99	3,512.00	3,448.77	84.22	10.54	1.04	-1,673.04	8,615.06	14,012.46	13,966.89	45.57	307.470	
12,000.00	7,073.75	3,512.00	3,448.77	85.69	10.54	1.04	-1,673.04	8,615.06	14,108.99	14,063.33	45.66	309.022	
12,100.00	7,073.51	3,512.00	3,448.77	87.17	10.54	1.04	-1,673.04	8,615.06	14,205.56	14,159.82	45.74	310.568	
12,200.00	7,073.27	3,512.00	3,448.77	88.65	10.54	1.04	-1,673.04	8,615.06	14,302.18	14,256.35	45.82	312.109	
12,300.00	7,073.03	3,512.00	3,448.77	90.14	10.54	1.04	-1,673.04	8,615.06	14,398.84	14,352.94	45.91	313.643	
12,400.00	7,072.79	3,512.00	3,448.77	91.63	10.54	1.04	-1,673.04	8,615.06	14,495.56	14,449.56	45.99	315.171	
12,500.00	7,072.55	3,512.00	3,448.77	93.13	10.54	1.04	-1,673.04	8,615.06	14,592.31	14,546.24	46.08	316.694	
12,600.00	7,072.31	3,512.00	3,448.77	94.62	10.54	1.04	-1,673.04	8,615.06	14,689.11	14,642.95	46.16	318.211	
12,700.00	7,072.06	3,512.00	3,448.77	96.13	10.54	1.04	-1,673.04	8,615.06	14,785.95	14,739.71	46.25	319.722	
12,800.00	7,071.82	3,512.00	3,448.77	97.63	10.54	1.04	-1,673.04	8,615.06	14,882.84	14,836.51	46.33	321.226	
12,900.00	7,071.58	3,512.00	3,448.77	99.14	10.54	1.04	-1,673.04	8,615.06	14,979.76	14,933.35	46.42	322.726	
13,000.00	7,071.34	3,512.00	3,448.77	100.65	10.54	1.04	-1,673.04	8,615.06	15,076.73	15,030.22	46.50	324.219	
13,100.00	7,071.10	3,512.00	3,448.77	102.16	10.54	1.04	-1,673.04	8,615.06	15,173.73	15,127.14	46.59	325.706	
13,200.00	7,070.86	3,512.00	3,448.77	103.68	10.54	1.04	-1,673.04	8,615.06	15,270.77	15,224.10	46.67	327.188	
13,300.00	7,070.62	3,512.00	3,448.77	105.20	10.54	1.04	-1,673.04	8,615.06	15,367.85	15,321.10	46.76	328.664	
13,400.00	7,070.38	3,512.00	3,448.77	106.72	10.54	1.04	-1,673.04	8,615.06	15,464.97	15,418.13	46.84	330.134	
13,500.00	7,070.14	3,512.00	3,448.77	108.24	10.54	1.04	-1,673.04	8,615.06	15,562.13	15,515.20	46.93	331.598	
13,600.00	7,069.89	3,512.00	3,448.77	109.77	10.54	1.04	-1,673.04	8,615.06	15,659.32	15,612.30	47.02	333.056	
13,700.00	7,069.65	3,512.00	3,448.77	111.30	10.54	1.04	-1,673.04	8,615.06	15,756.54	15,709.44	47.10	334.509	
13,800.00	7,069.41	3,512.00	3,448.77	112.83	10.54	1.04	-1,673.04	8,615.06	15,853.80	15,806.61	47.19	335.956	
13,900.00	7,069.17	3,512.00	3,448.77	114.36	10.54	1.04	-1,673.04	8,615.06	15,951.10	15,903.82	47.28	337.397	
14,000.00	7,068.93	3,512.00	3,448.77	115.89	10.54	1.04	-1,673.04	8,615.06	16,048.42	16,001.06	47.36	338.833	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,100.00	7,068.69	3,512.00	3,448.77	117.43	10.54	1.04	-1,673.04	8,615.06	16,145.78	16,098.33	47.45	340.262	
14,200.00	7,068.45	3,512.00	3,448.77	118.97	10.54	1.04	-1,673.04	8,615.06	16,243.18	16,195.64	47.54	341.686	
14,300.00	7,068.21	3,512.00	3,448.77	120.50	10.54	1.04	-1,673.04	8,615.06	16,340.60	16,292.97	47.63	343.105	
14,400.00	7,067.97	3,512.00	3,448.77	122.05	10.54	1.04	-1,673.04	8,615.06	16,438.05	16,390.34	47.71	344.517	
14,500.00	7,067.72	3,512.00	3,448.77	123.59	10.54	1.04	-1,673.04	8,615.06	16,535.54	16,487.74	47.80	345.924	
14,600.00	7,067.48	3,512.00	3,448.77	125.13	10.54	1.04	-1,673.04	8,615.06	16,633.05	16,585.16	47.89	347.325	
14,700.00	7,067.24	3,512.00	3,448.77	126.68	10.54	1.04	-1,673.04	8,615.06	16,730.60	16,682.62	47.98	348.721	
14,800.00	7,067.00	3,512.00	3,448.77	128.22	10.54	1.04	-1,673.04	8,615.06	16,828.17	16,780.10	48.07	350.110	
14,900.00	7,066.76	3,512.00	3,448.77	129.77	10.54	1.04	-1,673.04	8,615.06	16,925.77	16,877.62	48.15	351.494	
15,000.00	7,066.52	3,512.00	3,448.77	131.32	10.54	1.04	-1,673.04	8,615.06	17,023.40	16,975.16	48.24	352.873	
15,100.00	7,066.28	3,512.00	3,448.77	132.87	10.54	1.04	-1,673.04	8,615.06	17,121.06	17,072.72	48.33	354.245	
15,200.00	7,066.04	3,512.00	3,448.77	134.42	10.54	1.04	-1,673.04	8,615.06	17,218.74	17,170.32	48.42	355.612	
15,300.00	7,065.80	3,512.00	3,448.77	135.97	10.54	1.04	-1,673.04	8,615.06	17,316.45	17,267.94	48.51	356.974	
15,400.00	7,065.55	3,512.00	3,448.77	137.53	10.54	1.04	-1,673.04	8,615.06	17,414.18	17,365.59	48.60	358.329	
15,500.00	7,065.31	3,512.00	3,448.77	139.08	10.54	1.04	-1,673.04	8,615.06	17,511.95	17,463.26	48.69	359.679	
15,600.00	7,065.07	3,512.00	3,448.77	140.64	10.54	1.04	-1,673.04	8,615.06	17,609.73	17,560.95	48.78	361.024	
15,700.00	7,064.83	3,512.00	3,448.77	142.20	10.54	1.04	-1,673.04	8,615.06	17,707.54	17,658.68	48.87	362.362	
15,800.00	7,064.59	3,512.00	3,448.77	143.75	10.54	1.04	-1,673.04	8,615.06	17,805.38	17,756.42	48.96	363.695	
15,900.00	7,064.35	3,512.00	3,448.77	145.31	10.54	1.04	-1,673.04	8,615.06	17,903.24	17,854.19	49.05	365.023	
16,000.00	7,064.11	3,512.00	3,448.77	146.87	10.54	1.04	-1,673.04	8,615.06	18,001.12	17,951.98	49.14	366.345	
16,100.00	7,063.87	3,512.00	3,448.77	148.43	10.54	1.04	-1,673.04	8,615.06	18,099.03	18,049.80	49.23	367.661	
16,200.00	7,063.63	3,512.00	3,448.77	149.99	10.54	1.04	-1,673.04	8,615.06	18,196.96	18,147.64	49.32	368.971	
16,300.00	7,063.38	3,512.00	3,448.77	151.56	10.54	1.04	-1,673.04	8,615.06	18,294.91	18,245.50	49.41	370.276	
16,400.00	7,063.14	3,512.00	3,448.77	153.12	10.54	1.04	-1,673.04	8,615.06	18,392.88	18,343.38	49.50	371.576	
16,500.00	7,062.90	3,512.00	3,448.77	154.68	10.54	1.04	-1,673.04	8,615.06	18,490.88	18,441.28	49.59	372.870	
16,600.00	7,062.66	3,512.00	3,448.77	156.25	10.54	1.04	-1,673.04	8,615.06	18,588.89	18,539.21	49.68	374.158	
16,700.00	7,062.42	3,512.00	3,448.77	157.81	10.54	1.04	-1,673.04	8,615.06	18,686.93	18,637.16	49.77	375.440	
16,800.00	7,062.18	3,512.00	3,448.77	159.38	10.54	1.04	-1,673.04	8,615.06	18,784.99	18,735.12	49.86	376.717	
16,874.30	7,062.00	3,512.00	3,448.77	160.54	10.54	1.04	-1,673.04	8,615.06	18,857.85	18,807.92	49.93	377.663	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	163.00	163.00	3.28	1.73	95.82	-606.23	5,944.14	5,974.97				
100.00	100.00	263.01	263.00	3.29	3.05	95.82	-606.23	5,944.14	5,974.97	5,968.63	6.34	942.235	
200.00	200.00	363.01	363.00	3.34	5.02	95.82	-606.23	5,944.14	5,974.97	5,966.62	8.35	715.179	
300.00	300.00	463.01	463.00	3.42	6.99	95.82	-606.23	5,944.14	5,974.97	5,964.57	10.40	574.246	
340.31	340.31	502.90	502.88	3.46	7.77	95.81	-605.16	5,944.14	5,974.86	5,963.63	11.23	531.902	
400.00	400.00	561.35	561.33	3.54	8.92	95.81	-605.26	5,944.14	5,974.87	5,962.42	12.46	479.634	
500.00	500.00	659.28	659.25	3.69	10.85	95.82	-605.70	5,944.14	5,974.92	5,960.39	14.53	411.140	
600.00	599.98	763.04	762.98	3.86	12.86	-86.12	-606.23	5,944.14	5,974.85	5,958.13	16.72	357.366	
700.00	699.84	862.89	862.84	4.04	14.76	-86.18	-606.23	5,944.14	5,974.50	5,955.70	18.80	317.791	
800.00	799.45	962.51	962.45	4.25	16.65	-86.27	-606.23	5,944.14	5,973.93	5,953.02	20.90	285.813	
900.00	898.70	1,060.93	1,060.87	4.48	18.52	-86.41	-605.75	5,944.14	5,973.09	5,950.09	23.01	259.639	
1,000.00	997.47	1,158.76	1,158.70	4.74	20.38	-86.57	-605.97	5,944.14	5,972.15	5,947.02	25.12	237.710	
1,100.00	1,095.62	1,258.71	1,258.62	5.03	22.30	-86.77	-606.23	5,944.14	5,971.04	5,943.71	27.33	218.469	
1,200.00	1,193.06	1,356.14	1,356.06	5.35	24.22	-87.01	-606.23	5,944.14	5,969.79	5,940.22	29.57	201.906	
1,268.36	1,259.18	1,422.27	1,422.18	5.58	25.52	-87.19	-606.23	5,944.14	5,968.88	5,937.78	31.10	191.906	
1,300.00	1,289.69	1,452.78	1,452.69	5.70	26.12	-87.26	-606.23	5,944.14	5,968.46	5,936.64	31.82	187.590	
1,400.00	1,386.11	1,548.55	1,548.45	6.07	28.01	-87.51	-605.41	5,944.14	5,967.14	5,933.07	34.07	175.127	
1,500.00	1,482.54	1,643.97	1,643.88	6.45	29.89	-87.76	-605.66	5,944.14	5,966.03	5,929.69	36.34	164.168	
1,600.00	1,578.96	1,739.52	1,739.42	6.86	31.77	-87.99	-606.13	5,944.14	5,965.05	5,926.42	38.63	154.431	
1,700.00	1,675.39	1,838.52	1,838.39	7.27	33.72	-88.24	-606.23	5,944.14	5,964.15	5,923.16	40.99	145.498	
1,800.00	1,771.81	1,934.94	1,934.81	7.70	35.62	-88.49	-606.23	5,944.14	5,963.37	5,920.05	43.32	137.671	
1,900.00	1,868.24	2,031.13	2,031.00	8.13	37.51	-88.74	-605.43	5,944.14	5,962.66	5,917.01	45.65	130.631	
2,000.00	1,964.66	2,126.81	2,126.67	8.57	39.40	-88.98	-605.62	5,944.14	5,962.13	5,914.15	47.97	124.285	
2,100.00	2,061.09	2,222.61	2,222.47	9.02	41.29	-89.22	-606.05	5,944.14	5,961.72	5,911.41	50.31	118.508	
2,200.00	2,157.51	2,320.69	2,320.51	9.47	43.22	-89.47	-606.23	5,944.14	5,961.42	5,908.72	52.69	113.138	
2,300.00	2,253.94	2,417.11	2,416.94	9.93	45.12	-89.72	-606.23	5,944.14	5,961.22	5,906.17	55.05	108.289	
2,400.00	2,350.36	2,513.15	2,512.98	10.39	47.01	-89.97	-605.63	5,944.14	5,961.12	5,903.72	57.40	103.847	
2,406.84	2,356.96	2,519.71	2,519.53	10.43	47.14	-89.98	-605.64	5,944.14	5,961.12	5,903.56	57.56	103.557 CC	
2,500.00	2,446.79	2,609.09	2,608.90	10.86	48.90	-90.21	-605.96	5,944.14	5,961.18	5,901.42	59.76	99.755	
2,600.00	2,543.21	2,706.42	2,706.21	11.33	50.85	-90.45	-606.23	5,944.14	5,961.35	5,899.17	62.18	95.875	
2,700.00	2,639.64	2,802.84	2,802.64	11.80	52.82	-90.70	-606.23	5,944.14	5,961.62	5,897.01	64.62	92.261	
2,800.00	2,736.06	2,899.14	2,898.93	12.27	54.78	-90.95	-605.60	5,944.14	5,962.01	5,894.95	67.06	88.912	
2,900.00	2,832.49	2,995.39	2,995.17	12.75	56.75	-91.19	-605.87	5,944.14	5,962.53	5,893.03	69.49	85.799	
3,000.00	2,928.91	3,092.17	3,091.91	13.23	58.75	-91.44	-606.23	5,944.14	5,963.16	5,891.19	71.97	82.857	
3,100.00	3,025.34	3,188.59	3,188.34	13.71	60.78	-91.68	-606.23	5,944.14	5,963.91	5,889.42	74.49	80.067	
3,200.00	3,121.76	3,285.04	3,284.78	14.19	62.82	-91.93	-605.52	5,944.14	5,964.77	5,887.77	77.01	77.460	
3,300.00	3,218.18	3,381.71	3,381.44	14.67	64.87	-92.18	-605.98	5,944.14	5,965.76	5,886.23	79.53	75.013	
3,400.00	3,314.61	3,477.92	3,477.61	15.15	66.90	-92.42	-606.23	5,944.14	5,966.86	5,884.81	82.05	72.724	
3,500.00	3,411.03	3,574.34	3,574.03	15.64	68.94	-92.66	-606.23	5,944.14	5,968.08	5,883.50	84.57	70.568 ES	
3,600.00	3,507.46	3,597.00	3,596.66	16.12	69.42	-92.72	-606.23	5,944.14	5,969.87	5,884.34	85.53	69.800	
3,700.00	3,603.88	3,597.00	3,596.66	16.61	69.42	-92.72	-606.23	5,944.14	5,973.29	5,887.31	85.98	69.470	
3,800.00	3,700.31	3,597.00	3,596.66	17.10	69.42	-92.72	-606.23	5,944.14	5,978.38	5,891.96	86.42	69.179	
3,900.00	3,796.73	3,597.00	3,596.66	17.59	69.42	-92.72	-606.23	5,944.14	5,985.14	5,898.31	86.83	68.928	
4,000.00	3,893.16	3,597.00	3,596.66	18.07	69.42	-92.72	-606.23	5,944.14	5,993.56	5,906.34	87.22	68.716	
4,100.00	3,989.58	3,597.00	3,596.66	18.56	69.42	-92.72	-606.23	5,944.14	6,003.64	5,916.05	87.59	68.542	
4,200.00	4,086.01	3,597.00	3,596.66	19.05	69.42	-92.72	-606.23	5,944.14	6,015.36	5,927.42	87.94	68.405	
4,300.00	4,182.43	3,597.00	3,596.66	19.55	69.42	-92.72	-606.23	5,944.14	6,028.72	5,940.46	88.26	68.305	
4,400.00	4,278.86	3,597.00	3,596.66	20.04	69.42	-92.72	-606.23	5,944.14	6,043.70	5,955.14	88.56	68.242	
4,500.00	4,375.28	3,597.00	3,596.66	20.53	69.42	-92.72	-606.23	5,944.14	6,060.30	5,971.45	88.84	68.213 SF	
4,600.00	4,471.71	3,597.00	3,596.66	21.02	69.42	-92.72	-606.23	5,944.14	6,078.49	5,989.39	89.10	68.220	
4,700.00	4,568.13	3,597.00	3,596.66	21.51	69.42	-92.72	-606.23	5,944.14	6,098.27	6,008.94	89.34	68.261	
4,800.00	4,664.56	3,597.00	3,596.66	22.01	69.42	-92.72	-606.23	5,944.14	6,119.63	6,030.07	89.55	68.336	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
4,900.00	4,760.98	3,597.00	3,596.66	22.50	69.42	-92.72	-606.23	5,944.14	6,142.53	6,052.79	89.75	68.444	
5,000.00	4,857.41	3,597.00	3,596.66	22.99	69.42	-92.72	-606.23	5,944.14	6,166.98	6,077.06	89.92	68.584	
5,100.00	4,953.83	3,597.00	3,596.66	23.49	69.42	-92.72	-606.23	5,944.14	6,192.94	6,102.86	90.07	68.756	
5,200.00	5,050.25	3,597.00	3,596.66	23.98	69.42	-92.72	-606.23	5,944.14	6,220.40	6,130.19	90.20	68.959	
5,300.00	5,146.68	3,597.00	3,596.66	24.48	69.42	-92.72	-606.23	5,944.14	6,249.34	6,159.02	90.32	69.193	
5,400.00	5,243.10	3,597.00	3,596.66	24.97	69.42	-92.72	-606.23	5,944.14	6,279.74	6,189.32	90.41	69.457	
5,500.00	5,339.53	3,597.00	3,596.66	25.47	69.42	-92.72	-606.23	5,944.14	6,311.57	6,221.09	90.49	69.750	
5,600.00	5,435.95	3,597.00	3,596.66	25.96	69.42	-92.72	-606.23	5,944.14	6,344.83	6,254.28	90.55	70.072	
5,700.00	5,532.38	3,597.00	3,596.66	26.46	69.42	-92.72	-606.23	5,944.14	6,379.48	6,288.89	90.59	70.422	
5,800.00	5,628.80	3,597.00	3,596.66	26.96	69.42	-92.72	-606.23	5,944.14	6,415.50	6,324.88	90.61	70.800	
5,900.00	5,725.23	3,597.00	3,596.66	27.45	69.42	-92.72	-606.23	5,944.14	6,452.87	6,362.24	90.62	71.205	
6,000.00	5,821.65	3,597.00	3,596.66	27.95	69.42	-92.72	-606.23	5,944.14	6,491.56	6,400.94	90.62	71.636	
6,100.00	5,918.08	3,597.00	3,596.66	28.45	69.42	-92.72	-606.23	5,944.14	6,531.56	6,440.96	90.60	72.094	
6,200.00	6,014.50	3,597.00	3,596.66	28.94	69.42	-92.72	-606.23	5,944.14	6,572.83	6,482.27	90.56	72.577	
6,300.00	6,110.93	3,597.00	3,596.66	29.44	69.42	-92.72	-606.23	5,944.14	6,615.36	6,524.84	90.52	73.084	
6,400.00	6,207.35	3,597.00	3,596.66	29.94	69.42	-92.72	-606.23	5,944.14	6,659.12	6,568.66	90.46	73.616	
6,500.00	6,303.78	3,597.00	3,596.66	30.43	69.42	-92.72	-606.23	5,944.14	6,704.08	6,613.70	90.39	74.171	
6,600.00	6,400.20	3,597.00	3,596.66	30.93	69.42	-92.72	-606.23	5,944.14	6,750.23	6,659.93	90.30	74.750	
6,677.76	6,475.18	3,597.00	3,596.66	31.32	69.42	-92.72	-606.23	5,944.14	6,786.91	6,696.68	90.23	75.216	
6,700.00	6,496.62	3,597.00	3,596.66	31.43	69.42	-99.95	-606.23	5,944.14	6,797.87	6,707.66	90.21	75.354	
6,750.00	6,544.66	3,597.00	3,596.66	31.68	69.42	-114.94	-606.23	5,944.14	6,825.12	6,734.95	90.17	75.692	
6,800.00	6,592.24	3,597.00	3,596.66	31.92	69.42	-127.08	-606.23	5,944.14	6,855.81	6,765.68	90.13	76.066	
6,850.00	6,639.07	3,597.00	3,596.66	32.16	69.42	-136.33	-606.23	5,944.14	6,889.70	6,799.61	90.09	76.476	
6,900.00	6,684.86	3,597.00	3,596.66	32.40	69.42	-143.26	-606.23	5,944.14	6,926.54	6,836.49	90.05	76.918	
6,950.00	6,729.32	3,597.00	3,596.66	32.62	69.42	-148.51	-606.23	5,944.14	6,966.06	6,876.05	90.01	77.388	
7,000.00	6,772.19	3,597.00	3,596.66	32.84	69.42	-152.59	-606.23	5,944.14	7,007.98	6,918.00	89.98	77.882	
7,050.00	6,813.20	3,597.00	3,596.66	33.05	69.42	-155.87	-606.23	5,944.14	7,051.98	6,962.03	89.95	78.396	
7,100.00	6,852.09	3,597.00	3,596.66	33.26	69.42	-158.63	-606.23	5,944.14	7,097.78	7,007.85	89.93	78.925	
7,150.00	6,888.63	3,597.00	3,596.66	33.45	69.42	-161.14	-606.23	5,944.14	7,145.04	7,055.13	89.91	79.466	
7,200.00	6,922.59	3,597.00	3,596.66	33.64	69.42	-163.77	-606.23	5,944.14	7,193.46	7,103.56	89.90	80.014	
7,250.00	6,953.76	3,597.00	3,596.66	33.82	69.42	-167.47	-606.23	5,944.14	7,242.72	7,152.82	89.90	80.564	
7,300.00	6,981.95	3,597.00	3,596.66	34.00	69.42	-178.19	-606.23	5,944.14	7,292.49	7,202.59	89.91	81.113	
7,350.00	7,006.99	3,597.00	3,596.66	34.17	69.42	46.67	-606.23	5,944.14	7,342.47	7,252.55	89.92	81.656	
7,400.00	7,028.72	3,597.00	3,596.66	34.35	69.42	24.94	-606.23	5,944.14	7,392.34	7,302.40	89.94	82.189	
7,450.00	7,047.00	3,597.00	3,596.66	34.52	69.42	20.99	-606.23	5,944.14	7,441.81	7,351.83	89.98	82.706	
7,500.00	7,061.73	3,597.00	3,596.66	34.69	69.42	19.21	-606.23	5,944.14	7,490.57	7,400.55	90.03	83.205	
7,550.00	7,072.82	3,597.00	3,596.66	34.86	69.42	18.19	-606.23	5,944.14	7,538.35	7,448.26	90.08	83.681	
7,600.00	7,080.18	3,597.00	3,596.66	35.04	69.42	17.55	-606.23	5,944.14	7,584.87	7,494.71	90.16	84.129	
7,650.00	7,083.79	3,597.00	3,596.66	35.22	69.42	17.15	-606.23	5,944.14	7,629.87	7,539.62	90.24	84.547	
7,674.30	7,084.18	3,597.00	3,596.66	35.32	69.42	17.02	-606.23	5,944.14	7,651.11	7,560.82	90.29	84.739	
7,700.00	7,084.12	3,597.00	3,596.66	35.42	69.42	17.02	-606.23	5,944.14	7,673.37	7,583.02	90.34	84.935	
7,800.00	7,083.88	3,597.00	3,596.66	35.84	69.42	17.02	-606.23	5,944.14	7,760.15	7,669.59	90.56	85.692	
7,900.00	7,083.64	3,597.00	3,596.66	36.34	69.42	17.02	-606.23	5,944.14	7,847.24	7,756.47	90.77	86.452	
8,000.00	7,083.40	3,597.00	3,596.66	36.90	69.42	17.02	-606.23	5,944.14	7,934.64	7,843.66	90.98	87.212	
8,100.00	7,083.16	3,597.00	3,596.66	37.52	69.42	17.02	-606.23	5,944.14	8,022.33	7,931.14	91.19	87.974	
8,200.00	7,082.91	3,597.00	3,596.66	38.21	69.42	17.02	-606.23	5,944.14	8,110.31	8,018.92	91.40	88.738	
8,300.00	7,082.67	3,597.00	3,596.66	38.95	69.42	17.02	-606.23	5,944.14	8,198.57	8,106.97	91.60	89.503	
8,400.00	7,082.43	3,597.00	3,596.66	39.74	69.42	17.02	-606.23	5,944.14	8,287.09	8,195.28	91.80	90.269	
8,500.00	7,082.19	3,597.00	3,596.66	40.59	69.42	17.02	-606.23	5,944.14	8,375.87	8,283.86	92.01	91.036	
8,600.00	7,081.95	3,597.00	3,596.66	41.49	69.42	17.02	-606.23	5,944.14	8,464.90	8,372.69	92.21	91.804	
8,700.00	7,081.71	3,597.00	3,596.66	42.43	69.42	17.02	-606.23	5,944.14	8,554.17	8,461.77	92.40	92.574	
8,800.00	7,081.47	3,597.00	3,596.66	43.41	69.42	17.02	-606.23	5,944.14	8,643.68	8,551.08	92.60	93.344	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,900.00	7,081.23	3,597.00	3,596.66	44.44	69.42	17.02	-606.23	5,944.14	8,733.41	8,640.62	92.79	94.116	
9,000.00	7,080.99	3,597.00	3,596.66	45.49	69.42	17.02	-606.23	5,944.14	8,823.37	8,730.38	92.99	94.888	
9,100.00	7,080.74	3,597.00	3,596.66	46.58	69.42	17.02	-606.23	5,944.14	8,913.54	8,820.36	93.18	95.662	
9,200.00	7,080.50	3,597.00	3,596.66	47.70	69.42	17.02	-606.23	5,944.14	9,003.91	8,910.55	93.37	96.436	
9,300.00	7,080.26	3,597.00	3,596.66	48.85	69.42	17.02	-606.23	5,944.14	9,094.49	9,000.94	93.55	97.211	
9,400.00	7,080.02	3,597.00	3,596.66	50.03	69.42	17.02	-606.23	5,944.14	9,185.27	9,091.53	93.74	97.987	
9,500.00	7,079.78	3,597.00	3,596.66	51.23	69.42	17.02	-606.23	5,944.14	9,276.23	9,182.31	93.92	98.764	
9,600.00	7,079.54	3,597.00	3,596.66	52.45	69.42	17.02	-606.23	5,944.14	9,367.38	9,273.27	94.11	99.542	
9,700.00	7,079.30	3,597.00	3,596.66	53.69	69.42	17.02	-606.23	5,944.14	9,458.71	9,364.42	94.29	100.320	
9,800.00	7,079.06	3,597.00	3,596.66	54.95	69.42	17.02	-606.23	5,944.14	9,550.21	9,455.74	94.46	101.099	
9,900.00	7,078.82	3,597.00	3,596.66	56.23	69.42	17.02	-606.23	5,944.14	9,641.88	9,547.24	94.64	101.878	
10,000.00	7,078.57	3,597.00	3,596.66	57.53	69.42	17.02	-606.23	5,944.14	9,733.71	9,638.89	94.82	102.658	
10,100.00	7,078.33	3,597.00	3,596.66	58.84	69.42	17.02	-606.23	5,944.14	9,825.70	9,730.71	94.99	103.439	
10,200.00	7,078.09	3,597.00	3,596.66	60.17	69.42	17.02	-606.23	5,944.14	9,917.85	9,822.69	95.16	104.220	
10,300.00	7,077.85	3,597.00	3,596.66	61.51	69.42	17.02	-606.23	5,944.14	10,010.15	9,914.82	95.33	105.001	
10,400.00	7,077.61	3,597.00	3,596.66	62.86	69.42	17.02	-606.23	5,944.14	10,102.60	10,007.09	95.50	105.783	
10,500.00	7,077.37	3,597.00	3,596.66	64.22	69.42	17.02	-606.23	5,944.14	10,195.18	10,099.51	95.67	106.565	
10,600.00	7,077.13	3,597.00	3,596.66	65.60	69.42	17.02	-606.23	5,944.14	10,287.91	10,192.07	95.84	107.348	
10,700.00	7,076.89	3,597.00	3,596.66	66.98	69.42	17.02	-606.23	5,944.14	10,380.77	10,284.77	96.00	108.131	
10,800.00	7,076.65	3,597.00	3,596.66	68.38	69.42	17.02	-606.23	5,944.14	10,473.76	10,377.60	96.17	108.914	
10,900.00	7,076.40	3,597.00	3,596.66	69.78	69.42	17.02	-606.23	5,944.14	10,566.89	10,470.56	96.33	109.697	
11,000.00	7,076.16	3,597.00	3,596.66	71.20	69.42	17.02	-606.23	5,944.14	10,660.13	10,563.64	96.49	110.481	
11,100.00	7,075.92	3,597.00	3,596.66	72.62	69.42	17.02	-606.23	5,944.14	10,753.50	10,656.85	96.65	111.265	
11,200.00	7,075.68	3,597.00	3,596.66	74.04	69.42	17.02	-606.23	5,944.14	10,846.98	10,750.18	96.81	112.049	
11,300.00	7,075.44	3,597.00	3,596.66	75.48	69.42	17.02	-606.23	5,944.14	10,940.58	10,843.62	96.96	112.833	
11,400.00	7,075.20	3,597.00	3,596.66	76.92	69.42	17.02	-606.23	5,944.14	11,034.30	10,937.18	97.12	113.617	
11,500.00	7,074.96	3,597.00	3,596.66	78.37	69.42	17.02	-606.23	5,944.14	11,128.12	11,030.85	97.27	114.401	
11,600.00	7,074.72	3,597.00	3,596.66	79.82	69.42	17.02	-606.23	5,944.14	11,222.05	11,124.62	97.43	115.186	
11,700.00	7,074.48	3,597.00	3,596.66	81.28	69.42	17.02	-606.23	5,944.14	11,316.08	11,218.50	97.58	115.970	
11,800.00	7,074.23	3,597.00	3,596.66	82.75	69.42	17.02	-606.23	5,944.14	11,410.22	11,312.49	97.73	116.754	
11,900.00	7,073.99	3,597.00	3,596.66	84.22	69.42	17.02	-606.23	5,944.14	11,504.45	11,406.57	97.88	117.538	
12,000.00	7,073.75	3,597.00	3,596.66	85.69	69.42	17.02	-606.23	5,944.14	11,598.78	11,500.75	98.03	118.322	
12,100.00	7,073.51	3,597.00	3,596.66	87.17	69.42	17.02	-606.23	5,944.14	11,693.20	11,595.03	98.17	119.106	
12,200.00	7,073.27	3,597.00	3,596.66	88.65	69.42	17.02	-606.23	5,944.14	11,787.72	11,689.40	98.32	119.890	
12,300.00	7,073.03	3,597.00	3,596.66	90.14	69.42	17.02	-606.23	5,944.14	11,882.33	11,783.86	98.47	120.674	
12,400.00	7,072.79	3,597.00	3,596.66	91.63	69.42	17.02	-606.23	5,944.14	11,977.02	11,878.41	98.61	121.457	
12,500.00	7,072.55	3,597.00	3,596.66	93.13	69.42	17.02	-606.23	5,944.14	12,071.80	11,973.04	98.75	122.240	
12,600.00	7,072.31	3,597.00	3,596.66	94.62	69.42	17.02	-606.23	5,944.14	12,166.66	12,067.77	98.90	123.023	
12,700.00	7,072.06	3,597.00	3,596.66	96.13	69.42	17.02	-606.23	5,944.14	12,261.61	12,162.57	99.04	123.806	
12,800.00	7,071.82	3,597.00	3,596.66	97.63	69.42	17.02	-606.23	5,944.14	12,356.63	12,257.45	99.18	124.588	
12,900.00	7,071.58	3,597.00	3,596.66	99.14	69.42	17.02	-606.23	5,944.14	12,451.73	12,352.41	99.32	125.370	
13,000.00	7,071.34	3,597.00	3,596.66	100.65	69.42	17.02	-606.23	5,944.14	12,546.91	12,447.45	99.46	126.151	
13,100.00	7,071.10	3,597.00	3,596.66	102.16	69.42	17.02	-606.23	5,944.14	12,642.16	12,542.57	99.60	126.933	
13,200.00	7,070.86	3,597.00	3,596.66	103.68	69.42	17.02	-606.23	5,944.14	12,737.49	12,637.76	99.73	127.713	
13,300.00	7,070.62	3,597.00	3,596.66	105.20	69.42	17.02	-606.23	5,944.14	12,832.89	12,733.02	99.87	128.494	
13,400.00	7,070.38	3,597.00	3,596.66	106.72	69.42	17.02	-606.23	5,944.14	12,928.35	12,828.35	100.01	129.274	
13,500.00	7,070.14	3,597.00	3,596.66	108.24	69.42	17.02	-606.23	5,944.14	13,023.89	12,923.74	100.14	130.053	
13,600.00	7,069.89	3,597.00	3,596.66	109.77	69.42	17.02	-606.23	5,944.14	13,119.49	13,019.21	100.28	130.832	
13,700.00	7,069.65	3,597.00	3,596.66	111.30	69.42	17.02	-606.23	5,944.14	13,215.15	13,114.74	100.41	131.610	
13,800.00	7,069.41	3,597.00	3,596.66	112.83	69.42	17.02	-606.23	5,944.14	13,310.88	13,210.34	100.54	132.388	
13,900.00	7,069.17	3,597.00	3,596.66	114.36	69.42	17.02	-606.23	5,944.14	13,406.68	13,306.00	100.68	133.166	
14,000.00	7,068.93	3,597.00	3,596.66	115.89	69.42	17.02	-606.23	5,944.14	13,502.53	13,401.72	100.81	133.942	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,100.00	7,068.69	3,597.00	3,596.66	117.43	69.42	17.02	-606.23	5,944.14	13,598.44	13,497.50	100.94	134.718	
14,200.00	7,068.45	3,597.00	3,596.66	118.97	69.42	17.02	-606.23	5,944.14	13,694.41	13,593.34	101.07	135.494	
14,300.00	7,068.21	3,597.00	3,596.66	120.50	69.42	17.02	-606.23	5,944.14	13,790.44	13,689.24	101.20	136.269	
14,400.00	7,067.97	3,597.00	3,596.66	122.05	69.42	17.02	-606.23	5,944.14	13,886.53	13,785.20	101.33	137.043	
14,500.00	7,067.72	3,597.00	3,596.66	123.59	69.42	17.02	-606.23	5,944.14	13,982.67	13,881.21	101.46	137.817	
14,600.00	7,067.48	3,597.00	3,596.66	125.13	69.42	17.02	-606.23	5,944.14	14,078.86	13,977.27	101.59	138.589	
14,700.00	7,067.24	3,597.00	3,596.66	126.68	69.42	17.02	-606.23	5,944.14	14,175.11	14,073.39	101.71	139.362	
14,800.00	7,067.00	3,597.00	3,596.66	128.22	69.42	17.02	-606.23	5,944.14	14,271.40	14,169.56	101.84	140.133	
14,900.00	7,066.76	3,597.00	3,596.66	129.77	69.42	17.02	-606.23	5,944.14	14,367.75	14,265.78	101.97	140.904	
15,000.00	7,066.52	3,597.00	3,596.66	131.32	69.42	17.02	-606.23	5,944.14	14,464.15	14,362.05	102.09	141.673	
15,100.00	7,066.28	3,597.00	3,596.66	132.87	69.42	17.02	-606.23	5,944.14	14,560.59	14,458.37	102.22	142.443	
15,200.00	7,066.04	3,597.00	3,596.66	134.42	69.42	17.02	-606.23	5,944.14	14,657.09	14,554.74	102.35	143.211	
15,300.00	7,065.80	3,597.00	3,596.66	135.97	69.42	17.02	-606.23	5,944.14	14,753.63	14,651.16	102.47	143.978	
15,400.00	7,065.55	3,597.00	3,596.66	137.53	69.42	17.02	-606.23	5,944.14	14,850.22	14,747.62	102.60	144.745	
15,500.00	7,065.31	3,597.00	3,596.66	139.08	69.42	17.02	-606.23	5,944.14	14,946.85	14,844.13	102.72	145.511	
15,600.00	7,065.07	3,597.00	3,596.66	140.64	69.42	17.02	-606.23	5,944.14	15,043.52	14,940.68	102.84	146.276	
15,700.00	7,064.83	3,597.00	3,596.66	142.20	69.42	17.02	-606.23	5,944.14	15,140.24	15,037.27	102.97	147.040	
15,800.00	7,064.59	3,597.00	3,596.66	143.75	69.42	17.02	-606.23	5,944.14	15,237.00	15,133.91	103.09	147.803	
15,900.00	7,064.35	3,597.00	3,596.66	145.31	69.42	17.02	-606.23	5,944.14	15,333.80	15,230.59	103.21	148.566	
16,000.00	7,064.11	3,597.00	3,596.66	146.87	69.42	17.02	-606.23	5,944.14	15,430.65	15,327.31	103.33	149.327	
16,100.00	7,063.87	3,597.00	3,596.66	148.43	69.42	17.02	-606.23	5,944.14	15,527.53	15,424.07	103.46	150.087	
16,200.00	7,063.63	3,597.00	3,596.66	149.99	69.42	17.02	-606.23	5,944.14	15,624.45	15,520.88	103.58	150.847	
16,300.00	7,063.38	3,597.00	3,596.66	151.56	69.42	17.02	-606.23	5,944.14	15,721.41	15,617.72	103.70	151.606	
16,400.00	7,063.14	3,597.00	3,596.66	153.12	69.42	17.02	-606.23	5,944.14	15,818.41	15,714.59	103.82	152.363	
16,500.00	7,062.90	3,597.00	3,596.66	154.68	69.42	17.02	-606.23	5,944.14	15,915.45	15,811.51	103.94	153.120	
16,600.00	7,062.66	3,597.00	3,596.66	156.25	69.42	17.02	-606.23	5,944.14	16,012.52	15,908.46	104.06	153.875	
16,700.00	7,062.42	3,597.00	3,596.66	157.81	69.42	17.02	-606.23	5,944.14	16,109.63	16,005.45	104.18	154.630	
16,800.00	7,062.18	3,597.00	3,596.66	159.38	69.42	17.02	-606.23	5,944.14	16,206.77	16,102.47	104.30	155.384	
16,874.30	7,062.00	3,597.00	3,596.66	160.54	69.42	17.02	-606.23	5,944.14	16,278.97	16,174.58	104.39	155.943	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	611.23	610.58	3.28	1.79	90.97	-235.89	13,897.88	13,907.94				
100.00	100.00	666.23	665.19	3.29	1.96	91.00	-242.18	13,895.96	13,904.66	13,899.42	5.25	2,650.809	
200.00	200.00	706.00	704.59	3.34	2.08	91.02	-247.47	13,894.75	13,901.81	13,896.40	5.41	2,568.935	
300.00	300.00	731.91	730.21	3.42	2.15	91.04	-251.25	13,894.08	13,899.44	13,893.87	5.57	2,494.000	
400.00	400.00	767.00	764.85	3.54	2.26	91.06	-256.80	13,893.36	13,897.60	13,891.80	5.80	2,397.479	
500.00	500.00	792.04	789.52	3.69	2.34	91.08	-261.06	13,892.96	13,896.25	13,890.23	6.02	2,307.808	
600.00	599.98	828.00	824.88	3.86	2.44	-90.84	-267.62	13,892.54	13,895.42	13,889.13	6.30	2,206.633	
700.00	699.84	889.00	884.52	4.04	2.63	-90.81	-280.35	13,891.95	13,894.96	13,888.29	6.66	2,084.863	
799.85	799.30	962.44	955.62	4.25	2.85	-90.76	-298.71	13,891.33	13,894.75	13,887.66	7.09	1,958.578	CC
800.00	799.45	962.52	955.70	4.25	2.85	-90.76	-298.74	13,891.33	13,894.75	13,887.66	7.09	1,958.419	
900.00	898.70	1,009.00	1,000.24	4.48	2.99	-90.73	-312.02	13,891.06	13,894.94	13,887.47	7.47	1,860.349	ES
1,000.00	997.47	1,068.00	1,056.35	4.74	3.17	-90.67	-330.25	13,890.93	13,895.57	13,887.66	7.91	1,757.485	
1,100.00	1,095.62	1,100.35	1,086.99	5.03	3.26	-90.64	-340.62	13,890.99	13,896.64	13,888.35	8.29	1,676.077	
1,200.00	1,193.06	1,152.05	1,135.87	5.35	3.42	-90.58	-357.47	13,891.28	13,898.16	13,889.40	8.76	1,586.050	
1,268.36	1,259.18	1,302.12	1,277.48	5.58	3.87	-90.51	-407.14	13,892.03	13,899.32	13,889.87	9.45	1,471.316	
1,300.00	1,289.69	1,343.91	1,316.90	5.70	4.00	-90.50	-421.00	13,891.96	13,899.58	13,889.89	9.68	1,435.215	
1,400.00	1,386.11	1,376.00	1,347.16	6.07	4.09	-90.49	-431.70	13,892.05	13,900.89	13,890.74	10.15	1,369.420	
1,500.00	1,482.54	1,438.00	1,405.64	6.45	4.28	-90.48	-452.26	13,892.46	13,902.60	13,891.88	10.72	1,296.314	
1,600.00	1,578.96	1,482.69	1,447.78	6.86	4.41	-90.46	-467.15	13,892.89	13,904.62	13,893.36	11.26	1,234.747	
1,700.00	1,675.39	1,540.32	1,501.94	7.27	4.59	-90.44	-486.81	13,893.65	13,907.02	13,895.17	11.85	1,173.730	
1,800.00	1,771.81	1,647.02	1,602.08	7.70	4.91	-90.41	-523.63	13,895.12	13,909.50	13,896.91	12.59	1,104.453	
1,900.00	1,868.24	1,733.04	1,682.89	8.13	5.16	-90.38	-553.07	13,896.43	13,912.12	13,898.83	13.29	1,047.135	
2,000.00	1,964.66	1,869.44	1,810.77	8.57	5.57	-90.33	-600.51	13,898.14	13,914.46	13,900.33	14.14	984.265	
2,100.00	2,061.09	1,998.52	1,932.35	9.02	5.96	-90.29	-643.86	13,899.55	13,916.63	13,901.66	14.97	929.501	
2,200.00	2,157.51	2,072.00	2,001.70	9.47	6.18	-90.27	-668.10	13,900.39	13,918.86	13,903.21	15.65	889.650	
2,300.00	2,253.94	2,502.37	2,408.00	9.93	7.47	-90.15	-809.96	13,900.80	13,920.21	13,902.81	17.40	800.175	
2,400.00	2,350.36	2,642.97	2,541.44	10.39	7.90	-90.12	-854.23	13,899.18	13,920.14	13,901.86	18.28	761.491	
2,448.03	2,396.68	2,643.00	2,541.47	10.62	7.90	-90.12	-854.24	13,899.18	13,920.05	13,901.55	18.50	752.292	
2,500.00	2,446.79	2,667.89	2,565.12	10.86	7.97	-90.11	-861.99	13,898.90	13,920.06	13,901.24	18.82	739.630	
2,600.00	2,543.21	2,706.00	2,601.32	11.33	8.09	-90.11	-873.90	13,898.73	13,920.55	13,901.15	19.40	717.444	
2,699.92	2,639.56	2,895.00	2,781.99	11.80	8.65	-90.08	-929.29	13,896.85	13,920.24	13,899.79	20.44	680.994	
2,700.00	2,639.64	2,895.00	2,781.99	11.80	8.65	-90.08	-929.29	13,896.85	13,920.24	13,899.79	20.44	680.981	
2,800.00	2,736.06	2,895.00	2,781.99	12.27	8.65	-90.08	-929.29	13,896.85	13,920.60	13,899.68	20.91	665.586	
2,900.00	2,832.49	2,958.00	2,843.12	12.75	8.84	-90.09	-944.48	13,896.87	13,921.44	13,899.86	21.58	645.129	
3,000.00	2,928.91	2,958.00	2,843.12	13.23	8.84	-90.09	-944.48	13,896.87	13,922.78	13,900.73	22.06	631.252	
3,100.00	3,025.34	3,239.67	3,120.72	13.71	9.68	-90.21	-990.90	13,898.96	13,924.61	13,901.23	23.38	595.531	
3,200.00	3,121.76	3,488.18	3,368.96	14.19	10.42	-90.44	-1,000.71	13,898.67	13,925.10	13,900.50	24.61	565.877	
3,300.00	3,218.18	3,527.00	3,407.78	14.67	10.54	-90.48	-1,001.06	13,898.35	13,924.64	13,899.43	25.21	552.412	
3,322.33	3,239.72	3,527.00	3,407.78	14.78	10.54	-90.48	-1,001.06	13,898.35	13,924.62	13,899.31	25.31	550.056	
3,400.00	3,314.61	3,527.00	3,407.78	15.15	10.54	-90.48	-1,001.06	13,898.35	13,924.84	13,899.15	25.69	542.025	
3,500.00	3,411.03	3,527.00	3,407.78	15.64	10.54	-90.48	-1,001.06	13,898.35	13,925.75	13,899.58	26.17	532.040	
3,600.00	3,507.46	3,527.00	3,407.78	16.12	10.54	-90.48	-1,001.06	13,898.35	13,927.39	13,900.73	26.66	522.441	
3,700.00	3,603.88	3,527.00	3,407.78	16.61	10.54	-90.48	-1,001.06	13,898.35	13,929.74	13,902.60	27.14	513.209	
3,800.00	3,700.31	3,527.00	3,407.78	17.10	10.54	-90.48	-1,001.06	13,898.35	13,932.81	13,905.18	27.63	504.329	
3,900.00	3,796.73	3,527.00	3,407.78	17.59	10.54	-90.48	-1,001.06	13,898.35	13,936.60	13,908.49	28.11	495.783	
4,000.00	3,893.16	3,527.00	3,407.78	18.07	10.54	-90.48	-1,001.06	13,898.35	13,941.10	13,912.51	28.59	487.558	
4,100.00	3,989.58	3,527.00	3,407.78	18.56	10.54	-90.48	-1,001.06	13,898.35	13,946.32	13,917.24	29.08	479.639	
4,200.00	4,086.01	3,527.00	3,407.78	19.05	10.54	-90.48	-1,001.06	13,898.35	13,952.25	13,922.69	29.56	472.012	
4,300.00	4,182.43	3,527.00	3,407.78	19.55	10.54	-90.48	-1,001.06	13,898.35	13,958.90	13,928.86	30.04	464.664	
4,400.00	4,278.86	3,527.00	3,407.78	20.04	10.54	-90.48	-1,001.06	13,898.35	13,966.26	13,935.74	30.52	457.584	
4,500.00	4,375.28	3,527.00	3,407.78	20.53	10.54	-90.48	-1,001.06	13,898.35	13,974.33	13,943.33	31.00	450.760	
4,600.00	4,471.71	3,527.00	3,407.78	21.02	10.54	-90.48	-1,001.06	13,898.35	13,983.11	13,951.63	31.48	444.181	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	4,568.13	3,527.00	3,407.78	21.51	10.54	-90.48	-1,001.06	13,898.35	13,992.61	13,960.65	31.96	437.836	
4,800.00	4,664.56	3,527.00	3,407.78	22.01	10.54	-90.48	-1,001.06	13,898.35	14,002.81	13,970.37	32.44	431.715	
4,900.00	4,760.98	3,527.00	3,407.78	22.50	10.54	-90.48	-1,001.06	13,898.35	14,013.71	13,980.80	32.91	425.810	
5,000.00	4,857.41	3,527.00	3,407.78	22.99	10.54	-90.48	-1,001.06	13,898.35	14,025.32	13,991.94	33.38	420.110	
5,100.00	4,953.83	3,527.00	3,407.78	23.49	10.54	-90.48	-1,001.06	13,898.35	14,037.63	14,003.78	33.86	414.608	
5,200.00	5,050.25	3,527.00	3,407.78	23.98	10.54	-90.48	-1,001.06	13,898.35	14,050.65	14,016.32	34.33	409.296	
5,300.00	5,146.68	3,527.00	3,407.78	24.48	10.54	-90.48	-1,001.06	13,898.35	14,064.36	14,029.56	34.80	404.166	
5,400.00	5,243.10	3,527.00	3,407.78	24.97	10.54	-90.48	-1,001.06	13,898.35	14,078.77	14,043.50	35.27	399.210	
5,500.00	5,339.53	3,527.00	3,407.78	25.47	10.54	-90.48	-1,001.06	13,898.35	14,093.87	14,058.14	35.73	394.423	
5,600.00	5,435.95	3,527.00	3,407.78	25.96	10.54	-90.48	-1,001.06	13,898.35	14,109.67	14,073.47	36.20	389.796	
5,700.00	5,532.38	3,527.00	3,407.78	26.46	10.54	-90.48	-1,001.06	13,898.35	14,126.16	14,089.50	36.66	385.325	
5,800.00	5,628.80	3,527.00	3,407.78	26.96	10.54	-90.48	-1,001.06	13,898.35	14,143.33	14,106.21	37.12	381.002	
5,900.00	5,725.23	3,527.00	3,407.78	27.45	10.54	-90.48	-1,001.06	13,898.35	14,161.19	14,123.61	37.58	376.823	
6,000.00	5,821.65	3,527.00	3,407.78	27.95	10.54	-90.48	-1,001.06	13,898.35	14,179.74	14,141.70	38.04	372.781	
6,100.00	5,918.08	3,527.00	3,407.78	28.45	10.54	-90.48	-1,001.06	13,898.35	14,198.96	14,160.47	38.49	368.873	
6,200.00	6,014.50	3,527.00	3,407.78	28.94	10.54	-90.48	-1,001.06	13,898.35	14,218.86	14,179.92	38.95	365.092	
6,300.00	6,110.93	3,527.00	3,407.78	29.44	10.54	-90.48	-1,001.06	13,898.35	14,239.44	14,200.04	39.40	361.434	
6,400.00	6,207.35	3,527.00	3,407.78	29.94	10.54	-90.48	-1,001.06	13,898.35	14,260.68	14,220.84	39.85	357.895	
6,500.00	6,303.78	3,527.00	3,407.78	30.43	10.54	-90.48	-1,001.06	13,898.35	14,282.60	14,242.31	40.29	354.470	
6,600.00	6,400.20	3,527.00	3,407.78	30.93	10.54	-90.48	-1,001.06	13,898.35	14,305.18	14,264.44	40.74	351.156	
6,677.76	6,475.18	3,527.00	3,407.78	31.32	10.54	-90.48	-1,001.06	13,898.35	14,323.20	14,282.11	41.08	348.653	
6,700.00	6,496.62	3,527.00	3,407.78	31.43	10.54	-97.68	-1,001.06	13,898.35	14,328.80	14,287.62	41.18	347.955	
6,750.00	6,544.66	3,527.00	3,407.78	31.68	10.54	-112.58	-1,001.06	13,898.35	14,344.23	14,302.83	41.40	346.493	
6,800.00	6,592.24	3,527.00	3,407.78	31.92	10.54	-124.61	-1,001.06	13,898.35	14,363.49	14,321.88	41.61	345.192	
6,850.00	6,639.07	3,527.00	3,407.78	32.16	10.54	-133.71	-1,001.06	13,898.35	14,386.45	14,344.64	41.81	344.070	
6,900.00	6,684.86	3,527.00	3,407.78	32.40	10.54	-140.46	-1,001.06	13,898.35	14,412.96	14,370.95	42.00	343.134	
6,950.00	6,729.32	3,527.00	3,407.78	32.62	10.54	-145.48	-1,001.06	13,898.35	14,442.82	14,400.63	42.18	342.383	
7,000.00	6,772.19	3,527.00	3,407.78	32.84	10.54	-149.25	-1,001.06	13,898.35	14,475.83	14,433.48	42.35	341.816	
7,050.00	6,813.20	3,527.00	3,407.78	33.05	10.54	-152.12	-1,001.06	13,898.35	14,511.77	14,469.27	42.50	341.431	
7,100.00	6,852.09	3,527.00	3,407.78	33.26	10.54	-154.31	-1,001.06	13,898.35	14,550.40	14,507.76	42.64	341.225	
7,150.00	6,888.63	3,527.00	3,407.78	33.45	10.54	-155.96	-1,001.06	13,898.35	14,591.46	14,548.69	42.77	341.194 SF	
7,200.00	6,922.59	3,527.00	3,407.78	33.64	10.54	-157.16	-1,001.06	13,898.35	14,634.67	14,591.79	42.88	341.331	
7,250.00	6,953.76	3,527.00	3,407.78	33.82	10.54	-157.96	-1,001.06	13,898.35	14,679.75	14,636.78	42.97	341.630	
7,300.00	6,981.95	3,527.00	3,407.78	34.00	10.54	-158.30	-1,001.06	13,898.35	14,726.41	14,683.36	43.05	342.083	
7,350.00	7,006.99	3,527.00	3,407.78	34.17	10.54	-158.04	-1,001.06	13,898.35	14,774.35	14,731.24	43.11	342.679	
7,400.00	7,028.72	3,527.00	3,407.78	34.35	10.54	-156.62	-1,001.06	13,898.35	14,823.26	14,780.09	43.17	343.408	
7,450.00	7,047.00	3,527.00	3,407.78	34.52	10.54	-151.50	-1,001.06	13,898.35	14,872.82	14,829.62	43.20	344.257	
7,500.00	7,061.73	3,527.00	3,407.78	34.69	10.54	-101.88	-1,001.06	13,898.35	14,922.74	14,879.51	43.23	345.210	
7,550.00	7,072.82	3,527.00	3,407.78	34.86	10.54	0.06	-1,001.06	13,898.35	14,972.70	14,929.46	43.24	346.253	
7,600.00	7,080.18	3,527.00	3,407.78	35.04	10.54	8.05	-1,001.06	13,898.35	15,022.39	14,979.14	43.25	347.366	
7,650.00	7,083.79	3,527.00	3,407.78	35.22	10.54	10.51	-1,001.06	13,898.35	15,071.51	15,028.27	43.24	348.531	
7,674.30	7,084.18	3,527.00	3,407.78	35.32	10.54	11.19	-1,001.06	13,898.35	15,095.08	15,051.84	43.24	349.116	
7,700.00	7,084.12	3,527.00	3,407.78	35.42	10.54	11.19	-1,001.06	13,898.35	15,119.91	15,076.67	43.23	349.726	
7,800.00	7,083.88	3,527.00	3,407.78	35.84	10.54	11.19	-1,001.06	13,898.35	15,216.50	15,173.28	43.22	352.070	
7,900.00	7,083.64	3,527.00	3,407.78	36.34	10.54	11.19	-1,001.06	13,898.35	15,313.14	15,269.93	43.21	354.400	
8,000.00	7,083.40	3,527.00	3,407.78	36.90	10.54	11.19	-1,001.06	13,898.35	15,409.83	15,366.63	43.20	356.714	
8,100.00	7,083.16	3,527.00	3,407.78	37.52	10.54	11.19	-1,001.06	13,898.35	15,506.55	15,463.36	43.19	359.014	
8,200.00	7,082.91	3,527.00	3,407.78	38.21	10.54	11.19	-1,001.06	13,898.35	15,603.32	15,560.13	43.19	361.299	
8,300.00	7,082.67	3,527.00	3,407.78	38.95	10.54	11.19	-1,001.06	13,898.35	15,700.13	15,656.94	43.18	363.569	
8,400.00	7,082.43	3,527.00	3,407.78	39.74	10.54	11.19	-1,001.06	13,898.35	15,796.98	15,753.79	43.18	365.824	
8,500.00	7,082.19	3,527.00	3,407.78	40.59	10.54	11.19	-1,001.06	13,898.35	15,893.86	15,850.68	43.18	368.065	
8,600.00	7,081.95	3,527.00	3,407.78	41.49	10.54	11.19	-1,001.06	13,898.35	15,990.79	15,947.60	43.18	370.290	

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 752H
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 752H	**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	7,081.71	3,527.00	3,407.78	42.43	10.54	11.19	-1,001.06	13,898.35	16,087.75	16,044.56	43.19	372.502	
8,800.00	7,081.47	3,527.00	3,407.78	43.41	10.54	11.19	-1,001.06	13,898.35	16,184.75	16,141.55	43.19	374.698	
8,900.00	7,081.23	3,527.00	3,407.78	44.44	10.54	11.19	-1,001.06	13,898.35	16,281.78	16,238.58	43.20	376.880	
9,000.00	7,080.99	3,527.00	3,407.78	45.49	10.54	11.19	-1,001.06	13,898.35	16,378.86	16,335.64	43.21	379.047	
9,100.00	7,080.74	3,527.00	3,407.78	46.58	10.54	11.19	-1,001.06	13,898.35	16,475.96	16,432.74	43.22	381.199	
9,200.00	7,080.50	3,527.00	3,407.78	47.70	10.54	11.19	-1,001.06	13,898.35	16,573.10	16,529.87	43.23	383.337	
9,300.00	7,080.26	3,527.00	3,407.78	48.85	10.54	11.19	-1,001.06	13,898.35	16,670.28	16,627.03	43.25	385.461	
9,400.00	7,080.02	3,527.00	3,407.78	50.03	10.54	11.19	-1,001.06	13,898.35	16,767.49	16,724.22	43.26	387.570	
9,500.00	7,079.78	3,527.00	3,407.78	51.23	10.54	11.19	-1,001.06	13,898.35	16,864.73	16,821.45	43.28	389.664	
9,600.00	7,079.54	3,527.00	3,407.78	52.45	10.54	11.19	-1,001.06	13,898.35	16,962.00	16,918.70	43.30	391.745	
9,700.00	7,079.30	3,527.00	3,407.78	53.69	10.54	11.19	-1,001.06	13,898.35	17,059.30	17,015.98	43.32	393.810	
9,800.00	7,079.06	3,527.00	3,407.78	54.95	10.54	11.19	-1,001.06	13,898.35	17,156.64	17,113.30	43.34	395.862	
9,900.00	7,078.82	3,527.00	3,407.78	56.23	10.54	11.19	-1,001.06	13,898.35	17,254.00	17,210.64	43.36	397.899	
10,000.00	7,078.57	3,527.00	3,407.78	57.53	10.54	11.19	-1,001.06	13,898.35	17,351.40	17,308.01	43.39	399.922	
10,100.00	7,078.33	3,527.00	3,407.78	58.84	10.54	11.19	-1,001.06	13,898.35	17,448.82	17,405.41	43.41	401.931	
10,200.00	7,078.09	3,527.00	3,407.78	60.17	10.54	11.19	-1,001.06	13,898.35	17,546.28	17,502.84	43.44	403.926	
10,300.00	7,077.85	3,527.00	3,407.78	61.51	10.54	11.19	-1,001.06	13,898.35	17,643.76	17,600.29	43.47	405.907	
10,400.00	7,077.61	3,527.00	3,407.78	62.86	10.54	11.19	-1,001.06	13,898.35	17,741.27	17,697.77	43.50	407.874	
10,500.00	7,077.37	3,527.00	3,407.78	64.22	10.54	11.19	-1,001.06	13,898.35	17,838.81	17,795.28	43.53	409.827	
10,600.00	7,077.13	3,527.00	3,407.78	65.60	10.54	11.19	-1,001.06	13,898.35	17,936.37	17,892.81	43.56	411.766	
10,700.00	7,076.89	3,527.00	3,407.78	66.98	10.54	11.19	-1,001.06	13,898.35	18,033.97	17,990.37	43.59	413.691	
10,800.00	7,076.65	3,527.00	3,407.78	68.38	10.54	11.19	-1,001.06	13,898.35	18,131.58	18,087.96	43.63	415.603	
10,900.00	7,076.40	3,527.00	3,407.78	69.78	10.54	11.19	-1,001.06	13,898.35	18,229.23	18,185.57	43.66	417.501	
11,000.00	7,076.16	3,527.00	3,407.78	71.20	10.54	11.19	-1,001.06	13,898.35	18,326.90	18,283.20	43.70	419.386	
11,100.00	7,075.92	3,527.00	3,407.78	72.62	10.54	11.19	-1,001.06	13,898.35	18,424.59	18,380.85	43.74	421.257	
11,200.00	7,075.68	3,527.00	3,407.78	74.04	10.54	11.19	-1,001.06	13,898.35	18,522.31	18,478.53	43.78	423.114	
11,300.00	7,075.44	3,527.00	3,407.78	75.48	10.54	11.19	-1,001.06	13,898.35	18,620.05	18,576.24	43.82	424.958	
11,400.00	7,075.20	3,527.00	3,407.78	76.92	10.54	11.19	-1,001.06	13,898.35	18,717.82	18,673.96	43.86	426.789	
11,500.00	7,074.96	3,527.00	3,407.78	78.37	10.54	11.19	-1,001.06	13,898.35	18,815.61	18,771.71	43.90	428.606	
11,600.00	7,074.72	3,527.00	3,407.78	79.82	10.54	11.19	-1,001.06	13,898.35	18,913.42	18,869.48	43.94	430.411	
11,700.00	7,074.48	3,527.00	3,407.78	81.28	10.54	11.19	-1,001.06	13,898.35	19,011.26	18,967.27	43.99	432.202	
11,800.00	7,074.23	3,527.00	3,407.78	82.75	10.54	11.19	-1,001.06	13,898.35	19,109.12	19,065.09	44.03	433.980	
11,900.00	7,073.99	3,527.00	3,407.78	84.22	10.54	11.19	-1,001.06	13,898.35	19,207.00	19,162.92	44.08	435.746	
12,000.00	7,073.75	3,527.00	3,407.78	85.69	10.54	11.19	-1,001.06	13,898.35	19,304.90	19,260.78	44.13	437.498	
12,100.00	7,073.51	3,527.00	3,407.78	87.17	10.54	11.19	-1,001.06	13,898.35	19,402.83	19,358.65	44.17	439.238	
12,200.00	7,073.27	3,527.00	3,407.78	88.65	10.54	11.19	-1,001.06	13,898.35	19,500.77	19,456.55	44.22	440.965	
12,300.00	7,073.03	3,527.00	3,407.78	90.14	10.54	11.19	-1,001.06	13,898.35	19,598.74	19,554.46	44.27	442.679	
12,400.00	7,072.79	3,527.00	3,407.78	91.63	10.54	11.19	-1,001.06	13,898.35	19,696.72	19,652.40	44.32	444.381	
12,500.00	7,072.55	3,527.00	3,407.78	93.13	10.54	11.19	-1,001.06	13,898.35	19,794.73	19,750.35	44.38	446.070	
12,600.00	7,072.31	3,527.00	3,407.78	94.62	10.54	11.19	-1,001.06	13,898.35	19,892.76	19,848.33	44.43	447.746	
12,700.00	7,072.06	3,527.00	3,407.78	96.13	10.54	11.19	-1,001.06	13,898.35	19,990.80	19,946.32	44.48	449.411	
12,800.00	7,071.82	3,527.00	3,407.78	97.63	10.54	11.19	-1,001.06	13,898.35	20,088.87	20,044.33	44.54	451.063	
12,900.00	7,071.58	3,527.00	3,407.78	99.14	10.54	11.19	-1,001.06	13,898.35	20,186.95	20,142.36	44.59	452.703	
13,000.00	7,071.34	3,527.00	3,407.78	100.65	10.54	11.19	-1,001.06	13,898.35	20,285.05	20,240.41	44.65	454.330	
13,100.00	7,071.10	3,527.00	3,407.78	102.16	10.54	11.19	-1,001.06	13,898.35	20,383.17	20,338.47	44.71	455.946	
13,200.00	7,070.86	3,527.00	3,407.78	103.68	10.54	11.19	-1,001.06	13,898.35	20,481.31	20,436.55	44.76	457.549	
13,300.00	7,070.62	3,527.00	3,407.78	105.20	10.54	11.19	-1,001.06	13,898.35	20,579.47	20,534.65	44.82	459.141	
13,400.00	7,070.38	3,527.00	3,407.78	106.72	10.54	11.19	-1,001.06	13,898.35	20,677.65	20,632.77	44.88	460.721	
13,500.00	7,070.14	3,527.00	3,407.78	108.24	10.54	11.19	-1,001.06	13,898.35	20,775.84	20,730.90	44.94	462.289	
13,600.00	7,069.89	3,527.00	3,407.78	109.77	10.54	11.19	-1,001.06	13,898.35	20,874.05	20,829.05	45.00	463.846	
13,700.00	7,069.65	3,527.00	3,407.78	111.30	10.54	11.19	-1,001.06	13,898.35	20,972.27	20,927.21	45.06	465.390	
13,800.00	7,069.41	3,527.00	3,407.78	112.83	10.54	11.19	-1,001.06	13,898.35	21,070.52	21,025.39	45.13	466.924	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
13,900.00	7,069.17	3,527.00	3,407.78	114.36	10.54	11.19	-1,001.06	13,898.35	21,168.78	21,123.59	45.19	468.445	
14,000.00	7,068.93	3,527.00	3,407.78	115.89	10.54	11.19	-1,001.06	13,898.35	21,267.05	21,221.80	45.25	469.956	
14,100.00	7,068.69	3,527.00	3,407.78	117.43	10.54	11.19	-1,001.06	13,898.35	21,365.34	21,320.03	45.32	471.455	
14,200.00	7,068.45	3,527.00	3,407.78	118.97	10.54	11.19	-1,001.06	13,898.35	21,463.65	21,418.27	45.38	472.943	
14,300.00	7,068.21	3,527.00	3,407.78	120.50	10.54	11.19	-1,001.06	13,898.35	21,561.98	21,516.53	45.45	474.419	
14,400.00	7,067.97	3,527.00	3,407.78	122.05	10.54	11.19	-1,001.06	13,898.35	21,660.31	21,614.80	45.52	475.885	
14,500.00	7,067.72	3,527.00	3,407.78	123.59	10.54	11.19	-1,001.06	13,898.35	21,758.67	21,713.08	45.58	477.340	
14,600.00	7,067.48	3,527.00	3,407.78	125.13	10.54	11.19	-1,001.06	13,898.35	21,857.04	21,811.38	45.65	478.783	
14,700.00	7,067.24	3,527.00	3,407.78	126.68	10.54	11.19	-1,001.06	13,898.35	21,955.42	21,909.70	45.72	480.216	
14,800.00	7,067.00	3,527.00	3,407.78	128.22	10.54	11.19	-1,001.06	13,898.35	22,053.82	22,008.03	45.79	481.638	
14,900.00	7,066.76	3,527.00	3,407.78	129.77	10.54	11.19	-1,001.06	13,898.35	22,152.23	22,106.37	45.86	483.049	
15,000.00	7,066.52	3,527.00	3,407.78	131.32	10.54	11.19	-1,001.06	13,898.35	22,250.66	22,204.73	45.93	484.450	
15,100.00	7,066.28	3,527.00	3,407.78	132.87	10.54	11.19	-1,001.06	13,898.35	22,349.10	22,303.09	46.00	485.840	
15,200.00	7,066.04	3,527.00	3,407.78	134.42	10.54	11.19	-1,001.06	13,898.35	22,447.55	22,401.48	46.07	487.219	
15,300.00	7,065.80	3,527.00	3,407.78	135.97	10.54	11.19	-1,001.06	13,898.35	22,546.02	22,499.87	46.15	488.588	
15,400.00	7,065.55	3,527.00	3,407.78	137.53	10.54	11.19	-1,001.06	13,898.35	22,644.50	22,598.28	46.22	489.947	
15,500.00	7,065.31	3,527.00	3,407.78	139.08	10.54	11.19	-1,001.06	13,898.35	22,742.99	22,696.70	46.29	491.296	
15,600.00	7,065.07	3,527.00	3,407.78	140.64	10.54	11.19	-1,001.06	13,898.35	22,841.50	22,795.13	46.37	492.634	
15,700.00	7,064.83	3,527.00	3,407.78	142.20	10.54	11.19	-1,001.06	13,898.35	22,940.02	22,893.58	46.44	493.962	
15,800.00	7,064.59	3,527.00	3,407.78	143.75	10.54	11.19	-1,001.06	13,898.35	23,038.55	22,992.04	46.52	495.280	
15,900.00	7,064.35	3,527.00	3,407.78	145.31	10.54	11.19	-1,001.06	13,898.35	23,137.10	23,090.51	46.59	496.588	
16,000.00	7,064.11	3,527.00	3,407.78	146.87	10.54	11.19	-1,001.06	13,898.35	23,235.66	23,188.99	46.67	497.886	
16,100.00	7,063.87	3,527.00	3,407.78	148.43	10.54	11.19	-1,001.06	13,898.35	23,334.23	23,287.48	46.75	499.174	
16,200.00	7,063.63	3,527.00	3,407.78	149.99	10.54	11.19	-1,001.06	13,898.35	23,432.81	23,385.99	46.82	500.453	
16,300.00	7,063.38	3,527.00	3,407.78	151.56	10.54	11.19	-1,001.06	13,898.35	23,531.40	23,484.50	46.90	501.722	
16,400.00	7,063.14	3,527.00	3,407.78	153.12	10.54	11.19	-1,001.06	13,898.35	23,630.01	23,583.03	46.98	502.981	
16,500.00	7,062.90	3,527.00	3,407.78	154.68	10.54	11.19	-1,001.06	13,898.35	23,728.63	23,681.57	47.06	504.230	
16,600.00	7,062.66	3,527.00	3,407.78	156.25	10.54	11.19	-1,001.06	13,898.35	23,827.26	23,780.12	47.14	505.470	
16,700.00	7,062.42	3,527.00	3,407.78	157.81	10.54	11.19	-1,001.06	13,898.35	23,925.90	23,878.68	47.22	506.701	
16,800.00	7,062.18	3,527.00	3,407.78	159.38	10.54	11.19	-1,001.06	13,898.35	24,024.55	23,977.25	47.30	507.922	
16,874.30	7,062.00	3,527.00	3,407.78	160.54	10.54	11.19	-1,001.06	13,898.35	24,097.85	24,050.49	47.36	508.823	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	154.00	154.00	3.28	1.42	90.88	-160.51	10,401.54	10,402.78				
100.00	100.00	254.00	254.00	3.29	2.52	90.88	-160.51	10,401.54	10,402.78	10,396.97	5.81	1,789.604	
200.00	200.00	354.00	354.00	3.34	4.37	90.88	-160.51	10,401.54	10,402.78	10,395.08	7.71	1,349.611	
300.00	300.00	454.00	454.00	3.42	6.22	90.88	-160.51	10,401.54	10,402.78	10,393.14	9.64	1,079.103	
340.98	340.98	494.95	494.95	3.46	6.98	90.88	-159.97	10,401.54	10,402.77	10,392.33	10.44	996.277 CC	
400.00	400.00	553.81	553.81	3.54	8.07	90.88	-160.01	10,401.54	10,402.78	10,391.17	11.60	896.526	
500.00	500.00	653.53	653.53	3.69	9.91	90.88	-160.21	10,401.54	10,402.78	10,389.18	13.60	765.123	
600.00	599.98	754.00	753.98	3.86	11.77	-91.05	-160.51	10,401.54	10,402.82	10,387.19	15.63	665.566	
700.00	699.84	853.86	853.84	4.04	13.67	-91.08	-160.51	10,401.54	10,402.91	10,385.20	17.71	587.316	
800.00	799.45	953.37	953.34	4.25	15.56	-91.12	-160.12	10,401.54	10,403.07	10,383.26	19.81	525.045	
900.00	898.70	1,052.31	1,052.29	4.48	17.45	-91.18	-160.31	10,401.54	10,403.32	10,381.40	21.93	474.407	
1,000.00	997.47	1,151.51	1,151.47	4.74	19.33	-91.26	-160.51	10,401.54	10,403.66	10,379.59	24.08	432.117	
1,100.00	1,095.62	1,249.67	1,249.62	5.03	21.20	-91.35	-160.51	10,401.54	10,404.11	10,377.88	26.23	396.627	
1,200.00	1,193.06	1,347.10	1,347.06	5.35	23.05	-91.46	-160.51	10,401.54	10,404.68	10,376.27	28.40	366.336	
1,268.36	1,259.18	1,413.13	1,413.08	5.58	24.31	-91.55	-159.76	10,401.54	10,405.14	10,375.25	29.89	348.091	
1,300.00	1,289.69	1,443.61	1,443.56	5.70	24.89	-91.60	-159.82	10,401.54	10,405.38	10,374.80	30.58	340.218	
1,400.00	1,386.11	1,540.05	1,539.99	6.07	26.72	-91.73	-160.18	10,401.54	10,406.18	10,373.39	32.79	317.363	
1,500.00	1,482.54	1,636.61	1,636.54	6.45	28.56	-91.87	-160.51	10,401.54	10,407.05	10,372.03	35.02	297.216	
1,600.00	1,578.96	1,733.04	1,732.96	6.86	30.40	-92.01	-160.51	10,401.54	10,407.98	10,370.73	37.25	279.385	
1,700.00	1,675.39	1,829.46	1,829.39	7.27	32.23	-92.15	-160.51	10,401.54	10,408.98	10,369.47	39.50	263.496	
1,800.00	1,771.81	1,926.04	1,925.96	7.70	34.07	-92.30	-160.10	10,401.54	10,410.05	10,368.28	41.77	249.243	
1,900.00	1,868.24	2,022.71	2,022.63	8.13	35.91	-92.44	-160.36	10,401.54	10,411.18	10,367.14	44.04	236.400	
2,000.00	1,964.66	2,118.76	2,118.66	8.57	37.77	-92.58	-160.51	10,401.54	10,412.38	10,366.03	46.34	224.674	
2,100.00	2,061.09	2,215.19	2,215.09	9.02	39.67	-92.72	-160.51	10,401.54	10,413.65	10,364.96	48.68	213.901	
2,200.00	2,157.51	2,311.71	2,311.61	9.47	41.56	-92.86	-159.76	10,401.54	10,415.00	10,363.97	51.03	204.088	
2,300.00	2,253.94	2,408.74	2,408.63	9.93	43.47	-93.00	-159.94	10,401.54	10,416.40	10,363.00	53.39	195.087	
2,400.00	2,350.36	2,505.92	2,505.81	10.39	45.37	-93.14	-160.39	10,401.54	10,417.86	10,362.10	55.76	186.826	
2,500.00	2,446.79	2,600.93	2,600.79	10.86	47.29	-93.28	-160.51	10,401.54	10,419.39	10,361.25	58.14	179.209	
2,600.00	2,543.21	2,697.35	2,697.21	11.33	49.24	-93.42	-160.51	10,401.54	10,421.00	10,360.44	60.56	172.066	
2,700.00	2,639.64	2,794.50	2,794.35	11.80	51.21	-93.56	-159.93	10,401.54	10,422.69	10,359.68	63.00	165.429	
2,800.00	2,736.06	2,892.09	2,891.94	12.27	53.19	-93.70	-160.31	10,401.54	10,424.42	10,358.96	65.46	159.259	
2,900.00	2,832.49	2,986.67	2,986.49	12.75	55.11	-93.84	-160.51	10,401.54	10,426.22	10,358.36	67.85	153.663	
3,000.00	2,928.91	3,083.10	3,082.91	13.23	57.07	-93.98	-160.51	10,401.54	10,428.09	10,357.80	70.29	148.363	
3,100.00	3,025.34	3,179.52	3,179.34	13.71	59.03	-94.12	-160.51	10,401.54	10,430.03	10,357.30	72.73	143.416	
3,200.00	3,121.76	3,277.36	3,277.15	14.19	61.02	-94.27	-159.52	10,401.54	10,432.08	10,356.88	75.19	138.736	
3,300.00	3,218.18	3,375.46	3,375.25	14.67	63.01	-94.41	-159.99	10,401.54	10,434.13	10,356.47	77.67	134.341	
3,400.00	3,314.61	3,468.86	3,468.61	15.15	64.90	-94.54	-160.51	10,401.54	10,436.25	10,356.22	80.03	130.397	
3,500.00	3,411.03	3,565.28	3,565.03	15.64	66.80	-94.68	-160.51	10,401.54	10,438.46	10,356.04	82.42	126.656 ES	
3,600.00	3,507.46	3,569.00	3,568.74	16.12	66.87	-94.68	-160.51	10,401.54	10,441.14	10,358.18	82.97	125.845	
3,700.00	3,603.88	3,569.00	3,568.74	16.61	66.87	-94.68	-160.51	10,401.54	10,444.79	10,361.34	83.44	125.175	
3,800.00	3,700.31	3,569.00	3,568.74	17.10	66.87	-94.68	-160.51	10,401.54	10,449.38	10,365.48	83.91	124.534	
3,900.00	3,796.73	3,569.00	3,568.74	17.59	66.87	-94.68	-160.51	10,401.54	10,454.94	10,370.57	84.37	123.921	
4,000.00	3,893.16	3,569.00	3,568.74	18.07	66.87	-94.68	-160.51	10,401.54	10,461.44	10,376.62	84.82	123.335	
4,100.00	3,989.58	3,569.00	3,568.74	18.56	66.87	-94.68	-160.51	10,401.54	10,468.90	10,383.63	85.27	122.777	
4,200.00	4,086.01	3,569.00	3,568.74	19.05	66.87	-94.68	-160.51	10,401.54	10,477.30	10,391.60	85.71	122.245	
4,300.00	4,182.43	3,569.00	3,568.74	19.55	66.87	-94.68	-160.51	10,401.54	10,486.66	10,400.52	86.14	121.740	
4,400.00	4,278.86	3,569.00	3,568.74	20.04	66.87	-94.68	-160.51	10,401.54	10,496.95	10,410.39	86.57	121.261	
4,500.00	4,375.28	3,569.00	3,568.74	20.53	66.87	-94.68	-160.51	10,401.54	10,508.19	10,421.21	86.98	120.807	
4,600.00	4,471.71	3,569.00	3,568.74	21.02	66.87	-94.68	-160.51	10,401.54	10,520.37	10,432.98	87.39	120.379	
4,700.00	4,568.13	3,569.00	3,568.74	21.51	66.87	-94.68	-160.51	10,401.54	10,533.48	10,445.69	87.80	119.976	
4,800.00	4,664.56	3,569.00	3,568.74	22.01	66.87	-94.68	-160.51	10,401.54	10,547.53	10,459.33	88.19	119.597	
4,900.00	4,760.98	3,569.00	3,568.74	22.50	66.87	-94.68	-160.51	10,401.54	10,562.50	10,473.92	88.58	119.242	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	3,569.00	3,568.74	22.99	66.87	-94.68	-160.51	10,401.54	10,578.40	10,489.43	88.96	118.910	
5,100.00	4,953.83	3,569.00	3,568.74	23.49	66.87	-94.68	-160.51	10,401.54	10,595.21	10,505.88	89.33	118.602	
5,200.00	5,050.25	3,569.00	3,568.74	23.98	66.87	-94.68	-160.51	10,401.54	10,612.95	10,523.25	89.70	118.317	
5,300.00	5,146.68	3,569.00	3,568.74	24.48	66.87	-94.68	-160.51	10,401.54	10,631.59	10,541.53	90.06	118.054	
5,400.00	5,243.10	3,569.00	3,568.74	24.97	66.87	-94.68	-160.51	10,401.54	10,651.14	10,560.73	90.41	117.814	
5,500.00	5,339.53	3,569.00	3,568.74	25.47	66.87	-94.68	-160.51	10,401.54	10,671.59	10,580.84	90.75	117.595	
5,600.00	5,435.95	3,569.00	3,568.74	25.96	66.87	-94.68	-160.51	10,401.54	10,692.94	10,601.85	91.08	117.397	
5,700.00	5,532.38	3,569.00	3,568.74	26.46	66.87	-94.68	-160.51	10,401.54	10,715.17	10,623.76	91.41	117.220	
5,800.00	5,628.80	3,569.00	3,568.74	26.96	66.87	-94.68	-160.51	10,401.54	10,738.30	10,646.57	91.73	117.064	
5,900.00	5,725.23	3,569.00	3,568.74	27.45	66.87	-94.68	-160.51	10,401.54	10,762.30	10,670.26	92.04	116.928	
6,000.00	5,821.65	3,569.00	3,568.74	27.95	66.87	-94.68	-160.51	10,401.54	10,787.18	10,694.83	92.35	116.812	
6,100.00	5,918.08	3,569.00	3,568.74	28.45	66.87	-94.68	-160.51	10,401.54	10,812.92	10,720.28	92.64	116.716	
6,200.00	6,014.50	3,569.00	3,568.74	28.94	66.87	-94.68	-160.51	10,401.54	10,839.52	10,746.59	92.93	116.639	
6,300.00	6,110.93	3,569.00	3,568.74	29.44	66.87	-94.68	-160.51	10,401.54	10,866.99	10,773.77	93.21	116.580	
6,400.00	6,207.35	3,569.00	3,568.74	29.94	66.87	-94.68	-160.51	10,401.54	10,895.29	10,801.80	93.49	116.540	
6,500.00	6,303.78	3,569.00	3,568.74	30.43	66.87	-94.68	-160.51	10,401.54	10,924.45	10,830.69	93.76	116.519	
6,600.00	6,400.20	3,569.00	3,568.74	30.93	66.87	-94.68	-160.51	10,401.54	10,954.43	10,860.41	94.02	116.515 SF	
6,677.76	6,475.18	3,569.00	3,568.74	31.32	66.87	-94.68	-160.51	10,401.54	10,978.32	10,884.11	94.22	116.524	
6,700.00	6,496.62	3,569.00	3,568.74	31.43	66.87	-101.93	-160.51	10,401.54	10,985.61	10,891.34	94.27	116.532	
6,750.00	6,544.66	3,569.00	3,568.74	31.68	66.87	-116.96	-160.51	10,401.54	11,004.79	10,910.40	94.39	116.583	
6,800.00	6,592.24	3,569.00	3,568.74	31.92	66.87	-129.17	-160.51	10,401.54	11,027.71	10,933.20	94.51	116.682	
6,850.00	6,639.07	3,569.00	3,568.74	32.16	66.87	-138.48	-160.51	10,401.54	11,054.21	10,959.59	94.62	116.831	
6,900.00	6,684.86	3,569.00	3,568.74	32.40	66.87	-145.51	-160.51	10,401.54	11,084.09	10,989.38	94.71	117.026	
6,950.00	6,729.32	3,569.00	3,568.74	32.62	66.87	-150.87	-160.51	10,401.54	11,117.15	11,022.35	94.80	117.267	
7,000.00	6,772.19	3,569.00	3,568.74	32.84	66.87	-155.08	-160.51	10,401.54	11,153.16	11,058.28	94.88	117.551	
7,050.00	6,813.20	3,569.00	3,568.74	33.05	66.87	-158.51	-160.51	10,401.54	11,191.86	11,096.91	94.95	117.876	
7,100.00	6,852.09	3,569.00	3,568.74	33.26	66.87	-161.44	-160.51	10,401.54	11,232.99	11,137.99	95.00	118.238	
7,150.00	6,888.63	3,569.00	3,568.74	33.45	66.87	-164.08	-160.51	10,401.54	11,276.28	11,181.23	95.05	118.635	
7,200.00	6,922.59	3,569.00	3,568.74	33.64	66.87	-166.67	-160.51	10,401.54	11,321.43	11,226.34	95.09	119.063	
7,250.00	6,953.76	3,569.00	3,568.74	33.82	66.87	-169.53	-160.51	10,401.54	11,368.15	11,273.03	95.12	119.519	
7,300.00	6,981.95	3,569.00	3,568.74	34.00	66.87	-173.21	-160.51	10,401.54	11,416.12	11,320.98	95.14	119.999	
7,350.00	7,006.99	3,569.00	3,568.74	34.17	66.87	-179.22	-160.51	10,401.54	11,465.04	11,369.89	95.15	120.498	
7,400.00	7,028.72	3,569.00	3,568.74	34.35	66.87	166.61	-160.51	10,401.54	11,514.60	11,419.45	95.15	121.012	
7,450.00	7,047.00	3,569.00	3,568.74	34.52	66.87	110.79	-160.51	10,401.54	11,564.48	11,469.33	95.15	121.537	
7,500.00	7,061.73	3,569.00	3,568.74	34.69	66.87	48.42	-160.51	10,401.54	11,614.38	11,519.23	95.15	122.068	
7,550.00	7,072.82	3,569.00	3,568.74	34.86	66.87	32.92	-160.51	10,401.54	11,663.99	11,568.85	95.14	122.600	
7,600.00	7,080.18	3,569.00	3,568.74	35.04	66.87	27.11	-160.51	10,401.54	11,713.01	11,617.88	95.13	123.128	
7,650.00	7,083.79	3,569.00	3,568.74	35.22	66.87	24.17	-160.51	10,401.54	11,761.14	11,666.02	95.12	123.647	
7,674.30	7,084.18	3,569.00	3,568.74	35.32	66.87	23.24	-160.51	10,401.54	11,784.13	11,689.01	95.11	123.895	
7,700.00	7,084.12	3,569.00	3,568.74	35.42	66.87	23.24	-160.51	10,401.54	11,808.29	11,713.18	95.11	124.154	
7,800.00	7,083.88	3,569.00	3,568.74	35.84	66.87	23.24	-160.51	10,401.54	11,902.36	11,807.26	95.10	125.152	
7,900.00	7,083.64	3,569.00	3,568.74	36.34	66.87	23.24	-160.51	10,401.54	11,996.52	11,901.42	95.10	126.147	
8,000.00	7,083.40	3,569.00	3,568.74	36.90	66.87	23.24	-160.51	10,401.54	12,090.78	11,995.68	95.10	127.139	
8,100.00	7,083.16	3,569.00	3,568.74	37.52	66.87	23.24	-160.51	10,401.54	12,185.13	12,090.03	95.10	128.128	
8,200.00	7,082.91	3,569.00	3,568.74	38.21	66.87	23.24	-160.51	10,401.54	12,279.57	12,184.46	95.11	129.114	
8,300.00	7,082.67	3,569.00	3,568.74	38.95	66.87	23.24	-160.51	10,401.54	12,374.09	12,278.98	95.11	130.097	
8,400.00	7,082.43	3,569.00	3,568.74	39.74	66.87	23.24	-160.51	10,401.54	12,468.71	12,373.58	95.12	131.077	
8,500.00	7,082.19	3,569.00	3,568.74	40.59	66.87	23.24	-160.51	10,401.54	12,563.40	12,468.26	95.14	132.054	
8,600.00	7,081.95	3,569.00	3,568.74	41.49	66.87	23.24	-160.51	10,401.54	12,658.18	12,563.02	95.15	133.029	
8,700.00	7,081.71	3,569.00	3,568.74	42.43	66.87	23.24	-160.51	10,401.54	12,753.03	12,657.86	95.17	134.000	
8,800.00	7,081.47	3,569.00	3,568.74	43.41	66.87	23.24	-160.51	10,401.54	12,847.97	12,752.77	95.19	134.968	
8,900.00	7,081.23	3,569.00	3,568.74	44.44	66.87	23.24	-160.51	10,401.54	12,942.98	12,847.76	95.22	135.934	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
9,000.00	7,080.99	3,569.00	3,568.74	45.49	66.87	23.24	-160.51	10,401.54	13,038.06	12,942.82	95.24	136.896	
9,100.00	7,080.74	3,569.00	3,568.74	46.58	66.87	23.24	-160.51	10,401.54	13,133.22	13,037.95	95.27	137.856	
9,200.00	7,080.50	3,569.00	3,568.74	47.70	66.87	23.24	-160.51	10,401.54	13,228.45	13,133.15	95.30	138.813	
9,300.00	7,080.26	3,569.00	3,568.74	48.85	66.87	23.24	-160.51	10,401.54	13,323.75	13,228.42	95.33	139.766	
9,400.00	7,080.02	3,569.00	3,568.74	50.03	66.87	23.24	-160.51	10,401.54	13,419.12	13,323.76	95.36	140.717	
9,500.00	7,079.78	3,569.00	3,568.74	51.23	66.87	23.24	-160.51	10,401.54	13,514.55	13,419.15	95.40	141.665	
9,600.00	7,079.54	3,569.00	3,568.74	52.45	66.87	23.24	-160.51	10,401.54	13,610.05	13,514.62	95.44	142.610	
9,700.00	7,079.30	3,569.00	3,568.74	53.69	66.87	23.24	-160.51	10,401.54	13,705.62	13,610.14	95.47	143.553	
9,800.00	7,079.06	3,569.00	3,568.74	54.95	66.87	23.24	-160.51	10,401.54	13,801.24	13,705.73	95.52	144.492	
9,900.00	7,078.82	3,569.00	3,568.74	56.23	66.87	23.24	-160.51	10,401.54	13,896.93	13,801.38	95.56	145.428	
10,000.00	7,078.57	3,569.00	3,568.74	57.53	66.87	23.24	-160.51	10,401.54	13,992.68	13,897.08	95.60	146.362	
10,100.00	7,078.33	3,569.00	3,568.74	58.84	66.87	23.24	-160.51	10,401.54	14,088.49	13,992.84	95.65	147.293	
10,200.00	7,078.09	3,569.00	3,568.74	60.17	66.87	23.24	-160.51	10,401.54	14,184.36	14,088.66	95.70	148.221	
10,300.00	7,077.85	3,569.00	3,568.74	61.51	66.87	23.24	-160.51	10,401.54	14,280.28	14,184.53	95.75	149.146	
10,400.00	7,077.61	3,569.00	3,568.74	62.86	66.87	23.24	-160.51	10,401.54	14,376.26	14,280.46	95.80	150.069	
10,500.00	7,077.37	3,569.00	3,568.74	64.22	66.87	23.24	-160.51	10,401.54	14,472.29	14,376.44	95.85	150.989	
10,600.00	7,077.13	3,569.00	3,568.74	65.60	66.87	23.24	-160.51	10,401.54	14,568.38	14,472.47	95.90	151.905	
10,700.00	7,076.89	3,569.00	3,568.74	66.98	66.87	23.24	-160.51	10,401.54	14,664.52	14,568.56	95.96	152.820	
10,800.00	7,076.65	3,569.00	3,568.74	68.38	66.87	23.24	-160.51	10,401.54	14,760.71	14,664.69	96.02	153.731	
10,900.00	7,076.40	3,569.00	3,568.74	69.78	66.87	23.24	-160.51	10,401.54	14,856.95	14,760.87	96.07	154.640	
11,000.00	7,076.16	3,569.00	3,568.74	71.20	66.87	23.24	-160.51	10,401.54	14,953.24	14,857.10	96.13	155.546	
11,100.00	7,075.92	3,569.00	3,568.74	72.62	66.87	23.24	-160.51	10,401.54	15,049.57	14,953.38	96.19	156.449	
11,200.00	7,075.68	3,569.00	3,568.74	74.04	66.87	23.24	-160.51	10,401.54	15,145.96	15,049.70	96.26	157.350	
11,300.00	7,075.44	3,569.00	3,568.74	75.48	66.87	23.24	-160.51	10,401.54	15,242.39	15,146.07	96.32	158.248	
11,400.00	7,075.20	3,569.00	3,568.74	76.92	66.87	23.24	-160.51	10,401.54	15,338.87	15,242.49	96.38	159.144	
11,500.00	7,074.96	3,569.00	3,568.74	78.37	66.87	23.24	-160.51	10,401.54	15,435.39	15,338.94	96.45	160.037	
11,600.00	7,074.72	3,569.00	3,568.74	79.82	66.87	23.24	-160.51	10,401.54	15,531.96	15,435.44	96.52	160.927	
11,700.00	7,074.48	3,569.00	3,568.74	81.28	66.87	23.24	-160.51	10,401.54	15,628.57	15,531.98	96.58	161.814	
11,800.00	7,074.23	3,569.00	3,568.74	82.75	66.87	23.24	-160.51	10,401.54	15,725.22	15,628.57	96.65	162.699	
11,900.00	7,073.99	3,569.00	3,568.74	84.22	66.87	23.24	-160.51	10,401.54	15,821.91	15,725.19	96.72	163.582	
12,000.00	7,073.75	3,569.00	3,568.74	85.69	66.87	23.24	-160.51	10,401.54	15,918.65	15,821.86	96.79	164.462	
12,100.00	7,073.51	3,569.00	3,568.74	87.17	66.87	23.24	-160.51	10,401.54	16,015.42	15,918.56	96.86	165.339	
12,200.00	7,073.27	3,569.00	3,568.74	88.65	66.87	23.24	-160.51	10,401.54	16,112.24	16,015.30	96.94	166.214	
12,300.00	7,073.03	3,569.00	3,568.74	90.14	66.87	23.24	-160.51	10,401.54	16,209.09	16,112.08	97.01	167.086	
12,400.00	7,072.79	3,569.00	3,568.74	91.63	66.87	23.24	-160.51	10,401.54	16,305.98	16,208.90	97.08	167.956	
12,500.00	7,072.55	3,569.00	3,568.74	93.13	66.87	23.24	-160.51	10,401.54	16,402.91	16,305.75	97.16	168.824	
12,600.00	7,072.31	3,569.00	3,568.74	94.62	66.87	23.24	-160.51	10,401.54	16,499.87	16,402.64	97.24	169.688	
12,700.00	7,072.06	3,569.00	3,568.74	96.13	66.87	23.24	-160.51	10,401.54	16,596.87	16,499.56	97.31	170.551	
12,800.00	7,071.82	3,569.00	3,568.74	97.63	66.87	23.24	-160.51	10,401.54	16,693.91	16,596.52	97.39	171.411	
12,900.00	7,071.58	3,569.00	3,568.74	99.14	66.87	23.24	-160.51	10,401.54	16,790.98	16,693.51	97.47	172.268	
13,000.00	7,071.34	3,569.00	3,568.74	100.65	66.87	23.24	-160.51	10,401.54	16,888.09	16,790.54	97.55	173.123	
13,100.00	7,071.10	3,569.00	3,568.74	102.16	66.87	23.24	-160.51	10,401.54	16,985.22	16,887.59	97.63	173.976	
13,200.00	7,070.86	3,569.00	3,568.74	103.68	66.87	23.24	-160.51	10,401.54	17,082.40	16,984.69	97.71	174.826	
13,300.00	7,070.62	3,569.00	3,568.74	105.20	66.87	23.24	-160.51	10,401.54	17,179.60	17,081.81	97.79	175.674	
13,400.00	7,070.38	3,569.00	3,568.74	106.72	66.87	23.24	-160.51	10,401.54	17,276.84	17,178.96	97.87	176.520	
13,500.00	7,070.14	3,569.00	3,568.74	108.24	66.87	23.24	-160.51	10,401.54	17,374.10	17,276.15	97.96	177.363	
13,600.00	7,069.89	3,569.00	3,568.74	109.77	66.87	23.24	-160.51	10,401.54	17,471.40	17,373.36	98.04	178.204	
13,700.00	7,069.65	3,569.00	3,568.74	111.30	66.87	23.24	-160.51	10,401.54	17,568.73	17,470.60	98.13	179.042	
13,800.00	7,069.41	3,569.00	3,568.74	112.83	66.87	23.24	-160.51	10,401.54	17,666.09	17,567.88	98.21	179.878	
13,900.00	7,069.17	3,569.00	3,568.74	114.36	66.87	23.24	-160.51	10,401.54	17,763.48	17,665.18	98.30	180.712	
14,000.00	7,068.93	3,569.00	3,568.74	115.89	66.87	23.24	-160.51	10,401.54	17,860.89	17,762.51	98.38	181.544	
14,100.00	7,068.69	3,569.00	3,568.74	117.43	66.87	23.24	-160.51	10,401.54	17,958.34	17,859.87	98.47	182.373	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,200.00	7,068.45	3,569.00	3,568.74	118.97	66.87	23.24	-160.51	10,401.54	18,055.81	17,957.25	98.56	183.200	
14,300.00	7,068.21	3,569.00	3,568.74	120.50	66.87	23.24	-160.51	10,401.54	18,153.31	18,054.67	98.65	184.025	
14,400.00	7,067.97	3,569.00	3,568.74	122.05	66.87	23.24	-160.51	10,401.54	18,250.84	18,152.11	98.73	184.847	
14,500.00	7,067.72	3,569.00	3,568.74	123.59	66.87	23.24	-160.51	10,401.54	18,348.39	18,249.57	98.82	185.667	
14,600.00	7,067.48	3,569.00	3,568.74	125.13	66.87	23.24	-160.51	10,401.54	18,445.97	18,347.06	98.91	186.485	
14,700.00	7,067.24	3,569.00	3,568.74	126.68	66.87	23.24	-160.51	10,401.54	18,543.58	18,444.58	99.00	187.300	
14,800.00	7,067.00	3,569.00	3,568.74	128.22	66.87	23.24	-160.51	10,401.54	18,641.21	18,542.12	99.10	188.114	
14,900.00	7,066.76	3,569.00	3,568.74	129.77	66.87	23.24	-160.51	10,401.54	18,738.87	18,639.68	99.19	188.925	
15,000.00	7,066.52	3,569.00	3,568.74	131.32	66.87	23.24	-160.51	10,401.54	18,836.55	18,737.27	99.28	189.734	
15,100.00	7,066.28	3,569.00	3,568.74	132.87	66.87	23.24	-160.51	10,401.54	18,934.26	18,834.88	99.37	190.541	
15,200.00	7,066.04	3,569.00	3,568.74	134.42	66.87	23.24	-160.51	10,401.54	19,031.98	18,932.52	99.46	191.345	
15,300.00	7,065.80	3,569.00	3,568.74	135.97	66.87	23.24	-160.51	10,401.54	19,129.74	19,030.18	99.56	192.148	
15,400.00	7,065.55	3,569.00	3,568.74	137.53	66.87	23.24	-160.51	10,401.54	19,227.51	19,127.86	99.65	192.948	
15,500.00	7,065.31	3,569.00	3,568.74	139.08	66.87	23.24	-160.51	10,401.54	19,325.31	19,225.57	99.75	193.746	
15,600.00	7,065.07	3,569.00	3,568.74	140.64	66.87	23.24	-160.51	10,401.54	19,423.13	19,323.29	99.84	194.542	
15,700.00	7,064.83	3,569.00	3,568.74	142.20	66.87	23.24	-160.51	10,401.54	19,520.98	19,421.04	99.94	195.335	
15,800.00	7,064.59	3,569.00	3,568.74	143.75	66.87	23.24	-160.51	10,401.54	19,618.84	19,518.81	100.03	196.127	
15,900.00	7,064.35	3,569.00	3,568.74	145.31	66.87	23.24	-160.51	10,401.54	19,716.73	19,616.60	100.13	196.916	
16,000.00	7,064.11	3,569.00	3,568.74	146.87	66.87	23.24	-160.51	10,401.54	19,814.63	19,714.41	100.22	197.704	
16,100.00	7,063.87	3,569.00	3,568.74	148.43	66.87	23.24	-160.51	10,401.54	19,912.56	19,812.24	100.32	198.489	
16,200.00	7,063.63	3,569.00	3,568.74	149.99	66.87	23.24	-160.51	10,401.54	20,010.51	19,910.09	100.42	199.272	
16,300.00	7,063.38	3,569.00	3,568.74	151.56	66.87	23.24	-160.51	10,401.54	20,108.48	20,007.96	100.52	200.053	
16,400.00	7,063.14	3,569.00	3,568.74	153.12	66.87	23.24	-160.51	10,401.54	20,206.47	20,105.85	100.61	200.832	
16,500.00	7,062.90	3,569.00	3,568.74	154.68	66.87	23.24	-160.51	10,401.54	20,304.48	20,203.76	100.71	201.609	
16,600.00	7,062.66	3,569.00	3,568.74	156.25	66.87	23.24	-160.51	10,401.54	20,402.50	20,301.69	100.81	202.383	
16,700.00	7,062.42	3,569.00	3,568.74	157.81	66.87	23.24	-160.51	10,401.54	20,500.55	20,399.64	100.91	203.156	
16,800.00	7,062.18	3,569.00	3,568.74	159.38	66.87	23.24	-160.51	10,401.54	20,598.62	20,497.61	101.01	203.926	
16,874.30	7,062.00	3,569.00	3,568.74	160.54	66.87	23.24	-160.51	10,401.54	20,671.49	20,570.40	101.08	204.497	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-93.18	-159.53	-2,868.28	2,872.85				
100.00	100.00	72.00	72.00	3.29	0.71	-93.18	-159.53	-2,868.28	2,872.71	2,868.71	4.00	718.371	
200.00	200.00	172.00	172.00	3.34	1.69	-93.18	-159.53	-2,868.28	2,872.71	2,867.68	5.03	571.071	
300.00	300.00	272.00	272.00	3.42	2.68	-93.18	-159.53	-2,868.28	2,872.71	2,866.61	6.10	471.014	
400.00	400.00	372.01	372.00	3.54	4.07	-93.18	-159.53	-2,868.28	2,872.71	2,865.11	7.60	377.754	
500.00	500.00	472.01	472.00	3.69	6.11	-93.18	-159.53	-2,868.28	2,872.71	2,862.91	9.80	293.195	
600.00	599.98	571.96	571.94	3.86	8.15	84.94	-158.77	-2,868.28	2,872.52	2,860.51	12.01	239.206	
700.00	699.84	671.40	671.38	4.04	10.19	85.05	-158.93	-2,868.28	2,872.07	2,857.84	14.23	201.896	
800.00	799.45	770.65	770.63	4.25	12.21	85.23	-159.37	-2,868.28	2,871.35	2,854.89	16.46	174.405	
900.00	898.70	870.77	870.70	4.48	14.32	85.49	-159.53	-2,868.28	2,870.36	2,851.56	18.81	152.638	
1,000.00	997.47	969.53	969.47	4.74	16.42	85.82	-159.53	-2,868.28	2,869.17	2,848.00	21.16	135.568	
1,100.00	1,095.62	1,067.62	1,067.54	5.03	18.50	86.24	-158.45	-2,868.28	2,867.78	2,844.24	23.54	121.847	
1,200.00	1,193.06	1,164.83	1,164.75	5.35	20.57	86.70	-158.69	-2,868.28	2,866.37	2,840.45	25.92	110.593	
1,268.36	1,259.18	1,230.91	1,230.83	5.58	21.97	87.05	-159.04	-2,868.28	2,865.40	2,837.84	27.56	103.986	
1,300.00	1,289.69	1,261.44	1,261.35	5.70	22.62	87.21	-159.26	-2,868.28	2,864.97	2,836.65	28.32	101.176	
1,400.00	1,386.11	1,358.25	1,358.11	6.07	24.73	87.71	-159.53	-2,868.28	2,863.76	2,832.96	30.80	92.982	
1,500.00	1,482.54	1,454.68	1,454.54	6.45	26.87	88.23	-159.53	-2,868.28	2,862.78	2,829.46	33.32	85.919	
1,600.00	1,578.96	1,551.11	1,550.96	6.86	29.00	88.76	-158.45	-2,868.28	2,862.06	2,826.21	35.86	79.823	
1,700.00	1,675.39	1,647.76	1,647.60	7.27	31.14	89.27	-158.64	-2,868.28	2,861.59	2,823.18	38.41	74.505	
1,800.00	1,771.81	1,744.59	1,744.43	7.70	33.28	89.77	-159.16	-2,868.28	2,861.34	2,820.37	40.98	69.831	
1,849.73	1,819.76	1,792.81	1,792.65	7.91	34.34	90.02	-159.54	-2,868.28	2,861.30	2,819.05	42.26	67.712 CC	
1,900.00	1,868.24	1,840.47	1,840.24	8.13	35.44	90.27	-159.53	-2,868.28	2,861.34	2,817.76	43.57	65.665	
2,000.00	1,964.66	1,936.90	1,936.66	8.57	37.67	90.78	-159.53	-2,868.28	2,861.59	2,815.35	46.24	61.889	
2,100.00	2,061.09	2,033.32	2,033.09	9.02	39.89	91.29	-159.53	-2,868.28	2,862.09	2,813.18	48.91	58.522	
2,200.00	2,157.51	2,130.46	2,130.20	9.47	42.12	91.83	-158.30	-2,868.28	2,862.91	2,811.32	51.60	55.486	
2,300.00	2,253.94	2,227.93	2,227.66	9.93	44.37	92.34	-158.86	-2,868.28	2,863.87	2,809.57	54.30	52.742	
2,400.00	2,350.36	2,322.72	2,322.36	10.39	46.51	92.83	-159.53	-2,868.28	2,865.05	2,808.15	56.90	50.348	
2,500.00	2,446.79	2,419.14	2,418.79	10.86	48.57	93.34	-159.53	-2,868.28	2,866.53	2,807.11	59.42	48.241	
2,600.00	2,543.21	2,515.57	2,515.21	11.33	50.62	93.85	-159.53	-2,868.28	2,868.25	2,806.31	61.94	46.308	
2,700.00	2,639.64	2,613.02	2,612.64	11.80	52.69	94.38	-158.31	-2,868.28	2,870.36	2,805.87	64.48	44.514	
2,800.00	2,736.06	2,711.09	2,710.71	12.27	54.78	94.89	-158.83	-2,868.28	2,872.51	2,805.47	67.04	42.848	
2,900.00	2,832.49	2,804.92	2,804.49	12.75	56.79	95.37	-159.53	-2,868.28	2,874.88	2,805.35	69.53	41.350 ES	
3,000.00	2,928.91	2,901.34	2,900.91	13.23	58.93	95.88	-159.53	-2,868.28	2,877.57	2,805.44	72.14	39.890	
3,100.00	3,025.34	2,997.77	2,997.34	13.71	61.07	96.38	-159.53	-2,868.28	2,880.51	2,805.76	74.75	38.535	
3,200.00	3,121.76	3,095.31	3,094.87	14.19	63.23	96.91	-158.90	-2,868.28	2,883.78	2,806.39	77.39	37.264	
3,300.00	3,218.18	3,193.19	3,192.75	14.67	65.40	97.41	-159.28	-2,868.28	2,887.14	2,807.10	80.04	36.073	
3,400.00	3,314.61	3,287.13	3,286.61	15.15	67.62	97.90	-159.53	-2,868.28	2,890.75	2,808.02	82.74	34.940	
3,500.00	3,411.03	3,383.56	3,383.03	15.64	70.02	98.40	-159.53	-2,868.28	2,894.64	2,809.03	85.61	33.811	
3,600.00	3,507.46	3,468.00	3,467.40	16.12	72.13	98.84	-159.53	-2,868.28	2,898.80	2,810.60	88.19	32.869	
3,700.00	3,603.88	3,468.00	3,467.40	16.61	72.13	98.84	-159.53	-2,868.28	2,905.16	2,816.56	88.60	32.790	
3,800.00	3,700.31	3,468.00	3,467.40	17.10	72.13	98.84	-159.53	-2,868.28	2,914.95	2,826.04	88.91	32.786 SF	
3,900.00	3,796.73	3,468.00	3,467.40	17.59	72.13	98.84	-159.53	-2,868.28	2,928.12	2,838.99	89.13	32.854	
4,000.00	3,893.16	3,468.00	3,467.40	18.07	72.13	98.84	-159.53	-2,868.28	2,944.62	2,855.37	89.25	32.993	
4,100.00	3,989.58	3,468.00	3,467.40	18.56	72.13	98.84	-159.53	-2,868.28	2,964.41	2,875.13	89.28	33.202	
4,200.00	4,086.01	3,468.00	3,467.40	19.05	72.13	98.84	-159.53	-2,868.28	2,987.42	2,898.19	89.23	33.480	
4,300.00	4,182.43	3,468.00	3,467.40	19.55	72.13	98.84	-159.53	-2,868.28	3,013.58	2,924.48	89.10	33.824	
4,400.00	4,278.86	3,468.00	3,467.40	20.04	72.13	98.84	-159.53	-2,868.28	3,042.79	2,953.91	88.89	34.233	
4,500.00	4,375.28	3,468.00	3,467.40	20.53	72.13	98.84	-159.53	-2,868.28	3,074.99	2,986.38	88.60	34.705	
4,600.00	4,471.71	3,468.00	3,467.40	21.02	72.13	98.84	-159.53	-2,868.28	3,110.06	3,021.81	88.26	35.239	
4,700.00	4,568.13	3,468.00	3,467.40	21.51	72.13	98.84	-159.53	-2,868.28	3,147.93	3,060.08	87.85	35.834	
4,800.00	4,664.56	3,468.00	3,467.40	22.01	72.13	98.84	-159.53	-2,868.28	3,188.48	3,101.09	87.39	36.487	
4,900.00	4,760.98	3,468.00	3,467.40	22.50	72.13	98.84	-159.53	-2,868.28	3,231.61	3,144.74	86.88	37.197	

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 752H
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 752H	**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
5,000.00	4,857.41	3,468.00	3,467.40	22.99	72.13	98.84	-159.53	-2,868.28	3,277.24	3,190.91	86.33	37.963	
5,100.00	4,953.83	3,468.00	3,467.40	23.49	72.13	98.84	-159.53	-2,868.28	3,325.24	3,239.50	85.74	38.782	
5,200.00	5,050.25	3,468.00	3,467.40	23.98	72.13	98.84	-159.53	-2,868.28	3,375.53	3,290.40	85.13	39.654	
5,300.00	5,146.68	3,468.00	3,467.40	24.48	72.13	98.84	-159.53	-2,868.28	3,427.99	3,343.51	84.48	40.576	
5,400.00	5,243.10	3,468.00	3,467.40	24.97	72.13	98.84	-159.53	-2,868.28	3,482.54	3,398.72	83.82	41.547	
5,500.00	5,339.53	3,468.00	3,467.40	25.47	72.13	98.84	-159.53	-2,868.28	3,539.07	3,455.93	83.14	42.566	
5,600.00	5,435.95	3,468.00	3,467.40	25.96	72.13	98.84	-159.53	-2,868.28	3,597.49	3,515.04	82.45	43.630	
5,700.00	5,532.38	3,468.00	3,467.40	26.46	72.13	98.84	-159.53	-2,868.28	3,657.72	3,575.96	81.76	44.739	
5,800.00	5,628.80	3,468.00	3,467.40	26.96	72.13	98.84	-159.53	-2,868.28	3,719.66	3,638.60	81.06	45.890	
5,900.00	5,725.23	3,468.00	3,467.40	27.45	72.13	98.84	-159.53	-2,868.28	3,783.23	3,702.87	80.35	47.083	
6,000.00	5,821.65	3,468.00	3,467.40	27.95	72.13	98.84	-159.53	-2,868.28	3,848.34	3,768.69	79.65	48.314	
6,100.00	5,918.08	3,468.00	3,467.40	28.45	72.13	98.84	-159.53	-2,868.28	3,914.93	3,835.98	78.96	49.584	
6,200.00	6,014.50	3,468.00	3,467.40	28.94	72.13	98.84	-159.53	-2,868.28	3,982.92	3,904.65	78.27	50.890	
6,300.00	6,110.93	3,468.00	3,467.40	29.44	72.13	98.84	-159.53	-2,868.28	4,052.23	3,974.65	77.58	52.231	
6,400.00	6,207.35	3,468.00	3,467.40	29.94	72.13	98.84	-159.53	-2,868.28	4,122.81	4,045.90	76.91	53.605	
6,500.00	6,303.78	3,468.00	3,467.40	30.43	72.13	98.84	-159.53	-2,868.28	4,194.58	4,118.33	76.25	55.011	
6,600.00	6,400.20	3,468.00	3,467.40	30.93	72.13	98.84	-159.53	-2,868.28	4,267.49	4,191.88	75.60	56.446	
6,677.76	6,475.18	3,468.00	3,467.40	31.32	72.13	98.84	-159.53	-2,868.28	4,324.93	4,249.82	75.11	57.583	
6,700.00	6,496.62	3,468.00	3,467.40	31.43	72.13	91.24	-159.53	-2,868.28	4,341.21	4,266.25	74.96	57.911	
6,750.00	6,544.66	3,468.00	3,467.40	31.68	72.13	75.57	-159.53	-2,868.28	4,376.08	4,301.46	74.62	58.644	
6,800.00	6,592.24	3,468.00	3,467.40	31.92	72.13	62.90	-159.53	-2,868.28	4,408.38	4,334.13	74.25	59.370	
6,850.00	6,639.07	3,468.00	3,467.40	32.16	72.13	53.25	-159.53	-2,868.28	4,437.99	4,364.13	73.86	60.084	
6,900.00	6,684.86	3,468.00	3,467.40	32.40	72.13	46.04	-159.53	-2,868.28	4,464.78	4,391.33	73.45	60.785	
6,950.00	6,729.32	3,468.00	3,467.40	32.62	72.13	40.61	-159.53	-2,868.28	4,488.64	4,415.61	73.02	61.471	
7,000.00	6,772.19	3,468.00	3,467.40	32.84	72.13	36.47	-159.53	-2,868.28	4,509.45	4,436.88	72.57	62.138	
7,050.00	6,813.20	3,468.00	3,467.40	33.05	72.13	33.25	-159.53	-2,868.28	4,527.15	4,455.04	72.11	62.784	
7,100.00	6,852.09	3,468.00	3,467.40	33.26	72.13	30.73	-159.53	-2,868.28	4,541.65	4,470.02	71.63	63.406	
7,150.00	6,888.63	3,468.00	3,467.40	33.45	72.13	28.73	-159.53	-2,868.28	4,552.90	4,481.76	71.14	64.001	
7,200.00	6,922.59	3,468.00	3,467.40	33.64	72.13	27.14	-159.53	-2,868.28	4,560.85	4,490.21	70.64	64.566	
7,250.00	6,953.76	3,468.00	3,467.40	33.82	72.13	25.87	-159.53	-2,868.28	4,565.48	4,495.34	70.13	65.097	
7,300.00	6,981.95	3,468.00	3,467.40	34.00	72.13	24.87	-159.53	-2,868.28	4,566.76	4,497.13	69.62	65.592	
7,350.00	7,006.99	3,468.00	3,467.40	34.17	72.13	24.10	-159.53	-2,868.28	4,564.68	4,495.57	69.11	66.045	
7,400.00	7,028.72	3,468.00	3,467.40	34.35	72.13	23.51	-159.53	-2,868.28	4,559.26	4,490.65	68.61	66.454	
7,450.00	7,047.00	3,468.00	3,467.40	34.52	72.13	23.10	-159.53	-2,868.28	4,550.52	4,482.42	68.11	66.815	
7,500.00	7,061.73	3,468.00	3,467.40	34.69	72.13	22.85	-159.53	-2,868.28	4,538.49	4,470.88	67.61	67.125	
7,550.00	7,072.82	3,468.00	3,467.40	34.86	72.13	22.75	-159.53	-2,868.28	4,523.23	4,456.10	67.13	67.380	
7,600.00	7,080.18	3,468.00	3,467.40	35.04	72.13	22.79	-159.53	-2,868.28	4,504.78	4,438.12	66.66	67.577	
7,650.00	7,083.79	3,468.00	3,467.40	35.22	72.13	22.99	-159.53	-2,868.28	4,483.23	4,417.03	66.21	67.714	
7,674.30	7,084.18	3,468.00	3,467.40	35.32	72.13	23.14	-159.53	-2,868.28	4,471.67	4,405.67	66.00	67.756	
7,700.00	7,084.12	3,468.00	3,467.40	35.42	72.13	23.14	-159.53	-2,868.28	4,459.12	4,393.35	65.77	67.797	
7,800.00	7,083.88	3,468.00	3,467.40	35.84	72.13	23.14	-159.53	-2,868.28	4,411.38	4,346.48	64.90	67.975	
7,900.00	7,083.64	3,468.00	3,467.40	36.34	72.13	23.14	-159.53	-2,868.28	4,365.41	4,301.37	64.04	68.169	
8,000.00	7,083.40	3,468.00	3,467.40	36.90	72.13	23.14	-159.53	-2,868.28	4,321.26	4,258.06	63.20	68.377	
8,100.00	7,083.16	3,468.00	3,467.40	37.52	72.13	23.14	-159.53	-2,868.28	4,279.00	4,216.62	62.38	68.595	
8,200.00	7,082.91	3,468.00	3,467.40	38.21	72.13	23.14	-159.53	-2,868.28	4,238.67	4,177.08	61.59	68.818	
8,300.00	7,082.67	3,468.00	3,467.40	38.95	72.13	23.14	-159.53	-2,868.28	4,200.34	4,139.50	60.84	69.042	
8,400.00	7,082.43	3,468.00	3,467.40	39.74	72.13	23.14	-159.53	-2,868.28	4,164.06	4,103.93	60.12	69.260	
8,500.00	7,082.19	3,468.00	3,467.40	40.59	72.13	23.14	-159.53	-2,868.28	4,129.88	4,070.42	59.45	69.467	
8,600.00	7,081.95	3,468.00	3,467.40	41.49	72.13	23.14	-159.53	-2,868.28	4,097.85	4,039.02	58.83	69.655	
8,700.00	7,081.71	3,468.00	3,467.40	42.43	72.13	23.14	-159.53	-2,868.28	4,068.03	4,009.77	58.27	69.818	
8,800.00	7,081.47	3,468.00	3,467.40	43.41	72.13	23.14	-159.53	-2,868.28	4,040.47	3,982.71	57.76	69.947	
8,900.00	7,081.23	3,468.00	3,467.40	44.44	72.13	23.14	-159.53	-2,868.28	4,015.21	3,957.88	57.33	70.034	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,080.99	3,468.00	3,467.40	45.49	72.13	23.14	-159.53	-2,868.28	3,992.30	3,935.32	56.97	70.072	
9,100.00	7,080.74	3,468.00	3,467.40	46.58	72.13	23.14	-159.53	-2,868.28	3,971.77	3,915.07	56.70	70.051	
9,200.00	7,080.50	3,468.00	3,467.40	47.70	72.13	23.14	-159.53	-2,868.28	3,953.67	3,897.16	56.51	69.965	
9,300.00	7,080.26	3,468.00	3,467.40	48.85	72.13	23.14	-159.53	-2,868.28	3,938.02	3,881.60	56.41	69.807	
9,400.00	7,080.02	3,468.00	3,467.40	50.03	72.13	23.14	-159.53	-2,868.28	3,924.86	3,868.44	56.41	69.572	
9,500.00	7,079.78	3,468.00	3,467.40	51.23	72.13	23.14	-159.53	-2,868.28	3,914.21	3,857.69	56.52	69.255	
9,600.00	7,079.54	3,468.00	3,467.40	52.45	72.13	23.14	-159.53	-2,868.28	3,906.09	3,849.36	56.73	68.857	
9,700.00	7,079.30	3,468.00	3,467.40	53.69	72.13	23.14	-159.53	-2,868.28	3,900.52	3,843.47	57.04	68.376	
9,800.00	7,079.06	3,468.00	3,467.40	54.95	72.13	23.14	-159.53	-2,868.28	3,897.51	3,840.04	57.47	67.819	
9,867.43	7,078.89	3,468.00	3,467.40	55.82	72.13	23.14	-159.53	-2,868.28	3,896.92	3,839.11	57.82	67.400	
9,900.00	7,078.82	3,468.00	3,467.40	56.23	72.13	23.14	-159.53	-2,868.28	3,897.06	3,839.06	58.00	67.189	
10,000.00	7,078.57	3,468.00	3,467.40	57.53	72.13	23.14	-159.53	-2,868.28	3,899.18	3,840.54	58.64	66.495	
10,100.00	7,078.33	3,468.00	3,467.40	58.84	72.13	23.14	-159.53	-2,868.28	3,903.86	3,844.48	59.38	65.749	
10,200.00	7,078.09	3,468.00	3,467.40	60.17	72.13	23.14	-159.53	-2,868.28	3,911.09	3,850.88	60.21	64.961	
10,300.00	7,077.85	3,468.00	3,467.40	61.51	72.13	23.14	-159.53	-2,868.28	3,920.86	3,859.73	61.13	64.143	
10,400.00	7,077.61	3,468.00	3,467.40	62.86	72.13	23.14	-159.53	-2,868.28	3,933.15	3,871.02	62.13	63.308	
10,500.00	7,077.37	3,468.00	3,467.40	64.22	72.13	23.14	-159.53	-2,868.28	3,947.93	3,884.73	63.20	62.469	
10,600.00	7,077.13	3,468.00	3,467.40	65.60	72.13	23.14	-159.53	-2,868.28	3,965.18	3,900.85	64.33	61.636	
10,700.00	7,076.89	3,468.00	3,467.40	66.98	72.13	23.14	-159.53	-2,868.28	3,984.87	3,919.35	65.52	60.819	
10,800.00	7,076.65	3,468.00	3,467.40	68.38	72.13	23.14	-159.53	-2,868.28	4,006.96	3,940.21	66.75	60.029	
10,900.00	7,076.40	3,468.00	3,467.40	69.78	72.13	23.14	-159.53	-2,868.28	4,031.40	3,963.39	68.02	59.272	
11,000.00	7,076.16	3,468.00	3,467.40	71.20	72.13	23.14	-159.53	-2,868.28	4,058.17	3,988.86	69.31	58.553	
11,100.00	7,075.92	3,468.00	3,467.40	72.62	72.13	23.14	-159.53	-2,868.28	4,087.20	4,016.59	70.62	57.879	
11,200.00	7,075.68	3,468.00	3,467.40	74.04	72.13	23.14	-159.53	-2,868.28	4,118.47	4,046.53	71.94	57.251	
11,300.00	7,075.44	3,468.00	3,467.40	75.48	72.13	23.14	-159.53	-2,868.28	4,151.90	4,078.64	73.26	56.673	
11,400.00	7,075.20	3,468.00	3,467.40	76.92	72.13	23.14	-159.53	-2,868.28	4,187.46	4,112.87	74.58	56.146	
11,500.00	7,074.96	3,468.00	3,467.40	78.37	72.13	23.14	-159.53	-2,868.28	4,225.08	4,149.19	75.89	55.670	
11,600.00	7,074.72	3,468.00	3,467.40	79.82	72.13	23.14	-159.53	-2,868.28	4,264.72	4,187.52	77.19	55.246	
11,700.00	7,074.48	3,468.00	3,467.40	81.28	72.13	23.14	-159.53	-2,868.28	4,306.31	4,227.83	78.48	54.873	
11,800.00	7,074.23	3,468.00	3,467.40	82.75	72.13	23.14	-159.53	-2,868.28	4,349.81	4,270.07	79.74	54.549	
11,900.00	7,073.99	3,468.00	3,467.40	84.22	72.13	23.14	-159.53	-2,868.28	4,395.15	4,314.17	80.98	54.274	
12,000.00	7,073.75	3,468.00	3,467.40	85.69	72.13	23.14	-159.53	-2,868.28	4,442.28	4,360.09	82.19	54.046	
12,100.00	7,073.51	3,468.00	3,467.40	87.17	72.13	23.14	-159.53	-2,868.28	4,491.14	4,407.76	83.38	53.863	
12,200.00	7,073.27	3,468.00	3,467.40	88.65	72.13	23.14	-159.53	-2,868.28	4,541.68	4,457.15	84.54	53.725	
12,300.00	7,073.03	3,468.00	3,467.40	90.14	72.13	23.14	-159.53	-2,868.28	4,593.84	4,508.18	85.66	53.628	
12,400.00	7,072.79	3,468.00	3,467.40	91.63	72.13	23.14	-159.53	-2,868.28	4,647.57	4,560.82	86.76	53.571	
12,500.00	7,072.55	3,468.00	3,467.40	93.13	72.13	23.14	-159.53	-2,868.28	4,702.81	4,614.99	87.82	53.552	
12,600.00	7,072.31	3,468.00	3,467.40	94.62	72.13	23.14	-159.53	-2,868.28	4,759.51	4,670.66	88.85	53.570	
12,700.00	7,072.06	3,468.00	3,467.40	96.13	72.13	23.14	-159.53	-2,868.28	4,817.62	4,727.78	89.84	53.622	
12,800.00	7,071.82	3,468.00	3,467.40	97.63	72.13	23.14	-159.53	-2,868.28	4,877.09	4,786.28	90.81	53.707	
12,900.00	7,071.58	3,468.00	3,467.40	99.14	72.13	23.14	-159.53	-2,868.28	4,937.86	4,846.12	91.74	53.824	
13,000.00	7,071.34	3,468.00	3,467.40	100.65	72.13	23.14	-159.53	-2,868.28	4,999.90	4,907.26	92.64	53.970	
13,100.00	7,071.10	3,468.00	3,467.40	102.16	72.13	23.14	-159.53	-2,868.28	5,063.15	4,969.64	93.51	54.145	
13,200.00	7,070.86	3,468.00	3,467.40	103.68	72.13	23.14	-159.53	-2,868.28	5,127.58	5,033.23	94.35	54.346	
13,300.00	7,070.62	3,468.00	3,467.40	105.20	72.13	23.14	-159.53	-2,868.28	5,193.13	5,097.97	95.16	54.573	
13,400.00	7,070.38	3,468.00	3,467.40	106.72	72.13	23.14	-159.53	-2,868.28	5,259.76	5,163.82	95.94	54.823	
13,500.00	7,070.14	3,468.00	3,467.40	108.24	72.13	23.14	-159.53	-2,868.28	5,327.44	5,230.74	96.69	55.097	
13,600.00	7,069.89	3,468.00	3,467.40	109.77	72.13	23.14	-159.53	-2,868.28	5,396.12	5,298.70	97.42	55.392	
13,700.00	7,069.65	3,468.00	3,467.40	111.30	72.13	23.14	-159.53	-2,868.28	5,465.77	5,367.65	98.11	55.708	
13,800.00	7,069.41	3,468.00	3,467.40	112.83	72.13	23.14	-159.53	-2,868.28	5,536.35	5,437.56	98.79	56.044	
13,900.00	7,069.17	3,468.00	3,467.40	114.36	72.13	23.14	-159.53	-2,868.28	5,607.82	5,508.39	99.43	56.397	
14,000.00	7,068.93	3,468.00	3,467.40	115.89	72.13	23.14	-159.53	-2,868.28	5,680.15	5,580.10	100.06	56.769	

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 752H
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 752H	**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
14,100.00	7,068.69	3,468.00	3,467.40	117.43	72.13	23.14	-159.53	-2,868.28	5,753.32	5,652.66	100.66	57.157	
14,200.00	7,068.45	3,468.00	3,467.40	118.97	72.13	23.14	-159.53	-2,868.28	5,827.28	5,726.04	101.24	57.561	
14,300.00	7,068.21	3,468.00	3,467.40	120.50	72.13	23.14	-159.53	-2,868.28	5,902.01	5,800.21	101.79	57.980	
14,400.00	7,067.97	3,468.00	3,467.40	122.05	72.13	23.14	-159.53	-2,868.28	5,977.48	5,875.14	102.33	58.414	
14,500.00	7,067.72	3,468.00	3,467.40	123.59	72.13	23.14	-159.53	-2,868.28	6,053.65	5,950.81	102.85	58.860	
14,600.00	7,067.48	3,468.00	3,467.40	125.13	72.13	23.14	-159.53	-2,868.28	6,130.52	6,027.17	103.35	59.320	
14,700.00	7,067.24	3,468.00	3,467.40	126.68	72.13	23.14	-159.53	-2,868.28	6,208.04	6,104.21	103.83	59.793	
14,800.00	7,067.00	3,468.00	3,467.40	128.22	72.13	23.14	-159.53	-2,868.28	6,286.20	6,181.91	104.29	60.276	
14,900.00	7,066.76	3,468.00	3,467.40	129.77	72.13	23.14	-159.53	-2,868.28	6,364.97	6,260.23	104.74	60.771	
15,000.00	7,066.52	3,468.00	3,467.40	131.32	72.13	23.14	-159.53	-2,868.28	6,444.32	6,339.16	105.17	61.277	
15,100.00	7,066.28	3,468.00	3,467.40	132.87	72.13	23.14	-159.53	-2,868.28	6,524.25	6,418.66	105.58	61.793	
15,200.00	7,066.04	3,468.00	3,467.40	134.42	72.13	23.14	-159.53	-2,868.28	6,604.72	6,498.74	105.98	62.318	
15,300.00	7,065.80	3,468.00	3,467.40	135.97	72.13	23.14	-159.53	-2,868.28	6,685.72	6,579.35	106.37	62.852	
15,400.00	7,065.55	3,468.00	3,467.40	137.53	72.13	23.14	-159.53	-2,868.28	6,767.23	6,660.48	106.75	63.395	
15,500.00	7,065.31	3,468.00	3,467.40	139.08	72.13	23.14	-159.53	-2,868.28	6,849.22	6,742.12	107.11	63.947	
15,600.00	7,065.07	3,468.00	3,467.40	140.64	72.13	23.14	-159.53	-2,868.28	6,931.69	6,824.24	107.46	64.506	
15,700.00	7,064.83	3,468.00	3,467.40	142.20	72.13	23.14	-159.53	-2,868.28	7,014.62	6,906.82	107.80	65.073	
15,800.00	7,064.59	3,468.00	3,467.40	143.75	72.13	23.14	-159.53	-2,868.28	7,097.99	6,989.86	108.12	65.647	
15,900.00	7,064.35	3,468.00	3,467.40	145.31	72.13	23.14	-159.53	-2,868.28	7,181.78	7,073.34	108.44	66.228	
16,000.00	7,064.11	3,468.00	3,467.40	146.87	72.13	23.14	-159.53	-2,868.28	7,265.98	7,157.23	108.75	66.815	
16,100.00	7,063.87	3,468.00	3,467.40	148.43	72.13	23.14	-159.53	-2,868.28	7,350.58	7,241.53	109.04	67.409	
16,200.00	7,063.63	3,468.00	3,467.40	149.99	72.13	23.14	-159.53	-2,868.28	7,435.55	7,326.22	109.33	68.009	
16,300.00	7,063.38	3,468.00	3,467.40	151.56	72.13	23.14	-159.53	-2,868.28	7,520.90	7,411.29	109.61	68.614	
16,400.00	7,063.14	3,468.00	3,467.40	153.12	72.13	23.14	-159.53	-2,868.28	7,606.61	7,496.73	109.88	69.225	
16,500.00	7,062.90	3,468.00	3,467.40	154.68	72.13	23.14	-159.53	-2,868.28	7,692.66	7,582.51	110.15	69.841	
16,600.00	7,062.66	3,468.00	3,467.40	156.25	72.13	23.14	-159.53	-2,868.28	7,779.04	7,668.64	110.40	70.461	
16,700.00	7,062.42	3,468.00	3,467.40	157.81	72.13	23.14	-159.53	-2,868.28	7,865.75	7,755.10	110.65	71.087	
16,800.00	7,062.18	3,468.00	3,467.40	159.38	72.13	23.14	-159.53	-2,868.28	7,952.77	7,841.88	110.89	71.717	
16,874.30	7,062.00	3,468.00	3,467.40	160.54	72.13	23.14	-159.53	-2,868.28	8,017.62	7,906.55	111.07	72.188	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	0.00	-97.46	-624.51	-4,772.31	4,813.16				
100.00	100.00	61.00	61.00	3.29	0.60	-97.46	-624.51	-4,772.31	4,813.00	4,809.11	3.89	1,237.102	
200.00	200.00	161.00	161.00	3.34	1.62	-97.46	-624.51	-4,772.31	4,813.00	4,808.05	4.95	971.575	
300.00	300.00	261.00	261.00	3.42	3.66	-97.46	-624.51	-4,772.31	4,813.00	4,805.92	7.08	679.651	
341.17	341.17	302.17	302.16	3.46	4.50	-97.45	-624.04	-4,772.31	4,812.94	4,804.97	7.97	604.062	
400.00	400.00	359.38	359.37	3.54	5.67	-97.45	-624.11	-4,772.31	4,812.95	4,803.74	9.21	522.542	
500.00	500.00	461.04	461.00	3.69	7.75	-97.46	-624.51	-4,772.31	4,813.00	4,801.56	11.44	420.785	
600.00	599.98	561.02	560.98	3.86	9.80	80.65	-624.51	-4,772.31	4,812.72	4,799.07	13.65	352.568	
700.00	699.84	660.88	660.84	4.04	11.84	80.72	-624.51	-4,772.31	4,811.87	4,795.99	15.88	303.070	
800.00	799.45	760.49	760.45	4.25	13.87	80.85	-624.51	-4,772.31	4,810.47	4,792.34	18.12	265.423	
900.00	898.70	859.74	859.70	4.48	15.90	81.03	-624.51	-4,772.31	4,808.53	4,788.15	20.39	235.851	
1,000.00	997.47	958.04	957.98	4.74	17.91	81.29	-622.48	-4,772.31	4,805.85	4,783.19	22.66	212.100	
1,100.00	1,095.62	1,055.21	1,055.15	5.03	19.90	81.56	-622.65	-4,772.31	4,802.98	4,778.04	24.93	192.637	
1,200.00	1,193.06	1,151.76	1,151.69	5.35	21.88	81.88	-622.99	-4,772.31	4,799.69	4,772.47	27.22	176.311	
1,268.36	1,259.18	1,217.34	1,217.26	5.58	23.22	82.12	-623.32	-4,772.31	4,797.24	4,768.45	28.80	166.588	
1,300.00	1,289.69	1,247.61	1,247.54	5.70	23.84	82.21	-623.50	-4,772.31	4,796.08	4,766.55	29.53	162.423	
1,400.00	1,386.11	1,343.36	1,343.28	6.07	25.79	82.51	-624.18	-4,772.31	4,792.50	4,760.65	31.86	150.446	
1,500.00	1,482.54	1,443.69	1,443.54	6.45	27.85	82.82	-624.51	-4,772.31	4,789.03	4,754.74	34.29	139.646	
1,600.00	1,578.96	1,540.11	1,539.96	6.86	29.82	83.12	-624.51	-4,772.31	4,785.67	4,749.00	36.67	130.515	
1,700.00	1,675.39	1,636.28	1,636.13	7.27	31.78	83.43	-623.76	-4,772.31	4,782.39	4,743.34	39.05	122.473	
1,800.00	1,771.81	1,731.70	1,731.54	7.70	33.74	83.73	-623.95	-4,772.31	4,779.33	4,737.91	41.42	115.374	
1,900.00	1,868.24	1,827.27	1,827.11	8.13	35.69	84.03	-624.40	-4,772.31	4,776.44	4,732.63	43.81	109.019	
2,000.00	1,964.66	1,925.87	1,925.66	8.57	37.71	84.34	-624.51	-4,772.31	4,773.67	4,727.40	46.27	103.169	
2,100.00	2,061.09	2,022.29	2,022.09	9.02	39.68	84.65	-624.51	-4,772.31	4,771.03	4,722.34	48.69	97.988	
2,200.00	2,157.51	2,118.48	2,118.27	9.47	41.65	84.96	-623.43	-4,772.31	4,768.48	4,717.37	51.11	93.298	
2,300.00	2,253.94	2,214.11	2,213.90	9.93	43.60	85.26	-623.68	-4,772.31	4,766.15	4,712.63	53.52	89.047	
2,400.00	2,350.36	2,309.93	2,309.70	10.39	45.56	85.56	-624.24	-4,772.31	4,763.98	4,708.04	55.95	85.154	
2,500.00	2,446.79	2,408.05	2,407.79	10.86	47.57	85.87	-624.51	-4,772.31	4,761.94	4,703.53	58.42	81.515	
2,600.00	2,543.21	2,504.47	2,504.21	11.33	49.54	86.18	-624.51	-4,772.31	4,760.04	4,699.18	60.86	78.215	
2,700.00	2,639.64	2,600.90	2,600.64	11.80	51.51	86.48	-624.51	-4,772.31	4,758.28	4,694.98	63.30	75.167	
2,800.00	2,736.06	2,697.08	2,696.81	12.27	53.48	86.80	-623.73	-4,772.31	4,756.65	4,690.90	65.74	72.352	
2,900.00	2,832.49	2,793.36	2,793.09	12.75	55.45	87.10	-624.06	-4,772.31	4,755.19	4,687.00	68.19	69.735	
3,000.00	2,928.91	2,890.23	2,889.91	13.23	57.44	87.41	-624.51	-4,772.31	4,753.88	4,683.22	70.66	67.278	
3,100.00	3,025.34	2,986.66	2,986.34	13.71	59.49	87.71	-624.51	-4,772.31	4,752.71	4,679.53	73.19	64.937	
3,200.00	3,121.76	3,083.07	3,082.74	14.19	61.54	88.03	-623.79	-4,772.31	4,751.69	4,675.97	75.72	62.754	
3,300.00	3,218.18	3,179.64	3,179.30	14.67	63.59	88.33	-624.21	-4,772.31	4,750.82	4,672.56	78.25	60.710	
3,400.00	3,314.61	3,275.99	3,275.61	15.15	65.64	88.64	-624.51	-4,772.31	4,750.09	4,669.30	80.79	58.799	
3,500.00	3,411.03	3,351.00	3,350.60	15.64	67.23	88.88	-624.51	-4,772.31	4,749.56	4,666.69	82.86	57.317	
3,504.45	3,415.33	3,351.00	3,350.60	15.66	67.23	88.88	-624.51	-4,772.31	4,749.56	4,666.67	82.89	57.303	
3,600.00	3,507.46	3,351.00	3,350.60	16.12	67.23	88.88	-624.51	-4,772.31	4,750.54	4,667.21	83.33	57.011	
3,700.00	3,603.88	3,351.00	3,350.60	16.61	67.23	88.88	-624.51	-4,772.31	4,753.63	4,669.87	83.76	56.755	
3,800.00	3,700.31	3,351.00	3,350.60	17.10	67.23	88.88	-624.51	-4,772.31	4,758.81	4,674.66	84.15	56.549	
3,900.00	3,796.73	3,351.00	3,350.60	17.59	67.23	88.88	-624.51	-4,772.31	4,766.09	4,681.57	84.52	56.392	
4,000.00	3,893.16	3,351.00	3,350.60	18.07	67.23	88.88	-624.51	-4,772.31	4,775.45	4,690.61	84.85	56.283	
4,100.00	3,989.58	3,351.00	3,350.60	18.56	67.23	88.88	-624.51	-4,772.31	4,786.89	4,701.74	85.14	56.222	
4,200.00	4,086.01	3,351.00	3,350.60	19.05	67.23	88.88	-624.51	-4,772.31	4,800.38	4,714.97	85.40	56.208	
4,300.00	4,182.43	3,351.00	3,350.60	19.55	67.23	88.88	-624.51	-4,772.31	4,815.91	4,730.27	85.63	56.239	
4,400.00	4,278.86	3,351.00	3,350.60	20.04	67.23	88.88	-624.51	-4,772.31	4,833.45	4,747.63	85.83	56.315	
4,500.00	4,375.28	3,351.00	3,350.60	20.53	67.23	88.88	-624.51	-4,772.31	4,853.00	4,767.01	85.99	56.436	
4,600.00	4,471.71	3,351.00	3,350.60	21.02	67.23	88.88	-624.51	-4,772.31	4,874.52	4,788.40	86.12	56.599	
4,700.00	4,568.13	3,351.00	3,350.60	21.51	67.23	88.88	-624.51	-4,772.31	4,897.99	4,811.76	86.22	56.806	
4,800.00	4,664.56	3,351.00	3,350.60	22.01	67.23	88.88	-624.51	-4,772.31	4,923.37	4,837.08	86.29	57.054	

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 752H
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 752H	**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	4,760.98	3,351.00	3,350.60	22.50	67.23	88.88	-624.51	-4,772.31	4,950.65	4,864.31	86.33	57.342	
5,000.00	4,857.41	3,351.00	3,350.60	22.99	67.23	88.88	-624.51	-4,772.31	4,979.79	4,893.44	86.35	57.671	
5,100.00	4,953.83	3,351.00	3,350.60	23.49	67.23	88.88	-624.51	-4,772.31	5,010.75	4,924.41	86.33	58.039	
5,200.00	5,050.25	3,351.00	3,350.60	23.98	67.23	88.88	-624.51	-4,772.31	5,043.50	4,957.21	86.29	58.446	
5,300.00	5,146.68	3,351.00	3,350.60	24.48	67.23	88.88	-624.51	-4,772.31	5,078.02	4,991.79	86.23	58.890	
5,400.00	5,243.10	3,351.00	3,350.60	24.97	67.23	88.88	-624.51	-4,772.31	5,114.25	5,028.11	86.14	59.371	
5,500.00	5,339.53	3,351.00	3,350.60	25.47	67.23	88.88	-624.51	-4,772.31	5,152.18	5,066.15	86.03	59.888	
5,600.00	5,435.95	3,351.00	3,350.60	25.96	67.23	88.88	-624.51	-4,772.31	5,191.75	5,105.85	85.90	60.440	
5,700.00	5,532.38	3,351.00	3,350.60	26.46	67.23	88.88	-624.51	-4,772.31	5,232.93	5,147.18	85.75	61.027	
5,800.00	5,628.80	3,351.00	3,350.60	26.96	67.23	88.88	-624.51	-4,772.31	5,275.69	5,190.11	85.58	61.647	
5,900.00	5,725.23	3,351.00	3,350.60	27.45	67.23	88.88	-624.51	-4,772.31	5,319.98	5,234.59	85.39	62.300	
6,000.00	5,821.65	3,351.00	3,350.60	27.95	67.23	88.88	-624.51	-4,772.31	5,365.78	5,280.59	85.19	62.985	
6,100.00	5,918.08	3,351.00	3,350.60	28.45	67.23	88.88	-624.51	-4,772.31	5,413.03	5,328.06	84.98	63.701	
6,200.00	6,014.50	3,351.00	3,350.60	28.94	67.23	88.88	-624.51	-4,772.31	5,461.71	5,376.96	84.75	64.448	
6,300.00	6,110.93	3,351.00	3,350.60	29.44	67.23	88.88	-624.51	-4,772.31	5,511.77	5,427.26	84.50	65.224	
6,400.00	6,207.35	3,351.00	3,350.60	29.94	67.23	88.88	-624.51	-4,772.31	5,563.17	5,478.92	84.25	66.030	
6,500.00	6,303.78	3,351.00	3,350.60	30.43	67.23	88.88	-624.51	-4,772.31	5,615.89	5,531.90	83.99	66.863	
6,600.00	6,400.20	3,351.00	3,350.60	30.93	67.23	88.88	-624.51	-4,772.31	5,669.88	5,586.16	83.72	67.723	
6,677.76	6,475.18	3,351.00	3,350.60	31.32	67.23	88.88	-624.51	-4,772.31	5,712.72	5,629.21	83.51	68.411	
6,700.00	6,496.62	3,351.00	3,350.60	31.43	67.23	81.65	-624.51	-4,772.31	5,724.78	5,641.34	83.44	68.608	
6,750.00	6,544.66	3,351.00	3,350.60	31.68	67.23	66.71	-624.51	-4,772.31	5,749.71	5,666.42	83.29	69.036	
6,800.00	6,592.24	3,351.00	3,350.60	31.92	67.23	54.61	-624.51	-4,772.31	5,771.50	5,688.39	83.12	69.440	
6,850.00	6,639.07	3,351.00	3,350.60	32.16	67.23	45.44	-624.51	-4,772.31	5,790.07	5,707.14	82.93	69.817	
6,900.00	6,684.86	3,351.00	3,350.60	32.40	67.23	38.62	-624.51	-4,772.31	5,805.33	5,722.59	82.74	70.167	
6,950.00	6,729.32	3,351.00	3,350.60	32.62	67.23	33.51	-624.51	-4,772.31	5,817.20	5,734.67	82.53	70.487	
7,000.00	6,772.19	3,351.00	3,350.60	32.84	67.23	29.63	-624.51	-4,772.31	5,825.65	5,743.34	82.31	70.778	
7,050.00	6,813.20	3,351.00	3,350.60	33.05	67.23	26.62	-624.51	-4,772.31	5,830.62	5,748.54	82.08	71.038	
7,100.00	6,852.09	3,351.00	3,350.60	33.26	67.23	24.27	-624.51	-4,772.31	5,832.11	5,750.27	81.84	71.264	
7,150.00	6,888.63	3,351.00	3,350.60	33.45	67.23	22.39	-624.51	-4,772.31	5,830.09	5,748.51	81.59	71.457	
7,200.00	6,922.59	3,351.00	3,350.60	33.64	67.23	20.89	-624.51	-4,772.31	5,824.59	5,743.26	81.33	71.614	
7,250.00	6,953.76	3,351.00	3,350.60	33.82	67.23	19.68	-624.51	-4,772.31	5,815.63	5,734.56	81.07	71.734	
7,300.00	6,981.95	3,351.00	3,350.60	34.00	67.23	18.70	-624.51	-4,772.31	5,803.24	5,722.44	80.81	71.816	
7,350.00	7,006.99	3,351.00	3,350.60	34.17	67.23	17.91	-624.51	-4,772.31	5,787.48	5,706.94	80.54	71.859	
7,400.00	7,028.72	3,351.00	3,350.60	34.35	67.23	17.29	-624.51	-4,772.31	5,768.43	5,688.15	80.27	71.862	
7,450.00	7,047.00	3,351.00	3,350.60	34.52	67.23	16.80	-624.51	-4,772.31	5,746.15	5,666.15	80.00	71.824	
7,500.00	7,061.73	3,351.00	3,350.60	34.69	67.23	16.44	-624.51	-4,772.31	5,720.76	5,641.03	79.74	71.745	
7,550.00	7,072.82	3,351.00	3,350.60	34.86	67.23	16.19	-624.51	-4,772.31	5,692.38	5,612.90	79.48	71.623	
7,600.00	7,080.18	3,351.00	3,350.60	35.04	67.23	16.05	-624.51	-4,772.31	5,661.13	5,581.91	79.22	71.459	
7,650.00	7,083.79	3,351.00	3,350.60	35.22	67.23	16.00	-624.51	-4,772.31	5,627.16	5,548.18	78.98	71.252	
7,674.30	7,084.18	3,351.00	3,350.60	35.32	67.23	16.02	-624.51	-4,772.31	5,609.71	5,530.85	78.86	71.134	
7,700.00	7,084.12	3,351.00	3,350.60	35.42	67.23	16.02	-624.51	-4,772.31	5,590.98	5,512.24	78.74	71.008	
7,800.00	7,083.88	3,351.00	3,350.60	35.84	67.23	16.02	-624.51	-4,772.31	5,518.61	5,440.37	78.24	70.531	
7,900.00	7,083.64	3,351.00	3,350.60	36.34	67.23	16.02	-624.51	-4,772.31	5,447.12	5,369.38	77.74	70.066	
8,000.00	7,083.40	3,351.00	3,350.60	36.90	67.23	16.02	-624.51	-4,772.31	5,376.54	5,299.31	77.23	69.614	
8,100.00	7,083.16	3,351.00	3,350.60	37.52	67.23	16.02	-624.51	-4,772.31	5,306.91	5,230.19	76.72	69.174	
8,200.00	7,082.91	3,351.00	3,350.60	38.21	67.23	16.02	-624.51	-4,772.31	5,238.25	5,162.06	76.19	68.748	
8,300.00	7,082.67	3,351.00	3,350.60	38.95	67.23	16.02	-624.51	-4,772.31	5,170.63	5,094.96	75.67	68.336	
8,400.00	7,082.43	3,351.00	3,350.60	39.74	67.23	16.02	-624.51	-4,772.31	5,104.06	5,028.93	75.13	67.937	
8,500.00	7,082.19	3,351.00	3,350.60	40.59	67.23	16.02	-624.51	-4,772.31	5,038.60	4,964.01	74.59	67.553	
8,600.00	7,081.95	3,351.00	3,350.60	41.49	67.23	16.02	-624.51	-4,772.31	4,974.29	4,900.25	74.04	67.185	
8,700.00	7,081.71	3,351.00	3,350.60	42.43	67.23	16.02	-624.51	-4,772.31	4,911.17	4,837.69	73.49	66.832	
8,800.00	7,081.47	3,351.00	3,350.60	43.41	67.23	16.02	-624.51	-4,772.31	4,849.30	4,776.37	72.93	66.495	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,900.00	7,081.23	3,351.00	3,350.60	44.44	67.23	16.02	-624.51	-4,772.31	4,788.71	4,716.34	72.37	66.174	
9,000.00	7,080.99	3,351.00	3,350.60	45.49	67.23	16.02	-624.51	-4,772.31	4,729.46	4,657.66	71.80	65.871	
9,100.00	7,080.74	3,351.00	3,350.60	46.58	67.23	16.02	-624.51	-4,772.31	4,671.60	4,600.37	71.23	65.585	
9,200.00	7,080.50	3,351.00	3,350.60	47.70	67.23	16.02	-624.51	-4,772.31	4,615.18	4,544.53	70.66	65.318	
9,300.00	7,080.26	3,351.00	3,350.60	48.85	67.23	16.02	-624.51	-4,772.31	4,560.26	4,490.18	70.08	65.069	
9,400.00	7,080.02	3,351.00	3,350.60	50.03	67.23	16.02	-624.51	-4,772.31	4,506.89	4,437.38	69.51	64.838	
9,500.00	7,079.78	3,351.00	3,350.60	51.23	67.23	16.02	-624.51	-4,772.31	4,455.12	4,386.18	68.94	64.627	
9,600.00	7,079.54	3,351.00	3,350.60	52.45	67.23	16.02	-624.51	-4,772.31	4,405.01	4,336.65	68.36	64.436	
9,700.00	7,079.30	3,351.00	3,350.60	53.69	67.23	16.02	-624.51	-4,772.31	4,356.63	4,288.84	67.79	64.264	
9,800.00	7,079.06	3,351.00	3,350.60	54.95	67.23	16.02	-624.51	-4,772.31	4,310.02	4,242.79	67.23	64.111	
9,900.00	7,078.82	3,351.00	3,350.60	56.23	67.23	16.02	-624.51	-4,772.31	4,265.25	4,198.58	66.67	63.978	
10,000.00	7,078.57	3,351.00	3,350.60	57.53	67.23	16.02	-624.51	-4,772.31	4,222.37	4,156.25	66.12	63.863	
10,100.00	7,078.33	3,351.00	3,350.60	58.84	67.23	16.02	-624.51	-4,772.31	4,181.44	4,115.87	65.58	63.766	
10,200.00	7,078.09	3,351.00	3,350.60	60.17	67.23	16.02	-624.51	-4,772.31	4,142.53	4,077.48	65.05	63.684	
10,300.00	7,077.85	3,351.00	3,350.60	61.51	67.23	16.02	-624.51	-4,772.31	4,105.68	4,041.14	64.54	63.617	
10,400.00	7,077.61	3,351.00	3,350.60	62.86	67.23	16.02	-624.51	-4,772.31	4,070.95	4,006.90	64.05	63.561	
10,500.00	7,077.37	3,351.00	3,350.60	64.22	67.23	16.02	-624.51	-4,772.31	4,038.40	3,974.82	63.58	63.513	
10,600.00	7,077.13	3,351.00	3,350.60	65.60	67.23	16.02	-624.51	-4,772.31	4,008.09	3,944.94	63.15	63.469	
10,700.00	7,076.89	3,351.00	3,350.60	66.98	67.23	16.02	-624.51	-4,772.31	3,980.05	3,917.30	62.75	63.422	
10,800.00	7,076.65	3,351.00	3,350.60	68.38	67.23	16.02	-624.51	-4,772.31	3,954.35	3,891.95	62.40	63.368	
10,900.00	7,076.40	3,351.00	3,350.60	69.78	67.23	16.02	-624.51	-4,772.31	3,931.02	3,868.92	62.10	63.299	
11,000.00	7,076.16	3,351.00	3,350.60	71.20	67.23	16.02	-624.51	-4,772.31	3,910.11	3,848.25	61.86	63.205	
11,100.00	7,075.92	3,351.00	3,350.60	72.62	67.23	16.02	-624.51	-4,772.31	3,891.67	3,829.97	61.69	63.079	
11,200.00	7,075.68	3,351.00	3,350.60	74.04	67.23	16.02	-624.51	-4,772.31	3,875.71	3,814.10	61.61	62.911	
11,300.00	7,075.44	3,351.00	3,350.60	75.48	67.23	16.02	-624.51	-4,772.31	3,862.28	3,800.67	61.61	62.690	
11,400.00	7,075.20	3,351.00	3,350.60	76.92	67.23	16.02	-624.51	-4,772.31	3,851.39	3,789.68	61.71	62.409	
11,500.00	7,074.96	3,351.00	3,350.60	78.37	67.23	16.02	-624.51	-4,772.31	3,843.08	3,781.16	61.92	62.061	
11,600.00	7,074.72	3,351.00	3,350.60	79.82	67.23	16.02	-624.51	-4,772.31	3,837.36	3,775.11	62.25	61.641	
11,700.00	7,074.48	3,351.00	3,350.60	81.28	67.23	16.02	-624.51	-4,772.31	3,834.24	3,771.54	62.70	61.149	
11,769.70	7,074.31	3,351.00	3,350.60	82.30	67.23	16.02	-624.51	-4,772.31	3,833.61	3,770.52	63.09	60.764 CC	
11,800.00	7,074.23	3,351.00	3,350.60	82.75	67.23	16.02	-624.51	-4,772.31	3,833.73	3,770.45	63.28	60.587 ES	
11,900.00	7,073.99	3,351.00	3,350.60	84.22	67.23	16.02	-624.51	-4,772.31	3,835.82	3,771.85	63.97	59.961	
12,000.00	7,073.75	3,351.00	3,350.60	85.69	67.23	16.02	-624.51	-4,772.31	3,840.52	3,775.74	64.78	59.282	
12,100.00	7,073.51	3,351.00	3,350.60	87.17	67.23	16.02	-624.51	-4,772.31	3,847.81	3,782.11	65.70	58.562	
12,200.00	7,073.27	3,351.00	3,350.60	88.65	67.23	16.02	-624.51	-4,772.31	3,857.68	3,790.96	66.72	57.816	
12,300.00	7,073.03	3,351.00	3,350.60	90.14	67.23	16.02	-624.51	-4,772.31	3,870.11	3,802.28	67.83	57.056	
12,400.00	7,072.79	3,351.00	3,350.60	91.63	67.23	16.02	-624.51	-4,772.31	3,885.08	3,816.07	69.01	56.298	
12,500.00	7,072.55	3,351.00	3,350.60	93.13	67.23	16.02	-624.51	-4,772.31	3,902.55	3,832.30	70.25	55.554	
12,600.00	7,072.31	3,351.00	3,350.60	94.62	67.23	16.02	-624.51	-4,772.31	3,922.49	3,850.96	71.53	54.834	
12,700.00	7,072.06	3,351.00	3,350.60	96.13	67.23	16.02	-624.51	-4,772.31	3,944.87	3,872.02	72.85	54.147	
12,800.00	7,071.82	3,351.00	3,350.60	97.63	67.23	16.02	-624.51	-4,772.31	3,969.64	3,895.45	74.20	53.501	
12,900.00	7,071.58	3,351.00	3,350.60	99.14	67.23	16.02	-624.51	-4,772.31	3,996.77	3,921.21	75.55	52.899	
13,000.00	7,071.34	3,351.00	3,350.60	100.65	67.23	16.02	-624.51	-4,772.31	4,026.19	3,949.28	76.91	52.347	
13,100.00	7,071.10	3,351.00	3,350.60	102.16	67.23	16.02	-624.51	-4,772.31	4,057.86	3,979.60	78.27	51.845	
13,200.00	7,070.86	3,351.00	3,350.60	103.68	67.23	16.02	-624.51	-4,772.31	4,091.74	4,012.13	79.61	51.396	
13,300.00	7,070.62	3,351.00	3,350.60	105.20	67.23	16.02	-624.51	-4,772.31	4,127.76	4,046.82	80.94	50.999	
13,400.00	7,070.38	3,351.00	3,350.60	106.72	67.23	16.02	-624.51	-4,772.31	4,165.87	4,083.62	82.24	50.654	
13,500.00	7,070.14	3,351.00	3,350.60	108.24	67.23	16.02	-624.51	-4,772.31	4,206.01	4,122.49	83.52	50.360	
13,600.00	7,069.89	3,351.00	3,350.60	109.77	67.23	16.02	-624.51	-4,772.31	4,248.12	4,163.36	84.77	50.116	
13,700.00	7,069.65	3,351.00	3,350.60	111.30	67.23	16.02	-624.51	-4,772.31	4,292.16	4,206.18	85.98	49.920	
13,800.00	7,069.41	3,351.00	3,350.60	112.83	67.23	16.02	-624.51	-4,772.31	4,338.05	4,250.89	87.16	49.770	
13,900.00	7,069.17	3,351.00	3,350.60	114.36	67.23	16.02	-624.51	-4,772.31	4,385.74	4,297.44	88.31	49.664	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,000.00	7,068.93	3,351.00	3,350.60	115.89	67.23	16.02	-624.51	-4,772.31	4,435.18	4,345.76	89.42	49.602	
14,100.00	7,068.69	3,351.00	3,350.60	117.43	67.23	16.02	-624.51	-4,772.31	4,486.30	4,395.81	90.49	49.580	SF
14,200.00	7,068.45	3,351.00	3,350.60	118.97	67.23	16.02	-624.51	-4,772.31	4,539.04	4,447.52	91.52	49.596	
14,300.00	7,068.21	3,351.00	3,350.60	120.50	67.23	16.02	-624.51	-4,772.31	4,593.36	4,500.85	92.52	49.649	
14,400.00	7,067.97	3,351.00	3,350.60	122.05	67.23	16.02	-624.51	-4,772.31	4,649.20	4,555.72	93.47	49.738	
14,500.00	7,067.72	3,351.00	3,350.60	123.59	67.23	16.02	-624.51	-4,772.31	4,706.50	4,612.10	94.40	49.859	
14,600.00	7,067.48	3,351.00	3,350.60	125.13	67.23	16.02	-624.51	-4,772.31	4,765.20	4,669.92	95.28	50.012	
14,700.00	7,067.24	3,351.00	3,350.60	126.68	67.23	16.02	-624.51	-4,772.31	4,825.27	4,729.14	96.13	50.195	
14,800.00	7,067.00	3,351.00	3,350.60	128.22	67.23	16.02	-624.51	-4,772.31	4,886.64	4,789.70	96.95	50.406	
14,900.00	7,066.76	3,351.00	3,350.60	129.77	67.23	16.02	-624.51	-4,772.31	4,949.28	4,851.55	97.73	50.643	
15,000.00	7,066.52	3,351.00	3,350.60	131.32	67.23	16.02	-624.51	-4,772.31	5,013.12	4,914.65	98.48	50.907	
15,100.00	7,066.28	3,351.00	3,350.60	132.87	67.23	16.02	-624.51	-4,772.31	5,078.14	4,978.94	99.19	51.194	
15,200.00	7,066.04	3,351.00	3,350.60	134.42	67.23	16.02	-624.51	-4,772.31	5,144.27	5,044.39	99.88	51.504	
15,300.00	7,065.80	3,351.00	3,350.60	135.97	67.23	16.02	-624.51	-4,772.31	5,211.49	5,110.95	100.54	51.836	
15,400.00	7,065.55	3,351.00	3,350.60	137.53	67.23	16.02	-624.51	-4,772.31	5,279.74	5,178.57	101.17	52.188	
15,500.00	7,065.31	3,351.00	3,350.60	139.08	67.23	16.02	-624.51	-4,772.31	5,348.99	5,247.22	101.77	52.559	
15,600.00	7,065.07	3,351.00	3,350.60	140.64	67.23	16.02	-624.51	-4,772.31	5,419.20	5,316.86	102.35	52.949	
15,700.00	7,064.83	3,351.00	3,350.60	142.20	67.23	16.02	-624.51	-4,772.31	5,490.34	5,387.44	102.90	53.357	
15,800.00	7,064.59	3,351.00	3,350.60	143.75	67.23	16.02	-624.51	-4,772.31	5,562.36	5,458.94	103.43	53.781	
15,900.00	7,064.35	3,351.00	3,350.60	145.31	67.23	16.02	-624.51	-4,772.31	5,635.24	5,531.31	103.93	54.220	
16,000.00	7,064.11	3,351.00	3,350.60	146.87	67.23	16.02	-624.51	-4,772.31	5,708.94	5,604.52	104.42	54.675	
16,100.00	7,063.87	3,351.00	3,350.60	148.43	67.23	16.02	-624.51	-4,772.31	5,783.43	5,678.55	104.88	55.144	
16,200.00	7,063.63	3,351.00	3,350.60	149.99	67.23	16.02	-624.51	-4,772.31	5,858.68	5,753.36	105.32	55.626	
16,300.00	7,063.38	3,351.00	3,350.60	151.56	67.23	16.02	-624.51	-4,772.31	5,934.66	5,828.91	105.75	56.121	
16,400.00	7,063.14	3,351.00	3,350.60	153.12	67.23	16.02	-624.51	-4,772.31	6,011.34	5,905.19	106.15	56.628	
16,500.00	7,062.90	3,351.00	3,350.60	154.68	67.23	16.02	-624.51	-4,772.31	6,088.70	5,982.16	106.54	57.147	
16,600.00	7,062.66	3,351.00	3,350.60	156.25	67.23	16.02	-624.51	-4,772.31	6,166.71	6,059.80	106.92	57.677	
16,700.00	7,062.42	3,351.00	3,350.60	157.81	67.23	16.02	-624.51	-4,772.31	6,245.35	6,138.08	107.28	58.217	
16,800.00	7,062.18	3,351.00	3,350.60	159.38	67.23	16.02	-624.51	-4,772.31	6,324.59	6,216.97	107.62	58.768	
16,874.30	7,062.00	3,351.00	3,350.60	160.54	67.23	16.02	-624.51	-4,772.31	6,383.84	6,275.98	107.87	59.183	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	18.03	2,248.86	731.93	2,365.35				
100.00	100.00	77.04	77.04	3.29	3.28	18.02	2,248.69	731.45	2,364.74	2,358.17	6.57	359.881	
200.00	200.00	337.26	336.78	3.34	3.47	17.78	2,242.15	718.80	2,361.33	2,354.56	6.77	348.885	
300.00	300.00	477.81	476.58	3.42	3.59	17.58	2,233.14	707.55	2,352.72	2,345.79	6.94	339.021	
400.00	400.00	824.11	818.72	3.54	3.97	17.27	2,188.73	680.66	2,337.97	2,330.67	7.30	320.121	
500.00	500.00	925.22	917.84	3.69	4.18	17.26	2,169.86	674.14	2,318.24	2,310.62	7.62	304.171	
600.00	599.98	1,034.34	1,024.73	3.86	4.46	-164.75	2,148.68	668.55	2,299.83	2,291.84	7.99	287.672	
700.00	699.84	1,125.75	1,114.21	4.04	4.72	-164.81	2,130.31	665.08	2,284.50	2,276.12	8.38	272.600	
800.00	799.45	1,205.56	1,192.44	4.25	4.96	-164.85	2,114.59	663.17	2,273.28	2,264.50	8.78	258.944	
900.00	898.70	1,292.63	1,277.76	4.48	5.23	-164.81	2,097.31	663.80	2,266.17	2,256.94	9.23	245.468	
1,000.00	997.47	1,419.51	1,401.84	4.74	5.66	-164.67	2,071.08	667.74	2,262.42	2,252.61	9.81	230.624	
1,100.00	1,095.62	1,567.61	1,545.80	5.03	6.20	-164.46	2,036.89	673.96	2,259.87	2,249.38	10.49	215.458	
1,185.35	1,178.83	1,677.58	1,652.09	5.30	6.65	-164.28	2,009.31	679.89	2,259.01	2,247.94	11.07	204.032	CC
1,200.00	1,193.06	1,693.89	1,667.82	5.35	6.71	-164.25	2,005.12	680.81	2,259.04	2,247.88	11.17	202.301	ES
1,268.36	1,259.18	1,781.28	1,752.06	5.58	7.09	-164.11	1,982.41	685.69	2,259.93	2,248.28	11.66	193.886	
1,300.00	1,289.69	1,829.78	1,798.72	5.70	7.30	-164.03	1,969.39	688.25	2,260.41	2,248.50	11.91	189.779	
1,400.00	1,386.11	1,919.56	1,885.07	6.07	7.70	-163.91	1,945.23	692.63	2,261.74	2,249.19	12.55	180.158	
1,500.00	1,482.54	2,007.95	1,970.29	6.45	8.11	-163.80	1,922.05	696.51	2,263.60	2,250.39	13.21	171.354	
1,600.00	1,578.96	2,086.47	2,046.15	6.86	8.47	-163.71	1,902.06	699.71	2,266.15	2,252.30	13.85	163.644	
1,700.00	1,675.39	2,172.62	2,129.60	7.27	8.86	-163.62	1,880.95	703.21	2,269.61	2,255.09	14.52	156.317	
1,800.00	1,771.81	2,274.19	2,228.10	7.70	9.32	-163.53	1,856.47	706.82	2,273.32	2,258.07	15.25	149.070	
1,900.00	1,868.24	2,385.70	2,336.09	8.13	9.85	-163.42	1,829.01	711.35	2,276.70	2,260.68	16.03	142.046	
2,000.00	1,964.66	2,521.87	2,467.46	8.57	10.50	-163.24	1,793.78	717.69	2,279.05	2,262.15	16.91	134.807	
2,100.00	2,061.09	2,643.22	2,584.02	9.02	11.11	-163.06	1,760.55	723.72	2,279.99	2,262.24	17.75	128.424	
2,200.00	2,157.51	2,740.03	2,676.89	9.47	11.60	-162.92	1,733.64	728.46	2,280.55	2,262.02	18.53	123.098	
2,300.00	2,253.94	2,846.74	2,779.38	9.93	12.15	-162.77	1,704.30	733.33	2,281.32	2,261.99	19.34	117.962	
2,400.00	2,350.36	2,978.10	2,905.18	10.39	12.83	-162.58	1,666.95	739.16	2,281.14	2,260.89	20.25	112.654	
2,500.00	2,446.79	3,082.31	3,004.63	10.86	13.38	-162.41	1,636.27	744.54	2,280.22	2,259.14	21.08	108.179	
2,600.00	2,543.21	3,189.84	3,106.87	11.33	13.97	-162.18	1,603.71	751.56	2,278.90	2,256.97	21.93	103.901	
2,700.00	2,639.64	3,276.55	3,189.28	11.80	14.44	-162.00	1,577.40	757.35	2,277.65	2,254.93	22.72	100.256	
2,755.71	2,693.36	3,314.08	3,225.08	12.06	14.64	-161.92	1,566.39	759.72	2,277.42	2,254.31	23.11	98.530	
2,800.00	2,736.06	3,346.99	3,256.57	12.27	14.82	-161.86	1,557.01	761.72	2,277.57	2,254.13	23.44	97.167	
2,900.00	2,832.49	3,408.56	3,315.71	12.75	15.14	-161.76	1,540.24	765.15	2,278.98	2,254.86	24.12	94.498	
3,000.00	2,928.91	3,472.82	3,377.79	13.23	15.46	-161.69	1,523.93	768.17	2,281.95	2,257.16	24.79	92.039	
3,100.00	3,025.34	3,534.99	3,438.22	13.71	15.76	-161.64	1,509.48	770.14	2,286.50	2,261.06	25.45	89.844	
3,200.00	3,121.76	3,609.57	3,511.06	14.19	16.11	-161.63	1,493.52	771.62	2,292.42	2,266.28	26.14	87.703	
3,300.00	3,218.18	3,689.27	3,589.17	14.67	16.46	-161.63	1,477.74	772.78	2,299.61	2,272.77	26.84	85.679	
3,400.00	3,314.61	3,849.26	3,745.53	15.15	17.20	-161.63	1,443.99	774.53	2,305.39	2,277.53	27.86	82.749	
3,500.00	3,411.03	4,015.32	3,906.18	15.64	18.03	-161.50	1,402.37	779.68	2,307.74	2,278.80	28.94	79.749	
3,600.00	3,507.46	4,134.47	4,020.73	16.12	18.66	-161.32	1,370.21	786.03	2,309.41	2,279.56	29.85	77.357	
3,700.00	3,603.88	4,223.26	4,105.97	16.61	19.13	-161.18	1,345.79	790.79	2,310.62	2,279.96	30.66	75.373	
3,800.00	3,700.31	4,328.70	4,207.22	17.10	19.68	-161.01	1,317.05	797.09	2,312.26	2,280.73	31.53	73.335	
3,900.00	3,796.73	4,448.26	4,321.62	17.59	20.33	-160.78	1,283.26	805.07	2,313.18	2,280.71	32.47	71.235	
4,000.00	3,893.16	4,550.39	4,419.23	18.07	20.88	-160.58	1,253.95	811.73	2,313.66	2,280.31	33.35	69.377	
4,100.00	3,989.58	4,645.49	4,510.20	18.56	21.40	-160.41	1,226.83	817.51	2,314.19	2,280.00	34.20	67.673	
4,200.00	4,086.01	4,735.13	4,595.98	19.05	21.88	-160.24	1,201.48	823.41	2,315.14	2,280.11	35.03	66.099	
4,300.00	4,182.43	4,903.22	4,756.32	19.55	22.81	-159.89	1,152.49	835.27	2,315.88	2,279.69	36.18	64.001	
4,397.52	4,276.47	4,959.82	4,810.03	20.02	23.12	-159.76	1,135.11	839.34	2,314.87	2,277.99	36.89	62.757	
4,400.00	4,278.86	4,961.09	4,811.24	20.04	23.13	-159.76	1,134.73	839.42	2,314.87	2,277.97	36.90	62.728	
4,500.00	4,375.28	5,017.40	4,865.13	20.53	23.44	-159.65	1,118.85	843.22	2,315.97	2,278.37	37.60	61.593	
4,600.00	4,471.71	5,116.02	4,959.83	21.02	23.97	-159.47	1,092.11	849.84	2,318.19	2,279.72	38.47	60.256	
4,700.00	4,568.13	5,256.97	5,094.24	21.51	24.75	-159.17	1,050.96	860.02	2,318.35	2,278.81	39.54	58.630	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
4,800.00	4,664.56	5,333.07	5,166.98	22.01	25.16	-159.03	1,029.17	864.96	2,319.10	2,278.77	40.33	57.505	
4,900.00	4,760.98	5,431.90	5,261.92	22.50	25.69	-158.88	1,002.26	870.39	2,320.83	2,279.63	41.20	56.332	
5,000.00	4,857.41	5,624.05	5,444.93	22.99	26.77	-158.56	944.58	879.78	2,319.17	2,276.71	42.46	54.621	
5,100.00	4,953.83	5,701.39	5,518.25	23.49	27.21	-158.40	920.34	884.17	2,317.08	2,273.80	43.27	53.545	
5,197.35	5,047.70	5,761.99	5,575.97	23.97	27.55	-158.30	902.13	887.06	2,316.06	2,272.07	44.00	52.642	
5,200.00	5,050.25	5,761.99	5,575.97	23.98	27.55	-158.30	902.13	887.06	2,316.07	2,272.06	44.01	52.627	
5,300.00	5,146.68	5,837.01	5,647.85	24.48	27.96	-158.20	880.87	890.12	2,316.38	2,271.60	44.78	51.724	
5,400.00	5,243.10	5,907.91	5,716.19	24.97	28.33	-158.13	862.17	892.69	2,318.27	2,272.75	45.53	50.923	
5,500.00	5,339.53	5,981.38	5,787.29	25.47	28.70	-158.08	843.81	894.95	2,321.28	2,275.01	46.26	50.174	
5,600.00	5,435.95	6,067.34	5,870.74	25.96	29.13	-158.03	823.33	897.52	2,325.32	2,278.27	47.05	49.426	
5,700.00	5,532.38	6,146.06	5,947.29	26.46	29.51	-158.00	805.09	899.34	2,329.80	2,282.01	47.79	48.753	
5,800.00	5,628.80	6,208.52	6,008.29	26.96	29.81	-157.99	791.76	900.42	2,335.69	2,287.25	48.44	48.219	
5,900.00	5,725.23	6,277.93	6,076.37	27.45	30.12	-158.01	778.26	901.27	2,343.12	2,294.02	49.10	47.720	
6,000.00	5,821.65	6,344.56	6,141.93	27.95	30.41	-158.04	766.31	901.68	2,351.77	2,302.04	49.73	47.289	
6,100.00	5,918.08	6,406.87	6,203.43	28.45	30.66	-158.09	756.31	901.76	2,361.95	2,311.63	50.32	46.937	
6,200.00	6,014.50	6,462.20	6,258.20	28.94	30.88	-158.15	748.47	901.71	2,373.81	2,322.95	50.86	46.678	
6,300.00	6,110.93	6,520.28	6,315.84	29.44	31.10	-158.22	741.43	901.73	2,387.53	2,336.15	51.38	46.466	
6,400.00	6,207.35	6,593.48	6,388.63	29.94	31.29	-158.32	733.68	901.71	2,402.66	2,350.77	51.88	46.308	
6,500.00	6,303.78	6,856.46	6,645.20	30.43	31.70	-158.07	686.30	920.93	2,411.90	2,359.06	52.84	45.643	
6,600.00	6,400.20	6,885.99	6,672.29	30.93	31.77	-157.87	678.06	929.28	2,422.11	2,368.87	53.24	45.494	
6,677.76	6,475.18	6,885.99	6,672.29	31.32	31.77	-157.87	678.06	929.28	2,432.53	2,379.12	53.41	45.543	
6,700.00	6,496.62	6,920.93	6,703.69	31.43	31.86	-165.08	668.46	941.24	2,435.25	2,381.59	53.66	45.382 SF	
6,750.00	6,544.66	6,933.71	6,715.00	31.68	31.90	179.36	665.08	946.12	2,444.37	2,390.53	53.84	45.401	
6,800.00	6,592.24	6,945.61	6,725.45	31.92	31.93	166.46	662.00	950.91	2,455.75	2,401.75	54.01	45.472	
6,850.00	6,639.07	6,980.99	6,755.97	32.16	32.02	156.65	653.22	966.48	2,469.79	2,415.45	54.33	45.456	
6,900.00	6,684.86	6,980.99	6,755.97	32.40	32.02	148.48	653.22	966.48	2,485.23	2,430.82	54.41	45.675	
6,950.00	6,729.32	6,980.99	6,755.97	32.62	32.02	141.78	653.22	966.48	2,502.86	2,448.38	54.48	45.943	
7,000.00	6,772.19	6,980.99	6,755.97	32.84	32.02	136.07	653.22	966.48	2,522.51	2,467.98	54.53	46.256	
7,050.00	6,813.20	6,980.99	6,755.97	33.05	32.02	131.00	653.22	966.48	2,544.03	2,489.45	54.58	46.609	
7,100.00	6,852.09	6,980.99	6,755.97	33.26	32.02	126.36	653.22	966.48	2,567.23	2,512.60	54.63	46.996	
7,150.00	6,888.63	6,980.99	6,755.97	33.45	32.02	121.97	653.22	966.48	2,591.92	2,537.25	54.67	47.414	
7,200.00	6,922.59	6,980.99	6,755.97	33.64	32.02	117.76	653.22	966.48	2,617.92	2,563.21	54.70	47.856	
7,250.00	6,953.76	6,980.99	6,755.97	33.82	32.02	113.65	653.22	966.48	2,645.03	2,590.28	54.74	48.316	
7,300.00	6,981.95	6,980.99	6,755.97	34.00	32.02	109.62	653.22	966.48	2,673.04	2,618.25	54.79	48.790	
7,350.00	7,006.99	6,980.99	6,755.97	34.17	32.02	105.67	653.22	966.48	2,701.77	2,646.93	54.83	49.271	
7,400.00	7,028.72	6,980.99	6,755.97	34.35	32.02	101.79	653.22	966.48	2,731.01	2,676.12	54.89	49.755	
7,450.00	7,047.00	6,980.99	6,755.97	34.52	32.02	98.01	653.22	966.48	2,760.57	2,705.62	54.95	50.236	
7,500.00	7,061.73	6,980.99	6,755.97	34.69	32.02	94.35	653.22	966.48	2,790.27	2,735.24	55.02	50.710	
7,550.00	7,072.82	6,980.99	6,755.97	34.86	32.02	90.85	653.22	966.48	2,819.91	2,764.80	55.11	51.172	
7,600.00	7,080.18	6,980.99	6,755.97	35.04	32.02	87.53	653.22	966.48	2,849.32	2,794.12	55.20	51.619	
7,650.00	7,083.79	6,980.99	6,755.97	35.22	32.02	84.42	653.22	966.48	2,878.33	2,823.03	55.30	52.047	
7,674.30	7,084.18	6,980.99	6,755.97	35.32	32.02	82.99	653.22	966.48	2,892.23	2,836.87	55.36	52.248	
7,700.00	7,084.12	6,980.99	6,755.97	35.42	32.02	82.99	653.22	966.48	2,906.94	2,851.52	55.42	52.457	
7,800.00	7,083.88	6,980.99	6,755.97	35.84	32.02	82.99	653.22	966.48	2,965.57	2,909.91	55.66	53.281	
7,900.00	7,083.64	6,980.99	6,755.97	36.34	32.02	82.99	653.22	966.48	3,026.38	2,970.47	55.91	54.128	
8,000.00	7,083.40	6,980.99	6,755.97	36.90	32.02	82.99	653.22	966.48	3,089.23	3,033.06	56.17	54.997	
8,100.00	7,083.16	6,980.99	6,755.97	37.52	32.02	82.99	653.22	966.48	3,154.00	3,097.56	56.43	55.887	
8,200.00	7,082.91	6,980.99	6,755.97	38.21	32.02	82.99	653.22	966.48	3,220.57	3,163.86	56.70	56.799	
8,300.00	7,082.67	6,936.65	6,717.60	38.95	31.91	82.11	664.31	947.29	3,287.05	3,230.45	56.60	58.070	
8,400.00	7,082.43	6,930.10	6,711.82	39.74	31.89	81.98	666.03	944.72	3,356.33	3,299.50	56.83	59.061	
8,500.00	7,082.19	6,885.99	6,672.29	40.59	31.77	81.09	678.06	929.28	3,428.36	3,371.61	56.76	60.404	
8,600.00	7,081.95	6,885.99	6,672.29	41.49	31.77	81.09	678.06	929.28	3,500.08	3,443.04	57.04	61.362	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
8,700.00	7,081.71	6,885.99	6,672.29	42.43	31.77	81.09	678.06	929.28	3,573.15	3,515.83	57.32	62.339	
8,800.00	7,081.47	6,885.99	6,672.29	43.41	31.77	81.09	678.06	929.28	3,647.50	3,589.90	57.59	63.333	
8,900.00	7,081.23	6,885.99	6,672.29	44.44	31.77	81.09	678.06	929.28	3,723.05	3,665.19	57.86	64.344	
9,000.00	7,080.99	6,885.99	6,672.29	45.49	31.77	81.09	678.06	929.28	3,799.73	3,741.60	58.13	65.371	
9,100.00	7,080.74	6,885.99	6,672.29	46.58	31.77	81.09	678.06	929.28	3,877.47	3,819.09	58.38	66.413	
9,200.00	7,080.50	6,885.99	6,672.29	47.70	31.77	81.09	678.06	929.28	3,956.22	3,897.58	58.64	67.471	
9,300.00	7,080.26	6,885.99	6,672.29	48.85	31.77	81.09	678.06	929.28	4,035.90	3,977.02	58.88	68.542	
9,400.00	7,080.02	6,885.99	6,672.29	50.03	31.77	81.09	678.06	929.28	4,116.47	4,057.35	59.12	69.627	
9,500.00	7,079.78	6,885.99	6,672.29	51.23	31.77	81.09	678.06	929.28	4,197.88	4,138.52	59.36	70.724	
9,600.00	7,079.54	6,885.99	6,672.29	52.45	31.77	81.09	678.06	929.28	4,280.08	4,220.49	59.58	71.834	
9,700.00	7,079.30	6,885.99	6,672.29	53.69	31.77	81.09	678.06	929.28	4,363.01	4,303.21	59.80	72.955	
9,800.00	7,079.06	6,885.99	6,672.29	54.95	31.77	81.09	678.06	929.28	4,446.66	4,386.64	60.02	74.087	
9,900.00	7,078.82	6,885.99	6,672.29	56.23	31.77	81.09	678.06	929.28	4,530.96	4,470.73	60.23	75.230	
10,000.00	7,078.57	6,885.99	6,672.29	57.53	31.77	81.09	678.06	929.28	4,615.89	4,555.46	60.43	76.382	
10,100.00	7,078.33	6,885.99	6,672.29	58.84	31.77	81.09	678.06	929.28	4,701.42	4,640.79	60.63	77.543	
10,200.00	7,078.09	6,885.99	6,672.29	60.17	31.77	81.09	678.06	929.28	4,787.50	4,726.68	60.82	78.713	
10,300.00	7,077.85	6,885.99	6,672.29	61.51	31.77	81.09	678.06	929.28	4,874.12	4,813.11	61.01	79.890	
10,400.00	7,077.61	6,885.99	6,672.29	62.86	31.77	81.09	678.06	929.28	4,961.24	4,900.04	61.19	81.076	
10,500.00	7,077.37	6,885.99	6,672.29	64.22	31.77	81.09	678.06	929.28	5,048.83	4,987.46	61.37	82.269	
10,600.00	7,077.13	6,885.99	6,672.29	65.60	31.77	81.09	678.06	929.28	5,136.88	5,075.34	61.54	83.468	
10,700.00	7,076.89	6,841.54	6,631.30	66.98	31.67	80.19	690.40	917.39	5,223.41	5,161.86	61.55	84.863	
10,800.00	7,076.65	6,839.40	6,629.30	68.38	31.66	80.14	690.98	916.93	5,312.10	5,250.39	61.71	86.079	
10,900.00	7,076.40	6,837.35	6,627.37	69.78	31.66	80.10	691.54	916.48	5,401.18	5,339.31	61.87	87.298	
11,000.00	7,076.16	6,835.37	6,625.51	71.20	31.65	80.06	692.08	916.07	5,490.62	5,428.60	62.02	88.523	
11,100.00	7,075.92	6,790.99	6,583.36	72.62	31.55	79.14	703.89	908.86	5,582.22	5,520.19	62.03	89.992	
11,200.00	7,075.68	6,790.99	6,583.36	74.04	31.55	79.14	703.89	908.86	5,672.20	5,610.02	62.19	91.210	
11,300.00	7,075.44	6,790.99	6,583.36	75.48	31.55	79.14	703.89	908.86	5,762.52	5,700.17	62.34	92.432	
11,400.00	7,075.20	6,790.99	6,583.36	76.92	31.55	79.14	703.89	908.86	5,853.15	5,790.65	62.49	93.659	
11,500.00	7,074.96	6,790.99	6,583.36	78.37	31.55	79.14	703.89	908.86	5,944.07	5,881.43	62.64	94.890	
11,600.00	7,074.72	6,790.99	6,583.36	79.82	31.55	79.14	703.89	908.86	6,035.29	5,972.50	62.79	96.125	
11,700.00	7,074.48	6,790.99	6,583.36	81.28	31.55	79.14	703.89	908.86	6,126.78	6,063.85	62.93	97.362	
11,800.00	7,074.23	6,790.99	6,583.36	82.75	31.55	79.14	703.89	908.86	6,218.53	6,155.46	63.07	98.603	
11,900.00	7,073.99	6,790.99	6,583.36	84.22	31.55	79.14	703.89	908.86	6,310.53	6,247.33	63.20	99.847	
12,000.00	7,073.75	6,790.99	6,583.36	85.69	31.55	79.14	703.89	908.86	6,402.77	6,339.44	63.34	101.094	
12,100.00	7,073.51	6,790.99	6,583.36	87.17	31.55	79.14	703.89	908.86	6,495.25	6,431.78	63.47	102.342	
12,200.00	7,073.27	6,790.99	6,583.36	88.65	31.55	79.14	703.89	908.86	6,587.94	6,524.34	63.59	103.593	
12,300.00	7,073.03	6,790.99	6,583.36	90.14	31.55	79.14	703.89	908.86	6,680.84	6,617.12	63.72	104.846	
12,400.00	7,072.79	6,790.99	6,583.36	91.63	31.55	79.14	703.89	908.86	6,773.95	6,710.10	63.84	106.101	
12,500.00	7,072.55	6,790.99	6,583.36	93.13	31.55	79.14	703.89	908.86	6,867.24	6,803.28	63.97	107.357	
12,600.00	7,072.31	6,790.99	6,583.36	94.62	31.55	79.14	703.89	908.86	6,960.73	6,896.64	64.09	108.615	
12,700.00	7,072.06	6,790.99	6,583.36	96.13	31.55	79.14	703.89	908.86	7,054.39	6,990.19	64.20	109.874	
12,800.00	7,071.82	6,790.99	6,583.36	97.63	31.55	79.14	703.89	908.86	7,148.23	7,083.91	64.32	111.134	
12,900.00	7,071.58	6,790.99	6,583.36	99.14	31.55	79.14	703.89	908.86	7,242.23	7,177.79	64.44	112.395	
13,000.00	7,071.34	6,790.99	6,583.36	100.65	31.55	79.14	703.89	908.86	7,336.39	7,271.84	64.55	113.656	
13,100.00	7,071.10	6,790.99	6,583.36	102.16	31.55	79.14	703.89	908.86	7,430.70	7,366.04	64.66	114.918	
13,200.00	7,070.86	6,790.99	6,583.36	103.68	31.55	79.14	703.89	908.86	7,525.16	7,460.38	64.77	116.181	
13,300.00	7,070.62	6,790.99	6,583.36	105.20	31.55	79.14	703.89	908.86	7,619.75	7,554.87	64.88	117.444	
13,400.00	7,070.38	6,790.99	6,583.36	106.72	31.55	79.14	703.89	908.86	7,714.49	7,649.50	64.99	118.707	
13,500.00	7,070.14	6,790.99	6,583.36	108.24	31.55	79.14	703.89	908.86	7,809.36	7,744.26	65.09	119.970	
13,600.00	7,069.89	6,790.99	6,583.36	109.77	31.55	79.14	703.89	908.86	7,904.35	7,839.15	65.20	121.233	
13,700.00	7,069.65	6,790.99	6,583.36	111.30	31.55	79.14	703.89	908.86	7,999.47	7,934.16	65.30	122.496	
13,800.00	7,069.41	6,790.99	6,583.36	112.83	31.55	79.14	703.89	908.86	8,094.70	8,029.29	65.41	123.758	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
13,900.00	7,069.17	6,790.99	6,583.36	114.36	31.55	79.14	703.89	908.86	8,190.05	8,124.54	65.51	125.020	
14,000.00	7,068.93	6,790.99	6,583.36	115.89	31.55	79.14	703.89	908.86	8,285.50	8,219.89	65.61	126.281	
14,100.00	7,068.69	6,790.99	6,583.36	117.43	31.55	79.14	703.89	908.86	8,381.07	8,315.36	65.71	127.542	
14,200.00	7,068.45	6,790.99	6,583.36	118.97	31.55	79.14	703.89	908.86	8,476.73	8,410.92	65.81	128.802	
14,300.00	7,068.21	6,790.99	6,583.36	120.50	31.55	79.14	703.89	908.86	8,572.50	8,506.59	65.91	130.062	
14,400.00	7,067.97	6,790.99	6,583.36	122.05	31.55	79.14	703.89	908.86	8,668.36	8,602.35	66.01	131.320	
14,500.00	7,067.72	6,790.99	6,583.36	123.59	31.55	79.14	703.89	908.86	8,764.31	8,698.20	66.11	132.577	
14,600.00	7,067.48	6,790.99	6,583.36	125.13	31.55	79.14	703.89	908.86	8,860.35	8,794.15	66.20	133.834	
14,700.00	7,067.24	6,790.99	6,583.36	126.68	31.55	79.14	703.89	908.86	8,956.48	8,890.18	66.30	135.089	
14,800.00	7,067.00	6,790.99	6,583.36	128.22	31.55	79.14	703.89	908.86	9,052.69	8,986.29	66.40	136.342	
14,900.00	7,066.76	6,790.99	6,583.36	129.77	31.55	79.14	703.89	908.86	9,148.98	9,082.49	66.49	137.595	
15,000.00	7,066.52	6,790.99	6,583.36	131.32	31.55	79.14	703.89	908.86	9,245.36	9,178.77	66.59	138.846	
15,100.00	7,066.28	6,790.99	6,583.36	132.87	31.55	79.14	703.89	908.86	9,341.80	9,275.12	66.68	140.096	
15,200.00	7,066.04	6,790.99	6,583.36	134.42	31.55	79.14	703.89	908.86	9,438.33	9,371.55	66.78	141.344	
15,300.00	7,065.80	6,790.99	6,583.36	135.97	31.55	79.14	703.89	908.86	9,534.92	9,468.05	66.87	142.591	
15,400.00	7,065.55	6,790.99	6,583.36	137.53	31.55	79.14	703.89	908.86	9,631.58	9,564.62	66.96	143.835	
15,500.00	7,065.31	6,790.99	6,583.36	139.08	31.55	79.14	703.89	908.86	9,728.32	9,661.26	67.06	145.079	
15,600.00	7,065.07	6,790.99	6,583.36	140.64	31.55	79.14	703.89	908.86	9,825.11	9,757.96	67.15	146.320	
15,700.00	7,064.83	6,790.99	6,583.36	142.20	31.55	79.14	703.89	908.86	9,921.97	9,854.73	67.24	147.560	
15,800.00	7,064.59	6,790.99	6,583.36	143.75	31.55	79.14	703.89	908.86	10,018.89	9,951.56	67.33	148.797	
15,900.00	7,064.35	6,790.99	6,583.36	145.31	31.55	79.14	703.89	908.86	10,115.88	10,048.45	67.42	150.033	
16,000.00	7,064.11	6,790.99	6,583.36	146.87	31.55	79.14	703.89	908.86	10,212.92	10,145.40	67.52	151.267	
16,100.00	7,063.87	6,790.99	6,583.36	148.43	31.55	79.14	703.89	908.86	10,310.01	10,242.40	67.61	152.498	
16,200.00	7,063.63	6,790.99	6,583.36	149.99	31.55	79.14	703.89	908.86	10,407.16	10,339.46	67.70	153.728	
16,300.00	7,063.38	6,790.99	6,583.36	151.56	31.55	79.14	703.89	908.86	10,504.37	10,436.58	67.79	154.955	
16,400.00	7,063.14	6,790.99	6,583.36	153.12	31.55	79.14	703.89	908.86	10,601.63	10,533.74	67.88	156.180	
16,500.00	7,062.90	6,790.99	6,583.36	154.68	31.55	79.14	703.89	908.86	10,698.93	10,630.96	67.97	157.403	
16,600.00	7,062.66	6,790.99	6,583.36	156.25	31.55	79.14	703.89	908.86	10,796.29	10,728.23	68.06	158.624	
16,700.00	7,062.42	6,790.99	6,583.36	157.81	31.55	79.14	703.89	908.86	10,893.69	10,825.54	68.15	159.843	
16,800.00	7,062.18	6,790.99	6,583.36	159.38	31.55	79.14	703.89	908.86	10,991.14	10,922.90	68.24	161.059	
16,874.30	7,062.00	6,790.99	6,583.36	160.54	31.55	79.14	703.89	908.86	11,063.58	10,995.27	68.31	161.961	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	-2.00	25.12	-0.88	25.14				
100.00	100.00	100.00	100.00	3.29	3.29	-2.00	25.12	-0.88	25.14	18.56	6.58	3.821	
200.00	200.00	200.00	200.00	3.34	3.34	-2.00	25.12	-0.88	25.14	18.47	6.67	3.768	
300.00	300.00	300.00	300.00	3.42	3.42	-2.00	25.12	-0.88	25.14	18.30	6.84	3.676	
400.00	400.00	400.00	400.00	3.54	3.54	-2.00	25.12	-0.88	25.14	18.06	7.08	3.553	
500.00	500.00	500.00	500.00	3.69	3.69	-2.00	25.12	-0.88	25.14	17.77	7.37	3.409	CC
600.00	599.98	600.74	600.72	3.86	3.86	174.23	23.59	-1.76	25.40	17.69	7.71	3.295	ES
700.00	699.84	701.41	701.24	4.04	4.05	168.94	19.00	-4.42	26.35	18.27	8.08	3.262	SF
800.00	799.45	801.32	800.91	4.25	4.26	163.78	13.05	-7.85	29.69	21.20	8.50	3.495	
900.00	898.70	901.10	900.47	4.48	4.49	161.57	7.11	-11.27	36.52	27.56	8.96	4.078	
1,000.00	997.47	1,001.05	1,000.18	4.74	4.73	162.83	0.63	-13.43	45.80	36.36	9.45	4.849	
1,100.00	1,095.62	1,100.25	1,099.15	5.03	5.00	164.90	-5.95	-15.23	58.23	48.26	9.97	5.841	
1,200.00	1,193.06	1,198.96	1,197.62	5.35	5.27	166.85	-12.49	-17.02	74.07	63.55	10.52	7.042	
1,268.36	1,259.18	1,266.09	1,264.59	5.58	5.46	168.03	-16.94	-18.24	86.87	75.96	10.91	7.964	
1,300.00	1,289.69	1,297.09	1,295.51	5.70	5.55	168.53	-18.99	-18.80	93.16	82.07	11.09	8.401	
1,400.00	1,386.11	1,395.05	1,393.25	6.07	5.84	169.76	-25.49	-20.57	113.10	101.43	11.68	9.687	
1,500.00	1,482.54	1,493.02	1,490.99	6.45	6.14	170.61	-31.99	-22.35	133.07	120.79	12.28	10.837	
1,600.00	1,578.96	1,590.99	1,588.72	6.86	6.44	171.25	-38.48	-24.13	153.07	140.17	12.90	11.866	
1,700.00	1,675.39	1,688.96	1,686.46	7.27	6.75	171.73	-44.98	-25.90	173.07	159.54	13.53	12.788	
1,800.00	1,771.81	1,786.93	1,784.20	7.70	7.07	172.12	-51.47	-27.68	193.09	178.91	14.18	13.618	
1,900.00	1,868.24	1,884.90	1,881.94	8.13	7.39	172.43	-57.97	-29.45	213.11	198.28	14.83	14.366	
2,000.00	1,964.66	1,982.87	1,979.67	8.57	7.71	172.69	-64.46	-31.23	233.14	217.64	15.50	15.042	
2,100.00	2,061.09	2,080.84	2,077.41	9.02	8.04	172.91	-70.96	-33.01	253.17	237.00	16.17	15.656	
2,200.00	2,157.51	2,178.81	2,175.15	9.47	8.37	173.10	-77.45	-34.78	273.21	256.36	16.85	16.214	
2,300.00	2,253.94	2,276.77	2,272.88	9.93	8.71	173.26	-83.95	-36.56	293.25	275.71	17.54	16.723	
2,400.00	2,350.36	2,374.74	2,370.62	10.39	9.04	173.40	-90.44	-38.34	313.29	295.06	18.23	17.188	
2,500.00	2,446.79	2,472.71	2,468.36	10.86	9.38	173.52	-96.94	-40.11	333.33	314.40	18.92	17.616	
2,600.00	2,543.21	2,570.68	2,566.10	11.33	9.72	173.63	-103.43	-41.89	353.37	333.75	19.62	18.009	
2,700.00	2,639.64	2,668.65	2,663.83	11.80	10.06	173.73	-109.93	-43.66	373.41	353.09	20.33	18.371	
2,800.00	2,736.06	2,766.62	2,761.57	12.27	10.40	173.82	-116.42	-45.44	393.46	372.42	21.03	18.707	
2,900.00	2,832.49	2,864.59	2,859.31	12.75	10.75	173.90	-122.92	-47.22	413.50	391.76	21.74	19.017	
3,000.00	2,928.91	2,962.56	2,957.04	13.23	11.09	173.97	-129.42	-48.99	433.55	411.09	22.46	19.306	
3,100.00	3,025.34	3,060.52	3,054.78	13.71	11.44	174.04	-135.91	-50.77	453.59	430.42	23.17	19.575	
3,200.00	3,121.76	3,158.49	3,152.52	14.19	11.79	174.10	-142.41	-52.54	473.64	449.75	23.89	19.826	
3,300.00	3,218.18	3,256.46	3,250.26	14.67	12.14	174.15	-148.90	-54.32	493.69	469.08	24.61	20.060	
3,400.00	3,314.61	3,354.43	3,347.99	15.15	12.49	174.20	-155.40	-56.10	513.74	488.40	25.33	20.279	
3,500.00	3,411.03	3,452.40	3,445.73	15.64	12.84	174.25	-161.89	-57.87	533.79	507.73	26.06	20.485	
3,600.00	3,507.46	3,550.37	3,543.47	16.12	13.19	174.29	-168.39	-59.65	553.83	527.05	26.78	20.679	
3,700.00	3,603.88	3,648.34	3,641.20	16.61	13.54	174.33	-174.88	-61.43	573.88	546.37	27.51	20.861	
3,800.00	3,700.31	3,746.31	3,738.94	17.10	13.89	174.37	-181.38	-63.20	593.93	565.69	28.24	21.033	
3,900.00	3,796.73	3,844.28	3,836.68	17.59	14.25	174.41	-187.87	-64.98	613.98	585.01	28.97	21.195	
4,000.00	3,893.16	3,942.24	3,934.42	18.07	14.60	174.44	-194.37	-66.75	634.03	604.33	29.70	21.348	
4,100.00	3,989.58	4,040.21	4,032.15	18.56	14.95	174.47	-200.86	-68.53	654.08	623.65	30.43	21.493	
4,200.00	4,086.01	4,138.18	4,129.89	19.05	15.31	174.50	-207.36	-70.31	674.13	642.97	31.17	21.631	
4,300.00	4,182.43	4,236.15	4,227.63	19.55	15.66	174.53	-213.85	-72.08	694.18	662.28	31.90	21.761	
4,400.00	4,278.86	4,334.12	4,325.36	20.04	16.02	174.55	-220.35	-73.86	714.23	681.60	32.63	21.886	
4,500.00	4,375.28	4,432.09	4,423.10	20.53	16.37	174.58	-226.85	-75.63	734.28	700.91	33.37	22.004	
4,600.00	4,471.71	4,530.06	4,520.84	21.02	16.73	174.60	-233.34	-77.41	754.33	720.22	34.11	22.116	
4,700.00	4,568.13	4,628.03	4,618.58	21.51	17.09	174.62	-239.84	-79.19	774.38	739.54	34.85	22.223	
4,800.00	4,664.56	4,725.99	4,716.31	22.01	17.44	174.64	-246.33	-80.96	794.43	758.85	35.58	22.326	
4,900.00	4,760.98	4,823.96	4,814.05	22.50	17.80	174.66	-252.83	-82.74	814.48	778.16	36.32	22.423	
5,000.00	4,857.41	4,921.93	4,911.79	22.99	18.16	174.68	-259.32	-84.51	834.54	797.47	37.06	22.517	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)	Rule Assigned: Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	4,953.83	5,019.90	5,009.52	23.49	18.52	174.70	-265.82	-86.29	854.59	816.78	37.80	22.606	
5,200.00	5,050.25	5,117.87	5,107.26	23.98	18.87	174.72	-272.31	-88.07	874.64	836.09	38.54	22.692	
5,300.00	5,146.68	5,215.84	5,205.00	24.48	19.23	174.74	-278.81	-89.84	894.69	855.40	39.29	22.774	
5,400.00	5,243.10	5,313.81	5,302.74	24.97	19.59	174.75	-285.30	-91.62	914.74	874.71	40.03	22.853	
5,500.00	5,339.53	5,411.78	5,400.47	25.47	19.95	174.77	-291.80	-93.40	934.79	894.02	40.77	22.929	
5,600.00	5,435.95	5,509.75	5,498.21	25.96	20.31	174.78	-298.29	-95.17	954.84	913.33	41.51	23.001	
5,700.00	5,532.38	5,607.71	5,595.95	26.46	20.67	174.79	-304.79	-96.95	974.89	932.64	42.26	23.071	
5,800.00	5,628.80	5,705.68	5,693.68	26.96	21.03	174.81	-311.28	-98.72	994.95	951.95	43.00	23.139	
5,900.00	5,725.23	5,803.65	5,791.42	27.45	21.39	174.82	-317.78	-100.50	1,015.00	971.25	43.74	23.203	
6,000.00	5,821.65	5,901.62	5,889.16	27.95	21.74	174.83	-324.27	-102.28	1,035.05	990.56	44.49	23.266	
6,100.00	5,918.08	5,999.59	5,986.90	28.45	22.10	174.84	-330.77	-104.05	1,055.10	1,009.87	45.23	23.326	
6,200.00	6,014.50	6,097.56	6,084.63	28.94	22.46	174.86	-337.27	-105.83	1,075.15	1,029.17	45.98	23.384	
6,300.00	6,110.93	6,195.53	6,182.37	29.44	22.82	174.87	-343.76	-107.60	1,095.20	1,048.48	46.72	23.440	
6,400.00	6,207.35	6,293.50	6,280.11	29.94	23.18	174.88	-350.26	-109.38	1,115.26	1,067.79	47.47	23.494	
6,500.00	6,303.78	6,391.46	6,377.84	30.43	23.54	174.89	-356.75	-111.16	1,135.31	1,087.09	48.22	23.546	
6,600.00	6,400.20	6,489.43	6,475.58	30.93	23.90	174.90	-363.25	-112.93	1,155.36	1,106.40	48.96	23.597	
6,677.76	6,475.18	6,558.52	6,544.34	31.32	24.16	174.74	-367.80	-117.45	1,171.17	1,121.67	49.50	23.660	
6,700.00	6,496.62	6,577.98	6,563.57	31.43	24.23	167.01	-369.07	-120.06	1,175.76	1,126.11	49.65	23.680	
6,750.00	6,544.66	6,621.52	6,606.28	31.68	24.39	150.96	-371.88	-128.04	1,186.03	1,136.04	49.99	23.725	
6,800.00	6,592.24	6,664.86	6,648.15	31.92	24.55	137.80	-374.62	-138.86	1,196.19	1,145.86	50.33	23.768	
6,850.00	6,639.07	6,708.02	6,689.01	32.16	24.71	127.60	-377.29	-152.46	1,206.16	1,155.50	50.66	23.810	
6,900.00	6,684.86	6,750.00	6,727.80	32.40	24.86	119.81	-379.80	-168.31	1,215.88	1,164.91	50.98	23.852	
6,950.00	6,729.32	6,793.99	6,767.22	32.62	25.02	113.78	-382.34	-187.63	1,225.29	1,173.99	51.31	23.882	
7,000.00	6,772.19	6,836.87	6,804.29	32.84	25.17	109.03	-384.72	-209.04	1,234.33	1,182.70	51.63	23.909	
7,050.00	6,813.20	6,879.73	6,839.82	33.05	25.32	105.23	-386.99	-232.90	1,242.94	1,190.99	51.94	23.929	
7,100.00	6,852.09	6,922.60	6,873.67	33.26	25.47	102.14	-389.14	-259.10	1,251.07	1,198.80	52.26	23.938	
7,150.00	6,888.63	6,965.52	6,905.73	33.45	25.62	99.60	-391.15	-287.56	1,258.67	1,206.08	52.59	23.936	
7,200.00	6,922.59	7,008.51	6,935.84	33.64	25.78	97.50	-393.03	-318.17	1,265.69	1,212.77	52.92	23.919	
7,250.00	6,953.76	7,050.00	6,962.89	33.82	25.93	95.77	-394.70	-349.58	1,272.10	1,218.86	53.24	23.894	
7,300.00	6,981.95	7,094.81	6,989.74	34.00	26.11	94.35	-396.34	-385.40	1,277.85	1,224.24	53.61	23.837	
7,350.00	7,006.99	7,138.17	7,013.27	34.17	26.28	93.20	-397.76	-421.78	1,282.92	1,228.94	53.98	23.768	
7,400.00	7,028.72	7,181.70	7,034.35	34.35	26.47	92.28	-399.00	-459.84	1,287.28	1,232.91	54.37	23.678	
7,450.00	7,047.00	7,225.41	7,052.86	34.52	26.67	91.58	-400.07	-499.41	1,290.90	1,236.12	54.78	23.567	
7,500.00	7,061.73	7,269.33	7,068.68	34.69	26.88	91.08	-400.96	-540.36	1,293.76	1,238.55	55.21	23.434	
7,550.00	7,072.82	7,313.47	7,081.71	34.86	27.11	90.77	-401.65	-582.52	1,295.85	1,240.18	55.67	23.279	
7,600.00	7,080.18	7,357.85	7,091.84	35.04	27.34	90.63	-402.15	-625.72	1,297.16	1,241.01	56.15	23.103	
7,650.00	7,083.79	7,400.00	7,098.66	35.22	27.58	90.67	-402.44	-667.30	1,297.68	1,241.06	56.62	22.918	
7,674.30	7,084.18	7,424.27	7,101.34	35.32	27.72	90.76	-402.52	-691.42	1,297.65	1,240.74	56.91	22.802	
7,700.00	7,084.12	7,447.41	7,103.03	35.42	27.85	90.84	-402.53	-714.50	1,297.55	1,240.36	57.18	22.691	
7,741.36	7,084.02	7,484.86	7,104.00	35.58	28.08	90.88	-402.45	-751.93	1,297.48	1,239.85	57.64	22.511	
7,800.00	7,083.88	7,543.47	7,103.80	35.84	28.45	90.88	-402.19	-810.55	1,297.49	1,239.11	58.37	22.228	
7,900.00	7,083.64	7,643.47	7,103.45	36.34	29.14	90.87	-401.76	-910.54	1,297.49	1,237.75	59.74	21.721	
8,000.00	7,083.40	7,743.47	7,103.10	36.90	29.90	90.87	-401.33	-1,010.54	1,297.49	1,236.25	61.24	21.188	
8,100.00	7,083.16	7,843.47	7,102.75	37.52	30.73	90.87	-400.90	-1,110.54	1,297.49	1,234.62	62.87	20.639	
8,200.00	7,082.91	7,943.47	7,102.40	38.21	31.61	90.86	-400.47	-1,210.54	1,297.49	1,232.88	64.61	20.081	
8,300.00	7,082.67	8,043.47	7,102.05	38.95	32.55	90.86	-400.03	-1,310.54	1,297.49	1,231.02	66.47	19.520	
8,400.00	7,082.43	8,143.47	7,101.70	39.74	33.54	90.85	-399.60	-1,410.54	1,297.49	1,229.07	68.42	18.963	
8,500.00	7,082.19	8,243.47	7,101.35	40.59	34.57	90.85	-399.17	-1,510.53	1,297.50	1,227.03	70.47	18.412	
8,600.00	7,081.95	8,343.47	7,101.00	41.49	35.65	90.84	-398.74	-1,610.53	1,297.50	1,224.90	72.60	17.872	
8,700.00	7,081.71	8,443.47	7,100.65	42.43	36.77	90.84	-398.31	-1,710.53	1,297.50	1,222.69	74.80	17.345	
8,800.00	7,081.47	8,543.47	7,100.30	43.41	37.92	90.83	-397.87	-1,810.53	1,297.50	1,220.42	77.08	16.833	
8,900.00	7,081.23	8,643.47	7,099.95	44.44	39.10	90.83	-397.44	-1,910.53	1,297.50	1,218.08	79.42	16.337	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,080.99	8,743.47	7,099.60	45.49	40.31	90.82	-397.01	-2,010.53	1,297.50	1,215.69	81.82	15.858	
9,100.00	7,080.74	8,843.47	7,099.25	46.58	41.55	90.82	-396.58	-2,110.52	1,297.51	1,213.24	84.27	15.397	
9,200.00	7,080.50	8,943.47	7,098.90	47.70	42.81	90.81	-396.15	-2,210.52	1,297.51	1,210.74	86.77	14.953	
9,300.00	7,080.26	9,043.47	7,098.55	48.85	44.09	90.81	-395.71	-2,310.52	1,297.51	1,208.20	89.31	14.527	
9,400.00	7,080.02	9,143.47	7,098.20	50.03	45.40	90.80	-395.28	-2,410.52	1,297.51	1,205.61	91.90	14.119	
9,500.00	7,079.78	9,243.47	7,097.85	51.23	46.72	90.80	-394.85	-2,510.52	1,297.51	1,202.99	94.52	13.727	
9,600.00	7,079.54	9,343.47	7,097.50	52.45	48.06	90.79	-394.42	-2,610.52	1,297.51	1,200.33	97.18	13.351	
9,700.00	7,079.30	9,443.47	7,097.15	53.69	49.41	90.79	-393.99	-2,710.52	1,297.52	1,197.64	99.87	12.992	
9,800.00	7,079.06	9,543.47	7,096.80	54.95	50.78	90.78	-393.56	-2,810.51	1,297.52	1,194.93	102.59	12.647	
9,900.00	7,078.82	9,643.47	7,096.45	56.23	52.16	90.78	-393.12	-2,910.51	1,297.52	1,192.18	105.34	12.318	
10,000.00	7,078.57	9,743.47	7,096.10	57.53	53.56	90.77	-392.69	-3,010.51	1,297.52	1,189.41	108.11	12.002	
10,100.00	7,078.33	9,843.47	7,095.75	58.84	54.96	90.77	-392.26	-3,110.51	1,297.52	1,186.62	110.90	11.700	
10,200.00	7,078.09	9,943.47	7,095.40	60.17	56.38	90.76	-391.83	-3,210.51	1,297.53	1,183.81	113.72	11.410	
10,300.00	7,077.85	10,043.47	7,095.05	61.51	57.81	90.76	-391.40	-3,310.51	1,297.53	1,180.97	116.56	11.132	
10,400.00	7,077.61	10,143.47	7,094.70	62.86	59.24	90.75	-390.96	-3,410.50	1,297.53	1,178.12	119.41	10.866	
10,500.00	7,077.37	10,243.47	7,094.35	64.22	60.68	90.75	-390.53	-3,510.50	1,297.53	1,175.25	122.28	10.611	
10,600.00	7,077.13	10,343.47	7,094.00	65.60	62.13	90.75	-390.10	-3,610.50	1,297.53	1,172.36	125.17	10.366	
10,700.00	7,076.89	10,443.47	7,093.65	66.98	63.59	90.74	-389.67	-3,710.50	1,297.53	1,169.46	128.07	10.131	
10,800.00	7,076.65	10,543.47	7,093.30	68.38	65.06	90.74	-389.24	-3,810.50	1,297.54	1,166.55	130.99	9.906	
10,900.00	7,076.40	10,643.47	7,092.95	69.78	66.53	90.73	-388.81	-3,910.50	1,297.54	1,163.62	133.92	9.689	
11,000.00	7,076.16	10,743.47	7,092.60	71.20	68.01	90.73	-388.37	-4,010.49	1,297.54	1,160.68	136.86	9.481	
11,100.00	7,075.92	10,843.47	7,092.25	72.62	69.49	90.72	-387.94	-4,110.49	1,297.54	1,157.73	139.81	9.281	
11,200.00	7,075.68	10,943.47	7,091.90	74.04	70.98	90.72	-387.51	-4,210.49	1,297.54	1,154.77	142.78	9.088	
11,300.00	7,075.44	11,043.47	7,091.55	75.48	72.47	90.71	-387.08	-4,310.49	1,297.55	1,151.80	145.75	8.903	
11,400.00	7,075.20	11,143.47	7,091.20	76.92	73.97	90.71	-386.65	-4,410.49	1,297.55	1,148.81	148.73	8.724	
11,500.00	7,074.96	11,243.47	7,090.85	78.37	75.47	90.70	-386.21	-4,510.49	1,297.55	1,145.82	151.73	8.552	
11,600.00	7,074.72	11,343.47	7,090.50	79.82	76.97	90.70	-385.78	-4,610.48	1,297.55	1,142.83	154.73	8.386	
11,700.00	7,074.48	11,443.47	7,090.15	81.28	78.48	90.69	-385.35	-4,710.48	1,297.55	1,139.82	157.73	8.226	
11,800.00	7,074.23	11,543.47	7,089.80	82.75	79.99	90.69	-384.92	-4,810.48	1,297.55	1,136.81	160.75	8.072	
11,900.00	7,073.99	11,643.47	7,089.45	84.22	81.51	90.68	-384.49	-4,910.48	1,297.56	1,133.78	163.77	7.923	
12,000.00	7,073.75	11,743.47	7,089.10	85.69	83.03	90.68	-384.06	-5,010.48	1,297.56	1,130.76	166.80	7.779	
12,100.00	7,073.51	11,843.47	7,088.75	87.17	84.55	90.67	-383.62	-5,110.48	1,297.56	1,127.72	169.84	7.640	
12,200.00	7,073.27	11,943.47	7,088.40	88.65	86.08	90.67	-383.19	-5,210.48	1,297.56	1,124.68	172.88	7.506	
12,300.00	7,073.03	12,043.47	7,088.05	90.14	87.60	90.66	-382.76	-5,310.47	1,297.56	1,121.64	175.93	7.376	
12,400.00	7,072.79	12,143.47	7,087.70	91.63	89.14	90.66	-382.33	-5,410.47	1,297.57	1,118.59	178.98	7.250	
12,500.00	7,072.55	12,243.47	7,087.35	93.13	90.67	90.65	-381.90	-5,510.47	1,297.57	1,115.53	182.04	7.128	
12,600.00	7,072.31	12,343.47	7,087.00	94.62	92.20	90.65	-381.46	-5,610.47	1,297.57	1,112.47	185.10	7.010	
12,700.00	7,072.06	12,443.47	7,086.65	96.13	93.74	90.64	-381.03	-5,710.47	1,297.57	1,109.40	188.17	6.896	
12,800.00	7,071.82	12,543.47	7,086.30	97.63	95.28	90.64	-380.60	-5,810.47	1,297.57	1,106.33	191.24	6.785	
12,900.00	7,071.58	12,643.47	7,085.95	99.14	96.82	90.63	-380.17	-5,910.46	1,297.58	1,103.26	194.32	6.678	
13,000.00	7,071.34	12,743.47	7,085.60	100.65	98.37	90.63	-379.74	-6,010.46	1,297.58	1,100.18	197.40	6.573	
13,100.00	7,071.10	12,843.47	7,085.25	102.16	99.91	90.62	-379.31	-6,110.46	1,297.58	1,097.10	200.48	6.472	
13,200.00	7,070.86	12,943.47	7,084.90	103.68	101.46	90.62	-378.87	-6,210.46	1,297.58	1,094.01	203.57	6.374	
13,300.00	7,070.62	13,043.47	7,084.55	105.20	103.01	90.62	-378.44	-6,310.46	1,297.58	1,090.93	206.66	6.279	
13,400.00	7,070.38	13,143.47	7,084.20	106.72	104.56	90.61	-378.01	-6,410.46	1,297.59	1,087.83	209.75	6.186	
13,500.00	7,070.14	13,243.47	7,083.85	108.24	106.11	90.61	-377.58	-6,510.45	1,297.59	1,084.74	212.85	6.096	
13,600.00	7,069.89	13,343.47	7,083.50	109.77	107.66	90.60	-377.15	-6,610.45	1,297.59	1,081.64	215.95	6.009	
13,700.00	7,069.65	13,443.47	7,083.15	111.30	109.22	90.60	-376.71	-6,710.45	1,297.59	1,078.54	219.05	5.924	
13,800.00	7,069.41	13,543.47	7,082.80	112.83	110.77	90.59	-376.28	-6,810.45	1,297.60	1,075.43	222.16	5.841	
13,900.00	7,069.17	13,643.47	7,082.46	114.36	112.33	90.59	-375.85	-6,910.45	1,297.60	1,072.33	225.27	5.760	
14,000.00	7,068.93	13,743.47	7,082.11	115.89	113.89	90.58	-375.42	-7,010.45	1,297.60	1,069.22	228.38	5.682	
14,100.00	7,068.69	13,843.47	7,081.76	117.43	115.45	90.58	-374.99	-7,110.44	1,297.60	1,066.11	231.49	5.605	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	7,068.45	13,943.47	7,081.41	118.97	117.01	90.57	-374.56	-7,210.44	1,297.60	1,062.99	234.61	5.531	
14,300.00	7,068.21	14,043.47	7,081.06	120.50	118.57	90.57	-374.12	-7,310.44	1,297.61	1,059.88	237.73	5.458	
14,400.00	7,067.97	14,143.47	7,080.71	122.05	120.13	90.56	-373.69	-7,410.44	1,297.61	1,056.76	240.85	5.388	
14,500.00	7,067.72	14,243.47	7,080.36	123.59	121.70	90.56	-373.26	-7,510.44	1,297.61	1,053.64	243.97	5.319	
14,600.00	7,067.48	14,343.47	7,080.01	125.13	123.26	90.55	-372.83	-7,610.44	1,297.61	1,050.51	247.10	5.251	
14,700.00	7,067.24	14,443.47	7,079.66	126.68	124.83	90.55	-372.40	-7,710.44	1,297.61	1,047.39	250.22	5.186	
14,800.00	7,067.00	14,543.47	7,079.31	128.22	126.39	90.54	-371.96	-7,810.43	1,297.62	1,044.26	253.35	5.122	
14,900.00	7,066.76	14,643.47	7,078.96	129.77	127.96	90.54	-371.53	-7,910.43	1,297.62	1,041.13	256.48	5.059	
15,000.00	7,066.52	14,743.47	7,078.61	131.32	129.53	90.53	-371.10	-8,010.43	1,297.62	1,038.00	259.62	4.998	
15,100.00	7,066.28	14,843.47	7,078.26	132.87	131.10	90.53	-370.67	-8,110.43	1,297.62	1,034.87	262.75	4.939	
15,200.00	7,066.04	14,943.47	7,077.91	134.42	132.67	90.52	-370.24	-8,210.43	1,297.63	1,031.74	265.89	4.880	
15,300.00	7,065.80	15,043.47	7,077.56	135.97	134.24	90.52	-369.80	-8,310.43	1,297.63	1,028.61	269.02	4.823	
15,400.00	7,065.55	15,143.47	7,077.21	137.53	135.81	90.51	-369.37	-8,410.42	1,297.63	1,025.47	272.16	4.768	
15,500.00	7,065.31	15,243.47	7,076.86	139.08	137.38	90.51	-368.94	-8,510.42	1,297.63	1,022.33	275.30	4.714	
15,600.00	7,065.07	15,343.47	7,076.51	140.64	138.95	90.50	-368.51	-8,610.42	1,297.63	1,019.19	278.44	4.660	
15,700.00	7,064.83	15,443.47	7,076.16	142.20	140.53	90.50	-368.08	-8,710.42	1,297.64	1,016.05	281.59	4.608	
15,800.00	7,064.59	15,543.47	7,075.81	143.75	142.10	90.50	-367.65	-8,810.42	1,297.64	1,012.91	284.73	4.557	
15,900.00	7,064.35	15,643.47	7,075.46	145.31	143.67	90.49	-367.21	-8,910.42	1,297.64	1,009.77	287.87	4.508	
16,000.00	7,064.11	15,743.47	7,075.11	146.87	145.25	90.49	-366.78	-9,010.41	1,297.64	1,006.62	291.02	4.459	
16,100.00	7,063.87	15,843.47	7,074.76	148.43	146.83	90.48	-366.35	-9,110.41	1,297.65	1,003.48	294.17	4.411	
16,200.00	7,063.63	15,943.47	7,074.41	149.99	148.40	90.48	-365.92	-9,210.41	1,297.65	1,000.33	297.32	4.365	
16,300.00	7,063.38	16,043.47	7,074.06	151.56	149.98	90.47	-365.49	-9,310.41	1,297.65	997.18	300.47	4.319	
16,400.00	7,063.14	16,143.47	7,073.71	153.12	151.56	90.47	-365.05	-9,410.41	1,297.65	994.03	303.62	4.274	
16,500.00	7,062.90	16,243.47	7,073.36	154.68	153.13	90.46	-364.62	-9,510.41	1,297.66	990.88	306.77	4.230	
16,600.00	7,062.66	16,343.47	7,073.01	156.25	154.71	90.46	-364.19	-9,610.40	1,297.66	987.73	309.92	4.187	
16,700.00	7,062.42	16,443.47	7,072.66	157.81	156.29	90.45	-363.76	-9,710.40	1,297.66	984.58	313.08	4.145	
16,800.00	7,062.18	16,543.47	7,072.31	159.38	157.87	90.45	-363.33	-9,810.40	1,297.66	981.43	316.23	4.103	
16,874.30	7,062.00	16,617.76	7,072.05	160.54	159.04	90.44	-363.01	-9,884.70	1,297.66	979.09	318.58	4.073	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 754H - OH - Plan #4-1300 — **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
0.00	0.00	0.00	0.00	3.28	3.28	177.29	-24.76	1.17	24.78				
100.00	100.00	100.00	100.00	3.29	3.29	177.29	-24.76	1.17	24.78	18.20	6.58	3.767	
200.00	200.00	200.00	200.00	3.34	3.34	177.29	-24.76	1.17	24.78	18.11	6.67	3.714	
300.00	300.00	300.00	300.00	3.42	3.42	177.29	-24.76	1.17	24.78	17.94	6.84	3.624	
400.00	400.00	400.00	400.00	3.54	3.54	177.29	-24.76	1.17	24.78	17.71	7.08	3.502	
500.00	500.00	500.00	500.00	3.69	3.69	177.29	-24.76	1.17	24.78	17.41	7.37	3.361	
600.00	599.98	599.15	599.13	3.86	3.85	-5.44	-26.45	1.46	24.76	17.06	7.71	3.214	
700.00	699.84	698.29	698.13	4.04	4.04	-7.86	-31.52	2.33	24.74	16.67	8.06	3.068	
710.68	710.49	708.88	708.69	4.06	4.06	-8.22	-32.26	2.45	24.73	16.63	8.10	3.053	
800.00	799.45	797.42	796.88	4.25	4.25	-11.90	-39.96	3.77	24.79	16.33	8.45	2.932	
900.00	898.70	896.94	895.73	4.48	4.48	-17.60	-51.42	5.73	24.66	15.76	8.89	2.773	
1,000.00	997.47	996.84	994.88	4.74	4.73	-26.68	-63.36	7.77	22.06	12.66	9.39	2.348	
1,100.00	1,095.62	1,096.54	1,093.85	5.03	5.00	-44.83	-75.28	9.81	17.52	7.56	9.96	1.759	
1,190.06	1,183.40	1,186.06	1,182.71	5.32	5.26	-78.61	-85.99	11.64	14.82	4.25	10.56	1.403	Level 3, CC
1,200.00	1,193.06	1,195.92	1,192.50	5.35	5.29	-83.39	-87.17	11.84	14.87	4.24	10.63	1.398	Level 3, ES, SF
1,268.36	1,259.18	1,263.62	1,259.69	5.58	5.49	-114.60	-95.26	13.23	18.13	7.07	11.05	1.640	
1,300.00	1,289.69	1,294.90	1,290.74	5.70	5.59	-125.29	-99.00	13.87	21.18	9.95	11.22	1.887	
1,400.00	1,386.11	1,393.76	1,388.87	6.07	5.90	-143.86	-110.83	15.89	33.54	21.77	11.78	2.849	
1,500.00	1,482.54	1,492.62	1,487.00	6.45	6.22	-152.06	-122.65	17.91	47.48	35.12	12.37	3.839	
1,600.00	1,578.96	1,591.48	1,585.14	6.86	6.54	-156.50	-134.47	19.93	61.95	48.96	12.99	4.769	
1,700.00	1,675.39	1,690.34	1,683.27	7.27	6.88	-159.25	-146.29	21.96	76.63	63.00	13.63	5.622	
1,800.00	1,771.81	1,789.21	1,781.40	7.70	7.21	-161.11	-158.11	23.98	91.44	77.15	14.29	6.400	
1,900.00	1,868.24	1,888.07	1,879.53	8.13	7.56	-162.45	-169.94	26.00	106.31	91.35	14.95	7.109	
2,000.00	1,964.66	1,986.93	1,977.66	8.57	7.91	-163.47	-181.76	28.02	121.22	105.59	15.63	7.755	
2,100.00	2,061.09	2,085.79	2,075.79	9.02	8.26	-164.26	-193.58	30.04	136.17	119.85	16.32	8.344	
2,200.00	2,157.51	2,184.65	2,173.92	9.47	8.61	-164.89	-205.40	32.07	151.13	134.12	17.01	8.883	
2,300.00	2,253.94	2,283.51	2,272.05	9.93	8.97	-165.41	-217.22	34.09	166.11	148.40	17.71	9.377	
2,400.00	2,350.36	2,382.37	2,370.19	10.39	9.33	-165.85	-229.04	36.11	181.10	162.68	18.42	9.831	
2,500.00	2,446.79	2,481.24	2,468.32	10.86	9.69	-166.22	-240.87	38.13	196.10	176.97	19.13	10.250	
2,600.00	2,543.21	2,580.10	2,566.45	11.33	10.06	-166.53	-252.69	40.15	211.11	191.26	19.85	10.636	
2,700.00	2,639.64	2,678.96	2,664.58	11.80	10.42	-166.80	-264.51	42.17	226.12	205.55	20.57	10.993	
2,800.00	2,736.06	2,777.82	2,762.71	12.27	10.79	-167.04	-276.33	44.20	241.14	219.84	21.29	11.325	
2,900.00	2,832.49	2,876.68	2,860.84	12.75	11.16	-167.26	-288.15	46.22	256.16	234.14	22.02	11.633	
3,000.00	2,928.91	2,975.54	2,958.97	13.23	11.53	-167.44	-299.98	48.24	271.18	248.43	22.75	11.920	
3,100.00	3,025.34	3,074.40	3,057.10	13.71	11.91	-167.61	-311.80	50.26	286.20	262.72	23.48	12.188	
3,200.00	3,121.76	3,173.27	3,155.24	14.19	12.28	-167.76	-323.62	52.28	301.23	277.01	24.22	12.438	
3,300.00	3,218.18	3,272.13	3,253.37	14.67	12.65	-167.90	-335.44	54.31	316.26	291.31	24.96	12.673	
3,400.00	3,314.61	3,370.99	3,351.50	15.15	13.03	-168.02	-347.26	56.33	331.29	305.60	25.69	12.894	
3,500.00	3,411.03	3,469.85	3,449.63	15.64	13.41	-168.14	-359.08	58.35	346.32	319.89	26.44	13.101	
3,600.00	3,507.46	3,568.71	3,547.76	16.12	13.78	-168.24	-370.91	60.37	361.36	334.18	27.18	13.296	
3,700.00	3,603.88	3,667.57	3,645.89	16.61	14.16	-168.34	-382.73	62.39	376.39	348.47	27.92	13.480	
3,800.00	3,700.31	3,766.43	3,744.02	17.10	14.54	-168.43	-394.55	64.41	391.43	362.76	28.67	13.654	
3,900.00	3,796.73	3,865.30	3,842.15	17.59	14.92	-168.51	-406.37	66.44	406.46	377.05	29.42	13.818	
4,000.00	3,893.16	3,964.16	3,940.29	18.07	15.30	-168.59	-418.19	68.46	421.50	391.34	30.16	13.974	
4,100.00	3,989.58	4,063.02	4,038.42	18.56	15.68	-168.66	-430.02	70.48	436.54	405.63	30.91	14.122	
4,200.00	4,086.01	4,161.88	4,136.55	19.05	16.06	-168.72	-441.84	72.50	451.58	419.91	31.66	14.262	
4,300.00	4,182.43	4,260.74	4,234.68	19.55	16.44	-168.79	-453.66	74.52	466.62	434.20	32.41	14.395	
4,400.00	4,278.86	4,359.60	4,332.81	20.04	16.82	-168.84	-465.48	76.55	481.66	448.49	33.17	14.522	
4,500.00	4,375.28	4,458.46	4,430.94	20.53	17.20	-168.90	-477.30	78.57	496.70	462.78	33.92	14.643	
4,600.00	4,471.71	4,557.33	4,529.07	21.02	17.59	-168.95	-489.12	80.59	511.74	477.06	34.67	14.758	
4,700.00	4,568.13	4,656.19	4,627.20	21.51	17.97	-169.00	-500.95	82.61	526.78	491.35	35.43	14.869	
4,800.00	4,664.56	4,755.05	4,725.34	22.01	18.35	-169.04	-512.77	84.63	541.82	505.63	36.18	14.974	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 754H - OH - Plan #4-1300

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
4,900.00	4,760.98	4,853.91	4,823.47	22.50	18.73	-169.09	-524.59	86.65	556.86	519.92	36.94	15.075	
5,000.00	4,857.41	4,952.77	4,921.60	22.99	19.12	-169.13	-536.41	88.68	571.90	534.20	37.70	15.171	
5,100.00	4,953.83	5,051.63	5,019.73	23.49	19.50	-169.17	-548.23	90.70	586.94	548.49	38.45	15.263	
5,200.00	5,050.25	5,150.49	5,117.86	23.98	19.89	-169.20	-560.06	92.72	601.99	562.77	39.21	15.352	
5,300.00	5,146.68	5,249.36	5,215.99	24.48	20.27	-169.24	-571.88	94.74	617.03	577.06	39.97	15.437	
5,400.00	5,243.10	5,348.22	5,314.12	24.97	20.65	-169.27	-583.70	96.76	632.07	591.34	40.73	15.519	
5,500.00	5,339.53	5,447.08	5,412.26	25.47	21.04	-169.30	-595.52	98.79	647.11	605.62	41.49	15.597	
5,600.00	5,435.95	5,545.94	5,510.39	25.96	21.42	-169.34	-607.34	100.81	662.16	619.91	42.25	15.673	
5,700.00	5,532.38	5,644.80	5,608.52	26.46	21.81	-169.36	-619.16	102.83	677.20	634.19	43.01	15.746	
5,800.00	5,628.80	5,743.66	5,706.65	26.96	22.20	-169.39	-630.99	104.85	692.24	648.47	43.77	15.816	
5,900.00	5,725.23	5,842.53	5,804.78	27.45	22.58	-169.42	-642.81	106.87	707.29	662.76	44.53	15.883	
6,000.00	5,821.65	5,941.39	5,902.91	27.95	22.97	-169.44	-654.63	108.89	722.33	677.04	45.29	15.948	
6,100.00	5,918.08	6,040.25	6,001.04	28.45	23.35	-169.47	-666.45	110.92	737.37	691.32	46.05	16.011	
6,200.00	6,014.50	6,139.11	6,099.17	28.94	23.74	-169.49	-678.27	112.94	752.42	705.60	46.82	16.072	
6,300.00	6,110.93	6,237.97	6,197.31	29.44	24.12	-169.52	-690.10	114.96	767.46	719.88	47.58	16.131	
6,400.00	6,207.35	6,336.83	6,295.44	29.94	24.51	-169.54	-701.92	116.98	782.51	734.17	48.34	16.187	
6,500.00	6,303.78	6,435.69	6,393.57	30.43	24.90	-169.56	-713.74	119.00	797.55	748.45	49.10	16.242	
6,600.00	6,400.20	6,534.56	6,491.70	30.93	25.28	-169.58	-725.56	121.03	812.59	762.73	49.87	16.295	
6,677.76	6,475.18	6,606.62	6,563.22	31.32	25.56	-169.58	-734.18	122.73	824.35	773.92	50.43	16.347	
6,700.00	6,496.62	6,623.49	6,579.94	31.43	25.63	-177.05	-736.20	123.80	827.98	777.41	50.57	16.374	
6,750.00	6,544.66	6,660.57	6,616.52	31.68	25.78	167.61	-740.62	127.89	837.20	786.32	50.88	16.455	
6,800.00	6,592.24	6,700.00	6,655.04	31.92	25.93	155.38	-745.30	134.84	848.01	796.79	51.22	16.556	
6,850.00	6,639.07	6,727.88	6,681.95	32.16	26.04	145.90	-748.57	141.36	860.51	809.05	51.46	16.722	
6,900.00	6,684.86	6,750.00	6,703.05	32.40	26.13	138.54	-751.14	147.46	874.96	823.33	51.63	16.947	
6,950.00	6,729.32	6,781.88	6,733.01	32.62	26.25	133.24	-754.80	157.69	891.41	839.50	51.91	17.171	
7,000.00	6,772.19	6,800.00	6,749.78	32.84	26.32	128.45	-756.86	164.26	910.11	858.08	52.03	17.493	
7,050.00	6,813.20	6,820.96	6,768.90	33.05	26.40	124.52	-759.20	172.50	931.03	878.85	52.18	17.843	
7,100.00	6,852.09	6,835.19	6,781.71	33.26	26.45	120.65	-760.78	178.50	954.19	901.95	52.24	18.265	
7,150.00	6,888.63	6,850.00	6,794.88	33.45	26.50	117.07	-762.40	185.09	979.48	927.16	52.32	18.720	
7,200.00	6,922.59	6,850.00	6,794.88	33.64	26.50	112.64	-762.40	185.09	1,006.73	954.57	52.16	19.300	
7,250.00	6,953.76	6,850.00	6,794.88	33.82	26.50	108.21	-762.40	185.09	1,035.80	983.78	52.02	19.913	
7,300.00	6,981.95	6,862.91	6,806.21	34.00	26.55	104.63	-763.80	191.10	1,066.20	1,014.06	52.14	20.448	
7,350.00	7,006.99	6,863.96	6,807.13	34.17	26.56	100.23	-763.91	191.60	1,097.93	1,045.85	52.08	21.081	
7,400.00	7,028.72	6,850.00	6,794.88	34.35	26.50	94.81	-762.40	185.09	1,130.77	1,079.01	51.76	21.846	
7,450.00	7,047.00	6,850.00	6,794.88	34.52	26.50	90.41	-762.40	185.09	1,164.07	1,112.31	51.76	22.490	
7,500.00	7,061.73	6,850.00	6,794.88	34.69	26.50	86.12	-762.40	185.09	1,197.75	1,145.95	51.80	23.123	
7,550.00	7,072.82	6,850.00	6,794.88	34.86	26.50	82.00	-762.40	185.09	1,231.59	1,179.70	51.88	23.738	
7,600.00	7,080.18	6,850.00	6,794.88	35.04	26.50	78.10	-762.40	185.09	1,265.37	1,213.36	52.00	24.332	
7,650.00	7,083.79	6,850.00	6,794.88	35.22	26.50	74.46	-762.40	185.09	1,298.89	1,246.73	52.16	24.901	
7,674.30	7,084.18	6,850.00	6,794.88	35.32	26.50	72.80	-762.40	185.09	1,315.04	1,262.79	52.25	25.169	
7,700.00	7,084.12	6,830.29	6,777.31	35.42	26.43	71.87	-760.24	176.40	1,331.80	1,279.81	51.99	25.618	
7,800.00	7,083.88	6,800.00	6,749.78	35.84	26.32	70.44	-756.86	164.26	1,400.45	1,348.62	51.84	27.017	
7,900.00	7,083.64	6,800.00	6,749.78	36.34	26.32	70.44	-756.86	164.26	1,471.86	1,419.65	52.21	28.191	
8,000.00	7,083.40	6,800.00	6,749.78	36.90	26.32	70.44	-756.86	164.26	1,546.44	1,493.89	52.55	29.429	
8,100.00	7,083.16	6,779.23	6,730.55	37.52	26.24	69.46	-754.50	156.78	1,623.30	1,570.76	52.54	30.895	
8,200.00	7,082.91	6,769.41	6,721.37	38.21	26.20	69.00	-753.38	153.50	1,702.46	1,649.76	52.69	32.309	
8,300.00	7,082.67	6,750.00	6,703.05	38.95	26.13	68.09	-751.14	147.46	1,783.65	1,730.95	52.70	33.846	
8,400.00	7,082.43	6,750.00	6,703.05	39.74	26.13	68.09	-751.14	147.46	1,866.31	1,813.36	52.95	35.244	
8,500.00	7,082.19	6,750.00	6,703.05	40.59	26.13	68.09	-751.14	147.46	1,950.59	1,897.41	53.18	36.678	
8,600.00	7,081.95	6,750.00	6,703.05	41.49	26.13	68.09	-751.14	147.46	2,036.30	1,982.91	53.39	38.141	
8,700.00	7,081.71	6,750.00	6,703.05	42.43	26.13	68.09	-751.14	147.46	2,123.26	2,069.68	53.58	39.631	
8,800.00	7,081.47	6,725.66	6,679.81	43.41	26.03	66.96	-748.31	140.79	2,210.72	2,157.23	53.49	41.330	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 754H - OH - Plan #4-1300

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
8,900.00	7,081.23	6,720.19	6,674.56	44.44	26.01	66.70	-747.67	139.43	2,299.45	2,245.85	53.60	42.900	
9,000.00	7,080.99	6,700.00	6,655.04	45.49	25.93	65.78	-745.30	134.84	2,389.26	2,335.70	53.56	44.612	
9,100.00	7,080.74	6,700.00	6,655.04	46.58	25.93	65.78	-745.30	134.84	2,479.46	2,425.75	53.71	46.167	
9,200.00	7,080.50	6,700.00	6,655.04	47.70	25.93	65.78	-745.30	134.84	2,570.38	2,516.54	53.84	47.737	
9,300.00	7,080.26	6,700.00	6,655.04	48.85	25.93	65.78	-745.30	134.84	2,661.96	2,607.99	53.97	49.321	
9,400.00	7,080.02	6,700.00	6,655.04	50.03	25.93	65.78	-745.30	134.84	2,754.12	2,700.03	54.09	50.916	
9,500.00	7,079.78	6,700.00	6,655.04	51.23	25.93	65.78	-745.30	134.84	2,846.81	2,792.61	54.20	52.522	
9,600.00	7,079.54	6,700.00	6,655.04	52.45	25.93	65.78	-745.30	134.84	2,939.98	2,885.68	54.31	54.137	
9,700.00	7,079.30	6,700.00	6,655.04	53.69	25.93	65.78	-745.30	134.84	3,033.59	2,979.18	54.40	55.760	
9,800.00	7,079.06	6,700.00	6,655.04	54.95	25.93	65.78	-745.30	134.84	3,127.59	3,073.09	54.50	57.391	
9,900.00	7,078.82	6,700.00	6,655.04	56.23	25.93	65.78	-745.30	134.84	3,221.95	3,167.37	54.58	59.027	
10,000.00	7,078.57	6,678.74	6,634.33	57.53	25.85	64.81	-742.78	130.76	3,316.20	3,261.68	54.52	60.828	
10,100.00	7,078.33	6,676.12	6,631.77	58.84	25.84	64.70	-742.47	130.31	3,411.08	3,356.49	54.58	62.493	
10,200.00	7,078.09	6,673.64	6,629.34	60.17	25.83	64.58	-742.17	129.89	3,506.23	3,451.58	54.65	64.161	
10,300.00	7,077.85	6,650.00	6,606.12	61.51	25.74	63.53	-739.36	126.48	3,602.08	3,547.51	54.57	66.010	
10,400.00	7,077.61	6,650.00	6,606.12	62.86	25.74	63.53	-739.36	126.48	3,697.62	3,642.97	54.65	67.664	
10,500.00	7,077.37	6,650.00	6,606.12	64.22	25.74	63.53	-739.36	126.48	3,793.40	3,738.67	54.72	69.320	
10,600.00	7,077.13	6,650.00	6,606.12	65.60	25.74	63.53	-739.36	126.48	3,889.38	3,834.59	54.80	70.979	
10,700.00	7,076.89	6,650.00	6,606.12	66.98	25.74	63.53	-739.36	126.48	3,985.57	3,930.70	54.87	72.641	
10,800.00	7,076.65	6,650.00	6,606.12	68.38	25.74	63.53	-739.36	126.48	4,081.94	4,027.00	54.94	74.303	
10,900.00	7,076.40	6,650.00	6,606.12	69.78	25.74	63.53	-739.36	126.48	4,178.48	4,123.47	55.00	75.967	
11,000.00	7,076.16	6,650.00	6,606.12	71.20	25.74	63.53	-739.36	126.48	4,275.18	4,220.11	55.07	77.632	
11,100.00	7,075.92	6,650.00	6,606.12	72.62	25.74	63.53	-739.36	126.48	4,372.02	4,316.89	55.13	79.297	
11,200.00	7,075.68	6,650.00	6,606.12	74.04	25.74	63.53	-739.36	126.48	4,469.01	4,413.81	55.20	80.962	
11,300.00	7,075.44	6,650.00	6,606.12	75.48	25.74	63.53	-739.36	126.48	4,566.13	4,510.86	55.26	82.627	
11,400.00	7,075.20	6,650.00	6,606.12	76.92	25.74	63.53	-739.36	126.48	4,663.36	4,608.04	55.32	84.293	
11,500.00	7,074.96	6,650.00	6,606.12	78.37	25.74	63.53	-739.36	126.48	4,760.72	4,705.33	55.38	85.957	
11,600.00	7,074.72	6,650.00	6,606.12	79.82	25.74	63.53	-739.36	126.48	4,858.18	4,802.73	55.45	87.621	
11,700.00	7,074.48	6,650.00	6,606.12	81.28	25.74	63.53	-739.36	126.48	4,955.74	4,900.23	55.51	89.283	
11,800.00	7,074.23	6,650.00	6,606.12	82.75	25.74	63.53	-739.36	126.48	5,053.39	4,997.83	55.57	90.945	
11,900.00	7,073.99	6,650.00	6,606.12	84.22	25.74	63.53	-739.36	126.48	5,151.14	5,095.51	55.62	92.605	
12,000.00	7,073.75	6,650.00	6,606.12	85.69	25.74	63.53	-739.36	126.48	5,248.97	5,193.29	55.68	94.264	
12,100.00	7,073.51	6,650.00	6,606.12	87.17	25.74	63.53	-739.36	126.48	5,346.88	5,291.14	55.74	95.921	
12,200.00	7,073.27	6,650.00	6,606.12	88.65	25.74	63.53	-739.36	126.48	5,444.87	5,389.07	55.80	97.576	
12,300.00	7,073.03	6,650.00	6,606.12	90.14	25.74	63.53	-739.36	126.48	5,542.93	5,487.07	55.86	99.229	
12,400.00	7,072.79	6,650.00	6,606.12	91.63	25.74	63.53	-739.36	126.48	5,641.06	5,585.14	55.92	100.880	
12,500.00	7,072.55	6,650.00	6,606.12	93.13	25.74	63.53	-739.36	126.48	5,739.25	5,683.27	55.98	102.528	
12,600.00	7,072.31	6,650.00	6,606.12	94.62	25.74	63.53	-739.36	126.48	5,837.50	5,781.47	56.04	104.175	
12,700.00	7,072.06	6,650.00	6,606.12	96.13	25.74	63.53	-739.36	126.48	5,935.81	5,879.72	56.09	105.818	
12,800.00	7,071.82	6,650.00	6,606.12	97.63	25.74	63.53	-739.36	126.48	6,034.18	5,978.03	56.15	107.459	
12,900.00	7,071.58	6,650.00	6,606.12	99.14	25.74	63.53	-739.36	126.48	6,132.60	6,076.39	56.21	109.097	
13,000.00	7,071.34	6,650.00	6,606.12	100.65	25.74	63.53	-739.36	126.48	6,231.07	6,174.80	56.27	110.733	
13,100.00	7,071.10	6,650.00	6,606.12	102.16	25.74	63.53	-739.36	126.48	6,329.59	6,273.26	56.33	112.365	
13,200.00	7,070.86	6,650.00	6,606.12	103.68	25.74	63.53	-739.36	126.48	6,428.15	6,371.76	56.39	113.994	
13,300.00	7,070.62	6,650.00	6,606.12	105.20	25.74	63.53	-739.36	126.48	6,526.76	6,470.31	56.45	115.620	
13,400.00	7,070.38	6,650.00	6,606.12	106.72	25.74	63.53	-739.36	126.48	6,625.41	6,568.90	56.51	117.243	
13,500.00	7,070.14	6,650.00	6,606.12	108.24	25.74	63.53	-739.36	126.48	6,724.10	6,667.53	56.57	118.862	
13,600.00	7,069.89	6,650.00	6,606.12	109.77	25.74	63.53	-739.36	126.48	6,822.83	6,766.20	56.63	120.478	
13,700.00	7,069.65	6,650.00	6,606.12	111.30	25.74	63.53	-739.36	126.48	6,921.59	6,864.90	56.69	122.090	
13,800.00	7,069.41	6,650.00	6,606.12	112.83	25.74	63.53	-739.36	126.48	7,020.39	6,963.64	56.75	123.699	
13,900.00	7,069.17	6,650.00	6,606.12	114.36	25.74	63.53	-739.36	126.48	7,119.22	7,062.41	56.82	125.304	
14,000.00	7,068.93	6,626.34	6,582.76	115.89	25.64	62.50	-736.54	124.03	7,217.57	7,160.79	56.78	127.125	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 754H - OH - Plan #4-1300

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
14,100.00	7,068.69	6,625.71	6,582.13	117.43	25.64	62.47	-736.46	123.97	7,316.43	7,259.60	56.84	128.730	
14,200.00	7,068.45	6,625.10	6,581.53	118.97	25.64	62.45	-736.39	123.93	7,415.33	7,358.43	56.90	130.330	
14,300.00	7,068.21	6,624.50	6,580.94	120.50	25.64	62.42	-736.32	123.88	7,514.26	7,457.30	56.96	131.927	
14,400.00	7,067.97	6,623.91	6,580.36	122.05	25.63	62.40	-736.25	123.83	7,613.21	7,556.19	57.02	133.520	
14,500.00	7,067.72	6,623.35	6,579.80	123.59	25.63	62.37	-736.18	123.79	7,712.19	7,655.11	57.08	135.108	
14,600.00	7,067.48	6,600.00	6,556.66	125.13	25.54	61.38	-733.39	122.44	7,811.68	7,754.63	57.05	136.928	
14,700.00	7,067.24	6,600.00	6,556.66	126.68	25.54	61.38	-733.39	122.44	7,910.69	7,853.57	57.12	138.504	
14,800.00	7,067.00	6,600.00	6,556.66	128.22	25.54	61.38	-733.39	122.44	8,009.72	7,952.54	57.18	140.075	
14,900.00	7,066.76	6,600.00	6,556.66	129.77	25.54	61.38	-733.39	122.44	8,108.77	8,051.52	57.25	141.642	
15,000.00	7,066.52	6,600.00	6,556.66	131.32	25.54	61.38	-733.39	122.44	8,207.85	8,150.53	57.32	143.205	
15,100.00	7,066.28	6,600.00	6,556.66	132.87	25.54	61.38	-733.39	122.44	8,306.95	8,249.57	57.38	144.763	
15,200.00	7,066.04	6,600.00	6,556.66	134.42	25.54	61.38	-733.39	122.44	8,406.07	8,348.62	57.45	146.317	
15,300.00	7,065.80	6,600.00	6,556.66	135.97	25.54	61.38	-733.39	122.44	8,505.21	8,447.69	57.52	147.867	
15,400.00	7,065.55	6,600.00	6,556.66	137.53	25.54	61.38	-733.39	122.44	8,604.38	8,546.79	57.59	149.412	
15,500.00	7,065.31	6,600.00	6,556.66	139.08	25.54	61.38	-733.39	122.44	8,703.56	8,645.90	57.66	150.953	
15,600.00	7,065.07	6,600.00	6,556.66	140.64	25.54	61.38	-733.39	122.44	8,802.76	8,745.03	57.73	152.489	
15,700.00	7,064.83	6,600.00	6,556.66	142.20	25.54	61.38	-733.39	122.44	8,901.97	8,844.18	57.80	154.021	
15,800.00	7,064.59	6,600.00	6,556.66	143.75	25.54	61.38	-733.39	122.44	9,001.21	8,943.34	57.87	155.547	
15,900.00	7,064.35	6,600.00	6,556.66	145.31	25.54	61.38	-733.39	122.44	9,100.46	9,042.52	57.94	157.070	
16,000.00	7,064.11	6,600.00	6,556.66	146.87	25.54	61.38	-733.39	122.44	9,199.73	9,141.72	58.01	158.587	
16,100.00	7,063.87	6,600.00	6,556.66	148.43	25.54	61.38	-733.39	122.44	9,299.01	9,240.93	58.08	160.100	
16,200.00	7,063.63	6,600.00	6,556.66	149.99	25.54	61.38	-733.39	122.44	9,398.31	9,340.16	58.15	161.608	
16,300.00	7,063.38	6,600.00	6,556.66	151.56	25.54	61.38	-733.39	122.44	9,497.62	9,439.40	58.23	163.111	
16,400.00	7,063.14	6,600.00	6,556.66	153.12	25.54	61.38	-733.39	122.44	9,596.95	9,538.65	58.30	164.610	
16,500.00	7,062.90	6,600.00	6,556.66	154.68	25.54	61.38	-733.39	122.44	9,696.29	9,637.92	58.38	166.103	
16,600.00	7,062.66	6,600.00	6,556.66	156.25	25.54	61.38	-733.39	122.44	9,795.65	9,737.20	58.45	167.592	
16,700.00	7,062.42	6,600.00	6,556.66	157.81	25.54	61.38	-733.39	122.44	9,895.02	9,836.49	58.52	169.075	
16,800.00	7,062.18	6,600.00	6,556.66	159.38	25.54	61.38	-733.39	122.44	9,994.40	9,935.80	58.60	170.554	
16,874.30	7,062.00	6,600.00	6,556.66	160.54	25.54	61.38	-733.39	122.44	10,068.24	10,009.58	58.66	171.650	

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
0.00	0.00	0.00	0.00	3.28	3.28	177.31	-49.87	2.34	49.93				
100.00	100.00	100.00	100.00	3.29	3.29	177.31	-49.87	2.34	49.93	43.35	6.58	7.589	
200.00	200.00	200.00	200.00	3.34	3.34	177.31	-49.87	2.34	49.93	43.25	6.67	7.483	
300.00	300.00	300.00	300.00	3.42	3.42	177.31	-49.87	2.34	49.93	43.09	6.84	7.300	
400.00	400.00	400.00	400.00	3.54	3.54	177.31	-49.87	2.34	49.93	42.85	7.08	7.056	
500.00	500.00	500.00	500.00	3.69	3.69	177.31	-49.87	2.34	49.93	42.55	7.37	6.770	
600.00	599.98	598.29	598.27	3.86	3.85	-4.83	-51.55	2.47	49.90	42.20	7.70	6.477	
700.00	699.84	696.58	696.42	4.04	4.04	-5.49	-56.59	2.87	49.83	41.77	8.06	6.184	
800.00	799.45	794.86	794.34	4.25	4.24	-6.59	-64.99	3.53	49.73	41.28	8.45	5.887	
900.00	898.70	893.15	891.92	4.48	4.47	-8.14	-76.72	4.45	49.62	40.75	8.87	5.595	
1,000.00	997.47	991.43	989.03	4.74	4.72	-10.14	-91.79	5.64	49.54	40.22	9.32	5.316	
1,076.28	1,072.40	1,066.41	1,062.72	4.96	4.93	-11.96	-105.51	6.72	49.51	39.83	9.68	5.115 CC	
1,100.00	1,095.62	1,089.72	1,085.56	5.03	5.00	-12.58	-110.17	7.09	49.51	39.72	9.79	5.055	
1,200.00	1,193.06	1,188.00	1,181.41	5.35	5.31	-15.45	-131.84	8.79	49.60	39.30	10.30	4.816	
1,268.36	1,259.18	1,255.19	1,246.47	5.58	5.54	-17.65	-148.53	10.10	49.76	39.10	10.66	4.669 ES	
1,300.00	1,289.69	1,286.29	1,276.45	5.70	5.65	-18.67	-156.77	10.75	50.03	39.20	10.83	4.618 SF	
1,400.00	1,386.11	1,385.12	1,371.16	6.07	6.02	-21.24	-184.90	12.97	52.96	41.53	11.43	4.633	
1,500.00	1,482.54	1,485.03	1,466.71	6.45	6.41	-23.34	-214.02	15.26	56.67	44.57	12.11	4.681	
1,600.00	1,578.96	1,584.94	1,562.25	6.86	6.83	-25.18	-243.14	17.55	60.46	47.64	12.81	4.718	
1,700.00	1,675.39	1,684.85	1,657.80	7.27	7.26	-26.81	-272.26	19.84	64.29	50.75	13.54	4.747	
1,800.00	1,771.81	1,784.76	1,753.34	7.70	7.70	-28.25	-301.38	22.13	68.18	53.88	14.30	4.769	
1,900.00	1,868.24	1,884.67	1,848.89	8.13	8.15	-29.53	-330.50	24.43	72.10	57.03	15.07	4.785	
2,000.00	1,964.66	1,984.58	1,944.44	8.57	8.61	-30.69	-359.62	26.72	76.05	60.20	15.85	4.797	
2,100.00	2,061.09	2,084.49	2,039.98	9.02	9.08	-31.72	-388.75	29.01	80.03	63.38	16.65	4.806	
2,200.00	2,157.51	2,184.40	2,135.53	9.47	9.55	-32.66	-417.87	31.30	84.04	66.57	17.47	4.811	
2,300.00	2,253.94	2,284.31	2,231.07	9.93	10.03	-33.52	-446.99	33.59	88.06	69.77	18.29	4.814	
2,400.00	2,350.36	2,384.22	2,326.62	10.39	10.51	-34.30	-476.11	35.89	92.10	72.98	19.13	4.815	
2,500.00	2,446.79	2,484.13	2,422.16	10.86	11.00	-35.01	-505.23	38.18	96.16	76.19	19.97	4.815	
2,600.00	2,543.21	2,584.04	2,517.71	11.33	11.49	-35.66	-534.35	40.47	100.24	79.41	20.82	4.814	
2,700.00	2,639.64	2,683.96	2,613.25	11.80	11.99	-36.27	-563.47	42.76	104.32	82.64	21.68	4.812	
2,800.00	2,736.06	2,783.87	2,708.80	12.27	12.48	-36.83	-592.59	45.05	108.42	85.87	22.54	4.809	
2,900.00	2,832.49	2,883.78	2,804.34	12.75	12.98	-37.34	-621.71	47.34	112.52	89.11	23.41	4.806	
3,000.00	2,928.91	2,983.69	2,899.89	13.23	13.48	-37.83	-650.84	49.64	116.63	92.35	24.29	4.802	
3,100.00	3,025.34	3,083.60	2,995.43	13.71	13.99	-38.27	-679.96	51.93	120.76	95.59	25.17	4.798	
3,200.00	3,121.76	3,183.51	3,090.98	14.19	14.49	-38.69	-709.08	54.22	124.88	98.83	26.05	4.794	
3,300.00	3,218.18	3,283.42	3,186.52	14.67	15.00	-39.08	-738.20	56.51	129.02	102.08	26.94	4.790	
3,400.00	3,314.61	3,383.33	3,282.07	15.15	15.50	-39.45	-767.32	58.80	133.16	105.33	27.83	4.785	
3,500.00	3,411.03	3,483.24	3,377.61	15.64	16.01	-39.80	-796.44	61.10	137.30	108.58	28.72	4.781	
3,600.00	3,507.46	3,583.15	3,473.16	16.12	16.52	-40.12	-825.56	63.39	141.45	111.84	29.62	4.776	
3,700.00	3,603.88	3,683.06	3,568.70	16.61	17.03	-40.43	-854.68	65.68	145.61	115.09	30.52	4.772	
3,800.00	3,700.31	3,782.97	3,664.25	17.10	17.54	-40.72	-883.80	67.97	149.76	118.35	31.42	4.767	
3,900.00	3,796.73	3,882.88	3,759.79	17.59	18.06	-40.99	-912.92	70.26	153.93	121.61	32.32	4.763	
4,000.00	3,893.16	3,982.79	3,855.34	18.07	18.57	-41.25	-942.05	72.56	158.09	124.87	33.22	4.758	
4,100.00	3,989.58	4,082.71	3,950.88	18.56	19.08	-41.50	-971.17	74.85	162.26	128.13	34.13	4.754	
4,200.00	4,086.01	4,182.62	4,046.43	19.05	19.60	-41.73	-1,000.29	77.14	166.43	131.39	35.04	4.750	
4,300.00	4,182.43	4,282.53	4,141.97	19.55	20.11	-41.96	-1,029.41	79.43	170.60	134.65	35.95	4.746	
4,400.00	4,278.86	4,382.44	4,237.52	20.04	20.63	-42.17	-1,058.53	81.72	174.78	137.92	36.86	4.742	
4,500.00	4,375.28	4,482.35	4,333.06	20.53	21.15	-42.37	-1,087.65	84.01	178.96	141.18	37.77	4.738	
4,600.00	4,471.71	4,582.26	4,428.61	21.02	21.66	-42.56	-1,116.77	86.31	183.14	144.45	38.69	4.734	
4,700.00	4,568.13	4,682.17	4,524.15	21.51	22.18	-42.75	-1,145.89	88.60	187.32	147.72	39.60	4.730	
4,800.00	4,664.56	4,782.08	4,619.70	22.01	22.70	-42.92	-1,175.01	90.89	191.50	150.98	40.52	4.726	
4,900.00	4,760.98	4,881.99	4,715.24	22.50	23.22	-43.09	-1,204.13	93.18	195.69	154.25	41.44	4.723	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
5,000.00	4,857.41	4,981.90	4,810.79	22.99	23.74	-43.25	-1,233.26	95.47	199.88	157.52	42.35	4.719	
5,100.00	4,953.83	5,081.81	4,906.33	23.49	24.25	-43.41	-1,262.38	97.77	204.06	160.79	43.27	4.716	
5,200.00	5,050.25	5,181.72	5,001.88	23.98	24.77	-43.56	-1,291.50	100.06	208.25	164.06	44.19	4.712	
5,300.00	5,146.68	5,281.63	5,097.42	24.48	25.29	-43.70	-1,320.62	102.35	212.45	167.33	45.11	4.709	
5,400.00	5,243.10	5,381.55	5,192.97	24.97	25.81	-43.84	-1,349.74	104.64	216.64	170.60	46.04	4.706	
5,500.00	5,339.53	5,481.46	5,288.51	25.47	26.33	-43.97	-1,378.86	106.93	220.83	173.88	46.96	4.703	
5,600.00	5,435.95	5,581.37	5,384.06	25.96	26.85	-44.10	-1,407.98	109.23	225.03	177.15	47.88	4.700	
5,700.00	5,532.38	5,681.28	5,479.60	26.46	27.37	-44.22	-1,437.10	111.52	229.22	180.42	48.80	4.697	
5,800.00	5,628.80	5,781.19	5,575.15	26.96	27.90	-44.34	-1,466.22	113.81	233.42	183.69	49.73	4.694	
5,900.00	5,725.23	5,881.10	5,670.69	27.45	28.42	-44.45	-1,495.34	116.10	237.62	186.97	50.65	4.691	
6,000.00	5,821.65	5,981.01	5,766.24	27.95	28.94	-44.56	-1,524.47	118.39	241.82	190.24	51.58	4.688	
6,100.00	5,918.08	6,080.92	5,861.79	28.45	29.46	-44.67	-1,553.59	120.68	246.02	193.52	52.50	4.686	
6,200.00	6,014.50	6,180.83	5,957.33	28.94	29.98	-44.77	-1,582.71	122.98	250.22	196.79	53.43	4.683	
6,300.00	6,110.93	6,280.74	6,052.88	29.44	30.50	-44.87	-1,611.83	125.27	254.42	200.07	54.36	4.681	
6,400.00	6,207.35	6,380.65	6,148.42	29.94	31.02	-44.96	-1,640.95	127.56	258.62	203.34	55.28	4.678	
6,500.00	6,303.78	6,480.56	6,243.97	30.43	31.55	-45.06	-1,670.07	129.85	262.83	206.62	56.21	4.676	
6,600.00	6,400.20	6,580.47	6,339.51	30.93	32.07	-45.15	-1,699.19	132.14	267.03	209.89	57.14	4.673	
6,677.76	6,475.18	6,658.16	6,413.81	31.32	32.48	-45.21	-1,721.84	133.93	270.30	212.44	57.86	4.672	
6,700.00	6,496.62	6,680.37	6,435.04	31.43	32.59	-52.43	-1,728.31	134.44	271.50	213.42	58.08	4.675	
6,750.00	6,544.66	6,730.05	6,482.56	31.68	32.85	-67.65	-1,742.79	135.58	276.17	217.51	58.66	4.708	
6,800.00	6,592.24	6,779.17	6,529.53	31.92	33.11	-80.38	-1,757.11	136.70	283.61	224.24	59.36	4.777	
6,850.00	6,639.07	6,816.48	6,565.14	32.16	33.31	-90.10	-1,768.13	138.08	294.61	234.61	60.00	4.910	
6,900.00	6,684.86	6,850.00	6,596.88	32.40	33.49	-97.47	-1,778.49	141.01	310.78	250.16	60.62	5.127	
6,950.00	6,729.32	6,877.92	6,623.05	32.62	33.64	-102.80	-1,787.46	144.74	332.03	270.93	61.10	5.434	
7,000.00	6,772.19	6,900.00	6,643.55	32.84	33.76	-106.32	-1,794.75	148.50	358.14	296.77	61.37	5.836	
7,050.00	6,813.20	6,927.22	6,668.53	33.05	33.92	-109.11	-1,803.97	154.13	388.63	326.74	61.89	6.280	
7,100.00	6,852.09	6,950.00	6,689.17	33.26	34.05	-110.56	-1,811.87	159.67	423.12	360.82	62.30	6.791	
7,150.00	6,888.63	6,963.33	6,701.11	33.45	34.13	-110.05	-1,816.56	163.27	460.99	398.59	62.40	7.388	
7,200.00	6,922.59	6,976.65	6,712.95	33.64	34.21	-108.36	-1,821.31	167.11	501.74	439.14	62.60	8.015	
7,250.00	6,953.76	6,987.05	6,722.12	33.82	34.27	-104.94	-1,825.04	170.29	544.79	482.02	62.78	8.678	
7,300.00	6,981.95	7,000.00	6,733.45	34.00	34.34	-100.38	-1,829.74	174.46	589.69	526.53	63.17	9.336	
7,350.00	7,006.99	7,000.00	6,733.45	34.17	34.34	-91.29	-1,829.74	174.46	635.84	572.70	63.14	10.070	
7,400.00	7,028.72	7,000.00	6,733.45	34.35	34.34	-79.59	-1,829.74	174.46	682.94	619.71	63.23	10.801	
7,450.00	7,047.00	7,000.00	6,733.45	34.52	34.34	-66.08	-1,829.74	174.46	730.56	667.14	63.41	11.520	
7,500.00	7,061.73	7,000.00	6,733.45	34.69	34.34	-52.42	-1,829.74	174.46	778.33	714.64	63.68	12.222	
7,550.00	7,072.82	7,000.00	6,733.45	34.86	34.34	-40.29	-1,829.74	174.46	825.95	761.93	64.02	12.902	
7,600.00	7,080.18	7,000.00	6,733.45	35.04	34.34	-30.43	-1,829.74	174.46	873.19	808.78	64.40	13.558	
7,650.00	7,083.79	7,000.00	6,733.45	35.22	34.34	-22.73	-1,829.74	174.46	919.82	855.00	64.82	14.190	
7,674.30	7,084.18	7,000.00	6,733.45	35.32	34.34	-19.65	-1,829.74	174.46	942.21	877.18	65.03	14.489	
7,700.00	7,084.12	7,000.00	6,733.45	35.42	34.34	-19.65	-1,829.74	174.46	965.85	900.60	65.25	14.802	
7,800.00	7,083.88	6,973.47	6,710.13	35.84	34.19	-17.20	-1,820.17	166.17	1,057.85	992.51	65.34	16.190	
7,900.00	7,083.64	6,950.00	6,689.17	36.34	34.05	-15.24	-1,811.87	159.67	1,151.33	1,085.89	65.44	17.594	
8,000.00	7,083.40	6,950.00	6,689.17	36.90	34.05	-15.24	-1,811.87	159.67	1,245.24	1,179.25	65.99	18.870	
8,100.00	7,083.16	6,950.00	6,689.17	37.52	34.05	-15.24	-1,811.87	159.67	1,340.03	1,273.60	66.43	20.171	
8,200.00	7,082.91	6,950.00	6,689.17	38.21	34.05	-15.24	-1,811.87	159.67	1,435.52	1,368.73	66.79	21.492	
8,300.00	7,082.67	6,929.47	6,670.58	38.95	33.93	-13.67	-1,804.74	154.65	1,531.13	1,464.38	66.75	22.938	
8,400.00	7,082.43	6,922.85	6,664.54	39.74	33.90	-13.19	-1,802.47	153.15	1,627.34	1,560.42	66.92	24.318	
8,500.00	7,082.19	6,900.00	6,643.55	40.59	33.76	-11.63	-1,794.75	148.50	1,724.20	1,657.39	66.81	25.808	
8,600.00	7,081.95	6,900.00	6,643.55	41.49	33.76	-11.63	-1,794.75	148.50	1,820.89	1,753.86	67.03	27.166	
8,700.00	7,081.71	6,900.00	6,643.55	42.43	33.76	-11.63	-1,794.75	148.50	1,917.92	1,850.70	67.22	28.532	
8,800.00	7,081.47	6,900.00	6,643.55	43.41	33.76	-11.63	-1,794.75	148.50	2,015.25	1,947.86	67.39	29.905	
8,900.00	7,081.23	6,900.00	6,643.55	44.44	33.76	-11.63	-1,794.75	148.50	2,112.82	2,045.28	67.54	31.285	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	Rule Assigned: Warning
9,000.00	7,080.99	6,900.00	6,643.55	45.49	33.76	-11.63	-1,794.75	148.50	2,210.61	2,142.94	67.67	32.669	
9,100.00	7,080.74	6,900.00	6,643.55	46.58	33.76	-11.63	-1,794.75	148.50	2,308.59	2,240.80	67.78	34.058	
9,200.00	7,080.50	6,900.00	6,643.55	47.70	33.76	-11.63	-1,794.75	148.50	2,406.73	2,338.84	67.89	35.450	
9,300.00	7,080.26	6,900.00	6,643.55	48.85	33.76	-11.63	-1,794.75	148.50	2,505.02	2,437.03	67.99	36.846	
9,400.00	7,080.02	6,878.02	6,623.14	50.03	33.64	-10.27	-1,787.49	144.76	2,602.98	2,535.15	67.83	38.374	
9,500.00	7,079.78	6,874.95	6,620.28	51.23	33.63	-10.08	-1,786.49	144.29	2,701.38	2,633.50	67.89	39.793	
9,600.00	7,079.54	6,872.06	6,617.58	52.45	33.61	-9.92	-1,785.55	143.86	2,799.88	2,731.95	67.94	41.213	
9,700.00	7,079.30	6,850.00	6,596.88	53.69	33.49	-8.70	-1,778.49	141.01	2,898.82	2,831.04	67.78	42.766	
9,800.00	7,079.06	6,850.00	6,596.88	54.95	33.49	-8.70	-1,778.49	141.01	2,997.40	2,929.54	67.86	44.171	
9,900.00	7,078.82	6,850.00	6,596.88	56.23	33.49	-8.70	-1,778.49	141.01	3,096.07	3,028.14	67.93	45.577	
10,000.00	7,078.57	6,850.00	6,596.88	57.53	33.49	-8.70	-1,778.49	141.01	3,194.83	3,126.83	68.00	46.984	
10,100.00	7,078.33	6,850.00	6,596.88	58.84	33.49	-8.70	-1,778.49	141.01	3,293.66	3,225.59	68.06	48.392	
10,200.00	7,078.09	6,850.00	6,596.88	60.17	33.49	-8.70	-1,778.49	141.01	3,392.55	3,324.43	68.12	49.800	
10,300.00	7,077.85	6,850.00	6,596.88	61.51	33.49	-8.70	-1,778.49	141.01	3,491.51	3,423.33	68.18	51.208	
10,400.00	7,077.61	6,850.00	6,596.88	62.86	33.49	-8.70	-1,778.49	141.01	3,590.53	3,522.29	68.24	52.617	
10,500.00	7,077.37	6,850.00	6,596.88	64.22	33.49	-8.70	-1,778.49	141.01	3,689.60	3,621.31	68.29	54.025	
10,600.00	7,077.13	6,850.00	6,596.88	65.60	33.49	-8.70	-1,778.49	141.01	3,788.72	3,720.38	68.35	55.434	
10,700.00	7,076.89	6,850.00	6,596.88	66.98	33.49	-8.70	-1,778.49	141.01	3,887.89	3,819.49	68.40	56.842	
10,800.00	7,076.65	6,850.00	6,596.88	68.38	33.49	-8.70	-1,778.49	141.01	3,987.09	3,918.64	68.45	58.249	
10,900.00	7,076.40	6,850.00	6,596.88	69.78	33.49	-8.70	-1,778.49	141.01	4,086.34	4,017.84	68.50	59.656	
11,000.00	7,076.16	6,850.00	6,596.88	71.20	33.49	-8.70	-1,778.49	141.01	4,185.62	4,117.07	68.55	61.062	
11,100.00	7,075.92	6,850.00	6,596.88	72.62	33.49	-8.70	-1,778.49	141.01	4,284.93	4,216.34	68.60	62.467	
11,200.00	7,075.68	6,850.00	6,596.88	74.04	33.49	-8.70	-1,778.49	141.01	4,384.28	4,315.64	68.64	63.871	
11,300.00	7,075.44	6,850.00	6,596.88	75.48	33.49	-8.70	-1,778.49	141.01	4,483.65	4,414.97	68.69	65.275	
11,400.00	7,075.20	6,850.00	6,596.88	76.92	33.49	-8.70	-1,778.49	141.01	4,583.06	4,514.32	68.74	66.677	
11,500.00	7,074.96	6,850.00	6,596.88	78.37	33.49	-8.70	-1,778.49	141.01	4,682.48	4,613.70	68.78	68.078	
11,600.00	7,074.72	6,850.00	6,596.88	79.82	33.49	-8.70	-1,778.49	141.01	4,781.94	4,713.11	68.83	69.478	
11,700.00	7,074.48	6,850.00	6,596.88	81.28	33.49	-8.70	-1,778.49	141.01	4,881.41	4,812.54	68.87	70.876	
11,800.00	7,074.23	6,850.00	6,596.88	82.75	33.49	-8.70	-1,778.49	141.01	4,980.90	4,911.99	68.92	72.273	
11,900.00	7,073.99	6,850.00	6,596.88	84.22	33.49	-8.70	-1,778.49	141.01	5,080.42	5,011.46	68.96	73.668	
12,000.00	7,073.75	6,850.00	6,596.88	85.69	33.49	-8.70	-1,778.49	141.01	5,179.95	5,110.94	69.01	75.062	
12,100.00	7,073.51	6,850.00	6,596.88	87.17	33.49	-8.70	-1,778.49	141.01	5,279.50	5,210.45	69.05	76.455	
12,200.00	7,073.27	6,850.00	6,596.88	88.65	33.49	-8.70	-1,778.49	141.01	5,379.07	5,309.97	69.10	77.845	
12,300.00	7,073.03	6,850.00	6,596.88	90.14	33.49	-8.70	-1,778.49	141.01	5,478.65	5,409.51	69.14	79.234	
12,400.00	7,072.79	6,850.00	6,596.88	91.63	33.49	-8.70	-1,778.49	141.01	5,578.25	5,509.06	69.19	80.622	
12,500.00	7,072.55	6,827.12	6,575.24	93.13	33.36	-7.55	-1,771.37	138.83	5,677.42	5,608.37	69.05	82.219	
12,600.00	7,072.31	6,826.28	6,574.45	94.62	33.36	-7.51	-1,771.11	138.76	5,777.01	5,707.92	69.09	83.612	
12,700.00	7,072.06	6,825.47	6,573.68	96.13	33.35	-7.48	-1,770.86	138.70	5,876.62	5,807.49	69.13	85.004	
12,800.00	7,071.82	6,824.68	6,572.93	97.63	33.35	-7.44	-1,770.62	138.64	5,976.24	5,907.07	69.17	86.394	
12,900.00	7,071.58	6,823.91	6,572.20	99.14	33.35	-7.40	-1,770.39	138.59	6,075.87	6,006.65	69.22	87.782	
13,000.00	7,071.34	6,823.17	6,571.49	100.65	33.34	-7.37	-1,770.16	138.53	6,175.51	6,106.25	69.26	89.167	
13,100.00	7,071.10	6,800.00	6,549.44	102.16	33.22	-6.34	-1,763.20	137.25	6,275.58	6,206.46	69.13	90.786	
13,200.00	7,070.86	6,800.00	6,549.44	103.68	33.22	-6.34	-1,763.20	137.25	6,375.22	6,306.04	69.17	92.162	
13,300.00	7,070.62	6,800.00	6,549.44	105.20	33.22	-6.34	-1,763.20	137.25	6,474.87	6,405.64	69.22	93.536	
13,400.00	7,070.38	6,800.00	6,549.44	106.72	33.22	-6.34	-1,763.20	137.25	6,574.52	6,505.25	69.27	94.907	
13,500.00	7,070.14	6,800.00	6,549.44	108.24	33.22	-6.34	-1,763.20	137.25	6,674.19	6,604.87	69.32	96.277	
13,600.00	7,069.89	6,800.00	6,549.44	109.77	33.22	-6.34	-1,763.20	137.25	6,773.87	6,704.49	69.37	97.644	
13,700.00	7,069.65	6,800.00	6,549.44	111.30	33.22	-6.34	-1,763.20	137.25	6,873.55	6,804.13	69.42	99.009	
13,800.00	7,069.41	6,800.00	6,549.44	112.83	33.22	-6.34	-1,763.20	137.25	6,973.25	6,903.77	69.47	100.371	
13,900.00	7,069.17	6,800.00	6,549.44	114.36	33.22	-6.34	-1,763.20	137.25	7,072.95	7,003.43	69.53	101.731	
14,000.00	7,068.93	6,800.00	6,549.44	115.89	33.22	-6.34	-1,763.20	137.25	7,172.66	7,103.09	69.58	103.089	
14,100.00	7,068.69	6,800.00	6,549.44	117.43	33.22	-6.34	-1,763.20	137.25	7,272.38	7,202.75	69.63	104.444	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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
14,200.00	7,068.45	6,800.00	6,549.44	118.97	33.22	-6.34	-1,763.20	137.25	7,372.11	7,302.43	69.68	105.796	
14,300.00	7,068.21	6,800.00	6,549.44	120.50	33.22	-6.34	-1,763.20	137.25	7,471.85	7,402.11	69.73	107.146	
14,400.00	7,067.97	6,800.00	6,549.44	122.05	33.22	-6.34	-1,763.20	137.25	7,571.59	7,501.80	69.79	108.494	
14,500.00	7,067.72	6,800.00	6,549.44	123.59	33.22	-6.34	-1,763.20	137.25	7,671.34	7,601.49	69.84	109.838	
14,600.00	7,067.48	6,800.00	6,549.44	125.13	33.22	-6.34	-1,763.20	137.25	7,771.09	7,701.20	69.90	111.180	
14,700.00	7,067.24	6,800.00	6,549.44	126.68	33.22	-6.34	-1,763.20	137.25	7,870.85	7,800.90	69.95	112.520	
14,800.00	7,067.00	6,800.00	6,549.44	128.22	33.22	-6.34	-1,763.20	137.25	7,970.62	7,900.61	70.01	113.856	
14,900.00	7,066.76	6,800.00	6,549.44	129.77	33.22	-6.34	-1,763.20	137.25	8,070.39	8,000.33	70.06	115.190	
15,000.00	7,066.52	6,800.00	6,549.44	131.32	33.22	-6.34	-1,763.20	137.25	8,170.17	8,100.05	70.12	116.521	
15,100.00	7,066.28	6,800.00	6,549.44	132.87	33.22	-6.34	-1,763.20	137.25	8,269.96	8,199.78	70.17	117.850	
15,200.00	7,066.04	6,800.00	6,549.44	134.42	33.22	-6.34	-1,763.20	137.25	8,369.75	8,299.51	70.23	119.175	
15,300.00	7,065.80	6,800.00	6,549.44	135.97	33.22	-6.34	-1,763.20	137.25	8,469.54	8,399.25	70.29	120.498	
15,400.00	7,065.55	6,800.00	6,549.44	137.53	33.22	-6.34	-1,763.20	137.25	8,569.34	8,498.99	70.35	121.818	
15,500.00	7,065.31	6,800.00	6,549.44	139.08	33.22	-6.34	-1,763.20	137.25	8,669.14	8,598.74	70.40	123.134	
15,600.00	7,065.07	6,800.00	6,549.44	140.64	33.22	-6.34	-1,763.20	137.25	8,768.95	8,698.49	70.46	124.448	
15,700.00	7,064.83	6,800.00	6,549.44	142.20	33.22	-6.34	-1,763.20	137.25	8,868.76	8,798.24	70.52	125.759	
15,800.00	7,064.59	6,800.00	6,549.44	143.75	33.22	-6.34	-1,763.20	137.25	8,968.58	8,898.00	70.58	127.067	
15,900.00	7,064.35	6,800.00	6,549.44	145.31	33.22	-6.34	-1,763.20	137.25	9,068.40	8,997.76	70.64	128.372	
16,000.00	7,064.11	6,800.00	6,549.44	146.87	33.22	-6.34	-1,763.20	137.25	9,168.22	9,097.52	70.70	129.674	
16,100.00	7,063.87	6,800.00	6,549.44	148.43	33.22	-6.34	-1,763.20	137.25	9,268.05	9,197.29	70.76	130.973	
16,200.00	7,063.63	6,800.00	6,549.44	149.99	33.22	-6.34	-1,763.20	137.25	9,367.88	9,297.06	70.82	132.269	
16,300.00	7,063.38	6,800.00	6,549.44	151.56	33.22	-6.34	-1,763.20	137.25	9,467.72	9,396.83	70.89	133.562	
16,400.00	7,063.14	6,800.00	6,549.44	153.12	33.22	-6.34	-1,763.20	137.25	9,567.56	9,496.61	70.95	134.851	
16,500.00	7,062.90	6,800.00	6,549.44	154.68	33.22	-6.34	-1,763.20	137.25	9,667.40	9,596.39	71.01	136.138	
16,600.00	7,062.66	6,800.00	6,549.44	156.25	33.22	-6.34	-1,763.20	137.25	9,767.25	9,696.17	71.08	137.421	
16,700.00	7,062.42	6,800.00	6,549.44	157.81	33.22	-6.34	-1,763.20	137.25	9,867.09	9,795.96	71.14	138.702	
16,800.00	7,062.18	6,800.00	6,549.44	159.38	33.22	-6.34	-1,763.20	137.25	9,966.95	9,895.74	71.20	139.979	
16,874.30	7,062.00	6,800.00	6,549.44	160.54	33.22	-6.34	-1,763.20	137.25	10,041.13	9,969.88	71.25	140.925	

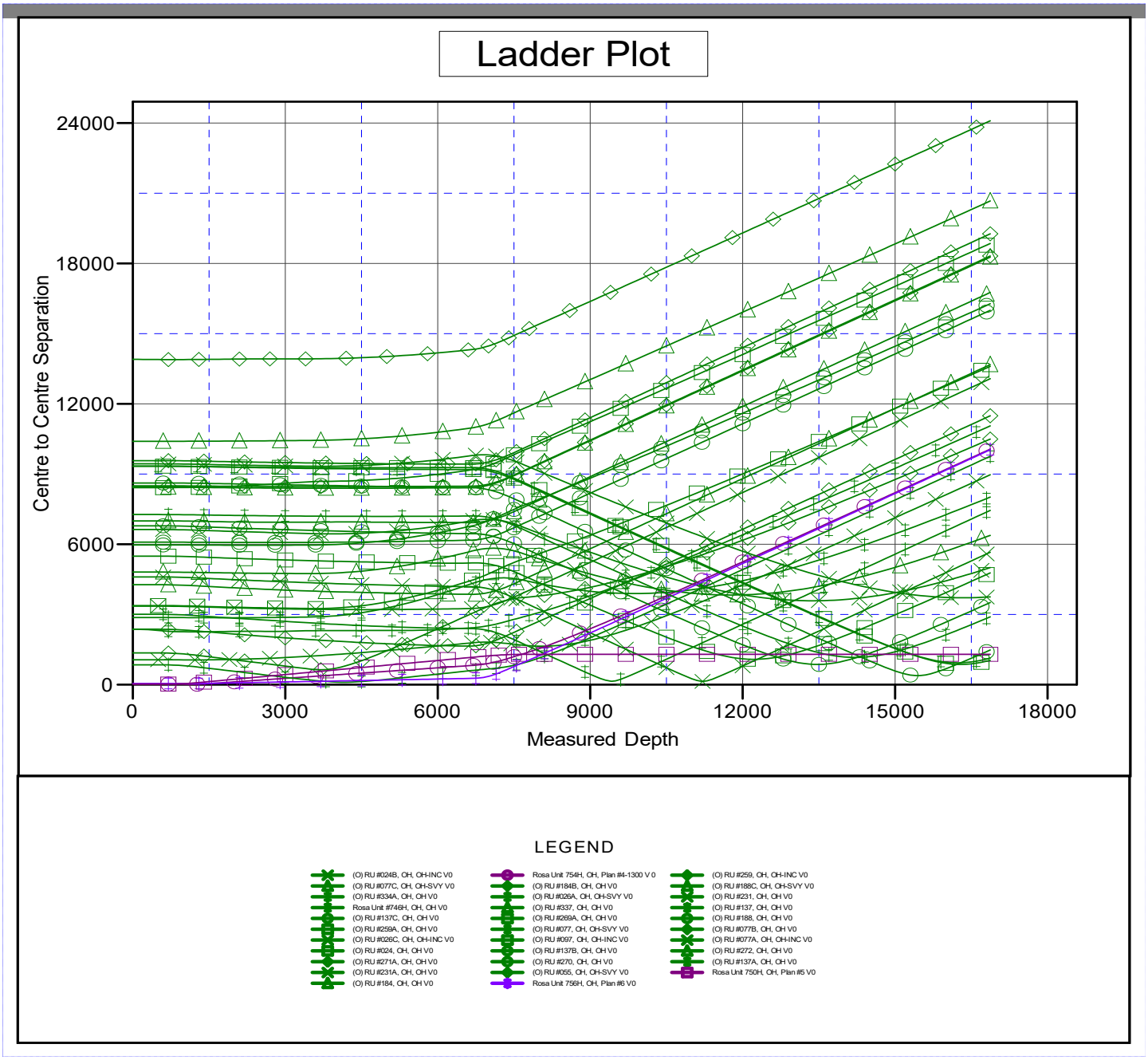
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 752H
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

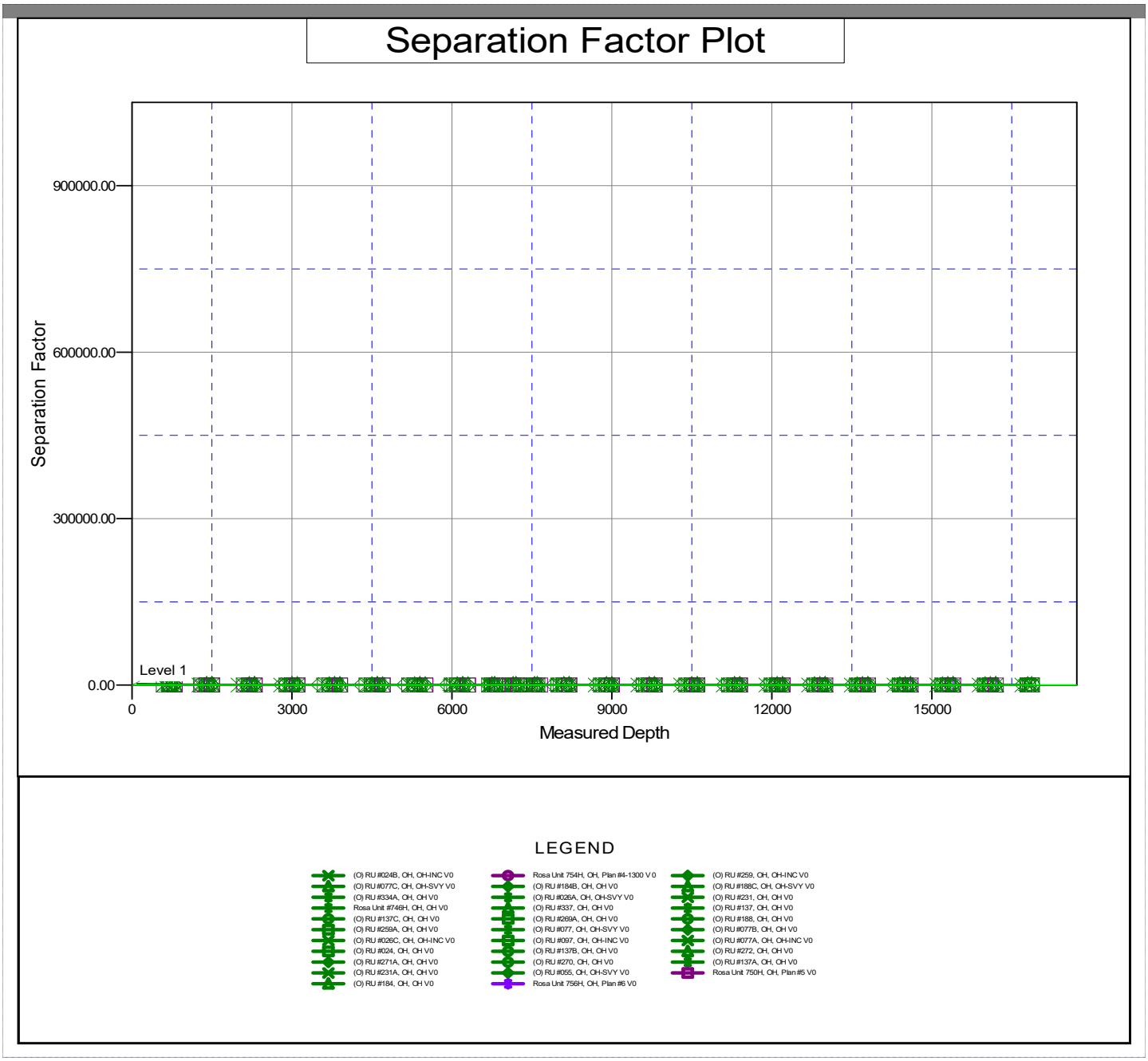
SDT

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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 752H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



Logos Operating LLC

Rio Arriba, NM (NAD83)
Rosa Unit 32
Rosa Unit 752H

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 752H
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 752H	**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 752H

Well Position	**+N/-S**	0.00 usft	**Northing:**	2,131,297.78 usft	**Latitude:**	36.856182
	+E/-W	0.00 usft	**Easting:**	2,857,645.07 usft	**Longitude:**	-107.373413
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	49,565.70118388

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	270.28

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

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,874.30	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	
1,268.36	15.37	181.92	1,259.18	-102.37	-3.44	2.00	2.00	0.00	181.92	
6,677.76	15.37	181.92	6,475.18	-1,535.07	-51.58	0.00	0.00	0.00	0.00	
7,674.30	90.14	270.25	7,084.18	-1,700.05	-690.38	9.00	7.50	8.86	88.34	RU 752H POE
16,874.30	90.14	270.25	7,062.00	-1,660.62	-9,890.26	0.00	0.00	0.00	0.00	RU 752H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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	181.92	599.98	-1.74	-0.06	0.05	2.00	2.00	0.00
700.00	4.00	181.92	699.84	-6.97	-0.23	0.20	2.00	2.00	0.00
800.00	6.00	181.92	799.45	-15.68	-0.53	0.45	2.00	2.00	0.00
900.00	8.00	181.92	898.70	-27.86	-0.94	0.80	2.00	2.00	0.00
1,000.00	10.00	181.92	997.47	-43.50	-1.46	1.25	2.00	2.00	0.00
1,100.00	12.00	181.92	1,095.62	-62.57	-2.10	1.80	2.00	2.00	0.00
1,200.00	14.00	181.92	1,193.06	-85.05	-2.86	2.44	2.00	2.00	0.00
1,268.36	15.37	181.92	1,259.18	-102.37	-3.44	2.94	2.00	2.00	0.00
Start 5409.40 hold at 1268.36 MD									
1,300.00	15.37	181.92	1,289.69	-110.75	-3.72	3.18	0.00	0.00	0.00
1,400.00	15.37	181.92	1,386.11	-137.23	-4.61	3.94	0.00	0.00	0.00
1,500.00	15.37	181.92	1,482.54	-163.72	-5.50	4.70	0.00	0.00	0.00
1,600.00	15.37	181.92	1,578.96	-190.20	-6.39	5.46	0.00	0.00	0.00
1,700.00	15.37	181.92	1,675.39	-216.69	-7.28	6.22	0.00	0.00	0.00
1,800.00	15.37	181.92	1,771.81	-243.17	-8.17	6.98	0.00	0.00	0.00
1,900.00	15.37	181.92	1,868.24	-269.66	-9.06	7.74	0.00	0.00	0.00
2,000.00	15.37	181.92	1,964.66	-296.14	-9.95	8.50	0.00	0.00	0.00
2,100.00	15.37	181.92	2,061.09	-322.63	-10.84	9.26	0.00	0.00	0.00
2,200.00	15.37	181.92	2,157.51	-349.12	-11.73	10.02	0.00	0.00	0.00
2,300.00	15.37	181.92	2,253.94	-375.60	-12.62	10.79	0.00	0.00	0.00
2,400.00	15.37	181.92	2,350.36	-402.09	-13.51	11.55	0.00	0.00	0.00
2,500.00	15.37	181.92	2,446.79	-428.57	-14.40	12.31	0.00	0.00	0.00
2,600.00	15.37	181.92	2,543.21	-455.06	-15.29	13.07	0.00	0.00	0.00
2,700.00	15.37	181.92	2,639.64	-481.54	-16.18	13.83	0.00	0.00	0.00
2,743.93	15.37	181.92	2,682.00	-493.18	-16.57	14.16	0.00	0.00	0.00
Ojo Alamo									
2,800.00	15.37	181.92	2,736.06	-508.03	-17.07	14.59	0.00	0.00	0.00
2,894.31	15.37	181.92	2,827.00	-533.01	-17.91	15.31	0.00	0.00	0.00
Kirtland									
2,900.00	15.37	181.92	2,832.49	-534.51	-17.96	15.35	0.00	0.00	0.00
3,000.00	15.37	181.92	2,928.91	-561.00	-18.85	16.11	0.00	0.00	0.00
3,100.00	15.37	181.92	3,025.34	-587.48	-19.74	16.87	0.00	0.00	0.00
3,200.00	15.37	181.92	3,121.76	-613.97	-20.63	17.63	0.00	0.00	0.00
3,267.66	15.37	181.92	3,187.00	-631.89	-21.23	18.14	0.00	0.00	0.00
Fruitland									
3,300.00	15.37	181.92	3,218.18	-640.45	-21.52	18.39	0.00	0.00	0.00
3,340.25	15.37	181.92	3,257.00	-651.12	-21.88	18.70	0.00	0.00	0.00
T/Coals									
3,400.00	15.37	181.92	3,314.61	-666.94	-22.41	19.15	0.00	0.00	0.00
3,476.11	15.37	181.92	3,388.00	-687.10	-23.09	19.73	0.00	0.00	0.00
B/Coals									
3,500.00	15.37	181.92	3,411.03	-693.43	-23.30	19.91	0.00	0.00	0.00
3,600.00	15.37	181.92	3,507.46	-719.91	-24.19	20.67	0.00	0.00	0.00
3,643.08	15.37	181.92	3,549.00	-731.32	-24.57	21.00	0.00	0.00	0.00
Pictured Cliffs									
3,700.00	15.37	181.92	3,603.88	-746.40	-25.08	21.43	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)
3,756.12	15.37	181.92	3,658.00	-761.26	-25.58	21.86	0.00	0.00	0.00
Lewis									
3,800.00	15.37	181.92	3,700.31	-772.88	-25.97	22.19	0.00	0.00	0.00
3,900.00	15.37	181.92	3,796.73	-799.37	-26.86	22.95	0.00	0.00	0.00
4,000.00	15.37	181.92	3,893.16	-825.85	-27.75	23.71	0.00	0.00	0.00
4,100.00	15.37	181.92	3,989.58	-852.34	-28.64	24.47	0.00	0.00	0.00
4,200.00	15.37	181.92	4,086.01	-878.82	-29.53	25.24	0.00	0.00	0.00
4,300.00	15.37	181.92	4,182.43	-905.31	-30.42	26.00	0.00	0.00	0.00
4,400.00	15.37	181.92	4,278.86	-931.79	-31.31	26.76	0.00	0.00	0.00
4,500.00	15.37	181.92	4,375.28	-958.28	-32.20	27.52	0.00	0.00	0.00
4,600.00	15.37	181.92	4,471.71	-984.77	-33.09	28.28	0.00	0.00	0.00
4,700.00	15.37	181.92	4,568.13	-1,011.25	-33.98	29.04	0.00	0.00	0.00
4,800.00	15.37	181.92	4,664.56	-1,037.74	-34.87	29.80	0.00	0.00	0.00
4,863.72	15.37	181.92	4,726.00	-1,054.61	-35.44	30.28	0.00	0.00	0.00
Chacra									
4,900.00	15.37	181.92	4,760.98	-1,064.22	-35.76	30.56	0.00	0.00	0.00
5,000.00	15.37	181.92	4,857.41	-1,090.71	-36.65	31.32	0.00	0.00	0.00
5,100.00	15.37	181.92	4,953.83	-1,117.19	-37.54	32.08	0.00	0.00	0.00
5,200.00	15.37	181.92	5,050.25	-1,143.68	-38.43	32.84	0.00	0.00	0.00
5,300.00	15.37	181.92	5,146.68	-1,170.16	-39.32	33.60	0.00	0.00	0.00
5,387.45	15.37	181.92	5,231.00	-1,193.32	-40.10	34.27	0.00	0.00	0.00
U/Cliff House									
5,400.00	15.37	181.92	5,243.10	-1,196.65	-40.21	34.36	0.00	0.00	0.00
5,500.00	15.37	181.92	5,339.53	-1,223.13	-41.10	35.12	0.00	0.00	0.00
5,600.00	15.37	181.92	5,435.95	-1,249.62	-41.99	35.88	0.00	0.00	0.00
5,700.00	15.37	181.92	5,532.38	-1,276.11	-42.88	36.64	0.00	0.00	0.00
5,726.57	15.37	181.92	5,558.00	-1,283.14	-43.12	36.85	0.00	0.00	0.00
Cliff House									
5,755.61	15.37	181.92	5,586.00	-1,290.83	-43.37	37.07	0.00	0.00	0.00
Menefee									
5,800.00	15.37	181.92	5,628.80	-1,302.59	-43.77	37.40	0.00	0.00	0.00
5,900.00	15.37	181.92	5,725.23	-1,329.08	-44.66	38.16	0.00	0.00	0.00
5,976.51	15.37	181.92	5,799.00	-1,349.34	-45.34	38.75	0.00	0.00	0.00
Point Lookout									
6,000.00	15.37	181.92	5,821.65	-1,355.56	-45.55	38.92	0.00	0.00	0.00
6,100.00	15.37	181.92	5,918.08	-1,382.05	-46.44	39.69	0.00	0.00	0.00
6,200.00	15.37	181.92	6,014.50	-1,408.53	-47.33	40.45	0.00	0.00	0.00
6,300.00	15.37	181.92	6,110.93	-1,435.02	-48.22	41.21	0.00	0.00	0.00
6,400.00	15.37	181.92	6,207.35	-1,461.50	-49.11	41.97	0.00	0.00	0.00
6,464.97	15.37	181.92	6,270.00	-1,478.71	-49.69	42.46	0.00	0.00	0.00
Mancos									
6,500.00	15.37	181.92	6,303.78	-1,487.99	-50.00	42.73	0.00	0.00	0.00
6,600.00	15.37	181.92	6,400.20	-1,514.47	-50.89	43.49	0.00	0.00	0.00
6,677.76	15.37	181.92	6,475.18	-1,535.07	-51.58	44.08	0.00	0.00	0.00
Start DLS 9.00 TFO 88.34									
6,700.00	15.55	189.41	6,496.62	-1,540.96	-52.17	44.64	9.00	0.83	33.64
6,750.00	16.83	204.94	6,544.66	-1,554.14	-56.32	48.72	9.00	2.55	31.06
6,800.00	19.08	217.63	6,592.24	-1,567.18	-64.36	56.70	9.00	4.50	25.37
6,850.00	22.01	227.39	6,639.07	-1,580.00	-76.25	68.53	9.00	5.86	19.54
6,900.00	25.38	234.83	6,684.86	-1,592.52	-91.92	84.13	9.00	6.75	14.87
6,950.00	29.04	240.56	6,729.32	-1,604.67	-111.26	103.41	9.00	7.32	11.46
7,000.00	32.90	245.08	6,772.19	-1,616.36	-134.15	126.25	9.00	7.71	9.04
7,050.00	36.89	248.73	6,813.20	-1,627.53	-160.47	152.51	9.00	7.97	7.31

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)
7,100.00	40.97	251.76	6,852.09	-1,638.11	-190.03	182.02	9.00	8.16	6.05
7,150.00	45.11	254.33	6,888.63	-1,648.03	-222.67	214.61	9.00	8.29	5.13
7,179.51	47.58	255.67	6,909.00	-1,653.55	-243.29	235.21	9.00	8.37	4.56
Black Top									
7,200.00	49.31	256.54	6,922.59	-1,657.23	-258.18	250.07	9.00	8.42	4.26
7,250.00	53.54	258.50	6,953.76	-1,665.65	-296.33	288.19	9.00	8.47	3.91
7,300.00	57.80	260.25	6,981.95	-1,673.25	-336.91	328.73	9.00	8.52	3.50
7,350.00	62.09	261.84	7,006.99	-1,679.97	-379.65	371.43	9.00	8.57	3.19
7,400.00	66.39	263.31	7,028.72	-1,685.78	-424.29	416.05	9.00	8.60	2.94
7,450.00	70.70	264.69	7,047.00	-1,690.63	-470.56	462.29	9.00	8.63	2.75
7,500.00	75.03	265.99	7,061.73	-1,694.51	-518.17	509.88	9.00	8.65	2.61
7,550.00	79.36	267.25	7,072.82	-1,697.38	-566.83	558.53	9.00	8.66	2.51
7,600.00	83.69	268.47	7,080.18	-1,699.22	-616.23	607.92	9.00	8.67	2.44
7,650.00	88.03	269.67	7,083.79	-1,700.03	-666.08	657.77	9.00	8.68	2.40
7,674.30	90.14	270.25	7,084.18	-1,700.05	-690.38	682.06	9.00	8.68	2.38
Start 9200.00 hold at 7674.30 MD									
7,700.00	90.14	270.25	7,084.12	-1,699.94	-716.08	707.76	0.00	0.00	0.00
7,800.00	90.14	270.25	7,083.88	-1,699.51	-816.08	807.76	0.00	0.00	0.00
7,900.00	90.14	270.25	7,083.64	-1,699.08	-916.08	907.76	0.00	0.00	0.00
8,000.00	90.14	270.25	7,083.40	-1,698.66	-1,016.08	1,007.76	0.00	0.00	0.00
8,100.00	90.14	270.25	7,083.16	-1,698.23	-1,116.07	1,107.76	0.00	0.00	0.00
8,200.00	90.14	270.25	7,082.91	-1,697.80	-1,216.07	1,207.76	0.00	0.00	0.00
8,300.00	90.14	270.25	7,082.67	-1,697.37	-1,316.07	1,307.76	0.00	0.00	0.00
8,400.00	90.14	270.25	7,082.43	-1,696.94	-1,416.07	1,407.76	0.00	0.00	0.00
8,500.00	90.14	270.25	7,082.19	-1,696.51	-1,516.07	1,507.76	0.00	0.00	0.00
8,600.00	90.14	270.25	7,081.95	-1,696.08	-1,616.07	1,607.76	0.00	0.00	0.00
8,700.00	90.14	270.25	7,081.71	-1,695.66	-1,716.07	1,707.76	0.00	0.00	0.00
8,800.00	90.14	270.25	7,081.47	-1,695.23	-1,816.07	1,807.76	0.00	0.00	0.00
8,900.00	90.14	270.25	7,081.23	-1,694.80	-1,916.07	1,907.76	0.00	0.00	0.00
9,000.00	90.14	270.25	7,080.99	-1,694.37	-2,016.06	2,007.76	0.00	0.00	0.00
9,100.00	90.14	270.25	7,080.74	-1,693.94	-2,116.06	2,107.76	0.00	0.00	0.00
9,200.00	90.14	270.25	7,080.50	-1,693.51	-2,216.06	2,207.76	0.00	0.00	0.00
9,300.00	90.14	270.25	7,080.26	-1,693.08	-2,316.06	2,307.76	0.00	0.00	0.00
9,400.00	90.14	270.25	7,080.02	-1,692.66	-2,416.06	2,407.76	0.00	0.00	0.00
9,500.00	90.14	270.25	7,079.78	-1,692.23	-2,516.06	2,507.76	0.00	0.00	0.00
9,600.00	90.14	270.25	7,079.54	-1,691.80	-2,616.06	2,607.76	0.00	0.00	0.00
9,700.00	90.14	270.25	7,079.30	-1,691.37	-2,716.06	2,707.76	0.00	0.00	0.00
9,800.00	90.14	270.25	7,079.06	-1,690.94	-2,816.05	2,807.76	0.00	0.00	0.00
9,900.00	90.14	270.25	7,078.82	-1,690.51	-2,916.05	2,907.76	0.00	0.00	0.00
10,000.00	90.14	270.25	7,078.57	-1,690.08	-3,016.05	3,007.76	0.00	0.00	0.00
10,100.00	90.14	270.25	7,078.33	-1,689.65	-3,116.05	3,107.76	0.00	0.00	0.00
10,200.00	90.14	270.25	7,078.09	-1,689.23	-3,216.05	3,207.76	0.00	0.00	0.00
10,300.00	90.14	270.25	7,077.85	-1,688.80	-3,316.05	3,307.76	0.00	0.00	0.00
10,400.00	90.14	270.25	7,077.61	-1,688.37	-3,416.05	3,407.76	0.00	0.00	0.00
10,500.00	90.14	270.25	7,077.37	-1,687.94	-3,516.05	3,507.76	0.00	0.00	0.00
10,600.00	90.14	270.25	7,077.13	-1,687.51	-3,616.04	3,607.75	0.00	0.00	0.00
10,700.00	90.14	270.25	7,076.89	-1,687.08	-3,716.04	3,707.75	0.00	0.00	0.00
10,800.00	90.14	270.25	7,076.65	-1,686.65	-3,816.04	3,807.75	0.00	0.00	0.00
10,900.00	90.14	270.25	7,076.40	-1,686.23	-3,916.04	3,907.75	0.00	0.00	0.00
11,000.00	90.14	270.25	7,076.16	-1,685.80	-4,016.04	4,007.75	0.00	0.00	0.00
11,100.00	90.14	270.25	7,075.92	-1,685.37	-4,116.04	4,107.75	0.00	0.00	0.00
11,200.00	90.14	270.25	7,075.68	-1,684.94	-4,216.04	4,207.75	0.00	0.00	0.00
11,300.00	90.14	270.25	7,075.44	-1,684.51	-4,316.04	4,307.75	0.00	0.00	0.00
11,400.00	90.14	270.25	7,075.20	-1,684.08	-4,416.03	4,407.75	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)
11,500.00	90.14	270.25	7,074.96	-1,683.65	-4,516.03	4,507.75	0.00	0.00	0.00
11,600.00	90.14	270.25	7,074.72	-1,683.23	-4,616.03	4,607.75	0.00	0.00	0.00
11,700.00	90.14	270.25	7,074.48	-1,682.80	-4,716.03	4,707.75	0.00	0.00	0.00
11,800.00	90.14	270.25	7,074.23	-1,682.37	-4,816.03	4,807.75	0.00	0.00	0.00
11,900.00	90.14	270.25	7,073.99	-1,681.94	-4,916.03	4,907.75	0.00	0.00	0.00
12,000.00	90.14	270.25	7,073.75	-1,681.51	-5,016.03	5,007.75	0.00	0.00	0.00
12,100.00	90.14	270.25	7,073.51	-1,681.08	-5,116.03	5,107.75	0.00	0.00	0.00
12,200.00	90.14	270.25	7,073.27	-1,680.65	-5,216.03	5,207.75	0.00	0.00	0.00
12,300.00	90.14	270.25	7,073.03	-1,680.23	-5,316.02	5,307.75	0.00	0.00	0.00
12,400.00	90.14	270.25	7,072.79	-1,679.80	-5,416.02	5,407.75	0.00	0.00	0.00
12,500.00	90.14	270.25	7,072.55	-1,679.37	-5,516.02	5,507.75	0.00	0.00	0.00
12,600.00	90.14	270.25	7,072.31	-1,678.94	-5,616.02	5,607.75	0.00	0.00	0.00
12,700.00	90.14	270.25	7,072.06	-1,678.51	-5,716.02	5,707.75	0.00	0.00	0.00
12,800.00	90.14	270.25	7,071.82	-1,678.08	-5,816.02	5,807.75	0.00	0.00	0.00
12,900.00	90.14	270.25	7,071.58	-1,677.65	-5,916.02	5,907.75	0.00	0.00	0.00
13,000.00	90.14	270.25	7,071.34	-1,677.23	-6,016.02	6,007.75	0.00	0.00	0.00
13,100.00	90.14	270.25	7,071.10	-1,676.80	-6,116.01	6,107.75	0.00	0.00	0.00
13,200.00	90.14	270.25	7,070.86	-1,676.37	-6,216.01	6,207.75	0.00	0.00	0.00
13,300.00	90.14	270.25	7,070.62	-1,675.94	-6,316.01	6,307.75	0.00	0.00	0.00
13,400.00	90.14	270.25	7,070.38	-1,675.51	-6,416.01	6,407.75	0.00	0.00	0.00
13,500.00	90.14	270.25	7,070.14	-1,675.08	-6,516.01	6,507.75	0.00	0.00	0.00
13,600.00	90.14	270.25	7,069.89	-1,674.65	-6,616.01	6,607.75	0.00	0.00	0.00
13,700.00	90.14	270.25	7,069.65	-1,674.23	-6,716.01	6,707.75	0.00	0.00	0.00
13,800.00	90.14	270.25	7,069.41	-1,673.80	-6,816.01	6,807.74	0.00	0.00	0.00
13,900.00	90.14	270.25	7,069.17	-1,673.37	-6,916.00	6,907.74	0.00	0.00	0.00
14,000.00	90.14	270.25	7,068.93	-1,672.94	-7,016.00	7,007.74	0.00	0.00	0.00
14,100.00	90.14	270.25	7,068.69	-1,672.51	-7,116.00	7,107.74	0.00	0.00	0.00
14,200.00	90.14	270.25	7,068.45	-1,672.08	-7,216.00	7,207.74	0.00	0.00	0.00
14,300.00	90.14	270.25	7,068.21	-1,671.65	-7,316.00	7,307.74	0.00	0.00	0.00
14,400.00	90.14	270.25	7,067.97	-1,671.22	-7,416.00	7,407.74	0.00	0.00	0.00
14,500.00	90.14	270.25	7,067.72	-1,670.80	-7,516.00	7,507.74	0.00	0.00	0.00
14,600.00	90.14	270.25	7,067.48	-1,670.37	-7,616.00	7,607.74	0.00	0.00	0.00
14,700.00	90.14	270.25	7,067.24	-1,669.94	-7,716.00	7,707.74	0.00	0.00	0.00
14,800.00	90.14	270.25	7,067.00	-1,669.51	-7,815.99	7,807.74	0.00	0.00	0.00
14,900.00	90.14	270.25	7,066.76	-1,669.08	-7,915.99	7,907.74	0.00	0.00	0.00
15,000.00	90.14	270.25	7,066.52	-1,668.65	-8,015.99	8,007.74	0.00	0.00	0.00
15,100.00	90.14	270.25	7,066.28	-1,668.22	-8,115.99	8,107.74	0.00	0.00	0.00
15,200.00	90.14	270.25	7,066.04	-1,667.80	-8,215.99	8,207.74	0.00	0.00	0.00
15,300.00	90.14	270.25	7,065.80	-1,667.37	-8,315.99	8,307.74	0.00	0.00	0.00
15,400.00	90.14	270.25	7,065.55	-1,666.94	-8,415.99	8,407.74	0.00	0.00	0.00
15,500.00	90.14	270.25	7,065.31	-1,666.51	-8,515.99	8,507.74	0.00	0.00	0.00
15,600.00	90.14	270.25	7,065.07	-1,666.08	-8,615.98	8,607.74	0.00	0.00	0.00
15,700.00	90.14	270.25	7,064.83	-1,665.65	-8,715.98	8,707.74	0.00	0.00	0.00
15,800.00	90.14	270.25	7,064.59	-1,665.22	-8,815.98	8,807.74	0.00	0.00	0.00
15,900.00	90.14	270.25	7,064.35	-1,664.80	-8,915.98	8,907.74	0.00	0.00	0.00
16,000.00	90.14	270.25	7,064.11	-1,664.37	-9,015.98	9,007.74	0.00	0.00	0.00
16,100.00	90.14	270.25	7,063.87	-1,663.94	-9,115.98	9,107.74	0.00	0.00	0.00
16,200.00	90.14	270.25	7,063.63	-1,663.51	-9,215.98	9,207.74	0.00	0.00	0.00
16,300.00	90.14	270.25	7,063.38	-1,663.08	-9,315.98	9,307.74	0.00	0.00	0.00
16,400.00	90.14	270.25	7,063.14	-1,662.65	-9,415.97	9,407.74	0.00	0.00	0.00
16,500.00	90.14	270.25	7,062.90	-1,662.22	-9,515.97	9,507.74	0.00	0.00	0.00
16,600.00	90.14	270.25	7,062.66	-1,661.80	-9,615.97	9,607.74	0.00	0.00	0.00
16,700.00	90.14	270.25	7,062.42	-1,661.37	-9,715.97	9,707.74	0.00	0.00	0.00
16,800.00	90.14	270.25	7,062.18	-1,660.94	-9,815.97	9,807.74	0.00	0.00	0.00

SDT
Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**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)
16,874.30	90.14	270.25	7,062.00	-1,660.62	-9,890.26	9,882.03	0.00	0.00	0.00
TD at 16874.30									

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 752H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,131,297.78	2,857,645.07	36.856182	-107.373413
RU 752H PBHL - plan hits target center - Point	0.00	0.00	7,062.00	-1,660.62	-9,890.26	2,129,589.55	2,847,762.92	36.851616	-107.407217
RU 752H FPP - plan misses target center by 0.09usft at 16711.71usft MD (7062.39 TVD, -1661.32 N, -9727.68 E) - Point	0.00	0.00	7,062.39	-1,661.41	-9,727.68	2,129,589.55	2,847,925.51	36.851614	-107.406661
RU 752H POE - plan hits target center - Point	0.00	0.00	7,084.18	-1,700.05	-690.38	2,129,594.42	2,856,962.89	36.851512	-107.375773

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,743.93	2,682.00	Ojo Alamo		0.00	0.00
2,894.31	2,827.00	Kirtland		0.00	0.00
3,267.66	3,187.00	Fruitland		0.00	0.00
3,340.25	3,257.00	T/Coals		0.00	0.00
3,476.11	3,388.00	B/Coals		0.00	0.00
3,643.08	3,549.00	Pictured Cliffs		0.00	0.00
3,756.12	3,658.00	Lewis		0.00	0.00
4,863.72	4,726.00	Chacra		0.00	0.00
5,387.45	5,231.00	U/Cliff House		0.00	0.00
5,726.57	5,558.00	Cliff House		0.00	0.00
5,755.61	5,586.00	Menefee			
5,976.51	5,799.00	Point Lookout			
6,464.97	6,270.00	Mancos			
7,179.51	6,909.00	Black Top			

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Planning Report

Database:	EDM 5000 Multi User Db	**Local Co-ordinate Reference:**	Well Rosa Unit 752H
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 752H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #5		

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
1,268.36	1,259.18	-102.37	-3.44	Start 5409.40 hold at 1268.36 MD
6,677.76	6,475.18	-1,535.07	-51.58	Start DLS 9.00 TFO 88.34
7,674.30	7,084.18	-1,700.05	-690.38	Start 9200.00 hold at 7674.30 MD
16,874.30	7,062.00	-1,660.62	-9,890.26	TD at 16874.30

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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 752H**	GL Elevation:	6,534’
Surface Location:	Sec 33, T31N, R5W 2611’ FNL, 950’ FWL (36.856182º N, -170.373413º W – NAD83)	KB:	30’
Bottom Hole Location:	Sec 31, T31N, R5W 1006’ FSL, 167’ FWL (36.851616º N, -107.407217º W – NAD83)	Measured Depth:	16,874’ (KB)
Lease Serial **CA Serial**	**# NMSF78773** **# 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	2744’	2682’	*POINT LOOKOUT	5977’	5799’
KIRTLAND	2894’	2827’	*MANCOS	6465’	6270’
*FRUITLAND	3268’	3187’	KICKOFF POINT	6678’	6475’
*PICTURED CLIFFS	3643’	3549’	LANDING POINT	7674’	7084’
LEWIS	3756’	3658’	TD	16874’	7062’
CHACRA	4864’	4726’			
*CLIFF HOUSE	5727’	5558’			
MENEFEE	5756’	5586’			

* 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:** 7,084' TVD x 0.43 = 3,047 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"	6,540'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	16,874'	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	6,040	500	0.3132		1.3	221	39	1.10	201	15.8
Stage 1 Lead	4,939	1,101	0.3132		1.3	448	80	1.90	236	12.4
						669	**119**		**437**	
Stage 2 Tail	4,339	600	0.3132		1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,318	1,021	0.3132		1.3	416	74	1.90	219	12.4
						660	**118**		**373**	
Stage 3 Tail	2,668	650	0.3132		1.3	265	47	1.58	168	13.2
Stage 3 Lead	350	2,318	0.3132		1.3	944	168	1.58	597	12.4
Stage 3 Lead	-	350	1.4895	0.2653	1	521	93	1.90	274	12.4
						1,730	**308**		**1039**	
						3,059	**545**		**1,850**	
Set Depth, ft RKB	6540									

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	**6,440**	**100**	**0.2531**	**1**	**25**	**5**	1.59	**16**	13.2
Open Hole Tail	**6,540**	**10,334**	**0.2291**	**1.15**	**2,733**	**487**	1.59	**1,719**	13.2
					2,758	**491**		**1,735**	
Set Depth, ft RKB	16874								

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 *7,084' TVD = 1559 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.

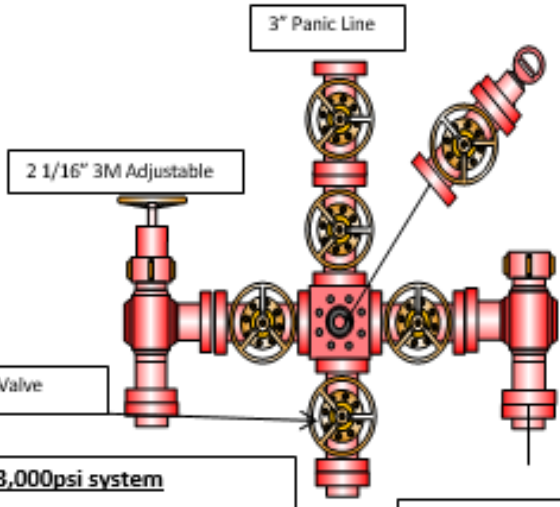
E. PRODUCTION TUBING

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.

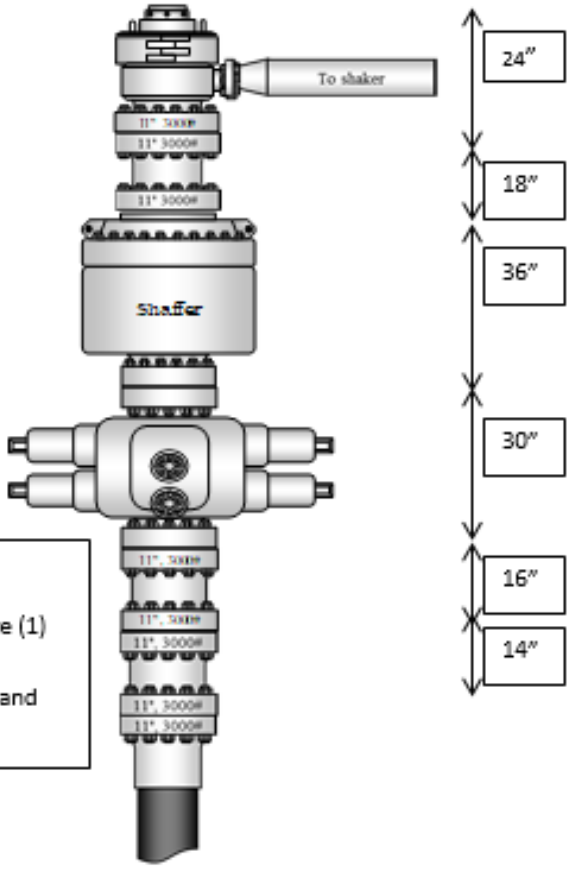
LOGOS OPERATING

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

District I
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District II
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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 340641

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 340641
	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